# Causality Relations between Church Attendance and Childbearing: Evidence from a Dutch panel study

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Draft version (23 April 2009)



**Abstract**

Previous studies have demonstrated that religious people in Europe have larger families. To date, however, there is a lack of evidence on the causality of this link. This analysis addresses the question if a reverse causation persists, i.e., if the frequency of church attendance influences a person's childbearing behaviour and, at the same time, if having a child affects one's level of church attendance. The analysis, applying Structural Equation Modeling, is based on four-wave panel data gathered in the Netherlands (1987-2006) spanning most of the reproductive life of the male and female respondents. Contrary to findings from the U.S. the results suggest a one-way causality: the level of church attendance influences future childbearing, but a change in the number of children does not prove to be a significant determinant for the frequency of church attendance.

## 1. Introduction and research question

Interest in the relationship between religiosity and fertility has been growing during the last decade in Europe (e.g. Adsera 2006a, 2006b; Philipov and Berghammer 2007; Frejka and Westoff 2008; Régnier-Loilier and Prioux 2008). The studies conducted as yet generally provide evidence of a positive association between religiosity and childbearing ideals, intentions and behaviour. However, in order to interpret this relationship as causal, religiosity is bound to be assumed stable over the childbearing years due to limited data availability.

A small number of studies in Europe have addressed the question whether there are age-related changes in religiosity. Rather than reporting variation in religiosity over the life course they suggest that cohort change is the main driver behind religious change (Lesthaeghe and Surkyn 1988; Te Grotenhuis and Scheepers 2001; Tilley 2003; Voas and Crockett 2005; Crockett and Voas 2006).

Evidence from the U.S., on the other hand, is mixed. While some studies downplay age-related changes in religiosity (e.g. Chaves 1991), others convey them. Several studies have demonstrated that family related life cycle events influence a person's religiosity. Already in 1970 a religious trajectory termed 'family life-cycle' has been described. It is marked by a rise in church attendance after marriage and a peak when children reach school age. Once children leave the parental home, religious participation evinces a decrease (Bahr 1970: 61).

Also recent U.S. studies that rely on longitudinal data testify the influence of having children on the religious life path of parents. The presence of children aged two and older leads to a slightly stronger impact of religious belief on respondent's daily life (Argue, Johnson and White 1999). In line with this finding, participants in a qualitative study stated that child rearing promoted their religiosity, whereas the end of caring for children was coupled with a drop in religiosity (Ingersoll-Dayton, Krause and Morgan 2002: 64-65). Stolzenberg, Blair-Loy and Waite (1995) note that social networks form more readily among persons with similar combinations of age, marital status and fertility and hence conclude that respondents who enter parenthood at conventional ages face stronger incentives to join church communities. Their results concur with this reasoning. The effect of the presence of young children on religious participation is stronger when parents are at the more widespread age of 32 than

when they are 25 years old. Rather than analysing the influence of childbearing and childrearing at certain points in time, McCullough et al. (2005) single out different religious trajectories over the life course and study their association with certain individual characteristics. They are able to show that an increase in the number of children is associated with a higher probability of displaying a parabolic curve as compared to a low and decreasing pattern. The parabolic pattern is characterised by an accelerating level of religious consumption from the late-20s to the early-50s and a decline from the late-50s onwards (p. 85).

Differences between the U.S. and Europe in the role played by religion and in the welfare regime disable a mere application of the U.S. related findings to the European context. Therefore, this study investigates the causal relations between church attendance and childbearing in the Netherlands. Using four-wave panel data which cover most of the reproductive life of the male and female respondents, it examines both the influence of church attendance on childbearing and the effects of changes in the number of children on the parent's religious trajectory in order to address the gap in the European literature.

The outline of the paper is as follows. First, theoretical considerations chart the mechanisms linking religiosity and childbearing and serve for the construction of research hypotheses to be empirically tested. Subsequently, a succinct illustration of past developments and present role of religion as well as an overview of fertility behaviour in the Netherlands are provided. The empirical part commences with a presentation of data and measures, followed by an introduction of the statistical method and model employed. Next, descriptive findings and results of the models are displayed and interpreted. A summary finalises this paper.

## 2. Theoretical background and research hypotheses

Several reasons have been proposed to explain why religiosity is conducive to a larger family size (e.g. McQuillan 2004; Chatters and Taylor 2005; Philipov and Berghammer 2007). Due to the relatively small number of adherents to other religions in the countries under study, most of the arguments are valid primarily for Christianity. First of all, the Christian churches attach a high value to family and children. Further fertility related teachings such as the crucial role of the mother for the upbringing of the children, the high importance of marriage and the Catholic prohibition of modern contraception promote a large number of children as does the rejection of abortion in the Catholic and Orthodox churches. While it is apparent that church members do not strictly follow the teaching as a whole, it can be assumed that they comply with the general views of their church. Second, church communities hold functions of social networks. The plausibility of Christian positions is enforced through the communication with other church members, in joint rituals and pastoral teaching. Being in contact with large families influences the views on the personal ideal number of children and enforces imitation. Adherents can also count on other members' support in issues related to children. Finally, religiosity might help believers to cope with new and stressful situations. Different kinds of uncertainties, for instance relating to the employment situation, the partnership or childrearing, have been found to be relevant for fertility decisions (e.g. Mills and Blossfeld 2005; Fliegenschnee 2006). Dealing with them could be easier for religious people if they find comfort and reassurance in their faith and through religious practices. *Based on these considerations we may presume that church attendance exhibits a positive effect on the number of children (Hypothesis 1).*

In addition to the arguments on the influence of religiosity on fertility, there are reasons to believe that childbearing and successive childrearing may trigger change in the parents' religiosity.
Christian churches encourage having children and are apt to provide a welcoming atmosphere for families. They, for instance, offer child playgroups or group meetings for parents whose gatherings might attract new parents who can meet others in similar stages of their family cycle, and, as Stolzenberg et al. (1995) revealed as relevant, of similar age. The first acquaintance with the local church community might be established through passage rites such as baptism or first communion, which continue to be largely used even by church members who do not draw on regular church

activities (Becker and De Hart 2006: 17 and 32). Instead of fuelling the parents' contact with a church community, the presence of a small child may also cause a reduction in religious practice if the parents feel unconfortable bringing a child to church.
Next to this explanation, which might be termed, 'social network based', another mechanism which refers to the 'meaning of life' is proposed. A birth might foster reflections on the meaning of life and one's own position toward religion whereupon answers might be sought in the church context (Ingersoll-Dayton et al. 2002: 64).
Another point is that parents might aim to actively expose their young children to 'good values' or want them to receive religious education provided by the church (Stolzenberg et al. 1995: 86 and 95; Becker and Hofmeister 2001: 713; Ingersoll-Dayton et al. 2002: 64; McCullough et al. 2005: 87). These interventions might be most fruitful when the children are in their early school years. The wish to expose the children to religious education does not cause a higher frequency of contact with the local parish in contexts where religious education is available as a school subject which is the case in several European countries such as Austria, Germany, Italy, the Netherlands, Spain.
*Relying on these arguments it is hypothesised that the birth of a child and subsequent childrearing entail an increase in the frequency of church attendance (Hypothesis 2).*

Another way is to approach this issue from a structural point of view. Having children frequently induces alterations in a person's structural location, primarily with regard to one's labour market participation (De Vaus and McAllister 1987; Becker and Hofmeister 2001: 707). A reduction in the working hours is accompanied by shifts in time allocation and frequently causes a diminution in social contacts, which might encourage the integration into a parish community. Gender differences are particularly evident here. *Women tend, more than men, to occupy themselves in child care and lower their engagement in paid work which, according to our reasoning, renders them to be disposed to increase their church attendance (Hypothesis 3).*

As a last point the reference to religious socialisation is warranted. Positive childhood reminiscences of the church can rouse the wish the child should experience them too or the desire to expose the child to 'good values' even in cases where own church attendance has faded. People who had been socialised in a religious family as children might be more ready to accede to church-based social networks and more susceptible to seek answers to the question about the meaning of life in religion than their peers without religious background. *Consequently, parents who do not attend church at present but have been raised in a religious family are more likely to resume church attendance after the birth of a child than their peers who did not grow up in a religious family (Hypothesis 4).*

## 3. Religion and fertility in the Netherlands

Following these more general considerations, this section focuses on past developments and current situation of religion in the Netherlands and reviews fertility behaviour in a concise way.
Until the mid-1960s one of the most eminent features of Dutch society was its 'pillarized' structure (Bryant 1981; Dekker and Ester 1996). Starting at the end of the 19$^{th}$ century, Protestants, Catholics and those without religion had developped their own societal institutions, such as schools, parties, trade unions or newspapers. Reinforced by a perspicuous regional concentration and marital homogamy, social contacts between the different groups were limited. This system known as 'pillarization' plummeted from the mid-1960s and contributed to an increase in the fraction of unaffiliated people. Today, the Netherlands are known for their high share of people without religion amounting to about 40% of the population (Statistical Yearbook of the Netherlands 2007: 116), which renders it one of the most secularized countries in Europe. At present, the Catholics constitute the largest religious group totalling to around 30% of the population followed by the Protestants with 20% (van Herten 2008). Actually, only around 8% of the Catholics (KASKI 2007) and 21% of the members of the Protestant Church attend church regularly (Becker and De Hart 2006: 32).
The transition from a more religious to a secularized society coincided with changes in family and fertility behaviour such as the decline in family size, postponed childbearing, rise in cohabitation, single parent families and partnership instability. These two broad developments are typically

considered as intertwined. For instance, Lesthaeghe and Surkyn (1988) posit that secularization and individualization were necessary conditions for the shifts in family and fertility patterns observed during the previous decades.
The Netherlands were characterised by a comparatively high fertility rate until the 1960s. Only a few countries in Central and Western Europe exceeded or reached similarly high levels as the Dutch period Total Fertility Rate (TFR) of 3.12 in 1960. Several studies have examined the reasons for this curiously high fertility rate and concluded that the outstandingly high fertility levels of Catholics constituted a decisive factor (e.g. Van Poppel 1985; Engelen and Hillebrand 1986). Between 1965 and 1975 a pronounced downswing in the number of births took place. In this period the fertility rate nearly halved to well below the European average at that time (1975: Netherlands 1.66, EU-25 countries 2.02). Currently the TFR stands at the moderately high level of 1.72 (2006 and 2007; Statistics Netherlands 2009), above the EU-25 average, despite a remarkably late age at childbearing. Dutch women are among the oldest first time mothers in Europe. They are on average 29 years old when giving birth for the first time (2006; European Demographic Datasheet 2008). Nevertheless, completed fertility is still comparatively high to other European countries, implying a strong 'catching up' of births by women in their thirties (Fokkema et al. 2008).
A comparison of 19 European countries revealed that the Netherlands are located in the upper third of countries when ranked by a concentration of births to women, i.e., the concentration of births is relatively high. In the birth cohort 1960 28% of women bore half of the children (Shkolnikov et al. 2007: 83). The reason for the high concentration is the comparably high childlessness amounting to around 18% for the cohorts born from 1961 to 1965 (Sardon 2006: 246; Frejka 2007: 63).

## 4. Data and measures

The analysis is based on panel data from the Panel Study of Social Integration in the Netherlands (Liefbroer and Kalmijn 1997), which span 18 years and therefore covers most of the reproductive life of the male and female respondents. Six waves of data have been collected in the years 1987 (Wave 1), 1989 (Wave 2), 1991 (Wave 3), 1995 (Wave 4), 1999/2000 (Wave 5) and 2005/2006 (Wave 6). In the first wave 1,775 respondents born in the years 1961, 1965 and 1969 participated. They were aged around 18, 22 and 26 at that time and around 36, 40 and 44 at the time of the last survey.
The data set comprises several measures of religiosity. Information on church attendance and religious adherence has been obtained in all waves except for the second one. Questions on the importance of religion in the parental home, parents' affiliation and their church attendance as well as questions on beliefs (belief in afterlife, belief in prayer, faith in God) have been asked at one or two occasions respectively.
In this analysis, I focus on the information on church attendance. Church attendance differs from religiosity. Sociologists of religion have characterised religiosity as a multidimensional concept (e.g. Glock 1962). And even though their views on the number and kind of these dimensions diverge, religious practice is mostly considered as one of them. Church attendance is one of the most salient indicators for religious practice (Billiet n.d.: 352). Differently from measures such as affiliation, religious belief or self-assessed religiosity, church attendance entails action and is thus presumably advantageous for empirical analyses. The motivations to visit church services can be multifold and not all of them reflect personal religious conviction, but especially in a secularised context, such as the Netherlands, attending church for reasons of convention or social pressure are arguably of minor importance. Church goers are a highly select group with respect to their socio-economic and demographic profile, e.g., having a larger family size (e.g. Adsera 2006b; Philipov and Berghammer 2007). While the gathering of believers is an indicator directly inherent to Christianity, one of its limitations is its different role in the different denominations. Whereas weekly church attendance is a prescription in Catholicism (Code of Canon Law 1983: 1247) and highly esteemed in the orthodox churches, due to the function ascribed to the church it is of lesser relevance in Protestantism. Also, some researchers have shown that respondents tend to overrate their church attendance in surveys (e.g. Smith 1998; Hadaway and Marler 2005).
The respondents are asked to report how often they attend church on a scale with five answering categories: *"once or more than once a week", "once or more than once a month", "more than once a*

*year", "once a year"* and *"less than once a year"*. Due to the deviation in the number of response categories in the question on church attendance in Wave 4 I used Waves 1, 3, 5 and 6 only. In Wave 3 only those respondents who indicate to belong to a religious denomination are asked about their church attendance. However, assuming that all other respondents had the lowest frequency of church attendance results in a very different distribution of answers than in the other waves and therefore another way of imputation has been applied. In cases where information for Wave 3 or Wave 5 was missing and levels of church attendance were equal in the waves before and after, i.e., in Waves 1 and 5 or 3 and 6 respectively, it was assumed that church attendance was stable over the three waves and the missing information was substituted in this way. Respondents for whom information in Wave 5 or Wave 6 was missing and attendance levels were stable over the two previous waves, i.e., Waves 1 and 3 or Waves 3 and 5 respectively it was assumed that church attendance remained at this level.

The possibility of selective attrition is a relevant issue in panel surveys. 1,257 respondents (70.8% of the original sample) took part in Wave 3, 836 respondents (47.1% of the original sample) participated in Wave 5 and 770 respondents (43.4% of the original sample) were interviewed in Wave 6. In order to assess the impact of attrition on the findings, attrition from each wave to the next was regressed on church attendance and number of children in the wave before using logistic regression. Sex and birth cohort were added as control variables. From Wave 1 to Wave 5 there was no selective attrition with respect to church attendance and number of children. From Wave 5 to Wave 6, however, a higher frequency of church attendance was significantly ($p<0.05$) related to a higher probability of participation at Wave 6. Having a higher number of children is also associated with lower attrition judging from the regression coefficients, two-child parents are significantly more prone to continue their participation in Wave 6 than childless individuals. The size of the effects is such that individuals who attend church once a year have a 3.4% higher attrition than those who attend once a month. The predicted probability of participation in the sixth wave is 9.2% lower for childless than for two-child-parents.

## 5. Method and model

The data are analysed using Structural Equation Modelling. Initially, the relevant variables and their relationships are translated into a structural equation model. It consists of a set of linear equations which are then modelled simultaneously. The dependent variables, frequency of church attendance and number of children, are expected to be continuous which is why modelling the number of children in a dichotomous way (having versus not having children) is not feasible. Structural Equation Modelling was given preference over other methods suitable for panel data, since it can handle unequally spaced waves in a straightforward manner and random measurement error, which is the deviation of the measured characteristic from the true characteristic ('noise'), can be corrected (Finkel 1995: 45). The analysis is based on Christian respondents and the unaffiliated and excludes adherents to other religions (n=43) since attending religious services might be of very different importance in those religions. Cases with observations in only one wave (n=525) were also eliminated since they do not contain any information on change between waves. The final total number of respondents that enter the analyses is 1153 of which 588 are females and 565 are males.
Instead of using wave as a time metric I experimented with age which seems to have more substantive meaning. Due to the unequal spacing of the waves and the cohort structure, however, it was impossible to split the age groups in a way that a certain cohort was present in every age group which is the basis for computing correlations between the different variables. Moreover, to correct for measurement error, a latent structure was included following the Heise procedure (Finkel 1995: 52). It was found that the error variances were close to zero which is why a correction for measurement error was not considered. The equations were estimated in LISREL 8.72 using the Maximum Likelihood estimator, which provides robust estimates even if the data are not normally distributed (Saris and Stronkhorst 1984: 171; Saris 2001: 123)

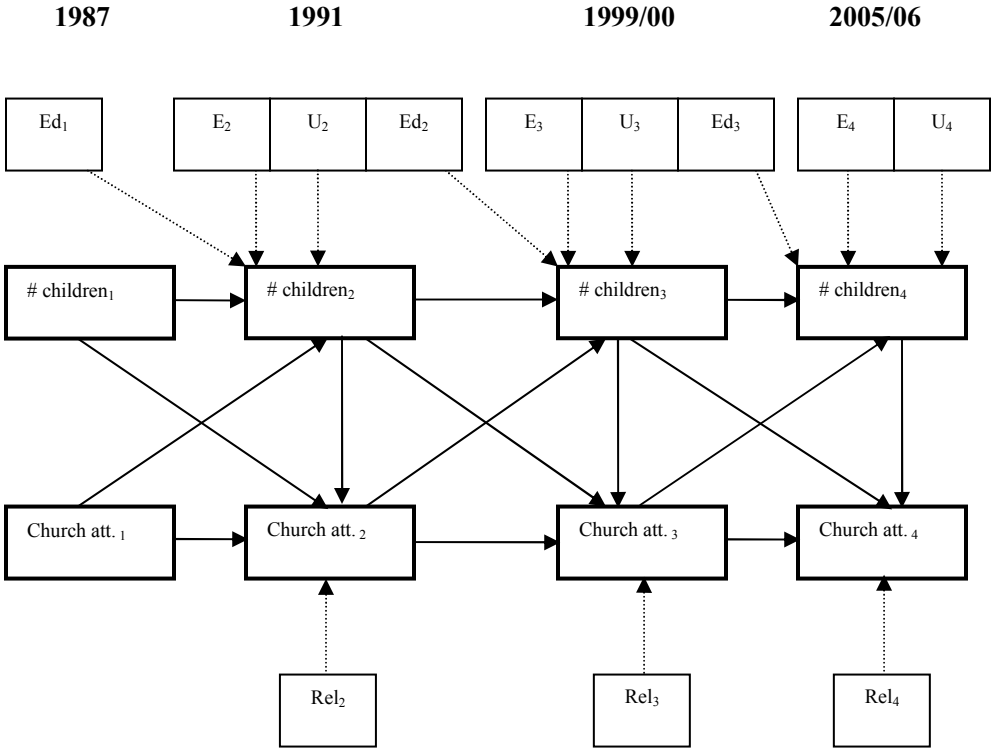
The theory predicts that having an additional child may increase church attendance in the next wave just as church attendance at an earlier wave is expected to yield a positive influence on the number of

children at the subsequent wave. This translates into a cross-lagged model as displayed in Figure 1. The times between the waves are unequal: four years lie between the first two waves considered, an 8-9 years gap follows and five years lie between the last two waves. Constructing a model based on this specification is only reasonable if the causal lags are approximately of the same length as the measurement gaps. This can straightforwardly be justified for the impact of church attendance on the number of children. Since the level of church attendance is not subject to large alterations predicting an influence seems reasonable, even if four to nine years lie between the measurement occasions. The mechanisms that were discussed at the beginning – teaching, social networks, uncertainty – remain in place. It only does not seem plausible to expect an immediate effect, i.e., an upward shift in church attendance will not instantaneously bring forth an increase in the number of children.

With regard to the reverse direction, I hypothesised that a *change* in the number of children affects church attendance and not that having a higher number of children implicates higher church attendance. This is implemented in the model through including both a lagged and an instantaneous effect of the number of children on church attendance (Finkel 1995: 15). A narrow prediction about the causal gap is not feasible, the theoretical discussion, however, allows for the conclusion that the measurement intervals are suitable, because on the one hand immediate, on the other hand delayed effects are expected.

Understandably, church attendance at time t is strongly influenced by church attendance at time t-1 for which reason arrows indicating the respective effects have been added. The same is true for the number of children. Besides, four time-varying control variables are included in all models (indicated by the boxes with the thin lines in Figure 1), namely employment status at the same time (employed/not employed)[1], highest educational level attained at previous wave (six levels)[2], union status at previous wave (in union/out of union) and religious affiliation (affiliated/unaffiliated). I also experimented with the inclusion of the variables of urbanity of residence at age 18, importance of religion in the parental home and being in or out of education but they did not ameliorate the models significantly which is why I refrained from considering them in the final models.

Figure 1: Model for the relationship between church attendance and number of children



The following equation for church attendance at time t results from Figure 1:

$$A_t = \alpha + \beta_1 A_{t-1} + \beta_3 C_t - \beta_2 C_{t-1} + \beta_4 Rel_t + \zeta_t \quad (1)$$

'A' denotes church attendance, 'C' stands for the number of children and 'Rel' for religious affiliation. Three equations to estimate $A_2$, $A_3$ and $A_4$ are constructed. The term $\beta_3 C_t - \beta_2 C_{t-1}$ reflects the change in the number of children from one wave to the next. It is estimated in LISREL by constraining the coefficient from $C_{t-1}$ to $A_t$ to be equal to that from $C_t$ to $A_t$ for each two waves except for the sign, which is negative for the lagged effect and positive for the instantaneous one.

The respective equation for the number of children is:

$$C_t = \alpha + \beta_1 C_{t-1} + \beta_2 A_{t-1} + \beta_3 E_t + \beta_4 U_t + \beta_5 Ed_{t-1} + \zeta_t \quad (2)$$

Employment status is denoted as 'E','U' stands for union status and 'Ed' for the level of education. Again, three equations to estimate $C_2$, $C_3$ and $C_4$ are deduced. This model therefore consists of a system of six equations, which are modeled jointly. The following three assumptions are made concerning the disturbance term $\zeta$: the mean of the disturbance term in each equation is zero, the disturbance term does not covary with the exogeneous variables and the covariation of the disturbance terms is zero. Moreover, the exogeneous variables might covary with each other (Saris and Stronkhorst 1984: 70-71).

## 6. Results

### 6.1. Descriptive results

A tabulation of the frequency of church attendance in different waves shows that 6-8% of respondents attend church services weekly and a similar percentage attends monthly. 17-23% state to go more than once a year and around 6-8% visit church services once a year. The non-attendees constitute the largest category: 53-62% indicate to participate in religious services less than once a year.
As for the number of children, in the first wave 90% of participants were still childless and the mean number of children is as low as 0.15. Four years later, in the third wave, 77% do not have any children. In the fifth wave the participants are around 30, 34 and 38 years old. 37% of them are childless and the average number of children amounts to 1.23. Five years later, at the time of the last wave, most participants have completed childbearing, especially the two older cohorts. 25% of the interviewees remain childless and the respondents have 1.62 children on average at that time.
Figure 2 depicts the development in the mean number of children by frequency of church attendance for the three surveyed cohorts separately. Respondents going to church less than monthly are compared to those who attend monthly and more often. The latter are clearly distinguished by a higher mean number of children. The difference amounts in the last wave in the cohorts 1961 and 1965 to 0.49 and 0.57 children. While religious and non-religious people are rather similar at the beginning of the observation period, their family sizes progressively diverge as time goes by. Decisions on the number of children are related to partnership behaviour, educational patterns and employment opportunities. Life course theorists claim the need to look at the interrelations between these careers (Willekens 1991: 19). Since religious people have more children they are likely to behave differently from their non-religious counterparts with respect to related areas too and that their lives become increasingly dissimilar as they age.

Figure 2: Mean number of children over waves, by frequency of church attendance and cohorts

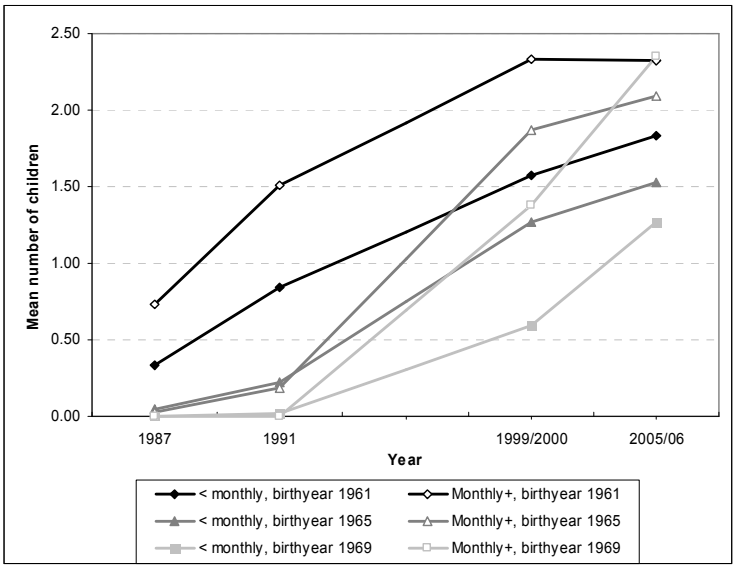



Figure 3 takes a cohort perspective comparing the share of monthly and weekly churchgoers among those who have ever had zero, one, two, three and more children. In the latter category 82% are three child mothers or fathers. To properly disentangle the effect of religiosity on subsequent childbearing, respondents who already had a child in the first wave were dropped here (n=115). The graph reveals the large differences in initial church attendance of resondents who eventually have zero to two versus three and more children. By the end of the 20th century a two-child family model had become dominant in European countries (Frejka 2007: 48). The turning point in the Netherlands was the birth cohort of 1939. For the first time the share of two-child mothers exceeded that of women with three or more children and this family size has remained most widespread up to the most recent cohorts that have completed childbearing. Their share has always exceeded 40%. On the contrary, 22-26% have been having three and more children in the birth cohorts 1945-65. Consequentially, it can be assumed that parents that opt for more than the modal number of two children are selected along certain characteristics, among them, as the graph indicates, a higher religiosity. The subsequent trajectories show that the percentage of people going to church at least monthly exhibits a decrease when comparing the share at the first and the last wave. This decline is most marked for the childless respondents. While the fraction of frequent church attendees drops by between 22 to 42% in relative terms for parents with one to three children, it decreases by close to two thirds for the childless. As a result, childless people reach a level below those with one or two children while they had been between the two groups in the first wave.

Resuming the research question, the impact of religiosity on subsequent childbearing is evident especially for those who ultimately have three and more children. They were distinguished by a markedly higher religiosity already in the first wave where everyone was childless. The differences are, however, less clear for the other groups. The observation that childless people show the highest rate of decrease suggests, with caution, a minor influence of having children on church attendance. From this bivariate inspection it seems that, on average, childbearing does not result in increased church attendance, but that it prevents from a steeper decrease. However, not only the fact that they do not have any children distinguishes childless people, particularly women, from parents, they differ also with respect to their education, employment and partnership career. For women, higher education is associated with an increased probability of childlessness in the Netherlands (de Meester et al. 2005; van Agtmaal-Wobma and van Huis 2008). For instance, in the cohorts born from 1960 to 1964 29% stayed childless among the highly educated, while the corresponding shares among the medium and the low educated were only 18% and 16% respectively (Fokkema et al. 2008: 771). For men, a recent study reports no relationship between education and childlessness (de Meester et al. 2005: 130-132).

Regarding employment, Keizer, Dykstra and Jansen (2008) found that for Dutch women having an uninterrupted employment pathway is positively related to childlessness whereas for men the opposite is the case (p. 871). Having or not having children is, according to de Meester et al. (2005), particularly strongly related to being or not being in a partnership. Men and women who do not have a partner are more likely to remain childless, both voluntary and involuntary (p. 130-132). We may suspect that not childlessness alone accounts for the pronounced decrease in church attendance, but that differences in the rate of decline may to some extent be owed to other dissimilarities in the lifestyle. Education, employment and union status will be controlled in the multivariate models.

Figure 3: Share of monthly and weekly church attendees over waves by number of children ever born

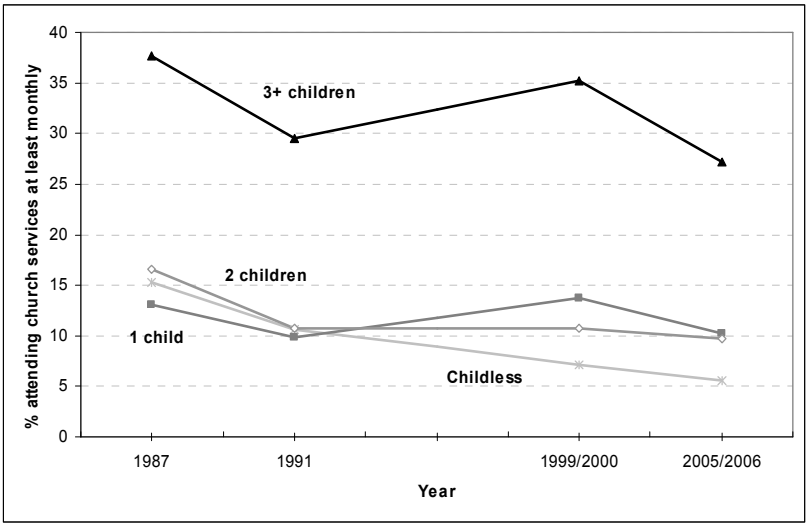



Table 1 depicts, in greater detail, the change in church attendance between the different waves by a specific change in the number of children. Only cases with a sufficient number of respondents (n>45) are exhibited. The upper part of the table ('Low church attendance levels') considers merely participants who indicated visiting church at most a few times a year[3] at time 1 and 2 respectively. Compared to those who have a child between the first two time points, a greater share among the childless people reduces their church attendance to yet a lower level. The percentage of people enhancing their church attendance is, however, almost identical. The same result holds when all church attendance levels are regarded as in the lower part of the table. The changes between time 2 and 3 are particularly interesting as they reveal that changes in church attendance are greater when having one or two children as compared to no children between the measurement occasions. But unexpectedly, a higher share of parents increases *and* reduces their church attendance, suggesting a bearing of different forces.

Table 1: Percentage increasing/decreasing their church attendance between waves by change in the number of children

| Low church attendance levels | | 0 to 0 children | 0 to 1 child | 0 to 2 children |
|---|---|---|---|---|
| **Time 1 – 2** | **% decrease** | 14.7 | 8.1 | - |
| | **% increase** | 10.0 | 10.5 | - |
| | ***n*** | *719* | *86* | - |
| **Time 2 – 3** | **% decrease** | 6.6 | 8.0 | 10.6 |
| | **% increase** | 3.5 | 10.2 | 14.9 |
| | ***n*** | *198* | *88* | *94* |

| All church attendance levels | | 0 to 0 children | 0 to 1 child | 0 to 2 children |
|---|---|---|---|---|
| **Time 1 – 2** | **% decrease** | 21.9 | 15.2 | - |
| | **% increase** | 8.6 | 8.6 | - |
| | ***n*** | *880* | *105* | - |
| **Time 2 – 3** | **% decrease** | 7.5 | 11.8 | 14.6 |
| | **% increase** | 4.2 | 10.8 | 12.7 |
| | ***n*** | *214* | *102* | *110* |

### 6.2. Results of the multivariate models

The hypotheses are tested in three sets of models. To shed light on the causality between church attendance and childbearing, the three cohorts 1961, 1965 and 1969 are investigated separately as they were located at each wave at a different stage in their childbearing process. To test the third hypothesis that women are prone to raise their level of church attendance after the birth of a child solely women are regarded. The third model tests whether people who had been socialised in a religious way but do not attend church at the time of the first wave increase their church attendance as a result of having children.

#### 6.2.1. Cohorts

The inclusion of both cross-lagged and instantaneous effects of the number of children turned out to be problematic because the high correlation between the two variables caused multi-collinearity in some cases. As a solution, joint effects of both variables were tested by comparing the fit of two kinds of models: in one model the effects of the number of children are constrained to be zero and in the other one they are estimated. The model with zero effects is nested within the one with parameter estimates. Given a better model fit is observed when the coefficients are estimated, it is deduced that a change in the number of children affects the level of church attendance (Finkel 1995: 39). If the model comparison reveals, on the other hand, that the more parsimonious model proves a better fit to the data, it is concluded that a change in the number of children does not influence the frequency of church attendance. Modelling the three cohorts separately brought precisely this result: the fits of the models with estimates for the parameters in question were not significantly better (on a 2% level) than those of the ones without[4]. This result contradicts the second hypothesis, suggesting that there is no significant effect of the change in the number of children on church attendance.
The first hypothesis conjectured an effect of the frequency of church attendance on the number of children. The results are fully in line with this prediction. All coefficients are unstandardized. The

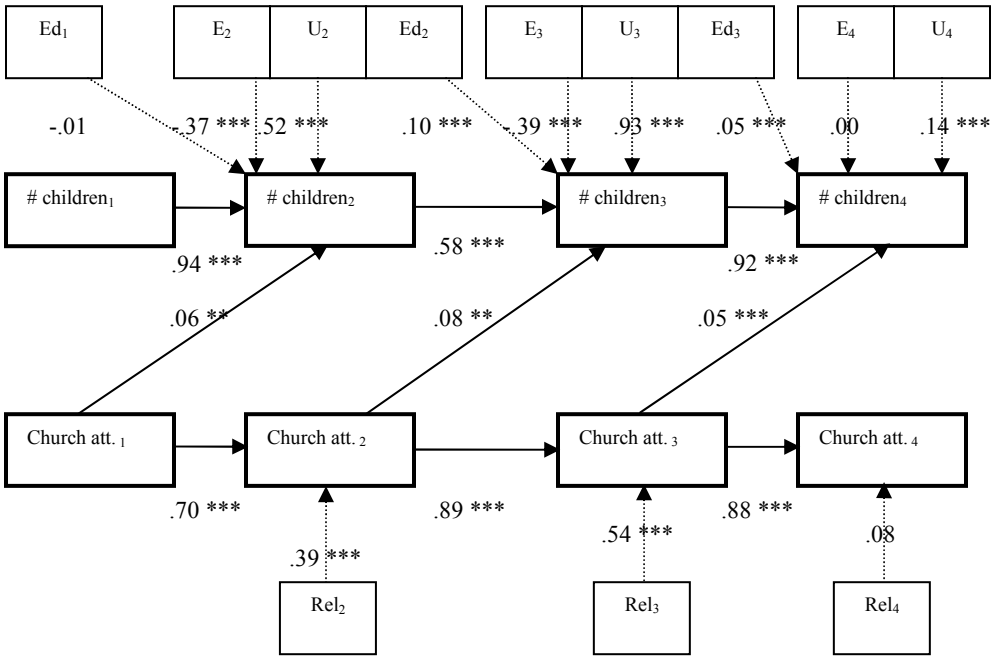
effect sizes are rather similar in all three cohorts, typically ranging between 0.05 and 0.09. This means that belonging to each higher church attendance category raises the absolute number of children by between 0.05 and 0.09. For example, weekly churchgoers have 0.30 to 0.36 children more than those who attend less than yearly.

The cohort of 1965 exhibits no influence of attendance on the number of children at the second point in time. Few had given birth between the first and second wave considered, which is why religious differences had not yet evolved (see also Figure 2). For the youngest cohort the first wave had to be skipped since none of the respondents in the dataset had had a child then – between ages 17 to 19 – and thus correlations could not be computed. Furthermore, the two highest attendance categories were collapsed into one due to the low case numbers.

Figures 4a to 4c reveal, as expected, a high degree of autocorrelation, i.e., the previous number of children or church attendance, respectively, strongly determines current levels. The coefficient for the influence of number of children of time 2 on time 3 is lower than the other ones since the time period is about double the length. The effects of the control variables point in the anticipated direction. Belonging to a religious denomination is strongly positively related to church attendance. The influences of education and employment are highly gender specific. Overall, the effects of the level of education are frequently not significant, being employed is negatively related to the number of children and being in a union shows a strong positive association.

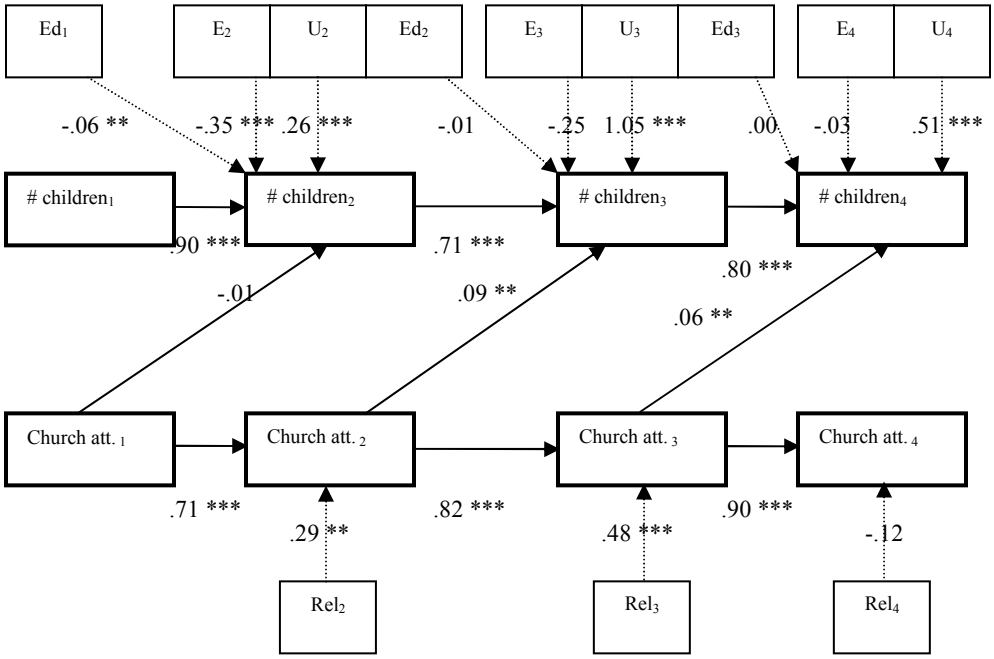
The strengths of the effects depend on the stage in the childbearing process. While the oldest cohort is around 26 years old at the first wave, the middle cohort is 26 at the second wave considered whereas the youngest cohort is 22 years old at the second wave. These shifts explain the varying sizes of the regression coefficients. While, for instance, union status is rather uncoupled from the number of children in the last wave for the two older cohorts, it still has a strong bearing for the youngest cohort. Employment status does not yield a significant impact for the two older cohorts, but is of great importance for the cohort of 1969.

Figure 4a: Effects of church attendance on the number of children. Dutch women and men born in 1961



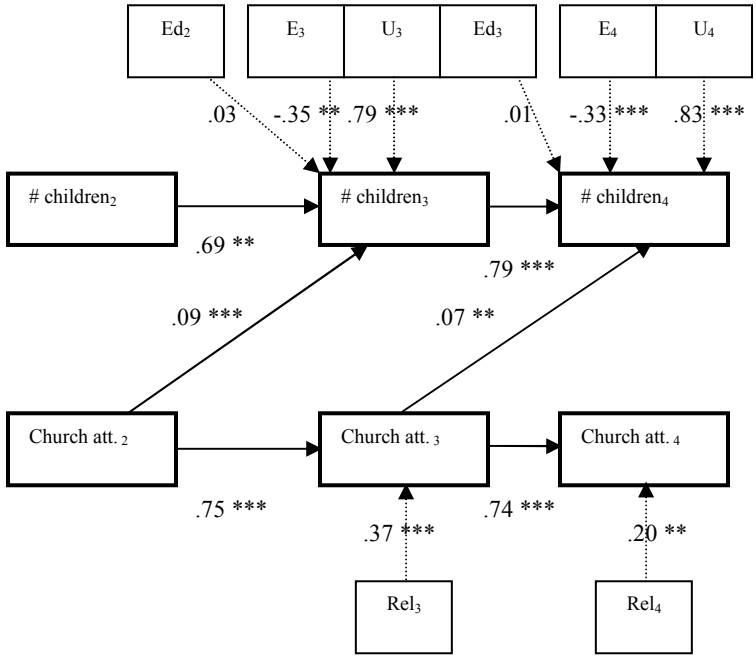

Note: Significance levels * p≤.05, ** p≤.01, ***p≤.001 (two-tailed)

Figure 4b: Effects of church attendance on the number of children. Dutch women and men born in 1965




Note: Significance levels * p≤.05, ** p≤.01, ***p≤.001 (two-tailed)

Figure 4c: Effects of church attendance on the number of children. Dutch women and men born in 1969

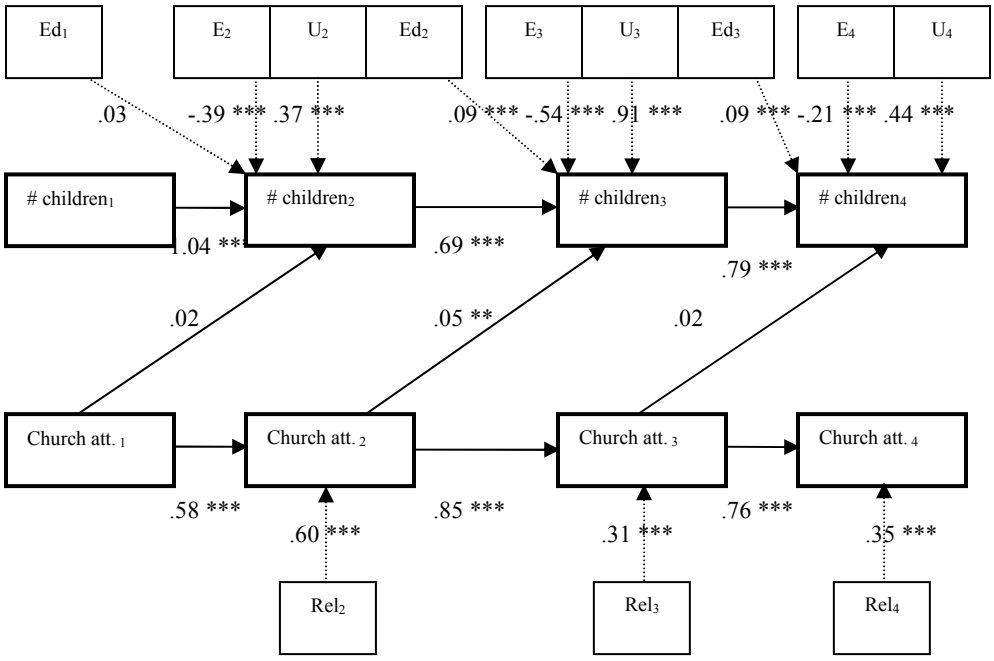



Note: Significance levels * p≤.05, ** p≤.01, ***p≤.001 (two-tailed)

### 6.2.2. Women

The third hypothesis predicted that women are inclined to increase their church attendance after the birth of a child. Results of the model (Figure 5) are not in line with this expectation[5]. In the Netherlands, childrearing obligations do have an impact on women's employment status. In 2005 around 69% of women who had children aged 0-16 were engaged in the labour marked. This share does not differ a great deal by the age of the children (< 2, 3-5 or 6-16 years) and lies above the OECD average (OECD Family Database 2009). Most of the working mothers took part-time employment. In 2002 one third of them worked 12-19 hours a week and 50% were employed for 20-34 hours (Fokkema et al. 2007: 773). Despite these clear shifts in time allocation and responsibilities the frequency of church attendance did not exhibit a change.
As in the results presented so far, we note a uni-directional effect of the frequency of church attendance on the number of children. The coefficients are, however, lower than in the previous models where men were present. The greater effect of religiosity for men as compared to women has been observed in other studies (e.g. Adsera 2006b; Adsera 2007: 227; Neuman 2007: 221) and was attributed to the greater inclination of men to discontinue religious participation. Hence, the remaining ones are more selected than the women.

Figure 5: Effects of church attendance on the number of children. Dutch women born between 1961 and 1969



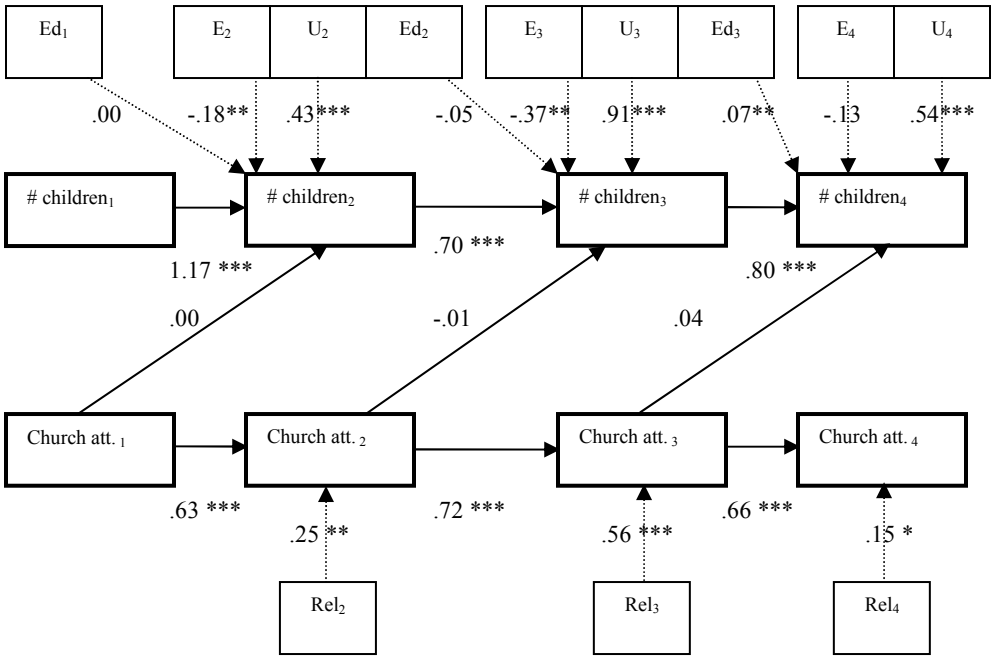

Note: Significance levels * p≤.05, ** p≤.01, ***p≤.001 (two-tailed)

### 6.2.3. Religious socialisation

The forth hypothesis expected an influence of childbearing on church attendance for those with a religious family background but little or no church attendance in the first wave.[6] Again, the model without additional effects representing a change in the number of children reflected the data best (Figure 6)[7] and the hypothesis is therefore rejected. Contrary to previous findings, the influence of church attendance on the number of children is negligible too. Note that only cases with low church attendance in the first wave were considered (n=310). They do not differ significantly from each other and very few shift their church attendance to higher levels during the observation period. At time 2

and 3 only 14 people reported attending church monthly or more often, at time 4 only 7 participants did so. Their mean number of children exceeds that of the infrequent church attendees, but the small case numbers do not lead to a significant effect.

Figure 6: Effects of church attendance on the number of children. Dutch women and men born between 1961 and 1969, with religious socialisation but low church attendance in the first wave




Note: Significance levels * p≤.05, ** p≤.01, ***p≤.001 (two-tailed)

## 7. Discussion

Previous studies have demonstrated that religious people in Europe have larger families. Based on the evidence from the U.S. and theoretical reasoning I speculated that the relationship between church attendance and having children could be a causal one going in both directions. This analysis addressed the question if such a reverse causation can be confirmed, i.e., if religiosity influences a person's childbearing behaviour and, at the same time, if having a child affects one's level of religiosity. The four-wave panel data (1987-2006) are analysed using Structural Equation Modelling. Contrary to expectations, the results suggest a one-way causality. The level of church attendance influences future childbearing, but a change in the number of children does not prove to be a significant determinant for the frequency of church attendance, neither for different cohorts, for women and for people socialised in a religious family. These results clearly diverge from findings for the U.S. where several studies have endorsed the importance of having children for subsequent church attendance.

What could be the reasons for these contradictory results? The first factor is measurement. Different mechanisms are at work for indicators of religious practice as compared to measures of religious belief. Childbearing responsibilities can impede taking part in religious practices but they do not influence religious convictions in the same way. Social network effects or the desire to expose the child to a religious surrounding are also not as relevant for religious belief. Research using different indicators is hence only partially comparable.

Secondly, note that the results of our models refer to an average effect. Theoretical arguments suggested that there might be some forces enhancing and some others preventing church attendance of parents with young children. The numbers in Table 1 were in accordance with this reckoning, without providing conclusive evidence. These conflicting effects might balance each other out in the average.

A third root for the inconsistent results might lie in the differences between the role played by religion in the U.S. and the Netherlands. Religiosity is higher in the U.S. than in most European countries. In a more vivid religious environment, where one gets in contact with religious people and ideas more frequently, increasing ones own religious activities might be more self-evident than in a secular context. Furthermore, in the U.S. the composition of parishes as well as their functions could encourage an increase in church attendance after the birth of a child. While in the U.S. a modest trend of disengagement of church attendance with age has been reported (Hout and Greeley 1987: 328), birth cohort strongly determines the level of church attendance in the Netherlands which is reflected in differences by age. In 2003 in the age group 18-45 14% of church members attended church regularly, while the respective share amounted to one third in the age group 65+ (Schmeets and Hendriks 2004). Meeting other people in childbearing ages is therefore more probable in U.S. than in Dutch parishes. Differently from Europe, church communities in the U.S. have strong welfare functions. Hungerman (2005) even concluded that church activities substitute for decreasing government spending. Estimates allude that around one quarter of the U.S. population is supplied with services from faith-based organisations annually (Johnson, Tompkins and Webb 2002: 7). In the year 2000 almost 2.2% of the per-capita income was donated to the churches by an average member (Hungerman 2005: 2250). Certainly, charitable activities are decisive for the Dutch churches as well. However, both supply and demand are lower than in the U.S. since the Dutch welfare system is among the most generous ones in Western countries and the Netherlands belong to the countries with the lowest poverty rates (Becker 2000: 227-228). Also, the motivation to increase church attendance when children are at a school age because churches provide religious teaching is of lesser relevance in the Netherlands: in the primary school sector religious communities have the right to offer voluntary religious education in public schools and participation is obligatory in confessional schools. The latter provide religious education also at the secondary level (Alberts 2007: 344).

Further research on European countries is needed to ascertain if the Dutch case is an exception or if transatlantic differences in the relationship between religiosity and childbearing exist. In particular, future studies need to investigate if the result holds for more religious countries than the Netherlands and for countries with more liberal welfare regimes.

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[1] Employment encompasses full and part time employment likewise. The category of not employed respondents consists of persons in education (with 20 hours paid work at most), unemployed or not engaged in paid work for reasons of childcare and/or housekeeping.
[2] The following six levels are distinguished: (1) primary school (LO/VGLO), (2) lower vocational education (LBO), (3) lower secondary general education (MAVO), (4) higher secondary/medium vocational education (MBO/HAVO/VWO), (5) higher vocational education (HBO) and (6) university and postgraduate education.
[3] This category comprises respondents who attend masses less than once a year, once a year or more than once a year.

[4] Cohort of 1961: (a) Model without effects: Chi2 557.4, df=78, (b) Model with effects: Chi2 552.5, df=75. Cohort of 1965: (a) Model without effects: Chi2 311.5, df=78, (b) Model with effects: Chi2 301.0, df=75. Cohort of 1969: (a) Model without effects: Chi2 210.3 df=32, (b) Model with effects: Chi2 207.3, df=30.

[5] (a) Model without effects: Chi2 557.0, df=78, (b) Model with effects: Chi2 551.8, df=75.

[6] The analysis takes into account respondents that stated that religious interest was quite or very important in their parental home and who attend church in the first wave a few times a year at most.

[7] (a) Model without effects: Chi2 278.4, df=78, (b) Model with effects: Chi2 268.2, df=75.