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## **Cohort Changes in the Sociodemographic Determinants of Gender Egalitarianism**

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# **COHORT CHANGES IN THE SOCIODEMOGRAPHIC DETERMINANTS OF GENDER EGALITARIANISM**

## **Abstract**

Theories offer competing perspectives on how gender egalitarian values spread through the population. First, a structural position theory focuses on increases in the proportion of women with high education, jobs with good pay, commitment to careers outside the family, and direct interests in gender equality. Second, a value shift theory suggests that gender norms change with social and economic development among women and men in all positions – traditional and non-traditional alike. Third, a diffusion theory suggests that structural change leads to adoption of new ideas and values supportive of gender equality by non-traditional and innovative groups in society, but that the new ideas later diffuse to other groups through cultural processes of modeling and imitation. This study tests these arguments by using the General Social Survey from 1977 to 2006 and comparing the determinants of gender egalitarianism across 88 cohorts born from 1900 to 1987. Multilevel models support the diffusion theory by demonstrating that the effects of education and other determinants first strengthen from early adoption of gender egalitarianism by innovative groups and then weaken as other groups come to accept the same views. Evidence of a sequence of divergence and convergence in views highlights the contribution of both structural position and value change in the diffusion process.

## **COHORT CHANGES IN THE SOCIODEMOGRAPHIC DETERMINANTS OF GENDER EGALITARIANISM**

Gender egalitarian values, attitudes, and beliefs – gender egalitarianism for short – contribute to progress toward women’s freedom and independence in several areas of social life: fertility (Rindfuss, Brewster, and Kavee 1996), work choices (Clark, Ramsbey, and Adler 1991), job segregation (Charles and Bradley 2002), welfare spending (Bolzendahl and Brooks 2007), politics and voting (Brooks 2000), and family relationships (Amato and Booth 1995; Kaufman 2000). In fact, much progress has been made in moving toward the goal of widespread support for gender equality (Cherlin and Walters 1981; Jackson 1998; Thornton and Young-DeMarco 2001). In the United States, the emergence of new norms during the 1960s and 1970s among second-wave feminists prefigured wider adoption of gender egalitarianism (Mason and Lu 1988).

Common explanations of the change tend to adopt one of the classical and competing perspectives of structure or culture. However, a third, perspective highlights the interaction of structure and culture in determining individual and temporal variation in gender egalitarianism. It suggests that structural change provides the impetus for adoption of new ideas and values supportive of gender equality by non-traditional and innovative groups in society, but that the new ideas diffuse to other groups through cultural processes of modeling and imitation. The arguments predicts that structural and cultural influences first widen and then narrow group disparities in gender egalitarianism, but the hypothesis has been subject to few if any tests.

### **Structural Position**

A structural position theory posits that changes in gender egalitarianism occur through

economic transformations that increase the proportion of women with high education, jobs with good-paying jobs, and commitment to careers outside the family. A shift from industrial economies to post-industrial service and knowledge economies increases the number of jobs traditionally filled by women and the demand of employers for female workers (Huber 1990). As the number of employed women increases to meet this demand, the labor force becomes more gender integrated. Along with a larger female labor force, educational opportunities for women increase, and professional and managerial jobs once filled by men slowly open up to women. Demographic changes reinforce economic and educational changes (Brooks and Bolzendahl 2004). Trends toward later marriage, fewer children, and more divorce strengthen the attraction to careers and goals outside the family, the need of women for independent income, and the opportunity for middle-aged mothers to return to the labor force (Oppenheimer 1976). In regard to gender egalitarianism, the argument suggests that the greater the proportion of the female population in the labor force and with high education, good-paying jobs, and limited family duties, the greater the gender egalitarianism.

An interest-based mechanism underlies arguments about the economic stake that non-traditional women have in gender equality (Bolzendahl and Myers 2004; Huber and Spitze 1981; Plutzer 1988). Women with high education and special job skills suffer most from gender discrimination in the labor force and feel most deprived by lack of opportunities. Because these women gain the most from equal treatment, they tend to have more egalitarian attitudes. Conversely, women with more traditional commitments to family and children will maintain or perhaps even strengthen their adherence to traditional attitudes (Glass 1992; Kane and Sanchez 1994) and make gender-based political cleavages more salient (Plutzer 1988). Women in homemaking and mothering roles who gain little economically from gender equality have fewer

incentives to adopt new attitudes. As Baxter and Kane (1995) argue, women's dependence on men at both the individual and societal levels draws them toward less egalitarian views.

Related mechanisms affect egalitarian attitudes among men – although not to the same extent. In some ways, their interests lie in gender inequality that reinforces their advantage in opportunities, jobs, and incomes. At the same time, however, husbands and family members benefit economically from more egalitarian treatment and higher pay for working spouses, children, and relatives (Morgan and Walker 1983; Warner 1991; Zuo and Tang 2000). Like their wives and daughters, men may become more liberal in their gender attitudes because gender equality favors the financial interest of the household (Smith 1985). Studies thus find that men have stronger egalitarian attitudes when they are part of a dual-earning couple (Cha and Thébaud 2009; Wilkie 1993). In addition, men may respond negatively to obvious inequities and positively to the benefits of equal opportunity at work. Both may increase gender egalitarianism (Bolzendahl and Myers 2004; Davis and Robinson 1991; Kane and Sanchez 1994).

The interest and exposure versions of the structural argument treat entrance of women into new education, work, and family roles as preceding changes in attitudes. Attitudes in large part follow from behavior rather than the other way around (Oppenheimer 1976): Those in positions to benefit most from equality will adopt egalitarian attitudes more quickly than those in more traditional positions. For example, Rindfuss, Brewster, and Kavee (1996) find that entrance into the labor force of mothers with young children occurred during times of normative opposition to the practice and that attitudinal change followed the behavioral change. Much of the change in gender egalitarianism accordingly comes from cohort replacement (Brooks and Bolzendahl 2004; Brewster and Padavic 2000; Firebaugh 1992). Since the positions and roles of many in older cohorts do not change, their attitudes likewise remain traditional throughout their

lives. The replacement of older cohorts by younger cohorts who are more affected by changes in opportunities for women leads to greater prevalence of gender egalitarianism.

Overall, then, the theory implies that the effects of education, work, job, and family characteristics are largely invariant. With invariant relationships, changes in population composition across cohorts will most influence gender egalitarianism.

### **Value Shift**

A value shift theory suggests that gender norms develop, at least in part, independently of social structural position. Women and men in all positions of a society – those in traditional and non-traditional roles alike – come to adopt more egalitarian attitudes with social and economic development. Contextual changes do not erase attitudinal differences across positions. Like the structural argument, the value shift argument recognizes a persistent relationship between social position and gender egalitarianism. However, contextual changes raise egalitarianism similarly across social positions and groups so as to maintain differences but at higher levels of support.

Consistent with these claims, within-nation studies find that gender egalitarianism has risen among most groups. Thornton and Young-DeMarco (2001) demonstrate a pervasive trend toward endorsement of gender equality in the United States from the 1960s to the 1990s. Rindfuss, Brewster, and Kavee (1996) similarly find that attitudes supportive of working mothers grew across all groups rather than from the changing education, work, and age composition of the population. Support for gender equality grew among men as well as women (Bolzendahl and Myers 2004) and among active Protestants with conservative religious views as well as less religious and liberal groups (Petersen and Donnerwerth 1998). Comparing across diverse high-income nations, Treas and Widmer (2000) find general consensus in gender attitudes, and Scott,

Alwin, and Braun (1996) find some similarities in liberalization of attitudes.

Since the change posited by the theory is so pervasive, the argument must go beyond claims about interests and exposure of those in non-traditional positions. It must explain why those with little direct interest in gender equality adopt egalitarian attitudes as much as those with direct interest. In other words, it must explain the potential for egalitarian attitudes to grow faster than – and thereby promote – non-traditional behavior. Accordingly, Inglehart and Norris (2003) argue that pervasive cultural shifts follow from societal modernization and that gender egalitarianism is a key component of these cultural shifts (see also Inglehart and Baker 2000). Economic change and material security undermine traditional values, family authority, and communal obligations and represent first steps toward changing views of women's roles. Further liberalization of views on gender equality comes from post-industrial values that foster self-expression, quality of life goals, and individualism. In arguing for the inevitable movement toward gender equality in modern societies, Jackson (1998) reaches conclusions that fit with the value shift theory. He says that the shift of economic and political power from households to business and government institutions in modern societies promotes gender equality. The shift ruptures traditional boundaries between men's and women's roles and weakens the incentives needed to maintain men's power over women. Given the pervasiveness of the change, all groups come to respond with stronger support for gender equality.

These arguments treat interests more broadly than the structural position theory (Inglehart 1989). Economic changes toward industrialization and post-industrialism shift motives for action from the search for material needs and the reliance on traditional forms of social organization to the search for self-expression, innovation, and justice. Since income grows broadly across a society with economic growth (despite the persistence of inequality), such

changes broadly affect norms and values. Interests thus remain a key source of egalitarian values but relate to the larger economic context rather than the particular positions of individuals. For example, laws and regulations relating to equal opportunity, affirmative action, equal pay, maternity leave, and reproductive rights promote the widespread adoption of gender egalitarian views in a society (Alwin, Braun, and Scott 1992; Crompton and Harris 1997; Norris 1987; Inglehart and Norris 2003:7).

The value shift theory leads to a prediction that contrasts with that of the structural positional theory: Egalitarian attitudes similarly increase across gender, work, age, education, income, and family groups. Individual characteristics of women and men also affect attitudes and values, with women in non-traditional positions having the most egalitarian views. Even so, economic, cultural, and political-legal changes raise gender egalitarianism among all groups.

### **Patterns of Diffusion**

A diffusion theory argues for the combined influence of structural position and value change on gender egalitarianism. The key is that contextual changes not only increase the level of gender egalitarianism but also affect social groups differently. The early stages of change most affect the attitudes of educated and working women, those in non-traditional positions and with the strongest interests in gender equality. Reflecting a form of backlash, traditional attitudes among other groups may harden in response. Change thus tends to polarize initially: It widens the gap between non-traditional and traditional women and strengthens the effects of individual characteristics on gender egalitarianism. At later stages of gender change, however, egalitarianism tends to diffuse vertically from high status, urban, and non-traditional innovators to lower status, less innovative, and more traditional groups (Poole and Zeigler 1981). As those

with lower levels of education, weaker ties to the labor force, less prestigious jobs, and larger families come to adopt attitudes similar to more innovative groups, differences in gender egalitarianism tend to decline or become less polarized.

The argument thus predicts interaction between 1) the characteristics of individuals that the structural position argument emphasizes, and 2) the pervasive contextual change that the value shift argument emphasizes. This interaction takes a non-linear form. The strength of the determinants first increases as innovative groups with strong interests in gender equality adopt egalitarian views and then decreases as these views diffuse to larger parts of the population with less direct interest in equality. In short, value divergence across groups is followed by value convergence.

Consistent with the argument, Mason and Lu (1988) find that gender egalitarianism grew similarly among most sociodemographic groups in the United States from 1977 to 1985, but that college educated women, who already had high gender egalitarianism in both periods, were an exception. The process of catching-up reflects a narrowing of formerly wide attitude differentials and the spread of new values to less innovative groups. Bolzendahl and Myers (2004) find that decreased polarization has occurred in attitudes toward women's participation in the public sphere and that, as most everyone comes to accept gender egalitarian goals, individual determinants have declining influence. In a study of nine EU nations, Banaszak and Plutzer (1993a) find that highly educated women, who already have egalitarian attitudes, show less change with economic and social development than women with low education.

These changes in relationships fit patterns of diffusion. Montgomery and Casterline (1993) say that diffusion occurs when the adoption of innovative ideas and behaviors by some individuals influences the likelihood of adoption by others. Diffusion often first occurs

horizontally among higher socioeconomic groups, as these groups tend to be most innovative and have communication networks across structurally equivalent positions (Rogers 2003; Strang and Meyer 1993). Vertical diffusion often follows, as lower ranking groups adopt the practices and ideas of more prestigious groups (Fischer 1978; Strang and Soule 1998; Wejnert 2002). Interests play a key role in the diffusion theory, but other mechanisms of action are important as well. Innovative women with more education adopt egalitarianism in part because it is in their interest, while other groups follow through processes of imitation and modeling highlighted by classical sociological arguments about social inequality and cultural distinction (Weber 1958; Simmel [1904] 1971; Veblen ([1899] 1992; Bourdieu 1994). As a result, the early adoption of gender egalitarianism by more advantaged women (and men to a lesser degree) in part involves innovation that strengthens class differences, but the vertical diffusion of the values to other groups of women (and men) in part reduces class differences.

The diffusion theory also gives special attention to divergence in change across genders. Women who benefit more from gender equality will more quickly adopt new attitudes than men (Ciabattari 2001). The diffusion of gender egalitarianism may occur for men but not to the same extent as for women. Primarily for women and secondarily for men, values supporting gender equality spread from the highly educated with good jobs and smaller families to the less educated with poor jobs and larger families.

## **Hypotheses**

The hypotheses focus neither on overall changes in support for gender egalitarianism nor on group differences in attitudes – topics that have been well studied. Rather, they focus on the combination of the two topics, or whether groups change their attitudes at different rates and

produce divergence in views followed by convergence.

H1: Changes in the population composition – the distribution of individual characteristics such as education, employment, occupation, income, marital status, family size, and religiosity – account for the trends in gender egalitarianism. The hypothesis implies that differences in gender egalitarianism across groups in traditional and non-traditional positions are maintained over time, but that the size of groups in traditional positions declines relative to the size of groups non-traditional positions.

H2: Changes in gender egalitarianism occur similarly across all groups. The hypothesis implies that differences in views across groups in traditional and non-traditional positions persist but that egalitarianism of all groups rises over time.

H3: Changes first affect innovative, high status groups, thus strengthening the effects of sociodemographic determinants of gender egalitarianism and creating divergence in views, but the changes later affect other groups, thus weakening the effects of the sociodemographic determinants and creating convergence in views. The hypothesis also implies that the changes occur more quickly and strongly for women than men.

Although most studies of change compare gender egalitarianism across survey years, a cohort-based approach has advantages in testing the hypotheses. Because generations are prone to adopt new values during young adulthood that persist through older ages (Brooks and Bolzendahl 2004), patterns of adoption of gender egalitarianism may show more clearly in comparison across cohorts than across years that mix varied cohorts. Studies show that cohort replacement plays an important role in changing gender egalitarianism (Firebaugh 1992; Inglehart and Norris 2003; Schnittker, Freese, and Powell 2003), and this role may appear clearly in the changing effects of sociodemographic determinants. Tests of the hypotheses thus come

from comparing the influence of structural position, value shift, and diffusion across persons born in different periods of the twentieth century. Such an approach both extends previous work on cohort change in gender egalitarianism and defines highly falsifiable hypotheses.

Despite considerable research on the topic, present knowledge remains limited. Change studies have analyzed consecutive cross-sectional surveys in the United States, first for periods through the 1970s (Mason Czajka, and Arber 1976; Spitze and Huber 1980), then through the 1980s (Mason and Lu 1988; Rindfuss, Brewster, and Kavee 1996), and more recently through the 1990s (Bolzendahl and Myers 2004; Brewster and Padavic 2000). None have used data through 2006 or examined changes across cohorts that fully test of the hypotheses. More is needed to understand the mechanisms behind the changing distribution of gender egalitarianism.

## **Methods**

Testing the hypotheses requires data on gender egalitarianism and its individual determinants for a period of decades and for cohorts born over an even longer period. The General Social Surveys (GSS), a set of consecutive cross-sectional surveys based on full probability samples of the non-institutional, English-speaking adult population in the United States (Davis, Smith, and Marsden 2007; NORC 2008), meet these criteria. There are four identical gender egalitarian items used in 15 surveys, the first in 1977 and the last in 2006. The 30-year time span means the surveys contain older cohorts born before 1900 and younger cohorts born after 1980. The range thus includes cohorts entering adulthood during periods of widely varying degrees of gender inequality and acceptance of gender egalitarian norms. Pooling the data for the surveys and cohorts yields 20,985 cases with data on all the relevant variables.

*Measures.* The gender equality items available for 15 surveys from 1977 to 2006 ask

about four statements: 1) it is much better for everyone involved if the man is the achiever outside the home and the woman takes care of the home and family (strongly agree, agree, disagree, strongly disagree); 2) a working mother can establish just as warm and secure a relationship with her children as a mother who does not work (strongly disagree, disagree, agree, strongly agree); 3) a preschool child is likely to suffer if his or her mother works (strongly agree, agree, disagree, strongly disagree); and 4) most men are better suited emotionally for politics than are women (agree, disagree).<sup>1</sup> Pooled across all available years, these four items define a single dimension of gender egalitarianism (GE) in an exploratory factor analysis and form a scale with an alpha reliability of .712.

Cohort measures single years of birth, excepting the first category of 1900 or earlier and the last category of 1987 or later. As such, it can reflect time-dependent value changes and diffusion processes. The models treat the effects of cohort as a quadratic. Based on the BIC statistic, two quadratic cohort terms do nearly as well as a set of 9 dummy variables for 10-year cohorts and better than 16 dummy variables for 5-year cohorts. They also make for fewer interaction terms needed to test the hypotheses. Thirteen dummy variables for year supplement the cohort variables. Following Brooks and Bolzendahl (2004), measures of life course statuses are used to represent the effects of age while avoiding redundancy with cohort and year.<sup>2</sup>

For the sociodemographic variables, race takes the form of two dummy variables for African Americans and others (with whites as the referent). Region of residence takes the form of eight dummy variables created from categories of similarly located states, and size of city of residence ranges from open country (1) to city with more than 250,000 (10). A dummy variable measures married versus others, and a continuous variable measures the number of children (up to eight or more) the respondent ever had. A measure of church attendance ranges from never

(0) to more than once a week (8).

For the SES variables, education equals the respondent's completed years of schooling. A dummy variable measures those working, unemployed, or going to school relative to others. In addition, self-identified homemakers may have special importance for gender egalitarianism and can be separated from all others. Prestige of current or former occupation is coded on the basis of a scale constructed from ratings of the general social standing of occupations (Davis, Smith, and Marsden 2007). Those with no information on current or former occupation (5.9 percent of the sample) are assigned the mean for the year of survey. Current family income in dollars comes from categories ranging from under \$1000 to over \$75,000, with the values recoded to the midpoint of the category and adjusted for inflation. The midpoints used for the top open-ended categories come from Hout (2004), who computes values that downwardly adjust the usual Pareto-formula estimates. As evidence that the coding does not bias the measures, a dummy variable for belonging to a top category proves insignificant when added to the models. For the 10.5 percent of the sample lacking income data, the mean for the year of the survey is assigned. Dummy variables for those not reporting occupational prestige and income remain insignificant when included in the models, indicating that substituting yearly means for missing data do not bias the estimates.

Of the sociodemographic determinants of gender egalitarianism, education seems best suited for the study of changes across cohorts. Determined in early in adulthood, it best reflects the position of persons when attitudes toward gender equality develop. The other work, job, income, family, and religion variables refer to current characteristics that, for older cohorts in particular, may differ from when younger. The lack of retrospective data on work and family life limits the measures and weakens the results. Still, as a supplement to education, the other

measures can provide additional if less ideal tests of the hypotheses. For all the variables with effects that differ across cohorts, I transform the original units into standardized units so comparisons of the extent of cohort-based changes are meaningful.

*Models.* The hypotheses specify possible changes across cohorts that affect not only the level of gender egalitarianism but also its determinants. Multilevel or hierarchical models, which nest one level of data (in this case, individuals) within another level of data (in this case, cohorts), are well suited for testing such hypotheses. The alternative of assigning common values to individuals in each cohort has problems: It ignores non-independent errors for individuals within the same cohort and heteroscedasticity across cohorts, and it exaggerates the degrees of freedom in testing the influence of the cohort variables (Raudenbush and Bryk 2002). These problems bias downward the estimates of standard errors. Multilevel or hierarchical models correct for these problems by including a separate error term for the macro-level units, and allow for appropriate tests of significance for macro-level variables.

With a cohort-based multilevel design, gender egalitarianism for individual  $i$  in cohort  $j$  ( $GE_{ij}$ ) is a function of  $k$  individual-level sociodemographic variables ( $X_{kij}$ ) measured in standard units,  $m$  individual-level control variables ( $Z_{mij}$ ), and an error term ( $r_{ij}$ ). The level-one model specifies separate equations for  $i$  individuals within each cohort  $j$ :

$$GE_{ij} = \beta_{0j} + \sum \beta_{kj} * X_{kij} + \sum \beta_{mj} * Z_{mij} + r_{ij} \quad (1)$$

The  $\beta_{0j}$ ,  $\beta_{kj}$  and  $\beta_{mj}$  coefficients then become outcomes in a second set of contextual equations that, excepting the control variables, use the cohort ( $C_j$ ) and cohort squared ( $C_j^2$ ) as determinants:

$$\beta_{0j} = \gamma_{00} + \gamma_{01} * C_j + \gamma_{02} * C_j^2 + u_{0j} , \quad (2a)$$

$$\beta_{kj} = \gamma_{k0} + \gamma_{k1} * C_j + \gamma_{k2} * C_j^2 + u_{kj} , \quad (2b)$$

$$\beta_{mj} = \gamma_{m0} \quad (2c)$$

Cohort can non-linearly influence the adjusted level of gender egalitarianism in equation 2a and the slopes of the individual-level determinants in equations 2b (the slopes of the control variables remain fixed). The coefficient estimates come from quasi-maximum likelihood techniques in HLM 6 that adjust for probability weights used by the GSS (Raudenbush et al. 2004). Given statistical tests confirming that the models differ by gender, separate results are presented for males and females.

The three hypotheses translate into predictions about the multilevel coefficients. The structural position hypothesis (H1) predicts that, because changing population composition accounts for increases in gender egalitarianism, cohort will have little influence net of the individual determinants (i.e.,  $\gamma_{01} = \gamma_{02} = \gamma_{k1} = \gamma_{k2} = 0$ ). The value change hypothesis (H2) predicts that, because of the widespread increase in gender egalitarianism among all groups, cohort will non-linearly increase the intercept or levels of gender egalitarianism (i.e.,  $\gamma_{01} > 0$  and  $\gamma_{02} < 0$ ). The diffusion hypothesis (H3) predicts that the slopes of the individual determinants, not just the level of gender egalitarianism, will change across cohorts as favorable views first emerge among innovative groups with direct interests in equality and then diffuse to other groups. This change in relationships across cohorts implies that the key determinants of GE interact with cohort and cohort squared. Determinants with a positive relationship to GE, such as education and work variables, should have a positive interaction term with cohort and a negative interaction term with cohort squared (i.e.,  $\gamma_{k1} > 0$  and  $\gamma_{k2} < 0$ ). Determinants with a negative relationship to GE, such as family and church variables, should have a negative interaction term with cohort and positive interaction term with cohort squared (i.e.,  $\gamma_{k1} < 0$  and  $\gamma_{k2} > 0$ ). However, the interactions should be stronger for females and males.

## Results

Table 1 shows effects of the level-1 additive SES and family determinants of GE (net of controls for race, region, and year). In general, higher SES men and women with lower family and religious involvement hold more egalitarian gender attitudes. Married women who attend church tend to have low GE, while educated women in the labor force or school and women with prestigious jobs tend to have high GE. The effects for males are similar in pattern but different in specific determinants. Being married has little influence, but number of children reduces GE. Much as for women, education and prestige raise and church attendance lowers GE.

Table 1 About Here

Table 1 also includes the effects of cohort on the intercept or adjusted GE mean. For both men and women, the positive coefficient for cohort and the negative coefficient for cohort squared reflect a rise and slight leveling off of GE across birth cohorts. However, the cohort-based curve rises more quickly and levels off more for women than men. These effects indicate increasing GE when controlling for compositional changes and thus favor the value change argument over the structural position argument. In addition, unlisted coefficients for the level-1 year dummy variables, which represent within cohort change (Firebaugh 1997), reveal a pattern of increase and decline, even when controlling for composition differences across time.

Table 2 presents the cross-level interaction coefficients that show how the slopes of key determinants change across cohorts. The results support the diffusion hypothesis with respect to education, labor force status, and income for women but not for men. Family variables show less consistent change in their influence on GE and less consistent support for the diffusion hypothesis, but religion attendance proves more important. Consider each in turn.

Table 2 About Here

*Education.* Changes in the effects of education, as represented by the cohort and cohort squared interaction terms in Table 2, fit the predicted curvilinear pattern specified by the diffusion hypothesis for females but less clearly for males. For females, the cohort interaction term is positive and significant and the cohort squared term is negative and significant. For males, the coefficients have the expected signs but do not reach statistical significance. Figure 1a depicts the predicted female and male slope of education for each cohort as implied by the interaction model. For females, education has a small positive effect for the oldest cohorts (the coefficient equals about .081). The effect nearly doubles in size up to a peak of .139 for the cohort born in 1935, thus indicating greatest divergence in views across education groups among Depression-era cohorts that reached adulthood in the late 1950s. The effect of education declines afterward to a low of about .013, reflecting the greater adoption of gender egalitarianism across all education levels among the baby-boom generations. Among cohorts born in the 1970s and 1980s, the zero effects of education indicate that more and less educated women differ little their in views.

#### Figures 1a-1h About Here

For males, a curvilinear pattern of cohort change in the education slope also appears, but does not reveal as much convergence as for females (i.e., the effects remain more positive among recent cohorts). The effects of education are smaller for males than females across most cohorts, show a more modest reversal across cohorts, and are not significantly influenced by cohort and cohort squared – all evidence that diffusion has proceeded less far among men than women. Whereas the gap GE declines substantially for the youngest cohorts of women, it declines only modestly for men.

To gauge the impact of cohort differences in education slopes, Table 2 presents another

statistic. It lists the variance in the education slopes without the cohort determinants, the variance in the slopes after accounting for the influence of the cohort determinants, and the reduction in the variance due to the cohort determinants. The variance for females drops by 79 percent when including the cohort measures but only by 14 percent for males.<sup>3</sup> Again, diffusion of gender equality across cohorts appears most clearly for women.

*Labor Force/School.* With labor force liberally defined to include those unemployed and going to school as well as with a full- or part-time job, Table 2 compares changes in the effects of the dummy variable across cohorts. For women but not men, cohort and cohort squared significantly influence the slope. Consistent with the results for education, the cohort interaction term has a positive effect and the cohort squared interaction term has a negative effect.

Including the cohort variables reduces the variance of the slopes by 41 percent for women. In the curve implied by the interaction coefficients (Figure 1b), the effect of labor force/school for women begins below zero,<sup>4</sup> rises to a peak of .118 for the cohort born in 1956, and then declines for younger cohorts to near zero again (.060). For males, however, work has little influence, and its effect fails to change significantly across cohorts.

As a check on the results, a dummy variable measuring keeping home relative to all other work categories replaces the labor force/school dummy variable in the model. Table 2 lists these results for women and men (though the category has little importance for men). Consistent with the effects for labor force/school, the negative effect of keeping home on GE first becomes more negative, thus reflecting divergence in views, perhaps even a backlash to changes, before reversing and becoming less negative. Figure 1c plots the curve for the effects. It begins near zero but becomes increasingly negative as less egalitarian views of women homemakers contrast more greatly with those of other women. After its low point of -.128 in the 1947 cohort, the

effect becomes increasingly less negative as homemakers adopt the more egalitarian views of others and for the youngest cohorts equals only .002. The male curve also changes but by a small amount. Given the ambiguous meaning of homemaking for men and the small number of cases in the category, the results have limited value.

*Prestige.* The interaction of occupational prestige with cohort and cohort squared fails to reach statistical significance for either men or women. Figure 1d accordingly reveals only a weak curvilinear pattern of effects. Although weak and non-significant, the change fits an attenuated version of the expected pattern found for education and labor force/school: The effect of prestige drops from weakly positive to near zero for recent cohorts.

*Income.* The coefficients for personal income indicate significant curvilinear patterns of change for women but not for men. As illustrated in Figure 1e, the effects of income for women are negative for 1900 cohort, become positive for the 1923 cohort, and peak for the 1947 cohort. Afterward they decline and fall to levels slightly below zero. Although not large, the differences in support of gender egalitarianism by income levels among females rise and fall across cohorts. Cohort changes in the effects of income prove weak for males.

*Marriage and Number of Children.* Although being married and having many children might be expected to define a dimension of cohort change in GE, neither interacts significantly with cohort in Table 2. Recall in Table 1 that marriage reduces GE among women and the number of children reduces GE among men. For both these determinants, however, the effects remain largely constant across cohorts (see Figures 1f and 1g).

*Church Attendance.* The interaction coefficients reach significance for both the cohort and cohort squared terms among men but only for the cohort term among women. As illustrated in Figure 1h, however, both genders show similar changes in the slopes for church attendance. It

begins near zero for the oldest cohorts and becomes more negative for new cohorts. It does not show the convergence found for SES determinants of gender egalitarianism, however. More so than for other potential cleavages, church attendance remains a source of divergent views on GE among women and men.

*Sensitivity Checks.* Tests for interactions can prove sensitive to model specification, but the results appear sufficiently consistent across multiple variables as to lend confidence to the findings. Even when not significant, the curvilinear pattern of results often fits the diffusion hypothesis and appears similar to other significant results. Further, the level-2 errors show no evidence of autocorrelation (despite temporal ordering of the cohorts) or heteroscedasticity (despite the varied sizes of the cohorts). In Figures 2a and 2b, scatterplots of the level-2 empirical Bayes residuals in the education slope by cohort reveal no evidence of non-randomness among men and women.

Figures 2a-2b About Here

Another check on the sensitivity of the results to influential cases further strengthens the findings. As a measure of level-2 influence, HLM computes the Mahalanobis distance of a unit's empirical Bayes estimates from its fitted value. In relation to the education interaction models, the distances are large enough for five cohorts to indicate deviations from normality and potentially influential cases. However, estimating the effects on the education slopes of the level-2 cohort and cohort squared determinants after deleting the five cohorts has virtually no effect. Similarly, deleting the five earliest and five latest five cohorts changes the level-2 estimates only trivially.

*Alternative Contextual Measure.* Although the level-2 contextual results depend on a simple measure of the year of birth, the measure is well suited for capturing the time-dependent

process of diffusion. To extend this logic, a measure of gender equality for each cohort should have similar curvilinear effects on the individual slopes for gender egalitarianism. As gender equality increases within cohorts, the influence of individual determinants should rise and decline. To check, I calculated the mean gender egalitarianism from the GSS for each cohort and used it as a quadratic in the level-2 model (available on request). The mean has a significant positive effect on the education slope and the mean squared has a significant negative effect, again supporting the diffusion hypothesis.<sup>5</sup> For cohorts with low level of gender egalitarianism, education has little influence, as few accept the tenets of equal treatment of men and women. As levels of gender egalitarianism increase initially, and some groups adopt gender egalitarianism, the divisions in views and the effects of the determinants increase. At the highest levels of gender egalitarianism, social divisions in views largely disappear and the effect of education declines to near zero.

## **Conclusion**

Based on the analysis of GSS, the adoption of gender egalitarian views occurs steadily and persistently across cohorts over the 20th century. Less obviously, however, the results also show that adoption reflects non-linear changes in the influence of the determinants and the strength of social cleavages. The effects of predictors become stronger across cohorts as attitudes shift from universally unfavorable toward gender equality to favorable among women with greater education and higher commitment to work. Among the most recent cohorts, the effects of the predictors then become weaker as favorable attitudes spread widely through the population and group differences decline in importance.

The evidence proves strong and robust for women but less consistent for men. Men not

only hold less egalitarian views than women but also show less responsiveness to social change. For example, the effects of education on gender egalitarianism increase and decrease for men as for women but by smaller and statistically insignificant amounts. Gender egalitarianism among recent cohorts thus depends more on level of education for men than women. This difference in patterns of change suggests that diffusion has moved faster and farther among women than men and qualifies theoretical claims about diffusion. The diffusion process best fits groups with stronger interests in equality.

Theories of both structural position and value change, though incomplete on their own, play a role in explaining the pattern of results. Structural changes that increase education, work, and career opportunities for women provide the impetus to adopt egalitarianism by increasing direct interests in equality among certain segments of the population. Value changes among other groups of women with less commitment to work and career (but still some interests in gender equality) occur later through processes of diffusion. Although the literature tends to highlight one or the other of these structural and cultural mechanisms of change, both contribute according to the diffusion theory to the remarkable progress made in gender egalitarianism over the last century.

The approach used to test these arguments has several advantages. Examining changes across cohorts rather than years, modeling the varying effects of the determinants of gender egalitarianism rather than just the level of gender egalitarianism, and testing non-linear predictions of an integrative diffusion theory all help extend the literature in new directions. However, the available GSS data used to evaluate the approach face some limitations and suggest needs for additional research. First, the data allow only for the indirect study of diffusion. The patterns of change in determinants are consistent with initial adoption of gender

egalitarianism by innovative groups and the later diffusion to other groups. Indeed, the predictions of non-linear interactions of cohort and the determinants of gender egalitarianism are highly falsifiable. Yet, other types of data and forms of analysis are needed to more directly validate claims about how beliefs and values change.

Second, the inability to measure SES and family characteristics of older cohorts at the time of young adulthood rather than at older ages compromises the tests. Current education better reflects past education than current employment, job characteristics, income, marital status, children, and church attendance reflect past work and family status. That the results prove consistent despite this measurement error is reassuring. Still, the ability to measure only current characteristics rather than past characteristics remains a limitation. To minimize this problem, additional research focusing on differences across nations at varied stages of movement toward gender equality can supplement over-time comparisons within a single nation.

Third, using a contextual measure of birth year (and secondarily the mean of gender egalitarianism) represent only a first step in understanding the sources of change in gender egalitarianism. The first step proves valuable in offering supportive evidence, but better measures of historical changes in structural position of women over the past century can extend the approach. Gathering cohort-based measures of education, work, and earning opportunities of women from historical sources and matching them to cohorts presents a daunting task. Even so, future research can use such data to provide additional tests of predictions that the context of gender equality relates non-linearly to the effects of the determinants of gender egalitarianism. With more direct measures of gender equality and access of women to school, work, and good jobs, the effects of the determinants of gender egalitarianism should increase and decrease in much the same way they do for the cohort measure.

## ENDNOTES

<sup>1</sup> Four other measures of gender egalitarianism available from 1973 to 1998 prove less suitable for the analysis. The questions ask about leaving running the country to men, approving of married woman earning money in business or industry, voting for a woman for President, and men being better suited emotionally for politics than women. While overlapping with items used in the analysis, the four measures truncate the range of cohorts and fail to capture change among more recent cohorts and prove less suitable for the analysis.

<sup>2</sup> Net of the cohort and year variables, age has little variation and little influence on gender egalitarianism. Its inclusion does not change any of the results to follow.

<sup>3</sup> Tests of significance of the variance components provide only approximate probabilities (Raudenbush and Bryk 2002:123). In general, however, the level-2 variances do not differ significantly from zero.

<sup>4</sup> The negative impact of work in the oldest cohorts likely reflects the divergence between current and past work among older persons. A more accurate relationship would appear with measures of work history. Despite some bias, the pattern of results is meaningful.

<sup>5</sup> The mean of gender egalitarianism has little importance as a predictor of the intercept, merely showing that the mean for a cohort predicts individual levels within the cohort. However, the mean has no such dependency in predicting the effect of education on gender egalitarianism. It instead has theoretical importance in showing that the context of gender equality helps define the nature of group divisions in views on gender egalitarianism.

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Table 1. Coefficients and T Ratios from Multilevel Models of the Gender Egalitarianism Scale

Predictors <sup>a</sup>	Female			Male		
	b	t		b	t	
Level 1						
Education	0.115	13.04	***	0.108	13.03	***
Labor Force or School	0.099	11.73	***	-0.025	-2.67	***
Occupational Prestige	0.039	4.98	***	0.030	3.37	***
Individual Income	0.014	1.90		0.007	0.78	
Married	-0.039	-5.75	***	0.006	0.72	
Number of Children	-0.001	-0.16		-0.020	-2.05	*
Church Attendance	-0.113	-14.63	***	-0.107	-12.19	***
Intercept	-0.555	-18.01	***	-0.766	-14.80	***
Level 2						
Cohort	0.020	13.87	***	0.017	7.58	***
Cohort 2	-0.013	-7.85	***	-0.007	-2.90	***
Variance Components (Unweighted)						
Level 1	0.42538			0.40102		
Level 2 Intercept	0.00043			0.40102		
Level 2 df	85			85		
N	11867			9118		

<sup>a</sup> Controlling for year, race, region, city size

\* p < .05 \*\* p < .01 \*\*\* p < .001

Table 2. Cross-Level Interaction Coefficients from Multilevel Models of the Gender Egalitarianism Scale <sup>a</sup>

Female Slopes <sup>b</sup>	Level-2 Predictors				Variance Component		
	Cohort b	t	Cohort 2 b	t	Without Cohort	With Cohort	Prop. Reduction
Education	0.003 **	2.12	-0.005 **	-2.52	0.00029	0.00006	0.793
Labor Force or School	0.007 ***	3.30	-0.006 ***	-2.94	0.00054	0.00032	0.407
Homemaker	-0.008 ***	-5.59	0.008 ***	5.14	0.00124	0.00020	0.839
Occupational Prestige	0.001	0.53	-0.002	-0.97	0.00065	0.00060	0.077
Individual Income	0.005 **	2.21	-0.005 **	-2.42	0.00014	0.00007	0.500
Married	-0.001	-0.48	0.001	0.55	0.00027	0.00033	-0.222
Number of Children	-0.002	-1.47	0.001	1.08	0.00003	0.00003	0.000
Church Attendance	-0.003 **	-2.24	0.002	1.35	0.00066	0.00041	0.379

Male Slopes <sup>b</sup>	Level-2 Predictors				Variance Component		
	Cohort b	t	Cohort 2 b	t	Without Cohort	With Cohort	Prop. Reduction
Education	0.002 *	1.71	-0.002	-1.49	0.00007	0.00006	0.143
Labor Force or School	-0.001	-0.43	0.001	0.26	0.00006	0.00003	0.500
Homemaker	-0.003 *	-1.83	0.003 **	2.04	0.00067	0.00062	0.075
Occupational Prestige	0.003	1.54	-0.003	-1.65	0.00047	0.00039	0.170
Individual Income	0.001	0.62	-0.001	-0.60	0.00016	0.00018	-0.125
Married	0.001	0.56	-0.001	-0.39	0.00011	0.00013	-0.182
Number of Children	-0.003	-1.55	0.003	1.42	0.00013	0.00012	0.077
Church Attendance	-0.005 ***	-2.82	0.005 **	2.28	0.00116	0.00047	0.595

<sup>a</sup> Each row of coefficients comes from a separate model

<sup>b</sup> Controlling for variables in Table 1

\* p < .1 p < .05 p < .01

Figure 1a. Predicted Education Effect by Cohort

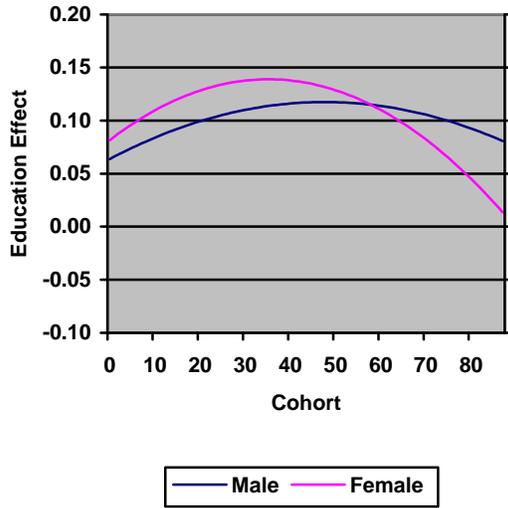


Figure 1b. Predicted Employment Effect by Cohort

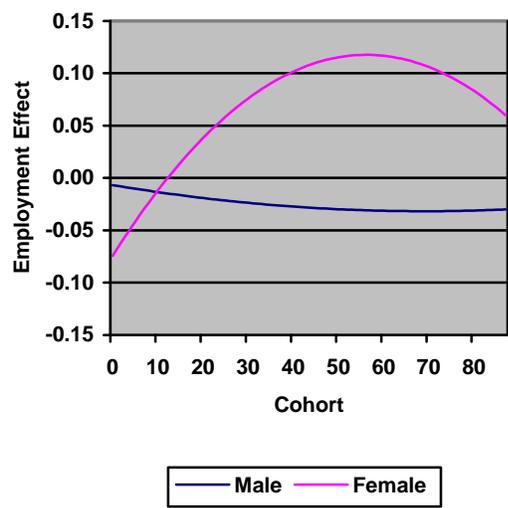


Figure 1c. Predicted Homemaker Effect by Cohort

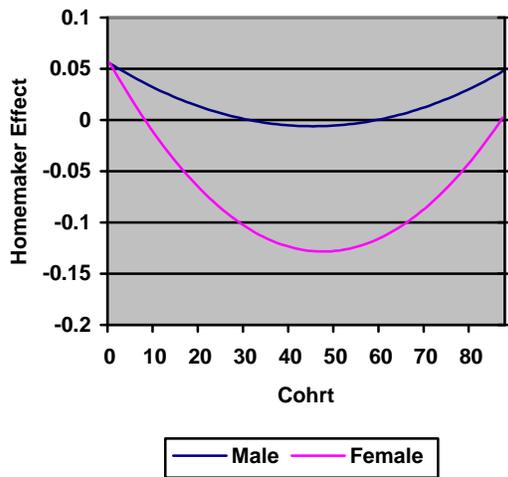


Figure 1d. Predicted Prestige Effect by Cohort

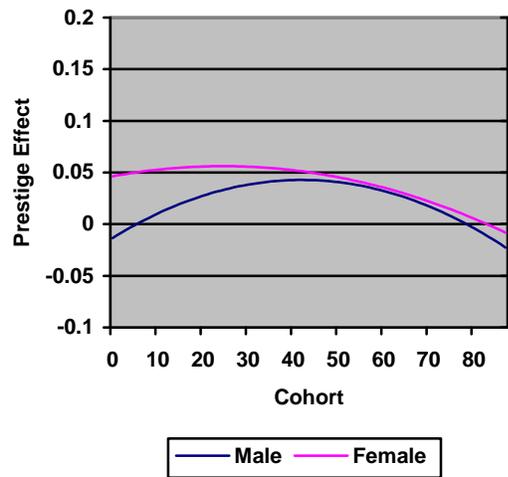


Figure 1e. Predicted Income Effect by Cohort

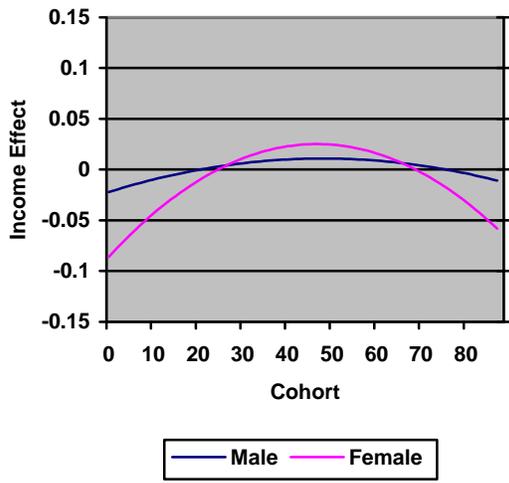


Figure 1f. Predicted Married Effect by Cohort

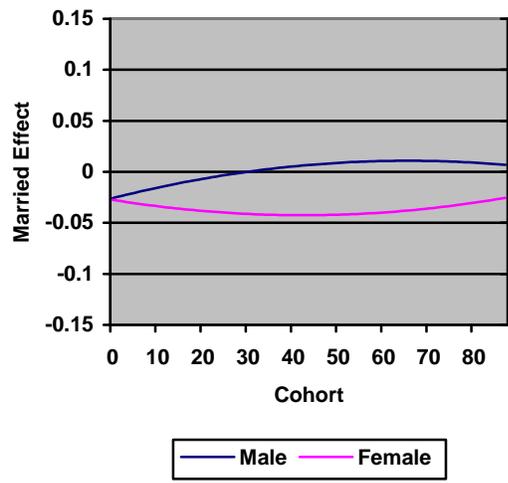


Figure 1g. Predicted Children Effect by Cohort

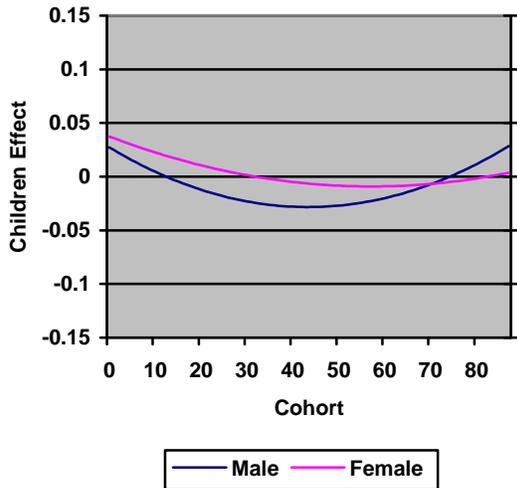


Figure 1h. Predicted Church Attendance Effect by Cohort

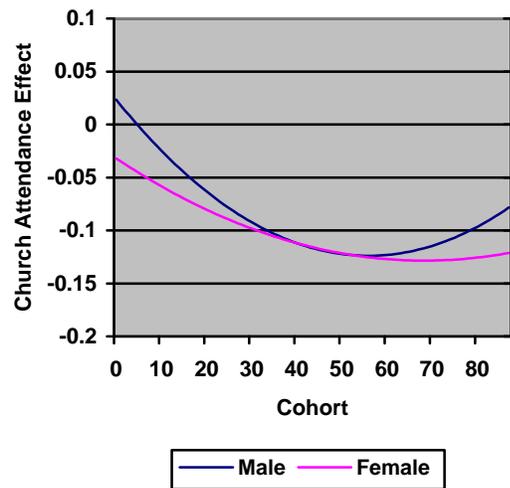


Figure 2a. EB Residuals from Female Model with Cohort-Education Interaction

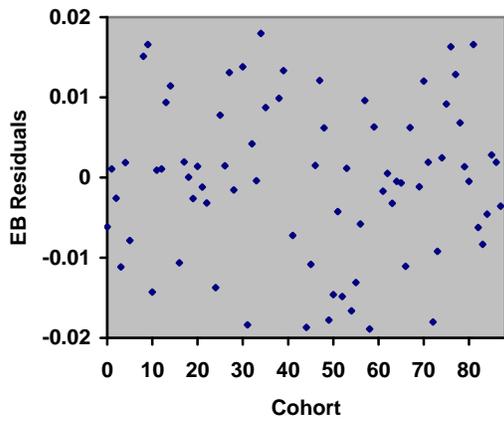


Figure 2b. EB Residuals from Male Model with Cohort-Education Interaction

