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The relationship between societal change and rising support for gender egalitarianism among men and women: Results from counterfactual analyses in the Netherlands, 1979–2012

Paula Thijs*, Manfred Te Grotenhuis, Peer Scheepers

Department of Sociology, Radboud University, P.O. Box 9104, 6500 HE Nijmegen, The Netherlands

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ABSTRACT

This study examines the relationship between important social, cultural, economic, and demographic changes and the rise of support for gender egalitarianism within the Dutch population between 1979 and 2012. Cohort replacement, educational expansion, secularization, and the feminization of the labor force are important processes that have taken place in western societies in ways that may have fostered support for gender egalitarianism. Using unique data from 16 repeated cross-sectional surveys in the Netherlands, we estimate age-period-cohort regression models, and the outcomes are subsequently applied in counterfactual simulation designs. Our results show that the social, cultural, economic, and demographic changes explain only a small part of the modest rise in support for gender egalitarianism for men, while they provide a much better explanation of the stronger rise among women. Especially the replacement of older female cohorts by younger ones seems to have propelled support for gender egalitarianism among women throughout the years.

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1. Introduction

Many countries have witnessed over time increases in support for gender egalitarianism during the past decades (e.g., Bolzendahl and Myers, 2004; Dorius and Alwin, 2012; Inglehart and Norris, 2003; Lee et al., 2007). As men and women differ in their support for gender egalitarianism (Bolzendahl and Myers, 2004; Ciabattari, 2001; Davis and Greenstein, 2009; Mason and Lu, 1988), these trends may have developed differently for men and women. Some studies reported that the rise in support for gender egalitarianism has been similar among men and women (Bolzendahl and Myers, 2004; Neve, 1995), others found stronger rates of change among women than among men over time (Brewster and Padavic, 2000; Lee et al., 2007) and across cohorts (Brewster and Padavic, 2000; Inglehart and Norris, 2003; Pampel, 2011; Shorrock, 2016). Moreover, even a reversal of the gender gap regarding support for gender egalitarianism was found (Jennings, 2006).

Previously proposed explanations for the general trend towards more gender egalitarianism relate to the different historical and contemporary circumstances in which people are socialized and live, i.e., cohort and period effects (Brewster and Padavic, 2000; Inglehart and Norris, 2003; Inglehart, 1997; Mannheim, 1952). Other researchers stress the importance of shifts in the social, cultural and economic structure of the population, such as educational expansion, secularization, and the feminization of the labor force (Brooks and Bolzendahl, 2004; Cotter et al., 2011; Mason et al., 1976; Pampel, 2011).

* Corresponding author.

E-mail address: p.thijs@maw.ru.nl (P. Thijs).

Because men and women benefit differently from supporting gender egalitarianism (Bolzendahl and Myers, 2004; Ciabattari, 2001), the liberalizing processes of educational expansion, secularization and labor force participation, together with cohort replacement, may affect the trend among men less as compared to women. So far, however, there remains a lacuna in our knowledge regarding how strong these processes are related to the trend in support for gender egalitarianism among men and women. Previous studies speculated about the influence of important societal changes in the social, cultural, demographic and economic structure of a population, but the actual contribution of these changes to the trend was neither tested nor quantified. Studies on the effects of cohort and period have difficulties disentangling cohort, period and age effects due to methodological problems (Mason et al., 1973). Moreover, the conclusions drawn in these studies rely on models in which only the *effect sizes* of certain individual characteristics were estimated, while the actual strength of societal processes related to such characteristics originates from the interplay between *effect sizes* and *sizes of the changes*. As a consequence, the contribution of societal processes like cohort replacement may have been over- or underestimated, if tested at all.

In this study, we aim to shed light on the extent to which the processes of cohort replacement, educational expansion, secularization, and labor force participation have affected the trend in support for gender egalitarianism among men and women. We analyze to what extent cohort, education, church attendance and labor participation are related to support for gender egalitarianism and whether the estimated effect sizes differ for men and women. We advance upon previous research by taking into account both the effect sizes of the individual characteristics, and – importantly – their distributional shifts in the structure of the population as observed in our samples. For this purpose, we employ a counterfactual simulation analysis (Te Grotenhuis et al., 2004), allowing to examine to what extent the observed trend is still present if the aforementioned shifts in distributions would *not* have taken place, given the estimated effect sizes. By analyzing the combination of effect sizes of individual characteristics *and* the sizes of shifts in the distribution of these characteristics, we are, to our knowledge, the first to quantify the actual contribution of societal changes in the social, cultural, demographic and economic structure of a population to the trend in support for gender egalitarianism.

We investigate trends in support for gender egalitarianism for men and women in the Netherlands between 1979 and 2012. We focus on one specific aspect of gender egalitarianism related to the private dimension (Wilcox and Jelen, 1991), i.e., whether a woman is more suited to raise little children than a man. This measure is an important indicator of support for gender egalitarianism because it captures a notion of gendered separate spheres rooted in a distinct male and female “nature” that goes beyond the mere division of roles (Davis and Greenstein, 2009), which may have substantial consequences for gender equality (Charles, 2011; England, 2010). As such, low levels of support for this item may imply persistent gender inequality in societies with relatively widespread norms of gender egalitarianism, such as the Netherlands.

The Netherlands provides an interesting case to study the liberalizing influence of societal processes to the trend in gender egalitarianism, because the average educational level of the Dutch population has increased substantially since the 1950s (Bar Haim and Shavit, 2013; Tolsma and Wolbers, 2014), while church attendance has dropped considerably (De Graaf and Te Grotenhuis, 2008). Moreover, increasing numbers of Dutch women have entered the labor force over the last decades (OECD, 2016; Van der Lippe and Van Dijk, 2002). As similar social, cultural, economic, and demographic changes have occurred in many other western countries, the results may be generalizable to and tested in other regions in which comparable increases in support for gender egalitarianism have been observed.

In sum, the following research questions are addressed: *How has support for gender egalitarianism developed among men and women in the Netherlands between 1979 and 2012? And to what extent are these trends due to important societal changes in the Dutch population, i.e., a) cohort replacement, b) educational expansion, c) secularization, and d) rising labor force participation?*

2. Theory and hypotheses

2.1. Demographic change: cohort replacement

According to theories of social change, demographic shifts are a driving force behind changes in public opinions in society (Firebaugh, 1992; Ryder, 1965). The composition of the population partly changes due to the gradual replacement of older cohorts by younger cohorts. Each birth cohort consists of individuals with similar formative experiences, socialized in specific historical and cultural circumstances which, according to Mannheim (1952) and Inglehart (1997), crystallize into normative orientations and values that are largely stable over the life course. These historical and cultural circumstances include normative conceptions of appropriate behavior and activities for women and men. Due to societal modernization, younger cohorts are generally socialized in times in which more liberal gender norms prevail (Brewster and Padavic, 2000; Brooks and Bolzendahl, 2004; Inglehart and Norris, 2003; Inglehart, 1997). Consequently, we expect each new cohort to support gender egalitarianism more than the previous.

The adoption of more liberal gender norms among subsequent cohorts may, however, differ between men and women. According to an interest-based perspective, individuals adopt and maintain attitudes that are in line with their interests (Bolzendahl and Myers, 2004; Kroska and Elman, 2009). Bolzendahl and Myers (2004) argued that women have stronger interests in gender egalitarianism than men because they benefit more from gender equality. In addition, girls' socialization into gendered behaviors and activities has likely changed more strongly than boys'. Changes in the historical and cultural context towards more liberal gender norms mainly concerned the emancipation of women. Women's movements were first and foremost aimed at improving women's position in society. Welfare reforms have been aimed at encouraging women's

employment and participation in male dominated educational subjects and occupations, while there have been fewer economic, cultural, and institutional incentives for men to enter traditionally female jobs or to cut down working hours to be involved with the family (England, 2010). Young female birth cohorts may therefore be more inclined to challenge existing gender structures and adopt gender egalitarianism. Indeed, previous research has found a growing gender gap in support for gender egalitarianism across cohorts, with women born after the 1950s being more egalitarian than men (Inglehart and Norris, 2003; Pampel, 2011; Schnabel, 2016). Hence, we predict a stronger effect of birth cohort on gender egalitarianism among women and we subsequently expect the contribution of cohort replacement to be stronger among women as compared to men. We therefore hypothesize that *the process of cohort replacement has contributed to an increase in support for gender egalitarianism in the Netherlands over time, and this contribution was stronger for women than for men (H1).*

2.2. Social, cultural, and economic changes

2.2.1. Educational expansion

The structure of the population has also changed due to several other important developments. Since the second half of the 20th century, the educational level increased rapidly among the Dutch population (Bar Haim and Shavit, 2013; Tolsma and Wolbers, 2014). Many scholars have argued that education has a ‘liberalizing’ influence on people’s values (Vogt, 1997), because the educational system transmits liberal gender norms and challenges essentialist assumptions. The longer students are socialized into these norms during their formative years through education, the more they will support these norms throughout their lives (Bolzendahl and Myers, 2004). Indeed, previous research has repeatedly shown that higher educated people support gender egalitarianism more strongly than lower educated individuals (Bolzendahl and Myers, 2004; Thornton et al., 1983; Thornton and Freedman, 1979). Hence, the increased proportion of higher educated individuals in society may have contributed to the rise in support for gender egalitarianism.

The rise in the average education level in the Dutch population has not developed similarly for men and women. Since the 1950s, higher education has expanded more rapidly among women than men (Tolsma and Wolbers, 2014; Van Hek et al., 2015). Consequently, the proportion of women exposed to liberal values taught through formal education has grown stronger than the proportion of men exposed to these norms. In addition, the liberalizing influence of education on gender role opinions may be stronger for women. From an interest-based perspective, women have a stronger interest in the egalitarian gender norms that are transmitted through formal education; particularly women in non-traditional positions (Bolzendahl and Myers, 2004; Kroska and Elman, 2009). Higher education increases women’s occupational opportunities, economic independence and non-traditional family arrangements. It is therefore argued that higher educated women benefit most from gender egalitarianism (Brooks and Bolzendahl, 2004; Pampel, 2011), such as the equal responsibility for care of little children, because it may reduce restrictions such as gender discrimination in the workplace and the double burden of paid work and family responsibilities (Van der Lippe and Van Dijk, 2001). Men may also have an interest in gender egalitarianism because they attach value to taking care of the children themselves or because they want equal opportunities for their wives and daughters (Ciabattari, 2001). However, given that (full-time) work still is the dominant norm for most men – in particular among the lower educated – supporting gender egalitarianism often contradicts men’s social position and the benefits they gain from maintaining a traditional gender division (Poortman and Van der Lippe, 2009). Previous studies have shown that differences in educational levels across time explained more of women’s over time variation in support for gender egalitarianism than men’s (Lee et al., 2007; Neve, 1995; Pampel, 2011). Yet, these studies could not quantify whether this was due to stronger educational effects or due to stronger educational expansion among women than men. Thus, given the expected gender dependent educational effect and differential rates of educational expansion among men and women, we hypothesize that *the process of educational expansion has contributed to an increase in support for gender egalitarianism in the Netherlands over time, and this contribution was stronger for women than for men (H2).*

2.2.2. Secularization

People are also socialized through religious organisations and communities (Scheepers et al., 2002). In general, Christian churches advocate a traditional division of gender roles based on a notion of separate spheres and religious organisations have long tried to sustain the social norms of women as caregivers and men as providers (Inglehart and Norris, 2003). The stronger people are integrated in a religious community, the more they are exposed to traditional norms and the less they will support gender egalitarianism. Previous studies found that religious individuals and people who frequently attend church indeed support gender egalitarianism less than non-religious individuals (Bolzendahl and Myers, 2004; Schnabel, 2016; Thornton and Freedman, 1979). The share of Dutch individuals belonging to a religious affiliation and attending church has dropped substantially over the past decades (De Graaf and Te Grotenhuis, 2008). Consequently, the decline in the proportion of religiously integrated people has likely contributed to an increase in support for gender egalitarianism.

In general, women are more religious than men (Norris and Inglehart, 2011), and secularization first affected men before women (Trezebiatowska and Bruce, 2012), also in the Netherlands (Becker and De Hart, 2006). Since the 1970s, however, church attendance declined more strongly among women than among men (Becker and De Hart, 2006). In addition, the traditional gender norms of the religious community mainly affect the position of women, restricting their opportunities to participate in the public domain while reinforcing men’s dominant position in society. We thus expect the influence of church attendance on support for gender egalitarianism to be stronger for women than for men. The differential shifts in the

proportion of church attendees, together with the expected gender dependent influence of church attendance on gender egalitarianism leads us to hypothesize that *the process of secularization has contributed to an increase in support for gender egalitarianism in the Netherlands over time, and this contribution was stronger for women than for men (H3).*

2.2.3. Feminization of the labor force

A third important development that has changed the composition of the Dutch population is the rise of female labor force participation. In recent decades, the proportion of women participating in the labor market has increased considerably (OECD, 2016). Working women are argued to have more interests in supporting gender egalitarianism because they often experience a double burden of paid work and family responsibilities (Van der Lippe and Van Dijk, 2001), which likely increases their support for egalitarian child care responsibilities. Based on the exposure perspective, Bolzendahl and Myers (2004) argued that labor force participation exposes women to gender discrimination and inequality in the work place as well as to their own capabilities to perform outside the household, and allows them to build social networks of other working women. These factors would also increase support for gender egalitarianism among working women. Indeed, previous research has found a positive influence of women's employment on their support for gender egalitarianism (Cunningham et al., 2005; Kraaykamp, 2012). We expect no such effect of men's labor force participation on their support for gender egalitarianism. Indeed, men with full-time employment may support gender egalitarianism even less than part-time and non-working men, because they benefit more from a gendered breadwinner-homemaker division of paid and unpaid labor (Ciabattari, 2001). In addition, even though men's participation in the Dutch labor market has changed as the proportion of part-time working men has risen (OECD, 2016), this development remains limited as compared to the rise in the proportion of working women. Hence, we expect that *the changes in labor force participation have contributed to an increase in support for gender egalitarianism in the Netherlands over time, and this contribution was stronger for women than for men (H4).*

3. Data and measurements

To test our hypotheses, we used repeated cross-sectional data from 16 national samples of the Cultural Changes in the Netherlands (CCN) surveys, collected between 1979 and 2012 by the Netherlands Institute for Social Research (SCP). Each wave consists of a nationally representative sample from the Dutch population of around 2000 individuals who are interviewed face-to-face. Response rates varied between 52 percent (in 2008) and 80 percent (in 1983). The sampling procedure and measurements are highly comparable across the waves. We combined all 16 cross-sectional waves into one pooled data set, containing 31,668 respondents aged between 16 and 74 at the time of the interview.

We measured our dependent variable support for gender egalitarianism with the question: 'A woman is more suited to raise little children than a man'. Response categories ranged from (1) strongly agree to (5) strongly disagree. The data contained more questions on gender egalitarianism such as the division of paid labor, which have often been used in previous research (Davis and Greenstein, 2009), but these items were only available in a limited number of waves. The measurement of our dependent variable not only reflects beliefs about preferred gendered roles but may also capture "gender essentialist" assumptions of men and women having innately different interests and skills, such as the ability to raise little children. This idea of gender essentialism can be used to justify gender stereotypes and a gendered division of roles (Charles, 2011; England, 2010). We therefore believe that this measure lies at the basis of gender egalitarianism. Moreover, the measure we use is frequently used in Dutch studies (e.g., Poortman and Van der Lippe, 2009), while related questions on gendered separate spheres have been widely used in previous research (Davis and Greenstein, 2009) and have been found to move in an egalitarian direction (e.g., Ciabattari, 2001; Norris and Inglehart, 2011). We consider a higher score on the dependent variable as indicating more support for gender egalitarianism. Missing values on the dependent variable (1.5%) were deleted listwise.

The independent variable *birth cohort* was measured as the respondent's year of birth. We excluded the oldest and youngest cohorts (born before 1907 and after 1992) in which the number of respondents was lower than 50 to avoid unreliable estimates.

Education was measured as the respondents' highest educational level followed.¹ We harmonized the educational categories over the waves, resulting in seven categories of educational attainment ranging from primary to university education. Over time, the share of low educated men (only primary education) dropped from 17.6 percent in 1979 to 5.3 percent in 2012 (see Figure A1 in the Appendix). The share of highly educated (tertiary education) men increased from 8.2 to 11.4 percent in this period. For women, the share of the low educated decreased from 21.4 to 5.9 percent between 1979 and 2012. The share of highly educated women rose substantively from 3.5 to 11.2 percent. Thus, educational expansion between 1979 and 2012 was stronger among women.²

¹ Education was measured as the respondents' highest educational level followed, because the respondents' highest education completed was not available in each survey year or suffered from too many missing answers.

² Note that the share of higher educated individuals was larger in 2002. This is possibly due to an overrepresentation of younger respondents in the survey of 2002 (Verhagen, 2007). Hence, the results in 2002 should be interpreted with care. However, this overrepresentation cannot explain the drop in support for egalitarian attitudes between 1996 and 2002 (see Fig. 2), as younger people generally show more support for gender egalitarianism than older people.

Church attendance was measured by a question on how often the respondent had attended a church in the past half year, ranging from attending church once a week or more to never going to church. Between 1979 and 2012, the share of men never attending church rose from 52.8 percent to 62.6 percent. The share of female non-attendees increased from 52.0 percent in 1979 to 58.3 percent in 2012 (see Figure A2 in the Appendix). Thus, secularization has continued over time, though somewhat stronger among men (c.f. Becker and De Hart, 2006).

Labor force participation was in most survey years only available as measured in three categories: full-time working (more than 35 h a week), part-time working (12–35 h working per week) and non-working (0–12 h a week) based on the commonly used Statistics Netherlands definition. In 1979, 69.6 percent of the men worked full-time and 2.9 percent worked part-time. By 2012, the share of full-time working men had dropped to 57.8 percent while the share of part-time working men had risen to 11.2%. Among women, 13 percent worked full-time and 12.5 percent part-time in 1979, which increased to 14.8 percent full-time working and 45.7 percent part-time working in 2012 (see Figure A3 in the Appendix). These changes indicate that feminization of the labor force in the Netherlands mainly comes down to an increase in women's part-time work. Among men, part-time work has also risen while the share of full-time working men decreased.

We control for age as measured in years and period as measured with year of survey. Missing values on the independent variables and control variables (1.9 percent of the cases) were deleted listwise, resulting in a sample size to be analyzed of 30,852 respondents. For descriptive statistics of the dependent and independent variables, we refer to Table A1 in the Appendix.

4. Analytical strategy

We followed a two-step strategy to estimate (1) the individual level effects of cohort, education, church attendance, and labor force participation, and (2) the relative contribution of the societal processes of cohort replacement, educational expansion, secularization, and the feminization of the labor force to the trend in support for gender egalitarianism among men and women.

4.1. Multivariate regression analysis

First, we determined the effect sizes of cohort, education, church attendance, and labor force participation, while controlling for period and age effects. For this purpose, we performed an age-period-cohort regression analysis for men and women separately, including the effects of education, church attendance and labor force participation. However, the effects of cohort, period and age are generally difficult to estimate in statistical models because of the linear dependency between these measures (i.e., cohort + age = period). While a completely appropriate solution to this problem has not yet been found, one accepted way of dealing with this conundrum is to impose a grounded restriction on one of the measurements of age, period, or cohort (Glenn, 2005; Mason et al., 1973). Because our dependent variable is related to the care for children, we expect that younger men and women who are not yet confronted with raising little children may show comparable levels of support for this item, while more variation is expected among older men and women. Previous studies indeed showed that entry into marriage and birth of the first child decrease support for gender egalitarianism among male and female adolescents (Baxter et al., 2015; Corrigan and Konrad, 2007; Fan and Marini, 2000; Kaufman and Bernhardt, 2012). This would theoretically allow a restriction on the effect of age.

To determine whether such a restriction can be statistically supported, we examined the bivariate age effect on support for gender egalitarianism in Fig. 1. Fig. 1 shows lower levels of support for gender egalitarianism among older men and women as compared to younger individuals. In addition, men and women aged 16 to 30 seem to hold largely similar levels of support for gender egalitarianism while there is more variation between people aged over 30. Multiple t-tests revealed no significant differences within the age group of 16–30 years in all survey years separately as well as combined, among both men and women.³ Though the effects of age may be confounded with cohort and period effects, this finding seems theoretically plausible, because younger men and women mostly find themselves in a specific life phase with a higher likelihood to be single and, more importantly, childless as compared to people aged over 30 who have divergent experiences and life trajectories. This resembles a watered-down version of a “natural experiment” in which certain categories of age, cohort, or period are set equal by exogenous processes, such as the limited voting rights for women in the late 19th century (Firebaugh and Chen, 1995). Indeed, we found that the share of unmarried and childless people is considerably lower among individuals aged 30 and older. Moreover, similar results were found using a different representative Dutch dataset (‘Social and Cultural Developments in the Netherlands’). Based on these arguments, we imposed a theoretically driven and statistically supported restriction on the effects of individuals aged between 16 and 30, i.e., we constrained these effects to be equal for all respondents aged 16 to 30.⁴ This allowed to obtain stable estimates for the effects of cohort, period and age using constrained generalized linear regression models (CGLIM) (Mason et al., 1973).

³ We performed post-hoc Bonferroni tests for each combination of age within the category 16–30 years, in each survey year and in all survey years combined, for men and women separately. We found no significant differences in mean levels of support for gender egalitarianism ($p < 0.05$).

⁴ We performed a robustness check by analyzing models with variations of the restrictions imposed on the effect of age. These analyses led to similar conclusions.

Fig. 1. Mean levels of support for gender egalitarianism by age.
Source: Cultural Changes in the Netherlands 1979–2012 (N = 30,852).

We used dummy variables for each birth cohort and survey year to control for their potentially non-linear relationships with the dependent variable. We included age as a ratio-scaled variable (including the aforementioned restriction) in the model because it is close to linearly related to the dependent variable for people aged over 30.⁵ We controlled for changes in the effects of education, church attendance, and labor force participation over time by including interaction terms of these variables with year of survey (mean centered).⁶ Because our models may suffer from multicollinearity, we checked collinearity statistics, which were acceptable (see Table A2 in the Appendix).⁷

4.2. Counterfactual simulation analyses

The impact of compositional shifts results from a combination of the effect size of a variable *and* its distributional shift. Therefore, estimating individual level effects is not sufficient to draw conclusions on the actual contribution of compositional shifts to the trend in support for gender egalitarianism. So once we determined the effects sizes of cohort, education, church attendance, and labor force participation on the individual level, we analyzed to what extent shifts in the distribution of these characteristics have contributed to the trends in support for gender egalitarianism among men and women. For this purpose, we simulated a counterfactual situation in which the composition of the Dutch population had not changed since the beginning of the surveys, i.e., *as if* the existing cohorts in 1979 had not been replaced by younger cohorts, and *as if* there had been no educational expansion, secularization, and changes in labor force participation between 1979 and 2012. We used the survey year 1979 as a reference point because these processes were then on their lowest in the period under study. This analysis technically comes down to imposing the frequency distributions found in the 1979 sample to all subsequent samples and estimating a new mean level of support for gender egalitarianism in each survey year under this condition, thereby using the estimates of the effect sizes from our multivariate regression analyses obtained in the first step. As a result, we could measure the unique contribution of longitudinal shifts in the composition of the population due to cohort replacement, educational expansion, secularization, and changes in labor force participation to the trend in support for gender egalitarianism. Standard errors for each contribution were obtained with a bootstrap procedure.⁸

⁵ We tested whether age was linearly related to the dependent variable. We found no significant difference between a model with age as dummies and age as a linear variable (including the age restriction).

⁶ As a robustness check, we analyzed a model including additional individual-level characteristics that possible confound the relationship with the dependent variable, such as marital status and whether the respondent has children. The results did not alter our main conclusions. For reasons of parsimony, we therefore decided to estimate a more parsimonious model (Table 1).

⁷ Although the Variance Inflation Factor (VIF) was rather high for the age effect, the estimate remains significant for both men and women, so multicollinearity does not seem harmful here.

⁸ The sampling distribution of the differences between the observed and the simulated means is unknown and depends on the estimated and simulated effects, on the observed distributions and the co-variances between all variables. Therefore, we used a bootstrapping procedure to empirically determine the shape of the sample distribution for each estimated difference between the observed and simulated means (see Table A2a and A2b in the Appendix). For each survey year, we drew 1000 bootstrap samples with replacement from the original sample. Based on these samples we could determine the lower and upper boundaries of the 95% confidence interval to test the significance of the difference between the observed means and our simulated means.

Fig. 2. Trends in support for gender egalitarianism for men and women, 1979–2012.

Source: Cultural Changes in the Netherlands 1979–2012 (N = 30,852).

5. Results

5.1. The trend in support for gender egalitarianism for men and women

To answer our first research question, we examined the trend in support for gender egalitarianism for men and women. Fig. 2 shows that the mean levels of support for gender egalitarianism increased between 1979 and 2012, though somewhat stronger among women. The mean level increased from 2.50 to 2.94 among men and from 2.78 to 3.43 among women. Between 1996 and 2002, there was a temporary drop for both men and women, which stabilized from 2002 onwards.⁹

5.2. Results from multivariate regression analysis

Table 1 shows the individual level effects of birth cohort, educational attainment, church attendance, and labor force participation, controlled for period and age, for men and women separately.¹⁰ Because we used dummy variables for each category of birth cohort and survey year, we obtained a large number of cohort and period estimates. We therefore only displayed the standardized ‘sheaf’ coefficients (Heise, 1972) in Table 1, summarizing the effects of all dummies for cohort and for period.

The standardized coefficients for birth cohort in Table 1 show a significant influence of birth cohort on support for gender egalitarianism, all other things being equal, which is about three times stronger for women ($\beta = 0.37$) than for men ($\beta = 0.11$). This gender difference in the cohort effect is significant as tested with a z-test derived from the work of Paternoster et al. (1998). The strong cohort effect suggests that the process of cohort replacement may have contributed to the rise in support for gender egalitarianism, particularly among women. Controlled for cohort and age, the period effect is small and equal for men and women ($\beta = 0.10$). The controlled effect of age is significantly different for men and women, with older men supporting gender egalitarianism less than younger men ($b = -0.01$) and older women being somewhat more egalitarian than younger women ($b = 0.01$).

Table 1 also demonstrates that the higher men and women are educated, the more they support gender egalitarianism. The influence of educational attainment on support for gender egalitarianism is stronger for women ($\beta = 0.19$) than for men ($\beta = 0.13$), yet the difference is not significant. Men and women who attend church less than once a week support gender egalitarianism significantly more than those attending church weekly. The influence of church attendance on support for gender egalitarianism is again stronger for women ($\beta = 0.12$) than for men ($\beta = 0.10$), though not significantly. Full-

⁹ The increase in support for gender egalitarianism was significant between 1979 and 2012 as tested with ANOVA (men: $F = 30.30$, women: $F = 13.76$, $p < 0.001$). Interactions between sex and year of survey in regression analyses showed that the increase in support for gender egalitarianism between 1979 and 2012 was significantly stronger for women than for men. Post-hoc Bonferroni tests showed that the mean level of support for gender egalitarianism dropped significantly between 1996 and 2002 among both men and women ($p < 0.05$).

¹⁰ Because our dependent variable is an ordinal outcome measure, we also analyzed the model using an ordinal logistic regression analysis (polytomous universal model or PLUM) in SPSS as a robustness check. The results are highly similar to the outcomes of our linear regression model.

Table 1

Unstandardized (b) and standardized (beta) coefficients of birth cohort, educational attainment, church attendance, labor force participation, and controls (age and period) on support for gender egalitarianism for men and women.

	Men (N = 14,616)		Women (N = 16,236)	
	b	beta	b	beta
Intercept	2.77***		2.53***	
Birth cohort (1951 = ref.) ^a		0.11***		0.37***
Period (1993 = ref.) ^a		0.10***		0.10***
Age (16–30 years constrained)	-0.02***	-0.19***	0.01**	0.13***
Education		0.13***		0.19***
Primary	Ref.		Ref.	
Primary vocational	0.01		0.19***	
Lower secondary	0.17*		0.34***	
Secondary vocational	0.15*		0.46***	
Upper secondary	0.30***		0.52***	
Bachelor's or equivalent	0.34***		0.63***	
Master's or equivalent	0.43***		0.75***	
Church attendance		0.10***		0.12***
Once a week	Ref.		Ref.	
Once a fortnight	0.12*		0.26***	
Once a month	0.21***		0.14***	
Less than once a month	0.19***		0.21***	
Never	0.33***		0.39***	
Employment		0.03*		0.06***
Non-working	Ref.		Ref.	
Part-time working	0.08		0.15***	
Full-time working	-0.06*		0.10***	
Variance explained	12.6%		16.6%	

Notes: The model is controlled for the interaction terms of educational attainment, church attendance, and labor force participation times period (ratio scaled) (see Table A3 in the Appendix for all interaction coefficients). For this purpose, we mean centered the period variable, which roughly corresponded to the survey year 1993. The main effects in the table therefore represent the effects around 1993. Standardized sheaf-coefficients in bold indicate a significant difference between men and women (Paternoster et al., 1998).

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

^a To save space, we do not present the coefficients for each dummy category but calculated one coefficients summarizing the effect for all dummy categories instead (Heise, 1972).

Source: Cultural Changes in the Netherlands 1979–2012 (N = 30,852).

time working men support gender egalitarianism significantly less than non-working men ($b = -0.06$), whereas part-time working men do not differ from the latter ($b = 0.08$, not significant). Both part-time and full-time working women show significantly more support for gender egalitarianism than non-working women ($b = 0.15$ respectively 0.10). However, the overall effect of labor force participation on support for gender egalitarianism is weak ($\beta = 0.03$ respectively 0.06) and not significantly different for men and women. Due to these relatively small effects, shifts in the distribution of these characteristics should have been considerable in order to have propelled support for gender egalitarianism over time.

We controlled for changes in the effects of educational attainment, church attendance and labor force participation over time by including interaction terms (coefficients are displayed in Table A3 in the Appendix). The effects of these individual characteristics hardly changed over time.

Because the standardized coefficients of period and cohort in Table 1 tell little about either the direction of the effects (i.e., the sheaf-coefficient is always positive) or their non-linear relation with support for gender egalitarianism, we graphically presented the estimated mean level of support for gender egalitarianism over the survey years and across birth cohorts in Fig. 3, based on the controlled regression coefficients of all period dummies (a) and all birth cohort dummies (b).

Fig. 3a shows that men's and women's support for gender egalitarianism increased between 1979 and 1996, controlled for all other factors. Between 1996 and 2002 there was a small drop, after which the trend restored again. Fig. 3b shows the estimated mean level of support for gender egalitarianism across birth cohorts. With all other characteristics held equal, the rise of support for gender egalitarianism across cohorts appears to be much stronger for women than for men, which was also indicated by the standardized coefficients for birth cohort in Table 1 ($\beta = 0.37$ respectively 0.11). Older female cohorts support gender egalitarianism less than their male counterparts, but the gender gap reversed among cohorts born after 1950. As birth cohort is the strongest predictor for women's level of support for gender egalitarianism, replacement of more traditional cohorts by the more egalitarian cohorts born between the 1950s and 1970s is likely to have contributed to the upward trend among women in particular.

5.3. Results from counterfactual analysis

Once we determined the influence of birth cohort, educational attainment, church attendance, and labor force participation on the individual level, controlled for period and age, we analyzed the actual contribution of cohort replacement and shifts in the distribution of the individual characteristics over time to the longitudinal rise in support for gender

Note: estimated means per year and birth cohort are expressed as controlled deviations from the sample mean level of support for gender egalitarianism.

Fig. 3. Estimated mean levels of support for gender egalitarianism for men and women by period (a) and cohort (b) based on multivariate regression analyses (controlled for education, church attendance, labor force participation and age).

Note: estimated means per year and birth cohort are expressed as controlled deviations from the sample mean level of support for gender egalitarianism.

Source: Cultural Changes in the Netherlands 1979–2012 (N = 30,852).

egalitarianism. This allows us to answer our second research question. Given the cohort effect size as shown in Table 1, we expected the trend towards more gender egalitarianism to be mainly due to the replacement of older cohorts by younger cohorts, and particularly so for women. Given the effects of educational attainment, church attendance, and labor force participation, we expected additional though weaker contributions of shifts therein over time.

Based on our multivariate regression estimates (Table 1), we simulated trends in support for gender egalitarianism as if a) the cohorts that were present in the sample of 1979 had not been replaced by younger cohorts, and the distribution of b) educational attainment, c) church attendance, and d) labor force participation had not changed in our sample since 1979. Fig. 4 presents the trends resulting from these counterfactual simulations for men and women separately. The dotted line shows the observed trend in support for gender egalitarianism over time (taken from Fig. 2). The differences between the observed mean and the simulated means in each survey year indicate the contribution of cohort replacement and shifts in the distribution of educational attainment, church attendance, and labor force participation in the population since 1979. The larger these differences, the stronger the relative contribution of compositional shifts to the rise in support for gender egalitarianism. To test whether the differences between the observed and simulated means are significant, we calculated confidence intervals per survey year ($p < 0.05$). For the calculated differences and corresponding confidence intervals we refer to Table A4a (men) and A4b (women) in the Appendix.

Fig. 4. Observed trend in support for gender egalitarianism and simulated trends based on the distribution of cohort, educational attainment, church attendance, and labor force participation within the sample of 1979, for men and women separately.
Source: Cultural Changes in the Netherlands 1979–2012 (N = 30,852).

Line (a) in Fig. 4 shows the simulated trend with cohorts in the sample of 1979 constant over the years (i.e., as if no cohort replacement had taken place). For men, the simulated trend only marginally deviates from the observed trend and the difference is not significant. This is due to the fairly small differences in mean levels of support for gender egalitarianism between older and younger male cohorts (see Fig. 3b) that were used to calculate the simulated trend. By contrast, the simulated trend among women suggests that the longitudinal increase in support for gender egalitarianism would have been significantly *less* strong if the cohorts in the sample of 1979 (who were born between 1907 and 1963) would not have been (partly) replaced by younger cohorts. If older female birth cohorts had not been replaced by more egalitarian female cohorts, then support for gender egalitarianism would even have declined over time. Based on these results, cohort replacement mainly accounted for the rise in support for gender egalitarianism among women, supporting hypothesis 1.

Line (b) shows the simulated trend with the sample distribution of educational attainment among men and women held constant since 1979 (i.e., as if no educational expansion had taken place). Under this condition, men's rise in support for gender egalitarianism would have been slightly less strong than observed. The differences between the observed and simulated means are small yet significant in each survey year (except in 1980). For women the differences between the observed and simulated means are larger, indicating that educational expansion has contributed more to the rise in support for gender egalitarianism among women than among men. Between 1979 and 2002, the difference between the observed and the simulated trend increases over time as educational expansion advances. Between 2002 and 2008, however, the difference between the observed and simulated means decreases, which can be attributed to the temporary slowdown of the process of educational expansion in our sample during this period (see [Figure A1](#) in the Appendix). These results provide support for hypothesis 2: educational expansion has contributed to the observed rise in support for gender egalitarianism in the Netherlands over time, and this contribution was stronger among women than among men. We should note, however, that the contribution of educational expansion is rather small.

Line (c) shows the simulated trend with the sample distribution of church attendance constant since 1979 (i.e., as if no secularization had taken place). For both men and women, the simulated trend indicates that the rise in support for gender egalitarianism would have been slightly less strong than observed if secularization had not taken place in the period under study. Although the differences between the observed and the simulated means are minimal, the contribution of secularization is significant (except between 1980 and 1987 for women) and stronger for men, corresponding to the somewhat stronger process of secularization among men as compared to women (see [Figure A2](#) in the Appendix). Thus, secularization has indeed contributed to the rise in gender egalitarianism, though only slightly, and stronger for men than for women, which contradicts hypothesis 3.

Line (d) shows the simulated trend with the distribution of labor force participation in the sample constant since 1979 (i.e., as if no changes in labor force had taken place). The simulated trend among men hardly deviates from the observed trend (though significantly from 1996 onwards). Shifts in the male distribution of labor force participation mainly came down to an increase in the share of part-time working men. This shift has contributed little to the rise in support for gender egalitarianism. Also for women, we find marginal differences between the observed and simulated means (though significant from 1993 onwards). Thus, while we found a considerably increase in the proportion of – mainly part-time – working women between 1979 and 2012 (see [Figure A3](#) in the Appendix), the contribution of the rise in female labor force participation to the trend was limited because the effect of labor force participation on support for gender egalitarianism is rather small (see [Table 1](#)). Thus, we found some support for hypothesis 4 that the feminization of the labor force has contributed to the trend in support for gender egalitarianism, but its impact is minimal.

Line (e) shows the total simulated trend with cohorts and the distribution of education, church attendance and labor force participation in the 1979 sample constant over the survey years. For men, the simulated trend suggests that cohort replacement and shifts in the distribution of characteristics have had a modest influence on the trend in support for gender egalitarianism. The difference between the observed and simulated means is small but significant (except in 2008 and 2012). For women, the total simulated trend indicates that the observed trend would be largely absent, and that women would even be less egalitarian after the turn of the century compared to 1979, if the existing cohorts in 1979 had not been replaced by younger cohorts, and, to a lesser extent, if there had been no educational expansion. Secularization and changes in the share of women in the labor force between 1979 and 2012 hardly played a role in explaining the rise in support for gender egalitarianism.

6. Conclusion and discussion

In this research, we aimed to provide insight in the rise in support for gender egalitarianism among men and women and the extent to which important societal shifts in the social, cultural, economic, and demographic structure of the Dutch population could explain these trends. We used 16 waves of nationally representative cross-sectional data from the Netherlands between 1979 and 2012. The answer to our first research question is in line with previous research on gender egalitarianism: we found that both men's and women's support for gender egalitarianism concerning the care for children has increased during this period, with a temporary decline between 1996 and 2002. Women support gender egalitarianism more than men, and the development of these opinions over time was stronger for women than for men.

We found birth cohort to be a strong determinant of support for gender egalitarianism, especially among women. The oldest female cohorts in our study were least supportive of the idea that men and women are equally suited to raise children, even less than men born in the same birth cohorts. As each subsequent female cohort supports gender egalitarianism more, women have gradually caught up with and even by-passed men's support for gender egalitarianism. The gender gap reversed with the cohorts born after the Second World War, who were socialized during the “cultural revolution” of the 1960s and 1970s. These findings support [Mannheim's \(1952\)](#) notion, followed up by [Inglehart \(1997\)](#), that cohorts (generations) differ from each other because they have had different formative experiences which were specific for the historical and cultural situation in which they grew up. However, we found that this holds more strongly for women. As a consequence, changes in the female demographic composition could well explain the observed trend among women, as previously proposed ([Brooks and Bolzendahl, 2004](#); [Cotter et al., 2011](#); [Pampel, 2011](#)).

We answered our second research question by actually showing that the rise in support for gender egalitarianism was mainly due to the replacement of older female cohorts by the younger, more egalitarian female cohorts born between the

1950s and 1990s, taking advantage of counterfactual simulation analyses to fill this lacuna in the existing knowledge. However, only a small part of men's increase in support for gender egalitarianism could be attributed to shifts in the demographic composition, as the differences between older and younger male cohorts in their mean levels of support for gender egalitarianism were fairly small. Recent female cohorts indeed seem to have more interest in challenging the existing gender structures than male cohorts (Bolzendahl and Myers, 2004). Moreover, women may have benefited more from changes in the cultural and institutional discourse in which they were socialized. In the Netherlands, for example, several policies and media campaigns have been designed to encourage girls and women to enter male dominated educational subjects and occupations, such as science and technology (Wilson and Dekkers, 2013), while it has been less accepted and certainly not encouraged for men to take on female jobs or activities.

The increase of the share of higher educated women has also contributed somewhat to the trend, while the impact of secularization and the feminization of the labor market was marginal. This implies that the effect sizes of these characteristics and/or shifts in their distribution in the population were not strong enough to make a substantive impact on support for gender egalitarianism. Although we found that female church attendees differ significantly from non-attendees, Dutch women's secularization was seemingly not substantial enough to change support for gender egalitarianism at the societal level. Likewise, the increase in the share of (mainly part-time) working women has not contributed to the rise in gender egalitarianism, as has been widely theorized (e.g., Bolzendahl and Myers, 2004), because the effect size of labor force participation was rather small.

This study contributed to understanding the rise in support for gender egalitarianism by showing that cohort replacement could well explain the trend among women, while it only explained a minor part of the observed trend among men. We showed that the strength of demographic compositional changes as an explanation for the rise in support for gender egalitarianism is a combination of the effect size of demographic characteristics and their distributional shifts in the population, which differ between men and women. We added to previous propositions by quantifying the often theorized relationship between important social, cultural, economic, and demographic societal changes and men's and women's rising support for gender egalitarianism. In addition, we demonstrated that the explanations for these trends are gender specific. Hence, future research is advised to consider differential explanatory models for men and women.

Several limitations of this study should be addressed. First, gender egalitarianism consists of different dimensions (Davis and Greenstein, 2009), but we could only measure a specific aspect of support for gender egalitarianism based on one question concerning care for little children. This item was the best measure at hand, because we needed as many time points as possible to perform a counterfactual analysis and other measures in the data were only available in a limited number of waves. One could argue that the question whether a woman is more suited to raise little children not only measures preferences for gendered child care responsibilities but also captures gender essentialist beliefs of women having an inherently greater ability of caregiving and nurturing. Such gender essentialist assumptions of men and women having equal but essentially different natures may be used to justify role specialization and may reproduce gender stereotypes and existing inequalities in the household and in society at large (Charles, 2011; England, 2010; Epstein, 2007). For example, England (2010) and Charles (2011) have argued that, even (or particularly) in countries in which women have formally or legally gained equal opportunities and support for gender equality is widespread, men and women often work in traditionally male and female jobs. Also in the Netherlands, sex segregation in educational fields and on the labor market is considerably high, and women still allocate more time to household tasks than men (Portegijs & Van den Brakel, 2016). Although gender essentialist notions seem to persist, our findings indicate that more and more people have moved away from the belief that women are better suited to raise little children than men, which would contribute to greater gender equality. Disentangling various forms of gender egalitarianism in future research may add to a better understanding of changes in gender ideology. Notwithstanding, our findings are highly comparable to other studies using different measures of gender egalitarianism in different contexts (e.g., Cotter et al., 2011; Donnelly et al., 2015; Norris and Inglehart, 2011; Schnabel, 2016; Shorrock, 2016).

Second, due to the cross-sectional nature of our data, we cannot rule out the possibility of a reversed relationship between labor force participation and support for gender egalitarianism; higher levels of support for gender egalitarianism may have driven more women to enter the labor force. The use of panel data in future research may shed light on this issue. Yet, we consider cohort replacement to have actually influenced the rise in support for gender egalitarianism, as the reverse is highly unlikely.

Third, we could fairly well explain the rise in women's support for gender egalitarianism, but the smaller rise in men's support for gender egalitarianism remains largely unexplained. Certain periodic societal events or developments, such as female labor force participation, emancipation policies or governmental measures concerning child care may have directly influenced men's support for gender egalitarianism, but we were not able to include these contextual measures in our study. Besides, men have likely adopted support for gender egalitarianism at a slower pace than women because of their stronger interests in protecting the traditional gender hierarchy. With advanced gender equality, support for gender egalitarianism will possibly diffuse from young female cohorts to male cohorts.

Finally, we found a temporary decline between 1996 and 2002 which remained unexplained. Yet, the downturn in support for gender egalitarianism was not limited to the Dutch case, as a similar drop was found in other contexts (e.g., Cotter et al., 2011; Donnelly et al., 2015; Schnabel, 2016). This suggests that certain societal or even broader events may play a role in explaining periodic fluctuations in the trend towards support for gender egalitarianism. Although this study is confined to the Netherlands, similar social, cultural, economic and demographic societal changes have taken place in other western countries.

Therefore, this study provides general insights in explaining the rise in support for gender egalitarianism and may inspire theory driven hypotheses on gender specific period and cohort events affecting the rise in support for gender egalitarianism.

Appendix

Fig. A1. Distribution of educational attainment for men and women, 1979–2012.

Source: Cultural Changes in the Netherlands 1979–2012.

Fig. A2. Distribution of church attendance for men and women, 1979–2012.
Source: Cultural Changes in the Netherlands 1979–2012.

Fig. A3. Distribution of labor force participation for men and women, 1979–2012.

Source: Cultural Changes in the Netherlands 1979–2012.

Table A1

Descriptive statistics 1979–2012.

	Men			Women		
	Proportion	Mean	Sd	Proportion	Mean	Sd
'A woman is more suited to raise little children than a man'		2.75	1.16		3.19	1.18
Strongly agree	11.5			7.4		
Agree	40.8			26.9		
Neither agree nor disagree	16.4			17.6		
Disagree	23.5			35.7		
Strongly disagree	7.8			12.3		
Period		1994.41	10.35		1993.90	10.09
Cohort		1951.45	17.88		1951.61	17.44
Age		42.96	15.79		42.29	15.48
Education						
Primary	9.4			10.7		
Primary vocational	22.2			24.1		
Lower secondary	8.0			12.6		
Secondary vocational	22.4			21.4		
Upper secondary	9.0			10.1		
Bachelor's or equivalent	14.6			13.2		
Master's or equivalent	14.3			7.8		

Table A1 (continued)

	Men			Women		
	Proportion	Mean	Sd	Proportion	Mean	Sd
Church attendance						
Once a week	14.2			14.4		
Once a fortnight	4.1			4.8		
Once a month	5.4			6.3		
Less than once a month	17.3			18.6		
Never	59.0			55.8		
Labor force participation						
Non-working	36.0			62.7		
Part-time working	7.0			24.2		
Full-time working	57.0			13.1		
N	14,616			16,236		

Source: Cultural Changes in the Netherlands 1979–2012 (N = 30,852).

Table A2

Collinearity statistics.

Variables	Men VIF	Women VIF
Period (1993 = ref.) ^a	12.83	10.91
Birth cohort (1951 = ref.) ^a	2.83	2.57
Age (16–30 years constrained)	45.85	37.81
Education (primary education = ref.)		
Primary vocational	2.86	2.96
Lower secondary	1.83	2.20
Secondary vocational	3.04	3.00
Upper secondary	2.01	2.10
Bachelor's or equivalent	2.57	2.51
Master's or equivalent	2.50	2.19
Church attendance (once a week = ref.)		
Once a fortnight	1.28	1.30
Once a month	1.35	1.40
Less than once a month	2.03	2.07
Never	2.28	2.33
Labor force participation (non-working = ref.)		
Part-time working	1.56	1.42
Full-time working	1.95	1.23
Interactions education * period		
Primary vocational * period	3.20	3.18
Lower secondary * period	1.73	2.11
Secondary vocational * period	4.24	3.84
Upper secondary * period	1.97	1.90
Bachelor's or equivalent * period	3.18	2.94
Master's or equivalent * period	2.52	2.22
Interactions church attendance * period		
Once a fortnight * period	1.32	1.36
Once a month * period	1.43	1.49
Less than once a month * period	2.52	2.63
Never * period	5.69	5.34
Interactions employment * period		
Part-time working * period	4.04	2.05
Full-time working * period	1.69	1.51

^a Lowest tolerance value and highest VIF value are reported.

Source: Cultural Changes in the Netherlands 1979–2012 (N = 30,852).

Table A3

Unstandardized coefficients (b) for the interaction terms of educational attainment, church attendance, and labor force participation with survey year (extension of Table 1).

	Men (N = 14,616) b	Women (N = 16,236) b
Interactions education * period		
Primary * period	Ref.	Ref.
Primary vocational * period	0.001	0.003
Lower secondary * period	0.001	0.000
Secondary vocational * period	0.002	–0.005
Upper secondary * period	–0.005	–0.010
Bachelor's or equivalent * period	0.000	–0.003

(continued on next page)

Table A3 (continued)

	Men (N = 14,616) b	Women (N = 16,236) b
Master's or equivalent * period	–0.005	–0.008
Interactions church attendance * period		
Once a week * period	Ref.	Ref.
Once a fortnight * period	0.005	0.003
Once a month * period	0.003	0.003
Less than once a month * period	0.012***	0.005
Never * period	0.005	0.000
Interactions employment * period		
Non-working * period	Ref.	Ref.
Part-time working * period	0.002	–0.001
Full-time working * period	0.000	0.009**

Note: For the interactions, period was measured as ratio variable (each unit increase corresponding to the next survey year) centered on the survey year 1993.

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

Source: Cultural Changes in the Netherlands 1979–2012 (N = 30,852).

Table A4a

Estimated differences between observed and simulated means and corresponding 95% bootstrapped confidence intervals for men.

Year	Cohort - observed (a)		Education - observed (b)		Church attendance - observed (c)		Labor force participation - observed (c)		Total - observed (d)	
	Δ	95% CI	Δ	95% CI	Δ	95% CI	Δ	95% CI	Δ	95% CI
1979	0		0		0		0		0	
1980	–0.01 ns	–0.03, 0.01	–0.02 ns	–0.03, 0.00	–0.01	–0.03, –0.01	0.00	–0.01, 0.00 ns	–0.05	–0.09, –0.06
1981	–0.02 ns	–0.05, 0.00	–0.03	–0.05, –0.02	–0.01	–0.02, 0.00	–0.01	–0.01, 0.00 ns	–0.08	–0.12, –0.04
1985	–0.04 ns	–0.09, 0.01	–0.03	–0.05, –0.02	–0.01	–0.02, 0.00	–0.01	–0.02, 0.00 ns	–0.09	–0.15, –0.04
1986	–0.03 ns	–0.08, 0.02	–0.05	–0.06, –0.03	–0.01	–0.02, 0.00	–0.01	–0.02, 0.00 ns	–0.08	–0.14, –0.02
1987	–0.04 ns	–0.10, 0.02	–0.06	–0.07, –0.04	–0.02	–0.03, –0.01	–0.01	–0.02, 0.00 ns	–0.12	–0.19, –0.06
1991	–0.05 ns	–0.13, 0.03	–0.05	–0.07, –0.04	–0.02	–0.04, –0.01	–0.01	–0.02, –0.01	–0.13	–0.21, –0.04
1992	–0.06 ns	–0.15, 0.03	–0.05	–0.06, –0.03	–0.03	–0.04, –0.02	–0.01	–0.02, 0.00 ns	–0.14	–0.23, –0.04
1993	–0.06 ns	–0.16, 0.03	–0.06	–0.07, –0.04	–0.03	–0.05, –0.02	–0.01	–0.02, 0.00 ns	–0.15	–0.26, –0.05
1996	–0.06 ns	–0.17, 0.04	–0.07	–0.09, –0.06	–0.04	–0.05, –0.02	–0.02	–0.02, –0.01	–0.15	–0.27, –0.03
1997	–0.07 ns	–0.19, 0.04	–0.06	–0.07, –0.04	–0.04	–0.05, –0.03	–0.01	–0.02, –0.01	–0.16	–0.28, –0.03
2002	–0.08 ns	–0.23, 0.06	–0.11	–0.13, –0.09	–0.05	–0.07, –0.04	–0.01	–0.02, –0.01	–0.23	–0.40, –0.07
2004	–0.08 ns	–0.23, 0.06	–0.07	–0.09, –0.05	–0.05	–0.07, –0.04	–0.01	–0.02, –0.01	–0.17	–0.35, –0.00
2006	–0.09 ns	–0.25, 0.07	–0.08	–0.10, –0.06	–0.06	–0.08, –0.04	–0.01	–0.02, –0.01	–0.20	–0.38, –0.01
2008	–0.08 ns	–0.26, 0.10	–0.04	–0.06, –0.02	–0.07	–0.09, –0.05	–0.02	–0.03, –0.01	–0.16 ns	–0.36, 0.05
2012	–0.09 ns	–0.27, 0.09	–0.08	–0.11, –0.05	–0.07	–0.10, –0.05	–0.02	–0.03, –0.01	–0.18 ns	–0.41, 0.05

ns = non-significant with $\alpha = 0.05$ two-tailed.

Source: Cultural Changes in the Netherlands 1979–2012 (N = 30,852).

Table A4b

Estimated differences between observed and simulated means and corresponding 95% bootstrapped confidence intervals for women.

Year	cohort - observed (a)		education - observed (b)		church attendance - observed (c)		labor force participation - observed (d)		total - observed (e)	
	Δ	95% CI	Δ	95% CI	Δ	95% CI	Δ	95% CI	Δ	95% CI
1979	0		0		0		0		0	
1980	–0.04 ns	–0.07, 0.00	–0.04	–0.06, –0.02	–0.02 ns	–0.03, 0.00	–0.01 ns	–0.01, 0.00	–0.09	–0.13, –0.05
1981	–0.04 ns		–0.03		–0.01 ns		0.00 ns		–0.10	

Table A4b (continued)

Year	cohort - observed (a)		education - observed (b)		church attendance - observed (c)		labor force participation - observed (d)		total - observed (e)	
	Δ	95% CI	Δ	95% CI	Δ	95% CI	Δ	95% CI	Δ	95% CI
		–0.08, 0.00		–0.05, –0.02		–0.03, 0.00		–0.01, 0.00		–0.14, –0.05
1985	–0.15	–0.20, –0.11	–0.06	–0.08, –0.04	–0.02 ns	–0.03, 0.00	0.00 ns	–0.01, 0.00	–0.23	–0.28, –0.18
1986	–0.16	–0.20, –0.11	–0.05	–0.07, –0.04	–0.01 ns	–0.02, 0.00	0.00 ns	–0.01, 0.00	–0.23	–0.28, –0.17
1987	–0.21	–0.27, –0.16	–0.08	–0.10, –0.07	–0.02	–0.04, –0.01	0.00 ns	0.00, 0.01	–0.32	–0.37, –0.26
1991	–0.31	–0.39, –0.24	–0.11	–0.13, –0.09	–0.03	–0.04, –0.02	–0.01	–0.02, –0.01	–0.46	–0.53, –0.38
1992	–0.32	–0.40, –0.24	–0.10	–0.11, –0.08	–0.03	–0.04, –0.02	–0.01 ns	–0.01, 0.00	–0.46	–0.54, –0.38
1993	–0.34	–0.43, –0.26	–0.11	–0.13, –0.09	–0.03	–0.04, –0.02	–0.01	–0.02, –0.01	–0.49	–0.58, –0.41
1996	–0.37	–0.46, –0.28	–0.12	–0.14, –0.11	–0.02	–0.03, –0.01	–0.01	–0.02, –0.01	–0.55	–0.65, –0.45
1997	–0.40	–0.49, –0.30	–0.12	–0.14, –0.10	–0.03	–0.05, –0.02	–0.02	–0.03, –0.01	–0.58	–0.69, –0.48
2002	–0.48	–0.59, –0.36	–0.17	–0.20, –0.15	–0.04	–0.05, –0.03	–0.04	–0.05, –0.03	–0.75	–0.88, –0.62
2004	–0.48	–0.60, –0.36	–0.14	–0.16, –0.11	–0.04	–0.05, –0.03	–0.03	–0.05, –0.02	–0.73	–0.87, –0.58
2006	–0.49	–0.61, –0.36	–0.13	–0.15, –0.10	–0.04	–0.05, –0.02	–0.03	–0.05, –0.02	–0.73	–0.88, –0.58
2008	–0.56	–0.70, –0.41	–0.08	–0.10, –0.06	–0.04	–0.06, –0.03	–0.04	–0.06, –0.02	–0.75	–0.92, –0.59
2012	–0.57	–0.72, –0.42	–0.13	–0.17, –0.10	–0.05	–0.07, –0.03	–0.05	–0.07, –0.02	–0.87	–1.06, –0.68

ns = non-significant with $\alpha = 0.05$ two-tailed.

Source: Cultural Changes in the Netherlands 1979–2012 (N = 30,852).

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