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Student Participation and Instructor Gender in the Mixed-Age College Classroom

In 1991 over 38% of all U.S. college students, and nearly 42% of female U.S. college students, were age 25 or older. According to projections, by 1998 the number of nontraditional (age 25 or older) U.S. college students will rise to almost 46% (U.S. Bureau of the Census, 1995, p. 178–179). The Education Resources Institute (1996) reported that the percentage of college students age 40 or over grew from 5.5% of the total enrollment in 1970 to 11.2% in 1993, making this group the fastest-growing age category during that period. Clearly, nontraditional students will continue to be an increasingly significant part of the college classroom.

Despite their significance, nontraditional college students have been largely ignored in investigations of classroom discussion. Much of the debate has centered around the issue of student gender in the college classroom with little consideration to the impact of student age on classroom participation. The Education Resources Institute (1996) report described the typical 40 and over student as a white female who attends a community college part-time and works thirty or more hours per week. Thus, as Howard, Short, and Clark (1996) suggested, due to their different life experiences, nontraditional students' definition of the situation in the college classroom is likely to differ considerably from that of traditional students. These differences contribute to the greater willingness of nontraditional students to participate in classroom discussion.

Because Howard, Short, and Clark's (1996) sample of 13 introductory level courses were taught almost exclusively (12 of 13 courses) by fe-

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male instructors, it was not possible to consider the effect of instructor gender or course level in the mixed-age classroom. This study seeks to fill that void in the literature and contribute to the ongoing debate regarding the impact of student age, student gender, instructor gender, and course level on student participation.

Previous Research

Since Hall and Sandler's (1982) contention that the college classroom presents a "chilly climate" for female student participation, the issue of student gender has been the object of considerable study with ambiguous results. Several studies found no effect of student gender (Boersma, Gay, Jones, Morrison, & Remick, 1981; Cornelius, Gray, & Constantinople, 1990; Crawford & MacLeod, 1990 [in their university sample]; Hamlin & Janssen, 1981). However, other studies have concluded that males participate disproportionately (Brooks, 1982; Constantinople, Cornelius, & Gray, 1988; Crawford & MacLeod, 1990 [in their small college sample]; Fassinger, 1995; French, 1984; Graddol & Swann, 1989; Karp & Yoels, 1976; Pearson & West, 1991; Spender, 1981). Brooks (1982) linked males' greater levels of participation with instructor gender, suggesting that males participate more than females in female-taught classes. On the other hand, Sternglanz and Lyberger-Ficek (1977) and Pearson and West (1991) concluded that male students are more likely to dominate discussion in male-taught classes. Auster and MacRone (1994) found that instructor gender was not a significant determinant of student participation. Fassinger (1995) concluded that although instructor gender had no effect on the participation of male students, female students were more likely to participate in classes taught by female instructors.

Class size was found to be a significant determinant of participation in classroom discussion in several studies (Constantinople, Cornelius, & Gray, 1988; Crawford & MacLeod, 1990; Fassinger, 1995; Howard, Short, & Clark, 1996). Fassinger (1995) emphasized the role of student traits (e.g., confidence, comprehension, interest, and preparation) and class traits (size, emotional climate, interaction norms, frequent large group discussions) over instructor traits (e.g., gender). Nunn (1996) challenged Fassinger's (1995) findings by concluding that the instructor's choice of teaching techniques (e.g., teacher using praise, posing questions, asking for elaboration, using student names) significantly impacted the level of discussion. Several studies have found that the overall level of participation is greater in classes taught by females (Auster & MacRone, 1994; Cornelius, Gray, & Constantinople, 1990; Pearson & West, 1991; Statham, Richardson, & Cook, 1991). Sternglanz and Ly-

berger-Ficek (1977) found the opposite—that participation was greater in male-taught classes. Of the above studies, only Howard, Short, and Clark (1996) attempted to examine student age in relationship to participation in the college classroom.

Methodology

Utilizing a single method to investigate interaction in the college classroom presents limitations. While surveys are often the most efficient method of obtaining the data, Karp and Yoels (1976) demonstrated that what students say in surveys and how they actually behave in the classroom can be two very different things. Surveys are especially prone to find no effect of instructor gender, whereas observational research has on occasion (e.g., Karp & Yoels, 1976) demonstrated just such an effect. Observation can provide some clear evidence of what actually occurs but may not provide an interpretive understanding of the participants' views of the setting and of one another.

With those limitations in mind, this study utilized a triangulation of research methods: nonparticipant observation, survey, and interviews. The research was conducted during the fall 1995 semester at Indiana University Purdue University Columbus (IUPUC). Student enrollment in the fall of 1995 was 1836. IUPUC is a commuter campus with a large percentage (52% by head count and 37% by credit hour) of nontraditional students (age 25 or over) and a high percentage (61% by head count and 70% by credit hour) of female students. Student enrollment at IUPUC, given its relatively open admissions policy as an extension campus of a state university, also includes a large percentage (18%) of students who are officially designated as “underprepared” for college level work. Therefore, findings based on this case study may not be generalizable to dissimilar institutions (e.g., highly selective private residential institutions with few nontraditional students or institutions with a male student majority).

Eight students (6 females and 2 males) in the undergraduate course “Social Science Research Methods” were trained in nonparticipant observation techniques. Each student then chose to observe ten sessions of each of two courses for which they were not enrolled. Courses for observation were selected to fit the student observers' schedules, resulting in a nonrandom sample of courses.¹ Permission to observe each course was obtained in writing from the course instructor prior to the start of observations. Instructors were provided with an announcement to read to the class briefly identifying the student observer and his or her role in the classroom. Eleven instructors read the announcement to the class, however five did not.

The sample of courses proved to be representative of the student enrollment at IUPUC with regard to student age. Nontraditional students (those age 25 or older) accounted for 37% of enrollment by credit hour in the fall 1995 semester, nontraditional students were 37% of those observed as well. However, survey data revealed that 45% of our sample were nontraditional students. We suggest two factors to account for this discrepancy. First, we believe the observers had a tendency to label “younger” nontraditional students as being “traditional.” This error could lead us to underestimate the differences between traditional and nontraditional. Thus any significant differences between traditional and nontraditional students found via observation should be particularly robust. Second, based on classroom observations we believe nontraditional students were more likely to attend class and, therefore, be observed and counted than were traditional students. With regard to student gender, our sample included a higher percentage of females than did the overall enrollment. Females accounted for nearly 70% of enrollment by credit hour, but nearly 79% of the sample observed. This may have been due to a greater tendency on the part of female, as compared to male, students to attend class. Nonetheless, the presence of such a high percentage of females in the sample may dilute any effects of a “chilly climate” for female students.

All observed courses had a three-credit-hour “lecture” component.² Of these courses, six were 100 level, four were 200 level, four were 300 level, and two were 400 level. Eight were taught by female instructors and eight were taught by male instructors. Six of the observed courses met in the morning (before noon), five met in the afternoon (between noon and 4:30), and five met in the evening (beginning at 4:30 or later). Six courses met twice per week, while ten met once per week. Class meetings of the once-per-week courses were coded as two sessions (one prior to the ten-minute break and one afterwards) making each session approximately 75 minutes in length.

In each observed course the instructor utilized lecture as the primary pedagogical strategy, although these “lectures” were frequently “interactive” with multiple opportunities for students to discuss and ask questions of the instructor. According to course syllabi, only one of the sixteen instructors, a female, made participation in discussion a part of the course grade. In this course, students could earn 22.5 points of “extra credit” (out of a possible total 520 points in the course) through class attendance and active participation. One male instructor’s syllabus mentioned, “Attendance and class participation will affect the course grade.” However, there was no explanation of, nor provision for, factoring participation into the grade when the “Grading Procedures” were explained

on the syllabus. Four other syllabi (two from male instructors and two from female instructors) encouraged students to be prepared for discussion of the material assigned, but did not make discussion a part of the course grade. The other ten syllabi made no references to “class discussion” or “class participation.”

Ten sessions of each course were observed over the 16-week semester. Only “regular” class sessions—those without a film/video or examination as the primary activity—were observed. A total of 156 class sessions were observed.³ Observers recorded each student’s verbal contribution to the class using a seating chart. A total of 2711 student observations were made. These students made 4938 interactions which were coded into three categories: 2781 *student initiated* interactions (the student interrupts the instructor to ask a question or to make a comment without invitation to do so); 1743 *instructor initiated* interactions (the instructor invites students’ comments and questions); and 414 *direct questions* (the instructor calls on a specific student to answer a question or make a comment). In addition to tracking student interactions via the seating chart, observers also wrote qualitative field notes for each session describing the classroom environment as it pertained to interaction.

The second research methodology employed was a survey of instructors and students in the observed courses.⁴ The survey was designed to discover students’ reasons for participation and nonparticipation, students’ perceptions of each other and the instructor, and instructors’ perceptions of students. The survey incorporated to a significant extent the survey utilized by Howard, Short, and Clark (1996) as well as Karp and Yoels’ (1976) list of reasons “Why Students Would Choose Not to Talk in Class.” A revised and extended version of the survey was given to the instructors. A total of 242 students completed the survey, which was administered during the 10-12th weeks of the semester.

The final methodology utilized was the interview. Each of the eight observers conducted three interviews with members of the observed courses. Interview schedules were designed to provide specific feedback from some of the most and least “talkative” students in the observed courses. The objective was to “fill the gaps” in the data necessary to explain student levels of verbal participation. Interview subjects were not randomly chosen. Rather, a quota sample was selected to ensure representation of each demographic group. Fifteen students were interviewed along with nine instructors during the 13th and 14th weeks of the semester.

Analysis

Karp and Yoels (1976) suggested that there is a “consolidation of responsibility” regarding student participation in the college classroom.

They found that a small number of students (2 to 5) will account for a majority (50% to 75%) of all interactions. Howard, Short, and Clark (1996) also found the consolidation of responsibility in operation almost 20 years later with 4 to 5 students accounting for 89% of all interactions.

As Table 1 indicates, our analysis affirms these earlier findings. Although the observed courses averaged over 31 interactions per session, over 29 (nearly 92%) were made by roughly five “talkers”—students who contributed twice or more to classroom discussion. A total of 29.3% of all students observed were “talkers.” Over half of the students observed did not contribute a single interaction to class discussion in the observed class sessions. Student participation in discussion was the job of these, roughly, 5 students in each class. The issue then becomes who talks (and who doesn’t talk) and why?

Table 1 also provides results concerning student participation by demographic category. The results are mixed with regard to the impact of student gender. A greater percentage of females than males participated in class discussion (45.7% to 37.9%). Females also had a higher individual mean total interaction than did males (1.89 to 1.56). We also found that a greater percentage of females were “talkers” (30.4% to 25.5%). At first glance, the data seem to contradict Hall and Sandler’s (1982) “chilly climate” hypothesis. This may be due, in part, to the high percentage (78.6%) of the observed students who were female. Although the high percentage of female students is typical of commuter campuses, student demographic patterns at IUPUC in 1995 are quite likely to be significantly different from those found in most colleges and universities in the early 1970s (when Karp and Yoels [1976] conducted their study). They are also likely quite different from residential campuses—particularly at institutions with more selective admissions requirements.

Similar to Howard, Short, and Clark (1996) when we examined the effect of age on student participation, we found that nontraditional students (25 years of age or older) were considerably more likely to participate in classroom discussion than were traditional students (less than 25 years of age). A greater percentage of nontraditional students participated in discussion (53.4% to 38.5%). Nontraditional students had a mean total interaction per student that was almost three times that of traditional students (3.1 to 1.06). A greater percentage of nontraditional students were “talkers” (39.3% to 23.4%), and those nontraditional “talkers” contributed almost twice as many comments and questions as did the traditional “talkers” (individual mean total interactions per class session: 7.56 to 3.87). Clearly, in the mixed-age classroom, student discussion is dominated by the nontraditional students.

When we examine the effect of age when controlling for gender, the picture is further clarified. Though nontraditional males are the demo-

TABLE 1

Interactions per Class Session by Student Gender, Student Age, and Instructor Gender

Category	Mean Interaction Per Session	Mean Attend	Mean No. Students Participate	Percent Students Participate	Mean Interaction per Student	No. Students Making Two or More Interactions	Percent Students Making Twoplus Interactions	Mean Interaction by Twoplus Students	No. Interactions by Twoplus Students	Percent All Interactions by Twoplus Students	<i>N</i>
All	31.65	17.38	7.65	44.0	1.82	5.10	29.3	5.71	29.12	91.9	2711
Males	5.81	3.72	1.41	37.9	1.56	0.95	25.5	5.64	5.36	92.2	581
Females	25.84	13.65	6.24	45.7	1.89	4.15	30.4	5.73	23.78	92.0	2130
Traditional	11.56	10.90	4.19	38.5	1.06	2.56	23.4	3.91	10.01	86.6	1701
Nontraditional	20.10	6.47	3.46	53.4	3.10	2.54	39.3	7.56	19.20	95.5	1010
Traditional females	8.48	7.72	3.12	40.4	1.10	1.87	24.2	3.87	7.24	85.4	1204
Nontraditional females	17.36	5.94	3.12	52.6	2.92	2.28	38.4	7.26	16.55	95.3	926
Traditional males	3.08	2.87	1.08	33.8	0.97	0.69	21.6	3.92	2.70	87.7	497
Nontraditional males	2.74	0.54	0.33	61.9	5.08	0.26	48.1	10.15	2.64	96.4	84
Male instructor	32.61	18.59	7.51	40.4	1.75	4.81	25.9	6.22	29.92	91.8	1469
Female instructor	30.68	16.13	7.79	48.3	1.90	5.39	33.4	5.25	28.30	92.2	1242
<i>N</i>	4938	2711	1193		4938						

graphic group most likely to participate in discussion (61.9%) and are likely to participate at a greater level (mean total interaction per session = 5.08) than any other demographic grouping, their presence in the sample was limited. Nontraditional females outnumbered nontraditional males by a factor of ten (34.2% to 3.1% of the observed students). In the absence of nontraditional males, nontraditional females were the primary student contributors to class discussion. The percentage of nontraditional females who participated in discussion was 52.6% versus 40.4% of traditional females and 33.8% of traditional males. Nontraditional females also had a higher individual mean total interaction per session (2.92) than did traditional females (1.1) and traditional males (0.97). Whereas nontraditional females trailed nontraditional males in terms of participation percentage and mean total interactions, traditional females outcontributed traditional males on both counts.

Instructor gender produced smaller differences in student participation than did student gender and age. Male instructors had a higher mean number of interactions per class session (32.61 to 30.68) than female instructors despite higher mean attendance levels in male-taught classes (18.59 to 16.13). However, female instructors did have a higher percentage of students participating in discussion (48.3% to 40.4%) and a higher mean total interaction level per student in their classes (1.90 to 1.75). Female instructors also had a higher percentage of “talkers” (33.4% to 25.9%). Interestingly, in male-taught classes, “talkers” made a greater number of comments than did “talkers” in female-taught classes (6.22 to 5.25). So while female and male instructors have a similar number of interactions per session, responsibility for student participation was consolidated into fewer hands in male instructors’ classes.

As noted above, interactions were coded into three categories: *student initiated*, *instructor initiated*, and *direct questions*. Most interactions (56.3%) were *student initiated*, suggesting that students, not instructors, assume primary responsibility for initiating interaction in the classroom. Females had a higher mean *student initiated* interaction total than males (1.09 to 0.80), and nontraditional students exceeded traditional students (1.98 to .46). Again, the few nontraditional males (3.45) outparticipated all other demographic groupings. They were followed by nontraditional females (1.85), traditional females (0.5), and finally, traditional males (0.35). These results suggest nontraditional students are much more comfortable interrupting an instructor, without invitation to do so, to make a comment or ask a question than are traditional students. The mean *student initiated* interaction rate was nearly identical in male and female-taught classes (1.00 to 1.06).

The gaps in interaction levels between male and female as well as be-

TABLE 2
Mean Interactions by Source per Student per Session

Category	Total	Student Initiated	Instructor Initiated	Direct Question	<i>N</i>	Mean Attend
All	1.82	1.03	0.64	0.15	2711	17.38
Males	1.56	0.80	0.66	0.18	581	3.73
Females	1.89	1.09	0.66	0.15	2130	13.65
Traditional	1.06	0.46	0.66	0.16	1701	10.90
Nontraditional	3.10	1.98	0.98	0.15	1010	6.47
Traditional females	1.10	0.50	0.44	0.16	1204	7.72
Nontraditional females	2.92	1.85	0.94	0.13	926	5.94
Traditional males	0.97	0.35	0.46	0.16	497	2.87
Nontraditional males	5.08	3.45	1.35	0.29	84	0.54
Male instructor	1.75	1.00	0.65	0.11	1469	18.36
Female instructor	1.90	1.06	0.64	0.21	1242	16.34
<i>N</i>	4938	2781	1743	414	2711	

tween traditional and nontraditional students narrowed considerably with *instructor initiated* interactions. Males and females had identical mean levels of *instructor initiated* interactions, whereas nontraditional student levels exceeded that of traditional students by only 0.3 interactions per session (0.98 to 0.66)—a significant decrease from the *student initiated* gap of 1.52. Traditional males and traditional females had nearly identical mean *instructor initiated* interaction levels (0.46 to 0.44), whereas nontraditional males exceeded nontraditional females by 0.41 (1.35 to 0.94)—another significant drop from the *student initiated* gap of 1.60. Mean *instructor initiated* interaction levels were very similar in male- and female-taught classes (0.65 to 0.64).

Direct question interactions departed from the patterns established in *student* and *instructor initiated* interactions. Males slightly exceeded females in mean *direct question* levels (0.18 to 0.15), and traditional students slightly exceeded nontraditional students (0.16 to 0.15). Also female instructors had a mean *direct question* level that was almost twice as large as that of male instructors (0.21 to 0.11), accounting for two thirds of the difference in mean total interactions in male- and female-taught classes. However, one female instructor proved to be a statistical outlier regarding direct questions. This instructor accounted for 34.5% of all direct questions. If we remove this instructor's course from the analysis we find that students in courses taught by male and female instructors had identical mean direct questions per session of 0.11.

To test the significance of these variables (student gender, student age, instructor gender), and others that previous research suggests are significant (attendance, week in semester, number of sessions per week,

course level and time of day), ordinary least squares regression was utilized. Based on previous research, we expected that attendance, student gender (female = 1), student age (traditional = 1), courses which met once per week, and morning courses to have negative effects on interaction. We expected week in the semester, course level, instructor gender (female = 1), as well as afternoon and evening courses to have positive effects. As Table 3 indicates, the regression equations had adjusted *R* squares that ranged from 0.109 to 0.107. Attendance in the observed classes ranged from a low of 4 students to a high of 33 students. The effect of attendance was strongly significant and negative in each equation as predicted. As others (e.g., Howard, Short & Clark, 1996) have noted, increased attendance does limit classroom interaction. The size of the impact, as measured by beta scores, was larger for attendance than for any other variable in each of the equations.

TABLE 3
Ordinary Least Squares Regression of Total Interactions by Selected Independent Variables

Variable	Model I		Model II		Model III	
	B	Beta	B	Beta	B	Beta
Attendance	-0.140*** (0.014)	-0.223	-0.142*** (0.014)	-0.226	-0.141*** (0.014)	-0.226
Age (Traditional = 1)	-1.509*** (0.169)	-0.174	-1.516*** (0.170)	-0.175	-1.553*** (0.170)	-0.179
Gender (Female = 1)	-0.377* (0.197)	-0.037	-0.447* (0.195)	-0.044	-0.450* (0.194)	-0.044
Week in Semester	-0.039* (0.019)	-0.038	-0.037* (0.019)	-0.036	-0.037* (0.019)	-0.036
One session Per week	-0.721*** (0.213)	-0.086	-0.504* (0.201)	-0.060	-0.474** (0.186)	-0.056
Instructor gender (Female = 1)	0.230 (0.190)	0.027	0.059 (0.184)	0.007	0.230 (0.203)	0.027
Course level	0.320** (0.112)	0.074	0.340** (0.117)	0.078	0.254* (0.118)	0.059
Evening	0.573* (0.226)	0.061				
Afternoon			-0.124 (0.189)	-0.014		
Morning					-0.349 (0.213)	-0.041
Constant	5.735*** (0.527)		5.944*** (0.521)		6.143*** (0.536)	
Adjusted <i>R</i> Square	0.109		0.107		0.107	

NOTE: Numbers in parentheses are standard deviations.
p* < 0.05. *p* < 0.01. ****p* < 0.001.

As predicted, the influence of student age (traditional = 1) was strongly significant and negative in each equation. Being a traditional student made one much less likely to participate frequently in classroom discussion. The impact of student gender was significant and negative in each equation. However, the beta score for student age was three or more times larger than effect of student gender, suggesting that gender plays less of a role in predicting student participation in the mixed-age college classroom than do student age and attendance. Interestingly, the influence of instructor gender (female = 1), though positive, was not significant in any equation.

The effect of week in the semester, although small, was significant, but in the opposite direction than was anticipated. Closer inspection of the trends across the semester revealed that as the semester progressed, the percentage of total interactions from *student initiated* interactions increased, whereas the proportion of total interactions attributable to both *instructor initiated* and *direct questions* declined, thus accounting for the negative effect.

The impact of a course meeting only once per week was negative and significant in each equation as predicted. The impact of course level was positive and significant in each equation. Of the various day parts (morning, afternoon, evening), only evening (courses beginning at or after 4:30 p.m.) was found to be significant.

Table 4 provides the results of ordinary least squares regression of mean student interactions by the source of interaction. The results suggest that the model best explains variations in *student initiated* interactions (adjusted *R* square = 0.121), but does a poor job explaining variations in *instructor initiated interactions* (adjusted *R* square = 0.029) and *direct questions* (adjusted *R* square = 0.020). In all three equations the effect of attendance remains negative and significant, although the size of the effect as measured by beta score decreases from -0.221 for *student initiated* to -0.097 for *instructor initiated* to -0.080 for *direct questions*. It appears the negative impact of attendance is most strongly felt on *student initiated* interactions.

The influence of student age (traditional = 1) is negative and significant for both *student initiated* and *instructor initiated* interactions, but positive and not significant for *direct questions*. The size of the influence, measured by beta score, also declines from *student initiated* to *instructor initiated*. Again, this suggests that the impact is felt most strongly on *student initiated* interactions. The effect of student gender (female = 1) is negative, but not significant in any model. The effect of instructor gender was also not significant in any of the equations. The influence of course level was positive and significant for *student initi-*

TABLE 4
 Ordinary Least Squares Regression of Mean Student Interactions by Source of Interaction

Dependent Variable	I Student Initiated Interactions		II Instructor Initiated Interactions		III Direct Questions	
	B	Beta	B	Beta	B	Beta
Attendance	-0.106*** (0.010)	-0.221	-0.027*** (0.006)	-0.097	-0.007*** (0.002)	-0.080
Age	-1.040*** (0.128)	-0.157	-0.476*** (0.079)	-0.123	0.007 (0.025)	0.006
Gender (Traditional = 1)	-0.246 (0.149)	-0.032	-0.088 (0.091)	-0.019	-0.042 (0.029)	-0.030
Week In	0.012 (0.015)	0.015	-0.036*** (0.009)	-0.080	-0.015*** (0.003)	-0.105
Semester	-0.530** (0.162)	-0.082	-0.245* (0.099)	-0.066	0.054 (0.031)	0.046
One session	0.231 (0.144)	0.036	-0.050 (0.088)	-0.013	0.050 (0.028)	0.043
Per week	0.353*** (0.085)	0.107	0.021 (0.052)	0.011	-0.054*** (0.016)	-0.090
Evening course	0.598*** (0.171)	0.083	0.025 (0.105)	0.006	-0.050 (0.033)	-0.038
Constant	3.279*** (0.400)		1.952*** (0.244)		0.504*** (0.077)	
Adjusted R Square	0.121		0.029		0.020	

NOTE: Numbers in parentheses are standard deviations.
 * $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

ated interactions suggesting an increased confidence on the part of students that leads to more interactions. The effect of course level for *direct questions* was negative and significant, suggesting instructors rely on this technique to stimulate discussion more in entry-level courses than in upper-level courses.

Week in the semester was not significant for *student initiated* interactions, but it was negative and significant for both *instructor initiated* interactions and *direct questions*. This suggests that instructors spend less effort attempting to stimulate student participation as the semester progresses. The effect of a course meeting only once per week was negative and significant for both *student initiated* interactions and *instructor initiated* interactions, but it was positive and not significant for *direct questions*. Course level had a significant positive impact on *student initiated* interactions but a negative and significant impact on *direct questions*, again suggesting that instructors are more apt to directly call on students

in entry-level courses and to rely on student efforts to initiate interaction in upper-level courses. Finally, the effect of courses that met in the evening hours was significant and positive with regard to *student initiated* interactions, but it was not significant for *instructor initiated* interactions nor *direct questions*.

Given the significant negative impacts of student gender (female = 1) and age (traditional = 1), we asked whether these influences might be felt more strongly for various demographic groups of students in classes taught by instructors of a particular gender. We addressed this issue by using analysis of variance (ANOVA) to compare mean interaction levels of various student groupings by instructor gender. The ANOVA results presented in Table 5 suggest that for total interactions, student initiated interactions, and instructor initiated interactions instructor gender produced significant differences only for traditional female students.⁵ Whereas nontraditional female students had higher, though not statistically significant, mean levels of interactions in male-taught classes, their

TABLE 5
Analysis of Variance (ANOVA) of Mean Interactions per Student by Source of Interaction

Instructor	Total Interactions		Student Initiated Interactions		Instructor Initiated Interactions		Direct Questions	
	Male	Female	Male	Female	Male	Female	Male	Female
Gender								
All (<i>N</i> = 2711)	1.75	1.90	1.00	1.06	0.65	0.64	0.11	0.21***
Females (<i>N</i> = 2130)	1.78	2.01	1.03	1.14	0.65	0.67	0.10	0.20
Males (<i>N</i> = 581)	1.67	1.37	0.89	0.63	0.64	0.50	0.14	0.24
Traditional (<i>N</i> = 1701)	0.86	1.30	0.37	0.56	0.40	0.51	0.09	0.24
Nontraditional (<i>N</i> = 1010)	3.28	2.90	2.07	1.88	1.08	0.86	0.14	0.16
Traditional females (<i>N</i> = 104)	0.85	1.38***	0.39	0.66**	0.36	0.52*	0.09	0.23***
Traditional males (<i>N</i> = 497)	0.87	1.10	0.32	0.39	0.46	0.46	0.09	0.25***
Nontraditional females (<i>N</i> = 926)	3.04	2.80	1.90	1.80	1.04	0.85	0.11	0.16
Nontraditional males (<i>N</i> = 84)	4.77	7.67	3.12	6.22	1.33	1.44	0.32	0.00

p* < 0.05. *p* < 0.01. ****p* < 0.001.

younger counterparts, traditional females, were significantly more likely to initiate an interaction and to respond to an instructor's invitation for interaction in female-taught classes. It appears that younger female students experience and interpret the college classroom differently than do older females. Traditional college age students, male or female, participate at a very low rate in courses taught by males; however, when the instructor is female, traditional females are significantly more likely to both initiate interactions and respond to instructor initiated interactions. At the same time, traditional males continue to participate at the same lower rate—thus falling behind their female counterparts in female-taught courses. This suggests that if the mixed-age college classroom is a “chilly” climate for young female students, it is even more “chilly” for young male students. Any “chilly” climate is due mostly to student initiated interactions. The data suggest that instructors directly call on traditional students more often than nontraditional students and call on males and females equally often. Males and females are also equally likely to respond to instructor initiated interactions (see Table 2). Class size (attendance) and student age are better predictors of student participation than is student gender. The negative effects of age lessen for female students in female-taught courses, but not for male students in courses taught by either gender. This leads us to the issue of why students choose to participate and choose not to participate.

Reasons for Participation and Nonparticipation

Utilizing a survey, we asked students to identify reasons for their participation in class discussion. Table 6 shows that regardless of the demographic group, the four most frequently cited reasons were the same: “I am seeking information or clarification”; “I have something to contribute to the class”; “I learn by participating”; and, “I enjoy participating.” However, utilizing Kendall's tau to compare responses by student age, student gender, and instructor gender we found that scores were significantly different only when comparing traditional and nontraditional students on these four dimensions. Nontraditional students were more likely to say they participated for each of the four reasons than were traditional students. In comparing male and female students, the only significant difference was that females were more likely to cite “other” than were males.⁶ In female-taught courses, students were significantly more likely to say they participated because it was a part of their grade. We attribute this result to the previously mentioned female instructor who allowed students to earn extra credit points via attendance and participation.

TABLE 6

Reasons for Participation by Student Age, Student Gender, and Instructor Gender (Kendall's tau)

(Circle as many as you feel are important.) When I choose to participate in class discussion, I do so because	All	Nontra- ditional	Tradi- tional	Male	Female	Male Instructor	Female Instructor
I am seeking information or clarification;	82.2	89.8	77.3**	84.6	82.4	84.6	80.9
I have something to contribute to the class;	56.5	66.7	49.2**	48.1	59.6	56.9	57.3
I learn by participating;	52.5	64.8	43.2**	44.2	55.3	52.3	53.6
I enjoy participating;	44.2	56.5	34.8**	38.5	46.3	46.9	41.8
participation is part of my grade;	22.3	21.3	23.5	13.5	25.0	15.4	30.9**
I disagree with something the instructor said;	19.8	18.5	21.2	15.4	21.3	20.8	19.1
I am trying to make the class more interesting;	12.8	14.8	11.4	13.5	12.8	15.4	10.0
I feel obligated to do so when other students don't participate;	12.8	11.1	14.4	13.5	12.8	14.6	10.9
other (please specify):	3.3	1.9	5.3	0.0	4.8**	3.8	3.6
<i>N</i>	242	109	133	52	190	132	110

** $p < 0.01$

In their interview comments, as well, nontraditional students, as compared to their younger counterparts, defined the college classroom as a more "open" and friendly space where their participation is welcome and, potentially, valuable. Several nontraditional students, in describing the type of course they like best, mentioned class discussion.

I like a combination of lecture where I get information and also a class where discussion is encouraged and I can get feedback. (Nontraditional Female)

I don't like a class that is totally lecture. I like it when there's discussion. (Nontraditional Female)

I prefer discussion. It is much more of an adult learning style. The best people are participating in it and you have to be prepared to get something out of a discussion. I think it's a critical part [of the course. Because] that's how a student takes in learning. . . . They get involved with the material. (Nontraditional Male)

[Students who participate in discussion are] . . . learning to share their ideas and listen to other people verbalize their ideas. The more I participate, the more I get out of a class. If I just listen I don't get near as much out. (Nontraditional Female)

On the other hand, several traditional students in the course of their interviews specifically mentioned they did not like courses that required student participation.

I've always been afraid people would criticize me and think, "She should know this."(Traditional Female)

Students may not contribute to class discussion because they feel uncomfortable asking questions or, more than likely, they feel they're going to say the wrong thing. (Traditional Male)

I am totally against instructors who require participation. You wouldn't require biology for math, so I don't think you should require speech in a [non-speech] class. (Traditional Male)

I think it's unfair to require participation from students who don't know how to ask questions, or are uncomfortable asking questions, or are just shy people. (Traditional Female)

Recognizing that many students were unwilling or unable to participate in class discussion, we asked students to identify reasons for their nonparticipation in our survey. As Table 7 shows, students cited "the feeling that my ideas are not well enough formulated" and "the feeling that I don't know enough about the subject matter" most frequently.

TABLE 7
Reasons for Nonparticipation by Student Age, Student Gender, and Instructor Gender (Kendall's tau)

(Circle as many as you feel are important.) When I choose NOT to participate in class discussion, I do so because	All	Nontraditional	Traditional	Male	Female	Male Instructor	Female Instructor
of the feeling that my ideas are not well enough formulated;	38.0	39.4	45.7	37.0	44.4	42.9	42.7
of the feeling that I don't know enough about the subject matter;	38.0	36.4	48.3	47.8	41.4	42.9	42.7
of the chance that I would appear unintelligent in the eyes of other students;	24.0	20.2	32.8*	23.9	27.8	25.2	29.2
I had not done the assigned reading;	21.1	15.2	31.0**	47.8	17.2**	30.3	15.6**
of the chance that I would appear unintelligent in the eyes of the instructor;	16.5	13.1	23.3*	21.7	17.8	14.3	20.8
other (please specify);	16.1	21.2	15.5	13.0	19.5	14.3	22.9
of the large size of the class;	13.6	13.1	17.2	8.7	17.2	18.5	11.5
of the possibility that other students in the class would not respect my point of view;	7.0	3.0	12.1**	6.5	8.3	6.7	9.4
the course simply isn't meaningful to me;	5.0	3.0	7.8	10.9	4.1	8.4	2.1*
of the possibility that the teacher would not respect my point of view;	3.3	1.0	6.0	4.3	3.6	4.2	3.1
of the possibility that my comments might negatively affect my grade.	2.1	0.0	4.3*	4.3	1.8	3.4	1.0
<i>N</i>	242	109	133	52	190	132	110

* $p < 0.05$; ** $p < 0.01$

Again, utilizing Kendall's tau, we found that the percentage who cited these reasons was not significantly different by student age, student gender, or instructor gender. However, there were significant differences regarding some of the less frequently cited reasons for nonparticipation. Traditional students were significantly more likely than nontraditional to cite concerns about appearing unintelligent to the instructor or other students, the possibility that other students would not respect their point of view, and the possibility that their comments might negatively affect their grade. All of which indicates a perception of the college classroom as being a somewhat dangerous, unaccepting environment. Traditional students, male students, and students in male-taught courses were each significantly more likely to say they did not participate because they had not done their assigned reading than were their respective counterparts (nontraditional students, females, and students in female-taught courses). Thus one reason why traditional students (and to a lesser extent males and students in male-taught classes) perceive the classroom as being hostile and unaccepting may be their lack of preparation to participate.

Implications and Conclusions

Students learn more when they take an active role in their learning—seeing themselves as engaged participants in their education rather than passive recipients of knowledge from experts (see for example Rau & Heyl, 1990; Smith & Malec, 1995; Smith, 1996; Thompson, 1996). Kember and Gow (1994) found that students who participate in classroom discussion learn more than those who do not. Weast (1996) and Garside (1996) have demonstrated that active participation can facilitate critical thinking. But despite the potential benefits, the present study illustrates that different types of students participate at different levels. In particular, traditional students are the group most reluctant to participate. It is the responsibility of college instructors to facilitate their learning as well as the learning of students who participate more readily.

We need to be cautious in applying the findings of this study due to the limitations of the sample. The norms that operate at a small extension campus of a major state university may well be different than those that operate at a major residential campus or even at a small private residential liberal arts college. The participation of males and females, traditional and nontraditional students at highly selective institutions may also vary considerably from that described herein. Clearly, further research conducted at various types of institutions is needed.

Given these limitations, the evidence presented suggests that in the mixed-age college classroom, nontraditional students are far more likely

to initiate discussion than are their traditional (18- to 24-year-old) counterparts. Though the gap narrows considerably with instructor initiated interactions, nontraditional students are also more likely to respond to instructor attempts to initiate class discussions. College instructors thus face the continued existence of the “consolidation of responsibility” (Karp & Yoels, 1976). Our challenge is to turn more students into “talkers” in order to better facilitate their learning.

This study provides little support for the “chilly climate” thesis. If the mixed-age college classroom is “chilly,” it is not so for nontraditional female students, who account for the majority of interactions, nor for nontraditional males, who have the highest mean level of participation. It may be a “chilly” climate for traditional females when the instructor is male, but it is equally “chilly” for traditional male students. When the instructor is female, the climate is more “chilly” for traditional males than females. Both groups participate at a significantly lower rate than nontraditional students. Instructor gender also played a limited role in reasons students gave for their lack of participation. Students in male-taught classes were significantly more likely to worry about how they appeared to the instructor and were significantly more likely to find the course not to be meaningful. This suggests that female instructors may do a better job of creating a classroom environment that engages students and makes them feel sufficiently comfortable to participate.

This study also suggests that the lower participation level of traditional students is not due to instructors who only call on nontraditional students. However, instructors do seem to relinquish an increasing amount of responsibility for participation to the students as the semester progresses by inviting less participation through instructor initiated interactions and direct questions. This approach contributes to the dominance of nontraditional students who are most comfortable initiating interactions without an instructor’s invitation to do so. Part of the motivation for this tendency may be that as the semester progresses instructors feel an increased pressure to “get through the material” and therefore limit their invitations for discussion. Another possible explanation is that both students and instructors become increasingly comfortable with the norms that have developed over the course of the semester and fall into a pattern where responsibility for discussion is consolidated into the hands of a few students. The most obvious response to this dilemma is for instructors to increase the frequency of their invitations to participate in classroom discussion via direct questions and instructor initiated interactions and to maintain that level of invitation throughout the semester. Although nontraditional students will still be the most likely to participate, the gap will likely be much smaller

than when instructors take a more passive approach and rely on students to initiate interactions.

Additionally, this study provides support for department chairs who wish to seek structural changes. The results support the argument for lower enrollment caps in courses. While the largest course included in the sample had 33 students, the effect of larger class size was the largest significant predictor of student participation. We can only speculate that in mass lecture courses of one hundred or more the effect would be even more profound. In effect, if participation facilitates learning and large enrollments inhibit participation, then, other things being equal, large enrollments will hinder learning. Department chairs also find in this study encouragement to resist pressures to offer courses that meet only in once-per-week extended sessions (a practice that also discourages discussion).

Finally, two major reasons for the lack of participation of traditional students were their concerns with how they appear in the eyes of their classmates and their lack of preparation for class. Instructors can play an active role in addressing each of these issues. Despite her contention that instructors play a relatively small role in shaping participation in the classroom, Fassinger (1995, 1996) suggests that instructors can actively design their courses to foster a positive emotional climate, develop student confidence, and develop interaction norms that facilitate interaction. Nunn's (1996) research suggests that this can be accomplished by praising students, by asking students questions, by asking students for elaboration, by using student names, and by repeating student answers.

In the attempt to create new classroom norms that facilitate active student participation and thus greater learning, we suggest that it is appropriate to encourage and reward discussion by making it a component of the course grade or, alternatively, by offering extra credit for participation. One way to encourage students to evaluate their own participation and their responsibility for it, is to allow students to grade themselves on their discussion. Ideally, this would be done at the end of each class session so that students can immediately assess their input in class discussion. Students should be given a grading scale that is as concrete as possible (e.g., 1 point for attendance without participating in discussion; 2 points for making a single comment; 3 points for more than one comment; 4 points for equitable participation; and 5 points for participation that exceeds normative expectations). Based on the lead author's teaching experience, we have found that in response to such a system virtually every student present will participate in discussion and that students generally grade themselves in a fair manner.

To help alleviate students' fears of unformulated ideas, a lack of knowledge of the subject matter, and appearing unintelligent to the in-

structor or other students, instructors could provide questions for discussion to accompany each assigned reading so that students will have the opportunity to consider questions and reflect upon them prior to class. Thus students can formulate their responses and investigate topics to develop knowledge ahead of time and, hopefully, reduce the fear of appearing unintelligent. Positive instructor feedback for students who participate can also help students overcome their fear of participation. By providing questions for discussion ahead of time and grading students on their participation we can hold students accountable for completing assigned readings and being prepared to discuss them. Thus we can influence students' definitions of the college classroom by creating the expectation that each student will participate in class discussion.

In sum, we need to question our preexisting frames (Russell & Munby, 1992) about university teaching that limit our creativity and perpetuate passive and uninvolved learning. To begin, we should identify and discuss the norms of the "consolidation of responsibility" and "civil attention"⁷ (Karp & Yoels, 1976) that prevail in most college classrooms. If we begin our courses by making it clear that these classroom norms, which students have come to expect and find comfortable and which allow them to remain passive observers, do not apply in our courses, then we have a starting point for change. We can tell students why we value their participation (e.g., they learn by participating; it makes the class more interesting for all). There is also an abundance of pedagogical research (for examples see Bell & Bradburn, 1996; Hamlin & Janssen 1981; Longmore & Jarboe, 1996; McBroom & Reed, 1994; McKinney & Graham-Buxton, 1993; Sernau, 1995) that offers suggestions for collaborative learning and other strategies for getting students involved in classroom discussion. The task is daunting, but not impossible.

Notes

¹The observed courses included A103 "Evolution and Prehistory (Anthropology)"; R220 "Sociology of the Family"; R359 "Sociological Statistics"; B310 "Life Span Development (Psychology)"; B424 "Theories of Personality (Psychology)"; N100 "Contemporary Biology"; N217 "Human Physiology"; A110 "Birth and Death of the Universe (Astronomy)"; C101 "Elementary Chemistry I"; M119 "Brief Survey of Calculus I"; A243 "Nursing: Adaptive Patterns IV: Cognition/Interaction/Coping"; S141 "Introduction to Social Work"; A201 "Introduction to Financial Accounting"; SPV477 "Conflict Management (Organizational Leadership)"; E337 "Classroom Learning Environments (Education)"; and H340 "Education and American Culture (Education)".

²Two of the observed courses (N217 "Human Physiology" and C101 "Elementary Chemistry I") also had a 2-hour "laboratory" component. In these courses only the lecture portion of the class was observed.

³Ten sessions of 14 courses were observed. Due to scheduling difficulties only nine sessions of S141 "Introduction to Social Work" were observed. Observations of R359

“Sociological Statistics” were discontinued after seven sessions when a student in R359 contacted the senior researcher and indicated that the presence of an observer was interfering with her ability to learn.

⁴Copies of the surveys are available upon request from the authors.

⁵The significant differences in direct questions by instructor gender are attributable to the previously mentioned female instructor who accounted for 34.5% of all direct questions.

⁶There were no identifiable patterns in the responses of the small percentage of female students who cited another reason for their participation.

⁷The “civil attention” norm, according to Karp and Yoels (1976), means that students are careful to maintain an *appearance* of paying attention without at the same time showing so much involvement that the situation becomes risky for them. Thus students attend class, do not hold private conversation while the instructor is talking, nod their heads occasionally, and maintain enough attention to laugh at the appropriate junctures, but do not become involved via discussion which could potentially put them at risk.

References

- Auster, C. J., & MacRone, M. (1994). The Classroom as a negotiated social setting: An empirical study of the effects of faculty members' behavior on students' participation. *Teaching Sociology, 22*, 289–300.
- Bell, E. O., & Bradburn, E. M. (1996). A small-group exercise for teaching inequality: An application to gender stratification. *Teaching Sociology, 24*, 212–217.
- Boersma, P. D., Gay, D., Jones, R. A., Morrison, L., & Remick, H. (1981). Sex differences in college student-teacher interactions: Fact or fantasy? *Sex Roles, 7*, 775–784.
- Brooks, V. (1982). Sex differences in student dominance behavior in female and male professors' classrooms. *Sex Roles, 8*, 683–690.
- Constantinople, A., Cornelius, R., & Gray, J. (1988, September/October). The chilly climate: Fact or artifact? *Journal of Higher Education, 59*, 527–550.
- Cornelius, R., Gray, J. M., & Constantinople, A. P. (1990). Student faculty interaction in the college classroom. *Journal of Research and Development in Education, 23*, 189–197.
- Crawford, M., & MacLeod, M. (1990). Gender in the college classroom: An assessment of the “chilly climate” for women. *Sex Roles, 23*, 101–122.
- Education Resources Institute. (1996). *Life after forty*. Washington, DC: The Institute for Higher Education Policy.
- Fassinger, P. A. (1995, January/February). Understanding classroom interaction: Students' and professors' contributions to students' silence. *Journal of Higher Education, 66*, 82–96.
- Fassinger, P. A. (1996). Professors' and students' perceptions of why students participate in class. *Teaching Sociology, 24*, 25–33.
- French, J. (1984). Gender imbalance in the primary classroom: An interactional account. *Education Research, 26*, 127–136.
- Garside, C. (1996). Look who's talking: A comparison of lecture and group discussion teaching strategies in developing critical thinking skills. *Communication Education, 45*, 212–227.
- Graddol, D., & Swann, J. (1989). *Gender voices*. Cambridge, MA: Blackwell.

- Hall, R. M., & Sandler, B. R. (1982). The classroom climate: A chilly one for women? *Project on the status and education of women*. Washington, DC: Association of American Colleges.
- Hamlin, J., & Janssen, S. (1981). Active learning in large introductory courses. *Teaching Sociology*, *15*, 45–54.
- Howard, J. R., Short, L. B., & Clark, S. M. (1996). Student participation in the mixed-age college classroom. *Teaching Sociology*, *24*, 8–24.
- Karp, D. A., & Yoels, W. C. (1976). The college classroom: Some observation on the meaning of student participation. *Sociology and Social Research*, *60*, 421–439.
- Kember, D. & Gow, L. (1994). Orientations to teaching and their effect on the quality of student learning. *Journal of Innovative Higher Education*, *65*, 58–74.
- Longmore, M., & Dunn, D., & Jarboe, G. R. (1996). Learning by doing: Group projects in research methods class. *Teaching Sociology*, *24*, 84–91.
- McBroom, W. H., & Reed, F. W. (1994). An alternative to a traditional lecture course. *Teaching Sociology*, *22*, 328–332.
- McKinney, K., & Graham-Buxton, M. (1993). The use of collaborative learning groups in the large class: Is it possible? *Teaching Sociology*, *21*, 403–408.
- Nunn, C. E. (1996, May/June). Discussion in the college classroom: Triangulating observational and survey results. *Journal of Higher Education*, *67*, 243–266.
- Pearson, J., & West, R. (1991). An initial investigation of the effects of gender on student questions in the classroom: Developing a descriptive base. *Communication Education*, *40*, 22–32.
- Rau, W., & Sherman Heyl, B. (1990). Humanizing the college classroom: Collaborative learning and social organization among students. *Teaching Sociology*, *18*, 141–155.
- Russell, T., & Munby, H. (Eds.). (1992). *Teachers and teaching: From classroom to reflection*. London: Falmer.
- Sernau, S. (1995). Using a collaborative learning problem-solving approach in teaching social stratification. *Teaching Sociology*, *23*, 364–373.
- Smith, D. H. (1996). Developing a more interactive classroom: A continuing odyssey. *Teaching Sociology*, *24*, 64–75.
- Smith, D. H., & Malec, M. A. (1995). Learning students' names in sociology classes: Interactive tactics, who uses them, and when. *Teaching Sociology*, *23*, 280–286.
- Spender, D. (1981). *Invisible women: The schooling scandal*. London: Writers and Readers Publishing Cooperative.
- Statham, A., Richardson, L., & Cook, J. A. (1991). *Gender and university teaching: A negotiated difference*. Albany: SUNY.
- Sternglanz, S. H., & Lyberger-Ficek, S. (1977). Sex differences in student-teacher interaction in the college classroom. *Sex Roles*, *3*, 345–51.
- Thompson, J. (1996). The “between” of teaching sociology: Ways of knowing and teaching. *Teaching Sociology*, *24*, 321–330.
- U.S. Bureau of the Census. (1995). *Statistical abstract of the United States 1995*. Washington, DC: Bureau of the Census.
- Weast, D. (1996). Alternative strategies: The case for critical thinking. *Teaching Sociology*, *24*, 189–194.