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Emergence of Mixed-Sex Friendship Groups during Adolescence: Developmental Associations with Substance Use & Delinquency

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Abstract

Prospective longitudinal data from over 14,000 youth residing in 28 communities in the rural U.S. were analyzed to examine the emergence of mixed-sex friendship groups in early adolescence. Youth were surveyed on five occasions between fall of 6th grade and spring of 9th grade. At each assessment, youth reported the names of up to seven same-grade friends and described patterns of alcohol use, cigarette use and delinquency. Approximately 800 – 900 friendship groups (Mean = 10.5 members) were identified at each assessment and categorized in terms of gender composition (all-girl, mostly-girl, mixed-sex, mostly-boy, all-boy). The proportion of groups categorized as mixed-sex increased with grade level (10% in 6th grade, 22% in 9th grade), but gender-homogenous groups predominated at all grade levels (76% in 6th grade, 51% in 9th grade). Mixed-sex groups were slightly larger than all-girl groups but the same size as all-boy groups. All-girl groups had the highest levels of tightknittedness (i.e., density, reciprocity and transitivity), with mixed-sex groups having the lowest levels and all-boy groups having intermediate levels. After controlling for demographic factors, future mixed-sex group membership was predicted by lower popularity, higher levels of delinquency and lower levels of alcohol use; and mixed-sex friendship group membership was associated with increased likelihood of cigarette use. Results are partially consistent with Dunphy's classic account of the emergence of mixed-sex groups in adolescence, but suggest that in early adolescence, mixed-sex group affiliation is significantly associated with deviant behavior and *peripheral* social status, not with popularity.

Keywords

Friendship; peer groups; gender; adolescence; substance use; delinquency

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Given children's nearly universal preference for same-sex peers, it has been argued that boys and girls grow up within two distinct social worlds (Maccoby, 1998). While this has stimulated extensive research on sex differences in peer relationship processes (e.g., Rose & Rudolph, 2006), far less attention has been paid to the reemergence of mixed-sex peer relations in adolescence and how the resulting mixed-sex groups may differ from girls' and boys' groups. Moreover, while mixed-sex groups are normative by mid- to late-adolescence (Dunphy, 1969; Shrum, Cheek, & Hunter, 1988), there remains much to learn about the earliest emerging mixed-sex groups in early adolescence, and the developmental implications of being early in this transition. To date, research on cross-sex friendships has primarily focused on early-maturing girls' affiliation with older, mixed-sex and deviant peer groups (Poulin, Denault, & Pedersen, 2011; Stattin & Magnusson, 1990), leaving a gap in our understanding of cross-sex friendship groups among *same-age* youth. The present study analyzes a uniquely large dataset to advance understanding of the formation and features of mixed-sex friendship groups and the developmental implications of membership in these groups during early adolescence.

The re-merging of girls' and boys' "relational cultures" in adolescence involves extensive relearning about how to interact with peers (Maccoby, 1998). Thus, mixed-sex peer groups are an important context in which youth see models of cross-sex interaction, gain an "insider" perspective on the opposite sex, and gain practice interacting with other-sex peers. Mixed-sex groups offer critical opportunities for youth to build the interpersonal skills needed for future romantic relationships and for success in the mixed-sex social and work environments of late adolescence and adulthood (Connolly et al., 2004; Feiring, 1999; Sippola, 1999).

In his seminal work on cliques and crowds, Dunphy (1969) observed a shift from same-sex groups at age 13 (83% of boys and 65% of girls in same-sex groups) to mixed-sex groups by age 15 (73% of boys and 87% of girls in mixed-sex groups). More recent cross-sectional studies are consistent with this trend, reporting a steady increase in cross-sex friendships across adolescence (e.g., Shrum et al., 1988; Connolly, Furman, & Konarski, 2000). While mixed-sex groups seem to be the norm by mid- to late-adolescence, less is known about peer groups that emerge earlier. Few studies have examined the emergence of mixed-sex friendship groups longitudinally, or how these groups may – at different developmental periods – resemble or differ from same-sex friendship groups in terms of their structural features, the characteristics of their members, or the behavioral influences operating within these groups.

Maccoby (1998) argued that the structure and behavioral dynamics of girls' and boys' same-sex groups are so distinct that they represent two separate socialization "cultures" (Maccoby, 1998). It has been posited that boys are more oriented toward larger groups centered around shared activities (e.g., sports), while girls affiliate in dyads and smaller groups based on intimacy (e.g., disclosure, support) (Rose & Rudolph, 2006). Some studies have also noted differences in the "tightknittedness" of girls' and boys' groups: the proportion of pairs within a group that are friends with one another (density), the proportion of friendship nominations among pairs that are reciprocated (reciprocity), and the extent to which

individuals who share a common friend are also friends with each other (transitivity; Scott, 2000). Observational studies of naturally occurring peer groups suggest more tightly-knit groups among boys than girls, though gender differences are less clear in studies using sociometric measures of friendship (Gest, Davidson, Rulison, Moody, & Welsh, 2007).

During adolescence, the different interactive styles of same-sex peer groups begin to play out within a less sex-segregated social world (Maccoby, 1998). Yet knowledge of the structural properties (e.g., group size, tight-knittedness) of the resulting *mixed-sex* peer groups is limited. Dunphy (1969) theorized that the earliest mixed-sex groups represent the "superficial" mixing of two or more same-sex cliques, followed by a gradual transition into smaller, cohesive mixed-sex cliques later in adolescence. During the transitional phase of early and middle adolescence, then, we might expect groupings of mixed-sex peers that are larger and less tightly-knit than same-sex peer groups. These group structural features are presumed to have important psychological impact on young adolescents' sense of belonging and to affect the "efficiency" with which these groups socialize their members (see Moody & White, 2003).

Why do some youth transition into mixed-sex friendship groups earlier than their peers? As noted earlier, early puberty has been linked to girls' affiliation with older, deviant male peers: perhaps because these girls seek relationships with similarly mature boys, or because their physical maturation implies increased attraction from (and to) male peers (e.g., Stattin & Magnusson, 1990). Yet this account does not provide insight into the earliest forming mixed-sex groups of *same-age* peers. Beyond pubertal timing, two additional factors are salient in current theorizing about "early" mixed-sex friendship groups: social status and deviance.

In describing the developmental stages from same-sex to mixed-sex peer networks, Dunphy (1969) posited that upper-status members of unisexual cliques tended to be the first to initiate interactions with other-sex peers, later imitated by lower-status members. Supporting this hypothesis, Poulin and Pedersen (2007) found that youth with higher social status among their opposite-sex peers in 6th grade had higher proportions of opposite-sex friends in 7th grade. Yet an alternative model proposed by Bukowski and colleagues (1999) conceptualizes other-sex peer relations as a "backup" for the same-sex peer system, suggesting that early adolescents may turn to other-sex peers for friendship when they have trouble forming same-sex friendships (Bukowski, Sippola, & Hoza, 1999). Supporting the latter hypothesis, two studies found opposite-sex friendships to be more common among *less* socially competent pre-adolescents (Kovacs, Parker, & Hoffman, 1996; Sroufe, Bennett, Englund, Urban, & Shulman, 1993). Bukowski and colleagues' (1999) study provided support for both competing hypotheses: among 5th through 7th grade youth, cross-sex friendships were most common among the most *and* least popular youth. Overall, the plurality of evidence across studies supports the "backup" hypothesis: the only main effects of status thus far have indicated more cross-sex friends among low status youth, and higher status has only emerged as a predictor in the narrower instances of combined positive and negative effects or status among *opposite-sex* peers.

Other theory and evidence suggest that the earliest mixed-sex peer groups may form among more *deviant* youth. Moffitt's (1993) "maturity gap" theory suggests that membership in mixed-sex friendship groups and engagement in deviant behaviors (e.g., substance use, delinquency) may both be manifestations of youths' quest for maturity and social status (e.g., Allen, Schad, Oudekerk, & Chango, 2013; Moffitt, 1993). According to this theory, early adolescence is characterized by a gap between appearing mature but not receiving the same autonomy as an adult; consequently, deviant behaviors and peers become valued for their association with independence and "adult status". Recent work by Allen and colleagues (2013) supports this idea: early adolescents reporting a stronger desire for peer status tended to engage in more precocious behaviors, including minor delinquency and early romantic involvement. Early involvement in mixed-sex friendship groups may follow a similar pattern.

While these theories highlight processes of *selection into* mixed-sex peer groups, these groups may also become a context for peer *influence* on risky behaviors such as substance use and delinquency. Writings about the influence of mixed-sex peer groups has primarily concerned early-maturing girls' affiliations with older, deviant boys (e.g., Stattin & Magnusson, 1990): through affiliations with older male peers, these girls experience early exposure to substance use and other forms of delinquency (e.g. Poulin et al., 2011; Stattin & Magnusson, 1990). Yet mixed-sex groups also may foster increases in problem behavior, even when composed of same-age peers, for two other reasons. First, to the extent that mixed-sex groups are formed around shared interest in deviant activities, theories of deviancy training suggest that these groups will encourage and escalate such behaviors by modeling, reinforcing, and providing opportunities (e.g., Dishion, Spracklen, Andrews, & Patterson, 1996). In this case, the group's average engagement in a problem behavior should account for any effects of mixed-sex group membership (i.e., deviant mixed-sex groups are not expected to be any more influential than equally deviant same-sex groups). A second argument is that boys, even of the same age, generally show higher levels of delinquency; thus, girls who affiliate with boys are exposed to more deviant behavior than those who do not (e.g., Arndorfer & Stormshak, 2008). In this case, we would expect mixed-sex groups to be a risk context for girls, but potentially a protective context for boys. Yet studies demonstrating this effect to date have rarely parsed out the unique effect of gender, distinct from the oft-reported effect of *older* males.

The present study addresses four aims. First, we characterize the normative emergence of mixed-sex friendship groups from 6^{th} through 9^{th} grade. Consistent with past research, we expect a small minority of youth to be members of mixed-sex groups in 6^{th} grade, and for the frequency of mixed-sex groups to increase substantially by 9^{th} grade. Second, we explore how structural features of early adolescent friendship groups vary by the gender composition of the group. Because early mixed-sex groups are thought to form from the merging of same-sex groups, we expect that mixed-sex groups will be larger and less tightly-knit than same-sex groups. Third, we aim to identify the characteristics of early adolescents who affiliate with same-sex versus mixed-sex friendship groups. We expect that young adolescents in mixed-sex groups will be more "at-risk" on a variety of demographic and behavioral variables, but that this effect will diminish among older youth, for whom

mixed-sex affiliations are more normative. We also expect mixed-sex group membership to be associated with lower social status. Lastly, we explore the association between mixed-sex groups and deviance, and examine whether this association goes beyond demographic and behavioral variables typically associated with each. We expect to find that friendship *selection* processes explain this association, but expect *influence* of mixed-sex friendship groups to be accounted for by the group's mean level on each behavior.

Methods

Participants & Procedures

The present study uses data from the PROmoting School-community-university Partnerships to Enhance Resilience (PROSPER) longitudinal study of the dissemination of substance use prevention programs (Spoth et al., 2007). The PROSPER partnership model entailed the formation of a prevention team led by a local university Cooperative Extension educator, which led the implementation of a family-based intervention in 6th grade and a school-based intervention in 7th grade. PROSPER follows two successive cohorts of 6th grade students living in 28 rural communities in Iowa (n = 14) and Pennsylvania (n = 14). Each community had a public school district with 1,300 to 5,200 students. Average population in these communities was 19,000 residents and median household income was $37,000. As is typical of non-metropolitan communities in these regions, all are predominantly white (range: 97% to 61%). Within each state, seven communities were randomly assigned to the control condition and seven to the intervention. One intervention school did not agree to participate in the network portion of the study, resulting in a final sample of 27 rural communities and 54 community-cohorts. Students completed questionnaires administered in school by trained data collectors in the Fall of 6th grade, and in the Spring of 6th through 9th grades. Confidentiality of responses was assured.

Participation rates across waves ranged from 86% to 90% (average = 87.2%), with data from more than 8,500 youth at each wave. Due to the ongoing arrival and departure of students in the targeted schools over the four years of study, a total of 14,511 youth completed a survey on at least one occasion: 31% had data at all 5 waves, 21% at 4 waves, 17% at 3 waves, 15% at 2 waves, and 16% at one wave. We excluded a small proportion of youth from analyses (3.4%, n = 499) because they could not be assigned to any friendship group (see Group-Level Network Measures below). The 14,012 remaining participants were included in analyses of the structure of friendship groups. Analyses of the antecedents or consequences of mixed-sex group membership required complete data on the full set of predictors in the model for at least one wave, resulting in reduced sample sizes. Rates of missingness on variables of primary interest in this study ranged from 7–10% of all youth participating at a given wave. Consequently, sample sizes for these analyses ranged from n=9,715 to n=10,795. Individuals excluded from these analyses due to incomplete data on predictors had higher scores on measures of risk factors and problem behavior, though those differences were generally small, with Cohen's d values ranging from 0.1 to 0.4 across variables (e.g., d = 0.3 for past-month cigarette use).

Measures

Friendship nominations—Network data were collected in response to the question: "Who are your best and closest friends in your grade?" with two names allowed for best friends and five allowed for "other close friends." Students wrote the first and last names of each friend and we succeeded in matching 83% of those names to student rosters. The remaining 17% of names are accounted for by 15.1% of names that coders concluded matched none of the names on the class roster, and 1.9% of nominations that had duplicate plausible matches. Thus, we succeeded in matching over 97% of the friendship choices of our frame (i.e., same-grade friends in the school, after removing the 15.1% of names that were clearly not on the roster).

Group-level network measures—From these nominations, we identified friend groups using a variant of Moody's CROWDs routine, which is similar to other algorithms designed to search for groups by maximizing modularity scores (Moody, 2001). The modularity score (Guimera & Amaral, 2005) is a weighted function of within-group compared to cross-group ties. A value of 1.0 is achieved if all ties fall within the group and zero ties between groups. We obtained starting values based on principal component analysis (see also Gest, Moody, & Rulison, 2007). The algorithm then evaluates whether reassigning each student to another group would improve the modularity score. After each student's assignment is adjusted, the algorithm checks whether the modularity score would be improved by merging any groups or splitting any group into two, and repeats the process until no new changes are made.

This grouping procedure succeeded in assigning 93% of respondents (N=45,351 across waves) to groups. Students identified as isolates (N=1,476, 3% of sample, disconnected from all groups) and liaisons (N=1,943, 4% of sample, bridged multiple groups) were excluded from analyses. This approach identified 800–900 cohesive mutually exclusive subgroups at each wave, ranging from 3 to 73 members. We chose to exclude six subgroups (<0.02% of all groups at all waves) that had more than 40 members, because the meaning of "subgroup" likely shifts with so many members and sometimes led to only a single group within a school. (All analyses were also run using a stricter upper limit of 30, which excluded just under 1% of all groups: results remained the same so we report results for the more inclusive upper limit of 40.) Within the remaining 4,261 groups, the average group size was 10.54 members (SD = 5.21), with mean group sizes across waves ranging from 9.60 to 11.41. Compared to other published alternatives for large-scale network analysis, this approach identified smaller groups (see Newman and Girvan, 2004), which we see as more relevant to the group processes we wish to study.

Several indices of group structure were calculated for each peer group identified. *Group size* is the number of students in a group. *Density* is the number of ties within a group divided by number of possible ties in that group. *Reciprocity* is the proportion of friendship nominations within a group that were mutual (i.e., both students named each other as a friend). *Transitivity* is the proportion of the triads in each group where, when student *i* named student *j* and student *j* named student *h*, student *i* also named student *h*.

Individual-level network measures—Friendship nominations were also used to compute indices of youths' centrality in their grade-cohort network. *Indegree Centrality* was calculated as the percentile rank within school of the number of times each student was named as a friend (Freeman, 1979). *Bonacich Centrality* was computed as the weighted sum of nominations received by each individual (Bonacich, 1987), with the weights proportional to the number of nominations received by the nominating youth. Individuals have higher *Bonacich Centrality* if they receive nominations from peers who themselves receive many friendship nominations.

Demographics—Self-reports were used to identify *gender* and *race;* because the overwhelming majority of youth were white, race was transformed into a dichotomous variable indicating whether youth were "white" or "non-white". Student self-reports were also used to identify who received *free or reduced price lunch* at school (25–34% of the sample at each wave), and whether they *live with two parents* (e.g., mother and father or stepfather) for most of the year (dichotomous variable: yes/no; 76–77% of the sample at each wave reported "yes").

Behavioral characteristics—Self-reports were also used to assess several behavioral characteristics. *Family relations* is the mean of five standardized subscales assessing affective quality between children and parents, parent-child activities, parental knowledge, inductive reasoning, and family cohesion. These subscales were drawn or adapted from measures previously shown to have good reliability and validity (Parent-child Behavioral Interactions Scales, Conger, 1989; Family Environment Scale, Moos and Moos, 1994; Thornberry, 1988). *Religious attendance* is derived from the question, "How often do you go to church or religious services?" on a scale from 1 = "Never" to 8 = "More than once a week". Students' typical *school grades* were self-reported at each wave as 1 = Mostly F's, 2=Mostly D's, 3=Mostly C's, 4=Mostly B's, and 5 = Mostly A's. Items based on the National Survey of Delinquency and Drug Use (NSDDU) were used to assess substance use and conduct problems; Elliott, Huizinga, and Ageton (1985) demonstrated the stability and construct validity of this drug and delinquent behavior measure in a national survey of adolescents 11 to 17 years of age. *Delinquency* items asked students to indicate how many times in the past 12 months each of 12 behaviors were performed (e.g., "Taken something worth less than $25 that didn't belong to you", "Purposely damaged or destroyed property that did not belong to you"). Response options ranged from 1= "Never", to 5="Five or more times". To give heavier weight to more serious (less frequent) behaviors and arrive at a more normally distributed variable, we used a graded-response item response theory (IRT) model to score this measure (Osgood, McMorris & Potenza, 2002). The substance use items used in the present study included student reports of their *cigarette use* and *alcohol use* in the past month, with response options ranging from 1 = "Not at all" to 5 = "More than once a week." Self-report measures such as these are a standard approach in research on substance use and delinquency and a large body of research supports their reliability and validity (e.g., Huizinga & Elliott, 1986).

Peer group behavioral characteristics—"Peer group mean" scores were computed for each individual, excluding the individual's own score, for *free/reduced lunch status*, *two-*

parent families, family relations, religious attendance, school grades, ethnicity, popularity (based on Indegree Centrality), *cigarette use, alcohol use, and delinquency.*

Data Analytic Plan

Beginning with *group* as the unit of analysis, we present frequencies of five categories of group gender compositions ("all girls", "mostly girls", "mixed-sex", "mostly boys", and "all boys") at each wave. We then conduct a series of two-way ANOVAs to explore group differences in structure and a number of demographic and behavioral variables by wave and gender composition, again employing the five categories listed above. Next, we shift to the *individual* as the unit of analysis. A hierarchical logistic regression predicts membership in a mixed-sex group (coded as a binary outcome) as a function of wave, three problem behaviors (cigarette use, alcohol use, and delinquency) and their interactions with wave, as well as a series of previous-wave demographic and behavioral control variables. Finally, a series of hierarchical regression models are used to predict substance use and delinquency as a function of mixed-sex group membership, after controlling for individual-level and peer group-level demographic, behavioral, and group structure variables. Missing data were handled with maximum likelihood estimation, which uses data from all available cases at each wave, and yields unbiased estimates when variables associated with missingness are included in the models (e.g., Enders, 2010).

Results

Group-level Analyses: Developmental Emergence & Features of Mixed-Sex Groups

Normative emergence—We categorized groups according to their gender composition ratio. "All-girl" and "all-boy" groups were those in which 100% of the members were female or male, respectively. "Mixed-sex" groups were those in which the percentage of each gender was greater than 20% and less than 80%. These thresholds meant that there must be at least two youth of each gender for groups with 5 to 9 members and at least 3 youth of each gender for groups with 10 to 14 members. Remaining groups were characterized as "mostly girl" or "mostly boy". As summarized in Table 1, the proportion of friendship groups that were gender-homogeneous (all-girl or all-boy) decreased from 76% in the fall of 6^{th} grade to 50% in the spring of 9^{th} grade, $t(1708) = 11.06$, $p < .001$. All three types of gender-heterogeneous groups increased in frequency across waves, with the mixed-sex category increasing from 10% in fall of 6^{th} grade to 22% by spring of 9^{th} grade, $t(1708) = -6.79$, $p < .001$. These trends confirm that mixed-sex groups become more common across this developmental period but gender segregation remains strong.

Next we conducted a series of two-way ANOVAs (5 waves X 5 gender composition categories), with groups as the unit of analysis and planned contrasts directly testing our hypotheses about the association between group gender composition and structural features of groups, as well as the demographic and behavioral characteristics of group members. We had ample power to detect even small effects, so in the text we focus on effect size rather than statistical significance levels. Within each section, we describe variables having only main effects for gender composition before describing variables with interactions of gender composition by wave. Means on all variables by gender composition (across waves) and

results of statistical tests are provided in Table 2, with representative findings illustrated in Figure 1.

Structural features—As expected, all-girl groups were statistically significantly smaller than all-boy groups, though the difference was very small ($d_{G\text{-}B}$ =−.08; M_G=9.81, SD = 4.42; M_B=10.24, SD = 5.10). Mixed-sex groups were significantly larger (by about one member) than all-girl groups ($d_{MS\text{-}G}$ =.17; M_G=9.81, SD = 4.42; M_{MS}=10.68, SD = 5.47), but did not significantly differ in size from all-boy groups ($d_{MS\text{-}G}$ = .08, ns; M_B=10.24, SD = 5.10). The largest groups were the “mostly-girl” (M=12.19, SD = 6.06) and “mostly-boy” groups (M=11.94, SD = 5.79). Group size varied significantly across waves but Bonferonni post-hoc analyses revealed only modest differences and no consistent developmental trends, suggesting that differences may reflect our ample statistical power. In subsequent group structural analyses, we controlled for group size to ensure that any association between gender composition and group density, reciprocity and transitivity were not due to differing group sizes.

Both *density* and *transitivity* showed main effects of gender composition. Density in all-girl groups was greater than in all-boy groups ($d_{G\text{-}B}$ = .53), and density of mixed-sex groups was lower than that of all-girl groups ($d_{MS\text{-}G}$ = −.80) and all-boy groups ($d_{MS\text{-}B}$ = −.27). Transitivity in all-girls groups was greater than in all-boy groups ($d_{G\text{-}B}$ = .35), and transitivity of mixed-sex groups was lower than both all-girl groups ($d_{MS\text{-}G}$ = −.60) and all-boy groups ($d_{MS\text{-}B}$ = −.25). A significant wave by gender composition interaction indicated that *reciprocity* is greatest among all-girl groups at all waves, but that this difference increases across waves due to developmental increases in the reciprocity of all-girl groups. Once again, significant main effects of wave on density and transitivity did not reveal a clear age-developmental trend. In sum, density, reciprocity and transitivity were strongest among all-girl groups and, consistent with hypotheses, weakest among mixed-sex groups, with indices for all-boy groups generally falling in between.

Demographics—There were significant main effects of gender composition on the proportion of group members of nonwhite ethnicity, receiving free or reduced price lunch, living with a single parent, and attending church regularly. Planned contrasts revealed that, compared to all-girl and all-boy groups, mixed-sex groups had significantly (though modestly) more youth receiving free or reduced-price lunch ($d_{MS\text{-}G}$ = .08, $d_{MS\text{-}B}$ = .17), living with a single-parent family ($d_{MS\text{-}G}$ = .19, $d_{MS\text{-}B}$ = .31), and non-white youth ($d_{MS\text{-}G}$ = .18, $d_{MS\text{-}B}$ = .18), and fewer youth attending religious services ($d_{MS\text{-}G}$ = .63, $d_{MS\text{-}B}$ = .29). We also found a significant interaction of gender composition by wave on family relations. At wave 1, all-girl groups had the best family relations, while the family relations of mixed-sex and all-boy groups were about equivalent; by wave 5, family relations of all three groups had declined, with mixed-sex groups showing the worst family relations, followed by all-girl and then all-boy groups.

Behavioral characteristics—Significant main effects of gender composition and planned comparisons indicated that compared to all-girl and all-boy groups, mixed-sex group members report poorer school grades ($d_{MS\text{-}G}$ = −.62, $d_{MS\text{-}B}$ = −.19), more alcohol use ($d_{MS\text{-}G}$ = .41, $d_{MS\text{-}B}$ = .30), and more delinquency ($d_{MS\text{-}G}$ = .71, $d_{MS\text{-}B}$ = .15); and

compared to all-girl groups, mixed-sex group members received fewer friendship nominations (d_{MS-G} = .53). We also found a significant gender composition by wave interaction for cigarette use: mixed-sex group members used more cigarettes, and this difference increased across waves.

In sum, compared to all-girl and all-boy groups, mixed-sex groups were less tightly-knit and were comprised of youth who were more "at risk" across a range of demographic, family and individual characteristics. Effect sizes suggest medium-to-large differences between all-girl and mixed-sex groups, and small-to-medium differences between these and all-boy groups. Yet the fact that mixed-sex groups differed from both all-girl and all-boy groups indicates that these differences cannot be solely explained by general sex differences in the behaviors involved.

Individual-level Analyses: Selection and Influence Effects

To clarify the extent to which the distinct behavioral profiles associated with mixed-sex group membership reflected processes of peer selection or peer influence, we tested two sets of models with the individual as the unit of analysis. In a set of Selection Models, we predicted mixed-sex group membership (MSGM) at a given wave from individual-level demographic and behavioral variables at the immediately preceding wave, including *cigarette use*, *alcohol use*, and *delinquency*. In a series of Influence Models, we predicted each of the three problem behaviors from *previous-wave MSGM*. To correct for the correlated error structure associated with the nesting of occasions within students, and students within schools, we estimated hierarchical linear models using SAS Proc Mixed (Raudenbush & Bryk, 2002), with occasion at level one, students at level two, and the 54 school networks at level three. Because our interest was in the potentially unique characteristics of mixed-sex group members and influence of mixed-sex groups, all of the models employed a simplified two-category gender composition variable: members of mixed-sex groups (composed of at least 21% of each gender) were coded as "1", and all others were coded as "0". (We also tested a set of individual-level models in which we excluded those in the mostly-girl and mostly-boy groups from analyses; the pattern of results remained the same.) According to multivariate normal assumptions, intercept and wave were allowed to vary across networks and across individuals in all models, but non-significant variances and covariances were dropped from the final models (i.e., we determined each model's best error structure) to ensure accurate interpretation of coefficients. To maintain consistency of control variables across models, non-significant main effects were never dropped, and non-significant interactions were only dropped if never significant across any of the models. All variables (except dichotomous ones) are grand-mean centered.

Selection models: Predicting membership in mixed-sex groups—In Selection Model 1, MSGM is modeled as a function of wave, gender, a wave by gender interaction, and previous wave scores on the three problem behaviors and their interactions with wave. Results indicated a significant main effect for wave (β = .45, $p < .001$), reflecting a normative developmental increase in mixed-sex group membership (see Table 3). A significant interaction of alcohol use with wave (β = .08, $p < .05$) indicates that MSGM is *less* likely among alcohol users at wave 1, but that this difference dissipates by wave 5 (see

Figure 2, top). Interactions of wave with cigarette use and delinquency were non-significant, as was the main effect of cigarette use. There was, however, a significant main effect of delinquency on MSGM (β = .15, p < .001), indicating that across waves, delinquent youth were more likely to become members of mixed-sex groups.

Next, we tested whether these apparent selection effects changed after controlling for prior MSGM and a range of demographic and behavioral variables often associated with alcohol and tobacco use and delinquency (Table 3, Model 2). Results indicated that MSGM was predicted by less church attendance (β = −.03, p < .001), lower school grades (β = −.10, p < .001), non-white race status (β = −.16, p < .01), and was more common for boys (β = −.15, p < .01). After taking these effects into account, the interaction effect of wave by alcohol use remained statistically significant (β = .10, p < .05). However, the positive main effect for delinquency was qualified by an interaction with wave (β = −.06, p < .05) indicating that its positive association with MSGM dissipated by wave 5 (Figure 2, bottom). Lastly, MSGM was associated with lower network (Bonacich) centrality (β = −.31, p < .001) across waves[1]. Taken together, these findings provide evidence for a *selection* effect driving more "at risk", unpopular, and delinquent youth to join together into mixed-sex groups, while alcohol-using youth appear more likely to remain in their same-gender groups. In addition, the present findings suggest that the relation between cigarette use and MSGM does *not* typically result from selection processes.

Influence models: Predicting problem behaviors—In a basic Influence Model 1, youth were significantly more likely to use cigarettes if they were members of a mixed-sex group at the previous wave (β = .06, p < .001). A significant interaction of wave by gender indicates that the developmental increase in cigarette use is somewhat more pronounced among girls, with no gender difference at wave 1 but greater cigarette use among girls than boys at wave 5 (β = −.04, p < .001). In Influence Model 2, we added the same set of control variables as were added to the Selection model, plus peer group means on all of these variables. Peer group structural features found to be distinct in mixed-sex groups (i.e., group size, density, reciprocity, and transitivity) were also added, to ensure that any observed MSGM effects would not be confounded by these group structural differences[2]. Results indicate that cigarette use was predicted by free / reduced-price lunch status (β = .01, p < .01), living with a single parent (β = −.05, p < .001), less church attendance (β = −.01, p < .001), poorer family relations (β = −.13, p < .001), lower school grades (β = −.07, p < .001), lower school grades among one's peer group (β = −.05, p < .001), and less peer group reciprocity (β = −.09, p < .05). Even after accounting for all of these effects, previous wave MSGM predicts greater cigarette use (β = .04, p < .01). Finally, in a third Influence Model, we control for peer group mean cigarette use, to test whether the MSGM effect is effectively explained by greater cigarette use within mixed-sex groups. Although we do find a

[1]We tested two follow-up selection models. First, given past research suggesting that MSGM may be especially common among at-risk girls, we tested interactions of each of the problem behaviors with gender, but these interactions were not significant. Second, to assess whether MSGM is more likely among high-status youth (Bukowski et al., 1999), a follow-up model was tested that included dichotomous marker variables for low-status youth (z < −1.0) and high-status youth (z > 1.0) and interactions of these variables with wave. Results verify the original interpretation: low status was a positive predictor of MSGM, and high status was a negative predictor, with both wave interactions being non-significant.

[2]We also tested interactions of MSGM with each of the group structural variables, to assess whether mixed-sex groups may be especially problematic when they are more tightly knit; none of the interactions were significant.

significant main effect of peer group mean cigarette use (β = .15, p < .001) in Influence Model 3, MSGM also remains significant (β = .04, p < .05), suggesting that there is something unique about the socialization processes operating within mixed-sex groups that goes beyond increased behavioral similarity. Of note, the unique influence of MSGM on youths' cigarette use was not a result of *stronger* peer influences within mixed-sex groups: an interaction of MSGM by peer group mean cigarette use was non-significant (and thus, dropped from the model). Parameter estimates for each of the three Influence Models predicting Cigarette Use are shown in Table 4.

In the basic Influence Models predicting alcohol use and delinquency, MSGM at the previous wave was not a significant predictor, nor was the interaction of MSGM by peer group mean use or delinquency. Because the lack of significance in these two models already answers our research questions about the relations of alcohol use and delinquency to MSGM, we do not proceed to test Influence Models 2 or 3 for these dependent variables. Parameter estimates for the Alcohol Use and Delinquency Influence Models are presented together in Table 5.

In sum, results suggest an *influence* effect of mixed-sex groups on youths' tendency to use cigarettes, but no influence of MSGM on alcohol use or delinquency. The observed influence of MSGM on cigarette use is strengthened by Model 2, which suggests that socialization processes that operate within mixed-sex groups are robust even after controlling for numerous demographic and behavioral variables. Moreover, Influence Model 3 suggests that the socialization processes of MSGM are unique: their tendency to predict an increase in cigarette use goes beyond simply their greater tendency to be composed of cigarette-using members. Considered together with the Selection Models, it appears that cigarette use, alcohol use, and delinquency each have distinct and unique relations with mixed-sex group membership.

Discussion

In the present study, we aimed to gain a better understanding of the normative emergence of mixed-sex friendship groups during early adolescence and their developmental significance. The PROSPER Peers longitudinal dataset provides an ideal opportunity to explore these basic developmental questions, with 5 waves of data from two grade-cohorts of youth from 27 rural communities in 6^{th} through 9^{th} grade, producing a uniquely large sample size of over 11,000 youth at each wave. Mixed-sex friendship groups (defined here as groups in which each gender comprises over 20% of membership) became increasingly common between fall of 6^{th} grade and spring of 9^{th} grade, yet gender-homogenous groups still predominated even in 9^{th} grade. Consistent with the observation that mixed-sex groups in early adolescence are non-normative, these groups were generally less tightly-knit than more gender-homogeneous groups, and their members were more "at-risk" across a number of demographic and behavioral variables. In longitudinal models examining mixed-sex group membership in relation to cigarette use, alcohol use, and delinquency, we find evidence for selection and influence processes that are unique to mixed-sex group membership, but with patterns that differed by problem behavior.

As expected, the proportion of friendship groups that are purely same-sex (all-girl or all-boy) decrease substantially across waves, from 76% in 6th grade to 51% in 9th grade. Conversely, mixed-sex groups (i.e., 21%-79% female) become more common, increasing from 10% in the fall of 6th grade to nearly a quarter of all friendship groups by the spring of 9th grade. Clearly, mixed-sex friendship groups become increasingly common from early to mid-adolescence, but are not yet normative. The fact that a "gender-blind" grouping algorithm identified so many gender-homogenous groups in 9th grade speaks to the persistent power of gender segregation even in middle adolescence, and suggests that youth in mixed-sex groups sooner than this may be considered early in their transition into the mixed-sex social world.

The second aim of our study was to explore whether the structural features of friendship groups differed by gender composition. While all-girl groups were smallest (mean size of just under 10 members), followed by all-boy (just over 10) and then mixed-sex groups (just under 11), effect sizes suggest these differences are very small. The largest groups were the mostly-boy and mostly-girl groups (about 12 members, on average). Perhaps mostly-boy and mostly-girl groups represent predominantly intact same-sex groups with one or two members of the opposite sex "added on". Consistent with hypotheses, our findings also indicate a robust tendency for tight-knittedness to be weaker in mixed-sex groups than in all-girl or all-boy groups. Across waves and indices, tight-knittedness was highest in all-girl groups and decreased as the proportion of boys increased, with a notable uptick in tight-knittedness within all-boy groups.

In line with "two cultures" theories, the more "loosely connected" structure of mixed-sex groups may represent the consequences of mixing the two different gendered friendship styles within one group (Maccoby, 1998). These findings may reflect the slower emergence of intimacy in cross-sex friendships (Glick & Rose, 2011), or the difficulties inherent in achieving high levels of group cohesion when group members have relationship histories based on distinct values and activities. Yet another possibility is that mixed-sex groups formed from the merging of separate same-sex groups (Dunphy, 1969), with the resulting 'conglomeration' being less cohesive than either originating same-sex group. The fact that mixed-sex groups were not much larger suggests they were not simple aggregations of two same-sex groups, but perhaps they emerged from remnants of previous same-sex groups and thus represent 'mini-conglomerations'.

Consistent with expectations, group comparisons by gender composition also consistently suggest that mixed-sex groups are composed of the most "at-risk" youth. Mixed-sex groups had the lowest means on popularity, consistent with the interpretation of cross-sex friendships as a "backup system" for youth who struggle socially (Bukowski et al., 1999). Mixed-sex groups were also more likely to exhibit characteristics frequently associated with substance use and delinquency (e.g. low SES, single-parent homes, poor family relations, no religious attendance, poor school performance). This is in keeping with studies finding at-risk youth dating earlier than more "normative" youth (Zimmer-Gembeck & Helfand, 2008). Both dating and mixed-sex group membership may reflect a general desire to affiliate with the opposite sex, perhaps as part of a broader drive to engage in behaviors associated with "adult status" (e.g., Allen et al., 2013). Consistent with these ideas of mixed-sex group

membership as a marker of risk and deviance, these groups also had the highest means on cigarette use, alcohol use, and delinquency.

Lastly, our longitudinal models suggest selection and influence processes unique to mixed-sex groups, but with patterns differing by problem behavior. Delinquency predicted future membership in mixed-sex groups, but mixed-sex group membership did not predict subsequent increases in delinquency. Alcohol use, on the other hand, was *negatively* associated with future membership in mixed-sex friendship groups, and mixed-sex groups did not predict increases in alcohol use. This is consistent with views of alcohol use as a more normative problem behavior, associated with the "party culture" of higher status groups, in contrast to the "counter culture" associations of cigarette use and delinquency (Kreager, Rulison, & Moody, 2011). In contrast, cigarette use did not predict future membership in mixed-sex groups, but mixed-sex group membership *did* predict emergence of cigarette use, even after controlling for related risk factors. Putting these findings together, it appears that mixed-sex groups emerge first among socially marginal (less popular) and behaviorally deviant youth; and within these groups, cigarette use emerges. Contrary to expectations, mixed-sex membership predicted increased cigarette use even after accounting for peer group mean use, suggesting something unique either about the motivations behind early mixed-sex affiliation or the dynamic within these groups that is not being captured by other variables in our model. As noted elsewhere, it may be that a drive to affiliate with opposite sex and deviant peers to achieve "adult status" brings these groups together (Moffitt, 1993), while cigarette use (a "public" form of maturity) may emerge within these groups as a visible affirmation of shared group values in relation to deviant behaviors.

Developmental differences in peer selection patterns support interpretations of *early* mixed-sex affiliation as problematic: the trend for delinquent youth to affiliate in mixed-sex groups and the tendency of alcohol users to belong to same-sex groups both dissipated by 9th grade. However, we did not find developmental differences in the prediction of mixed-sex group membership by low social status, or in the prediction of cigarette use by mixed-sex group membership. An explanation of this discrepancy may lie in the relative normativeness of alcohol use and delinquency by 9th grade (36% and 50% of youth, respectively): it is likely that these behaviors appear across the spectrum of social status and peer groups. In contrast, mixed-sex affiliation and cigarette use both remain non-normative by 9th grade (less than 25% and 18% of youth, respectively), and thus are more likely to show continued associations with each other and with low social status across the ages studied.

This study has several strengths, most notably its large longitudinal dataset (over 14,000 students across five waves, with 800–900 peer groups identified per wave). Given the low frequency of mixed-sex groups early in adolescence, the large sample size was key to reliably detecting differences between categories of groups. This study is among the first to examine the emergence of mixed-sex groups longitudinally, and is the first to examine the structural and behavioral characteristics of same-age mixed-sex groups. Including more than one problem behavior provided a fuller picture of the behavioral dynamics of these groups, and controlling for numerous demographic characteristics provided stronger inferences about their unique effects.

A limitation of the study is the focus on youth living in rural communities: peer processes may vary across rural versus urban contexts, especially to the extent that behaviors associated with peer status differ. This study was also limited by the self-report nature of the demographic and behavioral data, and by the restricted range of constructs available, reflecting the original purpose of the larger study from which these data are drawn. In addition, the limit of peer nominations to seven friends may have artificially bounded some participants' friendship nominations. However, the purpose of this limit was to signal to participants that they should only list their *close* friends, and frequencies reveal that for the majority of participants, the limit was not a problem: 73.1% named fewer than seven friends. Lastly, assessments in the present study were typically spaced a year apart, which means we could not study selection and influence processes happening across shorter time periods (e.g., weeks or months). Clarifying the timeframes over which these peer processes unfold remains an important goal of future research.

Within the context of a uniquely large longitudinal sample, this study is among the first to examine the features and developmental implications of emerging mixed-sex groups during early adolescence. The structural features of mixed-sex groups are distinct in ways that are partially consistent with long-standing theories (Dunphy, 1969). The fact that mixed-sex affiliation was associated with lower popularity and behavioral risk suggests that early accounts emphasizing the role of popular peers in forging mixed-gender groups may not be accurate, though it should be noted that this study assessed sociometric popularity (derived from friendship nominations) rather than consensual, perceived popularity. Future research should explore between-group variability in factors that motivate mixed-sex versus same-sex group membership, and should integrate the current group-level focus with a focus on dyad-level cross-sex friendships (Glick & Rose, 2011) and romantic relationships (Kreager & Haynie, 2011). Both of these directions for future work may provide critical insights into the interpersonal processes that underlie the present findings.

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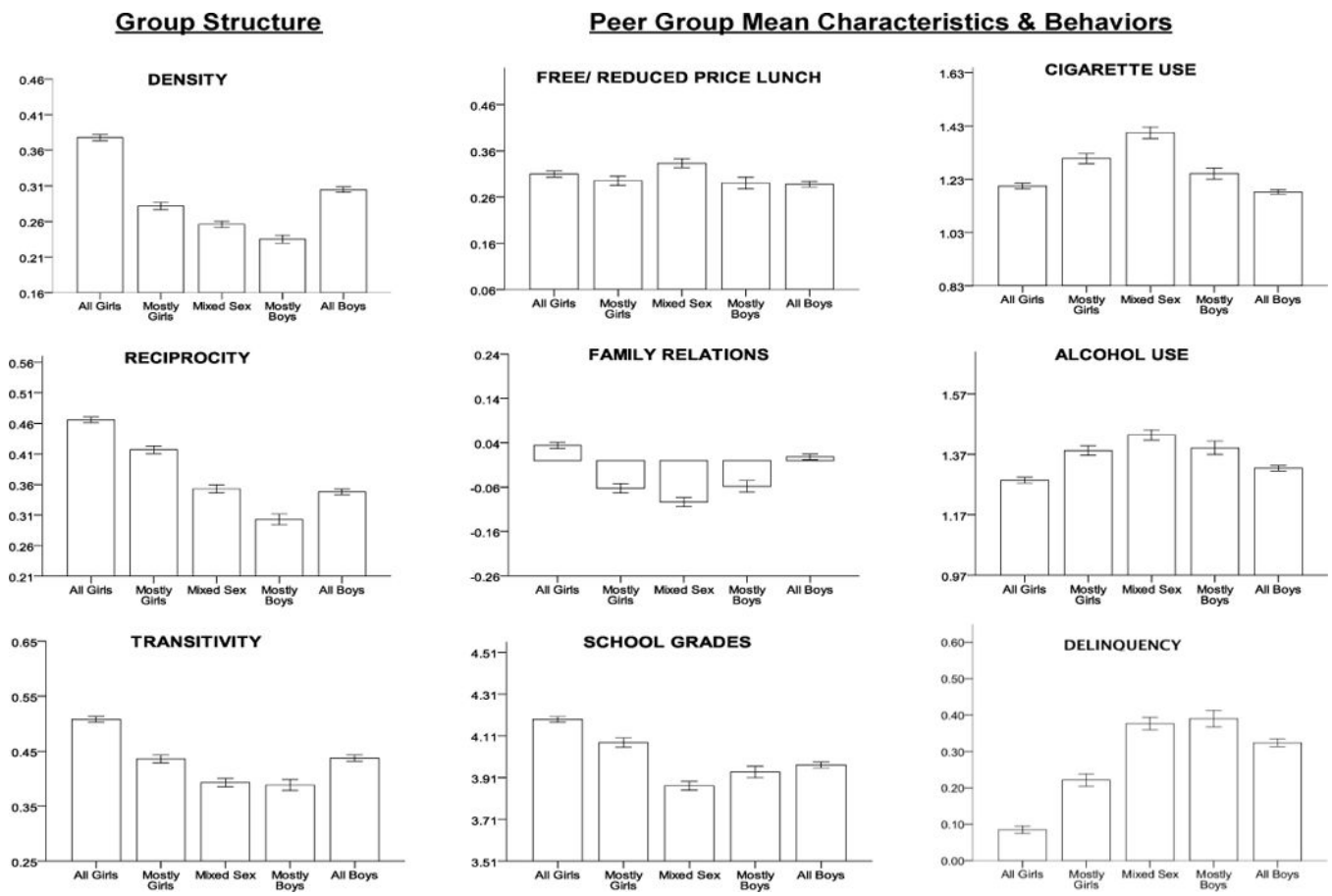
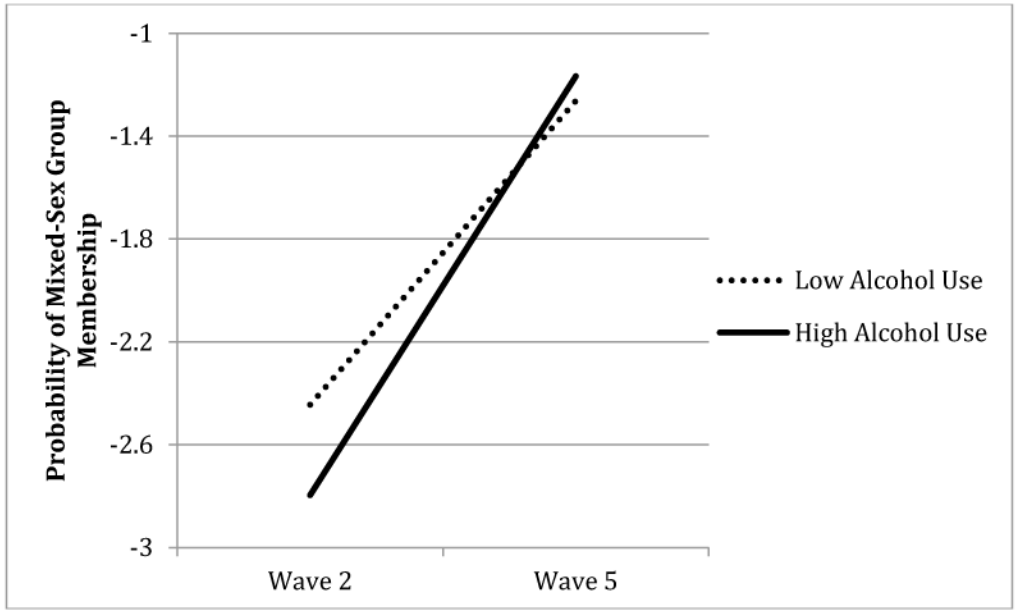


Figure 1.

Group-level means as a function of group gender composition. Three indices of within-group "connectedness" are represented along the left: group density (top-left), within-group reciprocity (middle-left), and within-group transitivity (bottom-left). In the middle panels are peer group means on examples of a demographic (free/reduced-price lunch, top-middle), family (family relations, middle-middle), and behavioral variable (school grades, bottom-middle). Finally, along the right are peer group means on three problem behaviors: cigarette use (top-right), alcohol use (middle-right), and delinquency (bottom-right).



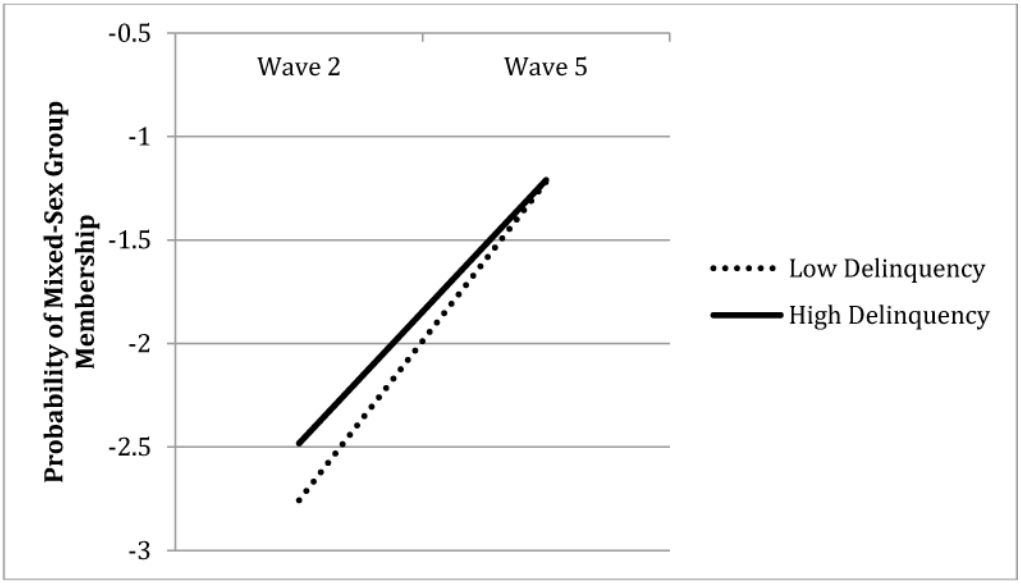


Figure 2.

Probability of mixed-sex group membership as a function of wave and problem behaviors. In the spring of 6th grade (wave 2), youth high in alcohol use are more likely to remain in gender homogeneous groups than are non-alcohol users (top); highly delinquent youth, on the other hand, are more likely to be members of mixed-sex groups than are non-delinquent youth (bottom). In both cases, the significant interaction of wave by problem behavior indicates that differences dissipate by spring of 9th grade (wave 5).

Table 1

Gender Composition of Peer Groups by Assessment Wave

Gender Composition (% Female)	Fall 6th	Spring 6th	Spring 7th	Spring 8th	Spring 9th
All girls 100%	0.40 329	0.39 318	0.33 271	0.28 257	0.25 228
Mostly girls (80–99%)	0.08 69	0.09 78	0.13 105	0.16 140	0.17 151
“Mixed-sex” (21–79%)	0.10 83	0.11 89	0.13 105	0.17 153	0.22 201
Mostly boys (1–20%)	0.06 45	0.06 48	0.06 52	0.07 67	0.10 89
All boys 0%	0.36 292	0.35 292	0.35 293	0.32 285	0.26 230
Total	1.00 818	1.00 825	1.00 826	1.00 902	1.00 899

Note. N of participants included in these frequencies = 14,012.

Table 2

Structural, demographic and behavioral features of peer groups by gender composition

	All Girls (N=1402)	Mostly Girls (N=541)	Mixed-Sex (N=629)	Mostly Boys (N=299)	All Boys (N=1387)	F (gender comp) df(4,4233)	Other Effects
Structural Features							
Size	9.81^{a} (4.42)	12.19^{b} (6.06)	10.68^{c} (5.47)	11.94^{b} (5.79)	10.24^{ac} (5.10)	24.68***	W: 10.83***
Density	0.38 ^{a} (0.17)	0.28 ^{b} (0.12)	0.26 ^{c} (0.11)	0.24 ^{c} (0.10)	0.30 ^{d} (0.14)	123.95***	W: 10.66***
Reciprocity	0.47 ^{a} (0.18)	0.42 ^{b} (0.15)	0.35 ^{c} (0.17)	0.30 ^{c} (0.15)	0.35 ^{c} (0.17)		W*G: 3.21***
Transitivity	0.51 ^{a} (0.19)	0.44 ^{b} (0.17)	0.39 ^{c} (0.19)	0.39^{c} (0.17)	0.44^{d} (0.20)	47.86***	W: 8.88***
Demographic & Family							
% Free/Reduced Lunch	0.31^{ab} (0.25)	0.30^{ab} (0.24)	0.33^{a} (0.25)	0.29^{ab} (0.22)	0.29^{b} (0.23)	7.22***	W: 12.60***
% Non-white	0.17^{ac} (0.23)	0.20^{bc} (0.24)	0.21^{b} (0.24)	0.16^{a} (0.18)	0.17^{a} (0.21)	3.58**	W: 4.43**
% Single parent	0.23^{a} (0.17)	0.25 ^{ab} (0.16)	0.26^{b} (0.17)	0.22^{ac} (0.15)	0.21^{c} (0.16)	9.36***	
Church attend	5.14^{a} (1.23)	4.77^{a} (1.18)	4.36^{b} (1.23)	4.46^{b} (1.21)	4.72^{a} (1.20)	40.61***	W: 45.47***
Family Relations	0.03^{a} (0.26)	−0.06^{b}(0.25)	−0.09^{b} (0.26)	−0.06^{b} (0.23)	0.01^{c} (0.22)		W*G: 1.69*
Individual Behavior							
Cigarette Use	1.20 ^{a} (0.40)	1.31 ^{b} (0.44)	1.40 ^{c} (0.55)	1.25 ^{ab} (0.36)	1.18 ^{d} (0.31)		W*G: 2.81***
Alcohol use	1.28 ^{a} (0.35)	1.38 ^{b} (0.38)	1.43 ^{c} (0.42)	1.39 ^{bc} (0.39)	1.32 ^{d} (0.34)	3.26*	W: 315.91***
Delinquency	0.09 ^{a} (0.37)	0.22 ^{b} (0.40)	0.38 ^{c} (0.42)	0.39 ^{c} (0.40)	0.32 ^{d} (0.38)	88.22***	W: 100.53***
Grades	4.19^{a} (0.50)	4.08^{b} (0.51)	3.87^{c} (0.53)	3.93^{cd} (0.47)	3.97^{d} (0.52)	46.06***	W: 39.50***
Popularity	0.61^{a} (0.12)	0.59 ^{b} (0.11)	0.53^{c} (0.12)	0.54^{c} (0.10)	0.53^{c} (0.12)	94.72***	W: 2.45*

Note.

*** $p < .001$,

** $p < .01$,

* $p < .05$.

N of participants included in these comparisons range from 13,151 to 14,012. Within each row, entries with different superscripts are significantly different based on contrasts. For group size and all individual characteristics, we compared every group mean to every other group mean and adjusted for multiple comparisons using bonferroni correction. For density, reciprocity and transitivity, we controlled for group size and conducted planned contrasts using mixed-sex as the reference group. F-values are presented for differences by group gender composition when significant. When significant differences emerged by wave ("W"), gender ("G"), or a wave by gender interaction (W*G), F values for these differences are reported in the final column.

Table 3

Selection Model: Predicting Odds of Membership in a Mixed Sex Friendship Group from Previous Wave Characteristics

	Model 1: Basic		Model 2: Demographic and Behavioral Controls	
Fixed Effects	**Estimate**	**SE**	**Estimate**	**SE**
Intercept	−2.23***	.15	−2.15***	.16
Wave	0.45***	.09	.47***	.09
Gender	−.07	.05	−.15**	.05
Wave*Gender	−.04	.03	−.04	.04
Problem Behaviors at Previous Wave				
Cigarette Use	.10	.06	.05	.06
Alcohol Use	−.16**	.06	−.13*	.06
Delinquency	.15***	.04	.12**	.04
Wave * Cigarette Use	< .01	.03	< .01	.04
Wave * Alcohol Use	.08*	.04	.10*	.04
Wave * Delinquency	−.04	.03	−.06*	.03
Outcome at Previous Wave				
Mixed Sex Group Membership			.71***	.07
Wave * MSGM			−.16***	.05
Demographic & Behavioral Controls at Previous Wave				
White			−.16**	.05
Two-parent family			< .01	.05
Free/reduced lunch			−.01	.01
Religious attendance			−.03***	.01
Family relations			.04	.05
School grades			−.10***	.02
Network Centrality			−.32***	.04
Random Effects				
Between Community				
Intercept	1.21***	.28	1.09***	.25
Wave	.44***	.10	.42***	.10
Covariance Intercept, Wave	−.57***	.15	−.53***	.14
Between Person				
Intercept	.24***	.04	.04	.05

Note.

*** p < .001,

** p < .01,

* $p < .05$;

N of participants included in this model = 9,898.

Table 4

Influence Model: Predicting **Cigarette Use** from Mixed Sex Group Membership Status at Previous Wave

	Model 1: Basic		Model 2: Demographic & Behavioral Controls		Model 3: Controlling for Group Mean Cigarette Use	
Fixed Effects	**Estimate**	**SE**	**Estimate**	**SE**	**Estimate**	**SE**
Intercept	1.21***	.01	.60***	.02	.61***	.02
Wave	.15***	.01	.06***	.01	.06***	.01
Gender	−.04***	.01	−.06***	.01	−.05***	.01
Wave * Gender	−.04***	.01	−.03***	.01	−.03**	.01
Mixed Sex (t-1)	**.06*** **	**.01**	**.04****	**.01**	**.04***	**.01**
Outcome (t-1)						
Cigarette Use			.60***	.01	.60***	.01
Wave * Cigarette Use			−.01	.01	−.01	.01
Controls (t-1)						
White			< .01	.01	< .01	.01
Free/reduced lunch			.01**	< .01	.01*	< .01
Two-parent family			−.05***	.01	−.05***	.01
Religious attendance			−.01***	< .01	−.01***	< .01
Family relations			.13***	.01	.13***	.01
School grades			−.07***	.01	−.07***	.01
Bonacich Centrality			.02	.01	.02	.01
Peer Group Structure (t-1)						
Group Size			< .01	< .01	< .01	< .01
Group Density			.01	.07	.01	.07
Group Reciprocity			−.09*	.04	−.07	.04
Group Transitivity			< .01	.04	< .01	.04
Peer Group Means (t-1)						
White			.01	.03	.02	.03

	Model 1: Basic		Model 2: Demographic & Behavioral Controls		Model 3: Controlling for Group Mean Cigarette Use	
Fixed Effects	**Estimate**	**SE**	**Estimate**	**SE**	**Estimate**	**SE**
Free/reduced lunch			−.01	.01	−.01	.01
Two-parent family			−.02	.03	−.01	.03
Religious attendance			−.01	< .01	−.01*	< .01
Family relations			−.04	.03	< .01	.03
School grades			−.05***	.01	−.03*	.01
Average Popularity			.03	.06	.02	.06
Cigarette Use					.15***	.03
Wave * Cigarette Use					.01	.02
Random Effects						
Between Community						
Intercept	.01***	< .01	< .01**	< .01	< .01*	< .01
Wave	< .01***	< .01	< .01**	< .01	< .01*	< .01
Covariance: Intercept, Wave	< .01***	< .01	< .01***	< .01	< .01*	< .01
Between Person						
Intercept	.17***	< .01				
Wave	.01***	< .01	.05***	< .01	.05***	< .01
Covariance: Intercept, Wave	.12***	< .01				
Within Person						
Residual	.28***	< .01	.36***	< .01	.36***	< .01

Note.

*** p < .001,

** p < .01,

* p < .05; N of participants included in this model = 9,715.

Table 5

Influence Models: Predicting **Alcohol Use** and **Delinquency** from Mixed Sex Group Membership Status at Previous Wave

	Alcohol Use Model 1: Basic		Delinquency Model 1: Basic	
Fixed Effects	**Estimate**	**SE**	**Estimate**	**SE**
Intercept	1.30***	.01	.09***	.01
Wave	.19***	.01	.12***	.01
Gender	.02	.01	.23***	.01
Wave * Gender	−.02**	.01	−.03***	.01
Mixed Sex (t-1)	.01	.01	.02	.01
Random Effects				
Between Community				
Intercept	.01***	< .01	.01***	< .01
Wave	< .01***	< .01	< .01 ***	< .01
Covariance: Intercept, Wave	< .01**	< .01		
Between Person				
Intercept	.14***	< .01	.27***	.01
Wave	.04***	< .01	.04***	< .01
Covariance: Intercept, Wave	.09***	< .01	.03***	< .01
Within Person				
Residual	.34***	< .01	.23***	< .01

Note.

*** p < .001,

** p < .01,

* p < .05;

N of participants included in these models = 10,795.