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Faculty at Coeducational and Women's Colleges:

How Do Their Teaching Practices Compare?

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### Abstract

Based on data from 11,228 faculty members from 17 women's colleges and 137 private coeducational institutions (from the same Carnegie categories as the women's colleges), this study examines differences in teaching between the two types of institutions. Hierarchical linear modeling is used to estimate the women's college effect on institutional average level of active classroom practice, student-faculty contact, and diverse classroom interactions as well as faculty emphasis on higher-order learning, intellectual skills, practical skills, and personal and social responsibility. Our results suggest that faculty at the women's colleges do each aspect of teaching more than faculty at the coeducational institutions.

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Women's colleges are an integral part of diverse institutional landscape that comprises American higher education. Much of the research indicates that students who attend these colleges and universities are more confident, better prepared for the workforce and graduate school, and are more engaged on campus than their counterparts at comparable coeducational institutions. In her adept observation, Miller-Bernal (2000) argues, "Women's colleges, in short, may offer a subculture that keeps the dominant culture at a distance. They can challenge the existing order by transforming what seems to be natural and offer alternative views of how society may be organized" (p. x). This begs the question: how do women's colleges make such a difference for women students? Many have speculated that the faculty at women's colleges are assumed to be doing things differently, but there is no evidence to date comparing faculty perspectives and practices at single-sex and coeducational institutions. In fact, nearly all of the research is based on student perspectives of the women's college experience. Our study intends to fill this gap.

In order to understand the impact that faculty can have on women in higher education, it is first important to examine status of women in higher education. As of 2009 women comprise 57% of the student body in colleges and universities (Touchton, Musil, & Campbell, 2008). While this does reflect the great progress women have made in higher education, it would be problematic to assume, based on this statistic, that women have achieved full access and/or equity in higher education. Unfortunately, the widely held notion that gender equity in higher education has been achieved is oversimplified and mistakenly presumes that women are

universally successful and men are facing educational crisis (Sax, 2008). Yet, according to Sax (2008) these types of messages,

“tend to convey the status of women and men as a zero-sum game: If one gender is succeeding, the other must be failing. The reality is that both genders face obstacles and challenges in their pursuit of higher education, and we need a deeper understanding of the nuances and implications of the gender gap in college” (¶ 2).

For example, while women represent the majority of students overall, certain sub-groups, such as women from low-income families, are not matriculating at the same rate as their wealthier peers (Touchton, Musil, & Campbell, 2008). Furthermore, women continue to be underrepresented in certain fields, such as science, technology, engineering, and math (Burke & Mattis, 2007). Yet, women’s representation in colleges and universities is only one part of the story.

While 98% of women today are educated at coeducational institutions, the other 2% matriculate to the less than 60 women’s colleges left in the United States. These institutions continue to have, at the core, the education and advancement of women. So might there be something for coeducational institutions to learn from single-sex institutions whose mission is to provide an equitable, empowering place for women to learn? Wolf-Wendel (2003) argues that “the women’s colleges that maintained their mission to educate women students serve as models to other institutions, in terms of their resilience as well as in terms of the outcomes their graduates have achieved” (p.35).

Extensive research has demonstrated the ways in which women’s colleges achieve their mission, creating a distinctly supportive environment for women students. Yet some researchers have also found that there are few, if any, significant differences between single-sex and

coeducational environments (Crosby et al. 1994; Oates & Williamson, 1978; Stoecker & Pascarella; 1991). Given that gender inequities continue to persist in coeducational institutions, and that the research findings on women's colleges are somewhat inconclusive and quite dated at this point, further studies are needed to understand how 21<sup>st</sup> century women's colleges may provide a learning environment for students that differs from comparable coeducational institutions. If so, what might faculty at coeducational institutions learn from women's colleges to better enhance the educational environment of their women students? Given that most of this research examining women's colleges and coeducational institutions is based on student perceptions, an important, yet unexplored, aspect of this area of inquiry is how faculty members' perceptions and practices at both types of institutions compare.

#### *Women's Colleges: Student Experiences and Outcomes*

In the early 1970s, researchers and educators began to pay closer attention to women's colleges. Numerous studies were conducted to determine if attending a women's college (as opposed to a coeducational institution) made a difference for women students. The research focused on various post-collegiate student outcomes, such as levels and types of graduate degrees, career-salience, and professional achievement (Rice & Hemmings, 1988; Riordan, 1994; Tidball, 1973; Tidball & Kistiakowsky, 1976). A number of studies also investigated whether the positive attainments of graduates of women's colleges were due to a recruitment effect, rather than the environmental aspects of these institutions (Stoecker & Pascarella, 1991) and if the selectivity of the women's colleges influenced student outcomes (Crosby et al., 1994; Lentz, 1980; Oates & Williamson, 1978, Tidball, 1980). Findings in this area of the literature are mixed, although more seem to support the continuing advantages of attending women's colleges.

The next wave of studies on women's colleges concentrated on the student experiences during college. One particular study (Miller-Bernal, 1993) found that students at women's colleges reported "having more women faculty as role models, participating more in classes, holding more leadership positions in campus activities, perceiving college personnel to be more concerned with their needs, and taking more courses focusing on women" (p.48). Other researchers found that students were more likely to perceive that their institution cared about them and the importance of civic involvement (Smith, Wolf, & Morrison, 1995).

Furthermore, studies show that attending a women's college positively affects students' academic ability, intellectual self-confidence, and their desire to influence social conditions (Kim, 2001, 2002; Kim & Alvarez, 1995). Most graduates of women's colleges (over 80%) report that they benefited very much from a high quality, teaching-oriented faculty and agreed that faculty were interested in students personally as well as academically (Women's College Coalition, 2008). More recently, researchers have compared student engagement at women's-only colleges and coeducational institutions. Using data from the National Survey of Student Engagement (NSSE), Kinzie, Thomas, Palmer, Umbach and Kuh (2007) found that women's college students reported higher levels of academic challenge, greater gains in college, and were also more engaged in effective educational practices, such as active and collaborative learning, student-faculty interaction, and diversity-related activities, than women in coeducational environments. While the results of the study explain differences in students self-reported perceptions and gains, faculty practices and perceptions of similar measures have yet to be compared between single-sex and coeducational environments.

*Women's College Faculty: More Evidence Needed*

As aforementioned, much of the research on women's colleges seems to indicate the instructional environment and faculty practices as women's colleges are distinct. But, there is no direct evidence from the faculty themselves illustrating these differences. A few studies have alluded to differences in faculty that provide a springboard for more closely examining both single-sex and coeducational environments.

In their study of 1,729 students at 23 coeducational institutions Whitt, Edison, Pascarella, Nora, and Terenzini (1999) found that a substantial portion of the women students had experienced a chilly climate in college. For example, over 40% reported having "observed discriminatory words, behaviors, or gestures directed toward female students" and 68.3% believed that more than a few "of the students in this college are prejudiced against women" (p.166). In addition, 30.2% think instructors did not "treat all students the same whether the student is male or female" (p.166). These results indicate that women who have achieved access to higher education are not necessarily receiving an equitable educational experience-in part due to the treatment they receive from faculty. Given the need to continually work toward gender equity, it is important to further examine the role that faculty play in women's educational experiences in both single-sex and coeducational environments.

Another study by Wolf-Wendel (2000) examined faculty perspectives as part of a case study analysis to understand what different types of institutions are doing to support their women students. She selected a combination of five single-sex and coeducational institutions based on their ability to award degrees to African American, White, and Latina women who went on to receive doctorates or who were listed in three editions of *Who's Who* books. Her examination included interviews with faculty, students, and administrators along with observations and

document analysis. Her analysis revealed seven particular traits that other faculty and administrators may follow to help women students succeed:

1. Having high academic expectations
2. Having a clear sense of mission and history
3. Providing positive role models
4. Creating a caring, supportive environment
5. Providing opportunities for leadership
6. Providing opportunities to learn about oneself
7. Creating a supportive and high-achieving peer culture of people like oneself
8. Connecting students to their communities (p.325).

Wolf-Wendel's in-depth qualitative approach of five institutions led to a deeper understanding of how faculty and administrators can better serve women students. While the selection criteria she used to identify case study sites is appropriate for understanding what institutions are doing right for women, it does not allow for a broader view of how faculty perceptions and practices at women's college and coeducation institutions compare. The current study will address this area of inquiry.

The differences in faculty's practices in the classroom may unintentionally differ in single-sex and coeducational environments. A study by Canada and Pringle (1995) highlights an example of how faculty may, even without realizing it, change their behaviors toward students when male students are added to a formerly all-female environment. In their study of a women's college that transitioned into a coeducational institution over the course of five years, Canada and Pringle found that in a single-sex classroom, male and female professors initiated similar numbers of interactions with students. However, in the mixed-sex environment female professors initiated more, and male professors initiated fewer, interactions but overall, professor-initiated interactions went down in the mixed-sex environment. In addition, their results indicated that when the percentage of male students was high, women in the mixed-sex classroom were less likely to "enter deliberately into a sustained conversation with the professor" (p. 180) than in a

single-sex classroom. Canada and Pringle concluded that “not only are female students at women’s colleges exposed to more female faculty members than are their counterparts at mixed-sex college, but they are also privy to a different type of female role modeling in the classroom” (p.178). This study serves as a basis for comparing faculty perceptions and practices at single-sex and coeducational environments and suggests that differences found between the types of institutions may be attributable to the characteristics (e.g. a greater proportion of females) of the faculty.

### *Study Purpose*

Much of the research reflects students’ belief that faculty play a major role in creating conditions that foster the positive outcomes and learning environments at women’s college, yet very little has been done to collect information from faculty about their practices and test whether women’s college faculty differ from their colleagues at comparable co-educational institutions. Faculty members are an untapped resource in the investigation of differences between these two types of institutions and this study aims to open up that line of inquiry. In particular, the purpose of this study is to determine if there are differences in teaching, such as classroom emphasis on active classroom practices, student-faculty contact, and personal and social responsibility, between women’s colleges and coeducation institutions. Further, we determine differences in the characteristics between faculty members at the two types of institutions and examine whether those differences in characteristics explain the differences in faculty teaching practices.

## Methods

### *Data and Sample*

The data for this study come from the 2003-2007 administrations of the Faculty Survey of Student Engagement (FSSE), an annual survey that complements the National Survey of Student Engagement by collecting responses about faculty members' expectations for students, their observations of student behaviors, how they structure classroom activities and course assignments to encourage certain student behaviors and outcomes, and how they spend their time on professional activities (e.g., teaching and research). After deletion for missing data, the study sample contained 11,228 faculty respondents from 154 private U.S. baccalaureate-granting colleges and universities, which included 17 women's colleges (768 faculty respondents) and 137 coeducational institutions (10,460 faculty respondents) that administered the course-based option of FSSE at least once from 2003 to 2007. For more appropriate comparison, we restricted the sample of faculty members at coeducational institutions to those at private institutions (all women's colleges are private) that were in the same 2005 Carnegie Basic Classification categories (baccalaureate arts and science and master's institutions) as the women's colleges.

### *Dependent Measures*

In their study of women students at the two types of institutions, Kinzie et al. (2007) relied on NSSE data to examine differences in student engagement, campus climate, and self-reported gains. In our study, we rely on available FSSE measures that parallel those used by Kinzie et al. and are most closely connected to faculty teaching practices. In particular, we examined active classroom practices, the amount of in-class diverse interactions, and the amount of student-faculty contact. We also examined the amount faculty emphasize higher-order thinking, practical skills, intellectual skills, and personal and social responsibility (see Appendix

A for scale reliabilities, means, standard deviations, and component items). The internal consistency of these scales ranged from adequate to good (alphas of 0.63 to 0.87).

### *Analyses*

Due to the nested nature of our data and our goal of estimating the effect of women's colleges (a characteristic of the institutions), we relied on hierarchical linear modeling (HLM) (Raudenbush & Bryk, 2002). The benefit of using HLM is that it allowed us to partition the variance attributable to the individual and the variance attributable to the institution, allowing us to test whether a institutional characteristic (designation as a women's college) affected average teaching practices at institutions.

For each dependent variable, we allowed the intercept to vary and included a dummy-coded variable at level 2 (the institutional level) to represent women's colleges. The dependent measures were standardized prior to running the models. Thus, the coefficient for the women's college variable can be interpreted as an effect size representing the standardized mean difference between women's colleges and coeducational institutions. Two different models were run, one with only the women's college variable and the other controlling for both individual and institutional characteristics. At the individual level, we included controls for gender, race and ethnicity, disciplinary area, and employment status. Faculty rank and course division (upper or lower division) were included in preliminary models, but we found no differences by these measures. So, to avoid over specification, they were removed. At the institution level, we controlled for institutional location, and the proportion of full-time students. Again, early models included Carnegie classification and enrollment size, but they were removed because they did not have statistically significant effects on the results.

### *Limitations*

The primary limitations of this study focus on institutions' choice to participate in FSSE and faculty members' choice regarding the course about which they responded. The limitations will be treated at length in the paper. Together the limitations suggest caution should temper attempts to generalize of the study's findings beyond the institutions and courses covered in the study.

## Results

As is quite common in studies of college students and faculty, the amount of variance in the dependent measures attributable to the institutions is generally small, ranging from 2.6% for faculty emphasis on higher-order thinking to 13.3% for diverse classroom interactions, with the remainder falling between 3% and 9%. While this suggests that faculty and course characteristics are the predominant factors influencing the dependent measures, the amount of institutional variation was sufficient to warrant modeling institution-level effects.

Table 1 contains the effect size estimates from our analyses. Two different effect sizes are reported. The first is the effect size estimate without any control variables introduced. The latter is the effect size estimate after adjusting for the effects of gender, race, employment status, and disciplinary area (level 1) as well as region and the percentage of fulltime students (level 2).

The effect sizes without controls ranged from a near trivial 0.09 ( $p < 0.05$ ) for emphasis on higher-order learning to a large 0.51 ( $p < 0.001$ ) for diverse interactions. For three of the seven measures, the introduction of the control variables rendered the effect size small enough that we cannot be confident that it is different than zero. On the other four measures, however, there is a significant, non-trivial effect for women's colleges even after the introduction of control variables. Faculty at women's colleges had, on average, nearly a third of a standard deviation more diverse interactions happening in their courses than faculty at coeducational

institutions (effect size with controls = 0.30,  $p < 0.01$ ). The average student-faculty contact reported by faculty at women's colleges was over a tenth of a standard deviation greater than their colleagues at coeducational institutions (effect size with controls = 0.13,  $p < 0.01$ ). Faculty at women's colleges averaged a higher level of emphasis on intellectual skills than their colleagues at coeducational institutions (effect size with controls = 0.16,  $p < 0.01$ ). And, faculty emphasis on practical skills was slightly higher at women's colleges than at coeducational colleges and universities (effect size with controls = 0.09,  $p < 0.10$ ).

That the effect sizes without controls are all larger than the effect sizes with controls suggests that some of the observed differences between faculty teaching practices at women's colleges and similar coeducational institutions are attributable to differences between the faculty at those institutions and differences between the groups of institutions other than women's college status.

Table 2 illustrates how faculty characteristics are distributed differently at the two types of institutions. At women's colleges 7 in 10 faculty respondents (70%) were women, while only 47% of the faculty respondents at coeducational institutions were women. This large difference in the gender breakdown of faculty members explains much of the reduction of the women's college effect because women score significantly higher than men on all seven measures of teaching in our study.

Differences in the disciplinary breakdown of faculty also likely contribute to the reduction of the women's college effect, though to a lesser degree than gender. Arts and humanities and education faculty are slightly overrepresented at women's colleges and business, engineering, and faculty from other fields are slightly underrepresented. For example, faculty from education tend to score above the majority of their colleagues in other fields on all of the

measures, while the results are more mixed for arts and humanities, business, and other faculty. Engineering faculty tend to score low compared to other faculty.

The difference in the percentage of part-time faculty members between the two types of institutions likely only contributes to the reduction of the women's college effect for emphasis on higher-order learning because that is the only model in which part-time faculty score significantly higher than part-timers. In fact, for active classroom practices, emphasis on practical skills and emphasis on personal and social responsibility, part-timers actually score significantly higher than full-timers.

Though racial/ethnic differences are apparent in the models, their existence does not likely influence the reduction in the women's college effect because there are no significant differences in the distribution of faculty by race/ethnicity across the two types of institutions.

Finally, the percentage of full-time students, a level two indicator, plays an interesting role in some of the models. Perhaps counterintuitively, the percentage of full-timers had a significant negative affect on all the dependent measures except for student-faculty contact where the effect was close to zero. This was actually a net benefit for women's colleges because the average women's college in this sample had 9% less full-time students than the average coeducational institution (79% and 88%, respectively). Consequently, percentage of full-time students likely also contributed to the reduction of the women's college effect from the model with no controls to the models with controls. There were no differences in the distribution of the two types of institutions by region, the other level-2 control variable.

### Discussion and Implications

The results of this study add to the body of research suggesting that women who attend women's colleges are advantaged in terms of the kinds of education offered at those institutions

compared to similar coeducational institutions even after controlling for institutional and faculty characteristics. In particular, we found that faculty at women's colleges have significantly greater contact with students, diverse classroom interactions, and emphasis on intellectual skills. These findings are consistent with past research showing similar results based on student responses (Kim, 2002; Kinzie et al., 2007).

After controls, we did not find significant differences between women's colleges and coeducational institutions on faculty members' active classroom practices or their emphasis on higher-order thinking and personal and social responsibility. While these findings seem inconsistent with prior research (Kim, 2001; Kinzie et al., 2007), faculty at women's colleges did score higher on all of these measures prior to controls. The difference in the size of the effects suggests that institutional and faculty characteristics explain some of the differences in faculty practices. What is important to recognize is that the effect size *without* controls reflects the difference between instructional practices in a typical women's college classroom and a typical coeducational classroom. For example, students at women's colleges are more likely to encounter active classroom practices, in part, because research shows that women faculty—a greater proportion of whom are at women's colleges—use these practices more than their male colleagues (Kuh, Nelson Laird, & Umbach, 2004). So, while it is valuable to understand the effects with controls, the effect size without controls represents something equally important: the instructional differences experienced by students on the two types of campuses.

A lesson for coeducational institutions that stems from this study and others (e.g. Kuh, Nelson Laird, & Umbach, 2004), is that the make-up of a campus's faculty currently matters in terms of improving the quality of undergraduate education. So, for institutions interested in improving instructional quality, increasing the percentage of women and faculty of color will

very likely work. Alternatively, institutions may want to implement teaching improvement programs that work to close the gender and racial/ethnic gaps in teaching practices.

It is also important to note that it is likely that the differences found between women students at women's colleges and similar coeducational institutions are not likely solely explained by instructional differences on the two types of campuses. Co-curricular experiences likely play a role as well. In other words, though we found positive effects for women's colleges in our study of faculty, this does not suggest that faculty practices are the only reason for the differences between students seen in other studies (e.g., Kinzie et al., 2007).

This study was a first step in the exploration of the instructional context of women's colleges. However, there is much left to explore. While our study establishes that there are differences between women's colleges and coeducational institutions, it does not fully explain those differences. Future research in this area could examine, both qualitatively and quantitatively, the defining elements of the instructional context or culture at women's colleges. For example, how does the emphasis on women's education and advancement influence teaching practices? Additional work could also unpack faculty differences at the two types of institutions. Do faculty members' teaching philosophies differ? Also, are there differences between women faculty at the two types of institutions? Are there differences between the men faculty? Clearly, more research, including research on faculty, is needed to understand the distinctiveness of women's colleges and the implications of those differences for all of higher education.

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Appendix A  
Dependent Variables and Component Items

Scales and Items	Mean	SD
Active classroom practices <sup>a</sup> ( $\alpha = 0.73$ )	2.90	1.15
Teacher-student shared responsibility (seminar, discussion, etc.)		
Small group activities		
Student presentations		
In-class writing		
Lecture <sup>b</sup>		
Student-faculty contact <sup>c</sup> ( $\alpha = 0.76$ )	3.05	0.90
Occasionally use e-mail to communicate with you		
Occasionally discuss grades or assignments with you		
At least once, talk about career plans with you		
Diverse interactions <sup>d</sup> ( $\alpha = 0.87$ )	2.21	0.88
Have serious conversations in your course with students of a different race or ethnicity than their own		
Have serious conversations in your course with students who are very different from them in terms of their religious beliefs, political opinions, or personal views		
Emphasis on Higher-Order Learning <sup>e</sup> ( $\alpha = .73$ )	3.26	0.61
Analyzing the basic elements of an idea, experience, or theory, such as examining a particular case or situation in depth and considering its components		
Synthesizing and organizing ideas, information, or experiences into new, more complex interpretations and relationships		
Making judgments about the value of information, arguments, or methods, such as examining how others gathered and interpreted data and assessing the soundness of their conclusions		
Applying theories or concepts to practical problems or in new situations		

Notes: Except where indicated otherwise, faculty responded to items on a scale where 1 = Very little, 2 = Some, 3 = Quite a bit, and 4 = Very much. All scale scores are means of faculty responses to the component items.

<sup>a</sup> Faculty were asked to identify the percentage of class time devoted to each activity (1 = 0%, 2 = 1-9%, 3 = 10-19%, 4 = 20-29%, 5 = 30-39%, 6 = 40-49%, 7 = 50-74%, 8 = 75% or more).

<sup>b</sup> Item reverse coded for scale.

<sup>c</sup> Faculty were asked what percent of students in their course did each item (1 = none, 2 = 1-24%, 3 = 25-49%, 4 = 50-74%, 5 = 75% or higher).

<sup>d</sup> Faculty were asked how often students in their course did each item (1 = Never, 2 = Sometimes, 3 = Often, 4 = Very often).

<sup>e</sup> Faculty were asked how much their course emphasized each item.

Appendix A (cont.)  
Dependent Variables and Component Items

Scales and Items	Mean	SD
Emphasis on Intellectual Skills <sup>e</sup> ( $\alpha= 0.63$ )	3.10	0.58
Writing clearly and effectively		
Speaking clearly and effectively		
Thinking critically and analytically		
Learning effectively on their own		
Emphasis on Practical Skills <sup>e</sup> ( $\alpha= 0.65$ )	2.67	0.70
Using computing and information technology		
Working effectively with others		
Solving complex real-world problems		
Acquiring job or work-related knowledge and skills		
Emphasis on Individual and Social Responsibility <sup>e</sup> ( $\alpha= 0.80$ )	2.32	0.84
Understanding themselves		
Understanding people of other racial and ethnic backgrounds		
Developing a personal code of values and ethics		
Developing a deepened sense of spirituality		

Notes: Except where indicated otherwise, faculty responded to items on a scale where 1 = Very little, 2 = Some, 3 = Quite a bit, and 4 = Very much. All scale scores are means of faculty responses to the component items.

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<sup>e</sup> Faculty were asked how much their course emphasized each item.

Table 1  
*Effect Sizes Comparing Faculty Teaching at Women's Colleges and Coeducational Institutions*  
*(n = 11,228)*

Dependent Variable	Effect size without controls	Effect size with controls
Active classroom practices	0.24**	0.08
Student-faculty contact	0.21**	0.13**
Diverse interactions	0.51***	0.30**
Emphasis on higher-order thinking	0.09*	0.02
Emphasis on intellectual skills	0.24***	0.16**
Emphasis on practical skills	0.15†	0.09†
Emphasis on personal and social responsibility	0.16†	0.00

†  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Note: HLM used to calculate effect sizes

Table 2.  
*Distributions of Faculty at Women's Colleges and Coeducational Institutions by Faculty Characteristics*

Faculty Characteristics		Women's Colleges (n = 768)	Coeducational Institutions (n = 10,460)	Sig. <sup>a</sup>
Gender	Women	70%	47%	***
	Men	30%	53%	***
Race/ethnicity	Asian/Pacific Islander	2%	3%	
	Black/African American	3%	2%	
	White	89%	88%	
	Hispanic/Latino	2%	2%	
	Other	4%	4%	
	Employment status	Full-time	90%	78%
	Part-time	10%	22%	***
Disciplinary area	Arts and humanities	37%	33%	*
	Biological science	7%	6%	
	Business	6%	9%	***
	Education	10%	8%	†
	Engineering	0%	1%	*
	Physical science	11%	11%	
	Professional fields	6%	6%	
	Social science	15%	14%	
	Other	8%	12%	**

† p < 0.10, \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001

<sup>a</sup> Significance taken from a Pearson chi-square test