Church Attendance and Childbearing: Evidence from a Dutch Panel Study

Running head: Church Attendance and Childbearing

Abstract

Prior research finds that religious people in Europe have larger families than their non-religious counterparts. To date, however, there is a lack of evidence on the causality of this link. This analysis studies whether having a child affects the parent's level of church attendance on the one hand and whether the frequency of church attendance influences a person's childbearing behaviour on the other hand. It is based on data from five waves of a large-scale Dutch panel survey, which span a substantial part of the respondents' reproductive period (1987-2006). Contrary to findings from the United States, the results suggest a one-way influence: having a child does not lead to a change in church attendance but the level of church attendance impacts future childbearing. The effect of the frequency of church attendance at different times in life on fertility is examined in detail.

Keywords: Church attendance, religiosity, childbearing, fertility, Netherlands

1 Introduction

Compared to most other parts of the world, European countries have seen an exceptionally profound decline in religiosity (Davie 2002; Voas 2008). Despite this secularisation, religiosity continues to motivate people's behaviour in many areas of life including the family domain (Voas 2007). Interest in the relationship between religiosity and fertility has grown in Europe during the past decade (e.g. Adsera 2006; Philipov and Berghammer 2007; Frejka and Westoff 2008). The studies unanimously document a positive correlation between religiosity and family size. However, they fail to address if a change in the number of children affects parents' religiosity or if the level of religiosity determines childbearing. Interpretations of results obtained with cross-sectional data tend to be based on the tacit assumption that religiosity influences childbearing. Yet, the reverse temporal ordering in the data does not allow such a conclusion. Religiosity is measured at the time of the survey, while the number of children at this point is the outcome of childbearing which took place earlier. When relating these two factors, we assume that the level of religiosity at the time of the interview influences the number of children in the same manner it had influenced the earlier childbearing decisions. This assumption cannot be taken for granted given that empirical studies in the United States (US) suggest that having a child might entail a change in parents' religiosity (Stolzenberg et al. 1995; Argue et al. 1999; Ingersoll-Dayton et al. 2002; McCullough et al. 2005). The existence of such an effect would distort the size of the impact of religiosity on fertility. Differences between the US and Europe regarding the role played by religion, however, do not permit a direct application of US findings to European countries. The present study therefore explicitly analyses the effect of childbearing on religiosity on the one

hand and the effect of religiosity on childbearing on the other hand. By doing so it addresses a gap in European research. It uses five waves from the Panel Study of Social Integration in the Netherlands which comprise 18 years (1987-2005) and thus cover most of the reproductive life of the male and female respondents (Liefbroer and Kalmijn 1997).

The Netherlands serve as case study. Until the mid-1960s, religious affiliation was a key characteristic in the 'pillarised' structure of Dutch society (Bryant 1981; Dekker and Ester 1996). Starting at the end of the nineteenth century, Protestants, Catholics and those without religion had developed their own social institutions such as schools, political parties, trade unions or newspapers. Reinforced by a perspicuous regional concentration and marital homogamy, social contacts between the different groups were limited. A specific affiliation also significantly determined family size. The Netherlands were characterised by comparatively high fertility until the 1960s. Several studies concluded that the outstandingly high fertility levels of Catholics constituted a decisive factor (e.g. van Poppel 1985; Engelen and Hillebrand 1986). This system of 'pillarisation' has started to crumble from the mid-1960s onwards and contributed to an increase in the share of unaffiliated people. In parallel, denominational fertility differences have become by and large negligible (Somers and van Poppel 2003). Today, the Netherlands are known for their high percentage of people without religion, i.e. about 40 per cent of the population, which makes it one of the most secularised countries in Europe. The Catholics constitute the largest religious group comprising around 30 per cent, followed by the Protestants with 20 per cent (Statistical Yearbook of the Netherlands 2009, p. 142). Actually, only around 7 per cent of all Catholics attend masses on a usual Sunday (Kregting and

Massaar-Remmerswaal 2009, p. 25) and 21 per cent of all members of the Protestant Church in the Netherlands partake regularly (Becker and de Hart 2006, p. 32). Clear fertility differences by frequency of church attendance were documented in a recent Dutch study (Berghammer 2009).

The paper starts with a concise overview of the results of previous empirical studies, succeeded by theoretical considerations that outline the mechanisms linking religiosity and childbearing. This is followed by the empirical part containing a presentation of data, measures and the statistical methods. Next, the findings on the impact of childbearing on religiosity are shown. The results on the reverse direction are presented in the subsequent section. The paper concludes with a summary.

2 Evidence from past studies and theoretical background

Recent European research demonstrates that religiosity constitutes an important factor for explaining fertility behaviour. Philipov and Berghammer (2007), studying 18 countries, observe the general pattern that religious women have a higher number of children than their non-religious peers. Westoff and Frejka's (2008) findings on the relationship between religiosity and the probability of having two or more children in four European regions, concur with theirs. Both studies report that the strength of the effect depends on how religiosity is measured. While Philipov and Berghammer (2007) show that church attendance is a slightly stronger distinguishing feature than self-assessed religiosity and religious affiliation, Westoff and Frejka (2008) exhibit that the importance of religion

matters most in Western Europe and church attendance is most relevant in Southern Europe. More in-depth results are obtained from country-specific studies. For Spain, Adsera (2006) notes a strengthening of the association between religiosity and fertility over cohorts, the reason possibly being the increased selection of convinced believers as secularisation proceeds. Religious minority groups—Muslims and conservative Protestants—stand out with a comparatively large family size. The analysis also confirms the pertinence of the couple's religious composition for their number of children. Brose (2006) concludes for (mostly western) Germany, showing that religiosity is a correlate of a higher number of children, that religious people estimate the costs of childbearing lower and the benefits higher than their non-religious counterparts. Régnier-Loilier and Prioux (2008) ascertain for France that religion is associated with lower childlessness, a higher mean number of children and a lower probability of non-marital childbearing. Berghammer (2009) reports for the Netherlands that religious socialisation matters for childbearing even in absence of current church attendance.

All of these studies are constraint by the use of cross-sectional data where the measurement of religiosity refers to the time of the interview while childbearing had taken place already earlier in life. Marcum addressed this problem more than twenty years ago: "In brief, surveys ascertain a respondent's religious participation at the time of the interview, *after* the birth of any children recorded by the same surveys. In other words, the temporal ordering of the variables is the reverse of that necessary to address the issue." (Marcum 1988, p. 622) He suggests three ways to proceed: (a) relying on indicators of religious practice less affected by child-care responsibilities than church

attendance, e.g. praying, reading the Bible, (b) using measures of religious commitment or importance or (c) employing measures that refer to a time before the family event. Marcum arrives at the conclusion that "the ideal solution, of course, would be to abandon cross-sectional for panel data" (p. 628).

Results from US studies warrant doubt that religiosity at the time of the survey can straightforwardly be linked to childbearing earlier in life. They provide evidence that having children triggers changes in religiosity. A religious trajectory called 'family life-cycle' was described as early as 1970. It is characterised by an increase in church attendance after marriage and a peak when the children reach school age. Once the children leave the parental home, religious participation decreases (Bahr 1970, p. 61). But also recent studies suggest the influence of having children on the parents' religious life path. The presence of children aged two and older leads to a slightly stronger impact of religious belief on respondents' daily lives (Argue et al. 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 linked with a drop in religiosity (Ingersoll-Dayton et al. 2002, pp. 64-65). Stolzenberg and colleagues (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 are more likely to join church communities than young parents. Rather than analysing the influence of childbearing and childrearing at certain points in time, McCullough and coauthors (2005) single out different religious trajectories, depicted as curves, 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 time people are in their late 20s to their early 50s and a decline from their late 50s onwards (p. 85).

Several reasons have been proposed to explain why having a child is conducive to an increase in religiosity. One mechanism refers to church-based social networks. The first acquaintance with the local church community might be established through passage rites such as baptism or first communion, which continue to be widely used even by church members who do not regularly partake in church activities (Netherlands: Becker and de Hart 2006, pp. 17 and 32). New parents might also be attracted by the possibility to gather with other parents, e.g. in child playgroups or group meetings which are organised by many parishes (Stolzenberg et al. 1995, p. 99). Instead of fuelling the parents' contact with a church community, the presence of a small child may also cause them to curb their religious practice if they feel uncomfortable when bringing their child to church. Besides this 'social-network-based' explanation, researchers have identified another mechanism which refers to the 'meaning of life'. A birth might foster reflections on the meaning of life whereupon answers might be sought in religion. It might also stimulate considerations on one's own position towards religion (Ingersoll-Dayton et al. 2002, p. 64). Another point is that parents might want to actively expose their young children to 'good values' or to religious education provided by the church (Stolzenberg et al. 1995, pp. 86 and 95; Becker and Hofmeister 2001, p. 713; Ingersoll-Dayton et al. 2002, p. 64;

McCullough et al. 2005, p. 87). Such interventions might be most fruitful when the children are in their early school years.

In addition to the arguments on the influence of childbearing on religiosity, some reasons indicate why religiosity is conducive to a larger family size (e.g. McQuillan 2004; Chatters and Taylor 2005). Due to the relatively small number of adherents to non-Christian religions in Europe, most of the arguments are primarily valid for Christianity. First of all, the Christian churches attach great importance to family and children. More specific fertility-related teachings such as the mother's crucial role in the upbringing of children, the high value of marriage and Catholics' prohibition of modern contraception promote a large number of children as does the rejection of abortion by the Catholic and Orthodox churches. While it is apparent that church members do not strictly follow all teachings, they hold in general more family-oriented values (Dobbelaere et al. 1999). Secondly, church communities take on functions of social networks. The plausibility of Christian positions is enforced through the communication with other church members, in joint rituals and pastoral teaching (Berger 1969). 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 (Krause et al. 2001; Chatters et al. 2002). Finally, religiosity might help believers to cope with new and stressful situations such as uncertainties related to fertility decisions (Pargament et al. 2000). Based on these considerations we may assume that church attendance has a positive effect on the number of children.

3 Data and methods

3.1 Data

The analysis is based on data from the Panel Study of Social Integration in the Netherlands (PSIN; Liefbroer and Kalmijn 1997). The aim of the PSIN is to monitor young adults' social integration into Dutch society with a focus on living arrangements, family formation, education and occupation. The first wave, fielded in 1987/88, constituted of a two-stage stratified random sample of Dutch males and females born in 1961, 1965 and 1969. 1,775 respondents participated, the response rate was 63.4 per cent. Altogether, six waves of data were collected in the years 1987/88, 1989, 1991, 1995, 2000/01 and 2005/06. The respondents were aged around 18, 22 and 26 at the first and around 36, 40 and 44 at the time of the last survey. The observation period spans 18 years and therefore covers most of the reproductive life of the male and female respondents.

The data set comprises several measures of religiosity. Yet, only information on church attendance and religious affiliation was obtained in all waves except the second one. Questions on the importance of religion in the parental home, parents' affiliation and their church attendance were asked in one wave, questions on beliefs (belief in afterlife, belief in prayer, faith in God) in two waves. Unlike affiliation which may be nominal (Day 2006), church attendance requires action, and thus might serve as a better indicator for religious commitment. Therefore, the analysis focuses on this measure. Church attendance, however, does not equate religiosity, which is commonly perceived as multidimensional. Even though researchers of religion disagree on the number and type of dimensions, most concepts include an ideological (belief and individual rituals), a

ritualistic (church attendance and involvement) and an intellectual dimension (religious knowledge) (Billiet 2002, pp. 350-352). It cannot be taken for granted that different aspects of religiosity develop in parallel over the life course. For instance, while in our data 48 per cent of respondents reduce their church attendance from weekly or monthly to yearly between waves 1 and 5, only 28 per cent turn from believing in God to being an agnostic or atheist. This study looks at church attendance but refrains from making claims about underlying belief or general degree of religiosity. It is based on Christian and unaffiliated respondents and excludes adherents to other religions since attending religious services might have different meanings in these traditions. Their share was 1.3 per cent in wave 1, 0.4 per cent in wave 3, 2.0 per cent in wave 4, 6.0 per cent in wave 5 and 4.6 per cent in wave 6.

In waves 1, 3, 5 and 6, the respondents were asked to report how often they attend masses based 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 *"never"*. Differently from the other waves, in wave 5, respondents who indicated that they are not religiously affiliated were not asked about their church attendance. As a consequence, information on church attendance is missing in 59 per cent of cases. Moreover, the question in wave 4 is not directly comparable to the other ones since it contains four instead of five answering categories: *"more than once a year"* and *"once a year"* were combined into *"once or several times a year"*. Collapsing the same two categories in the other waves resulted, however, in a considerably different distribution than in wave 4.

Therefore, another approach was followed. The variation in the variable of interest had to be reduced in order to be able to use all five waves. *"Once or more than once a week"* and *"once or more than once a month"* were kept as separate categories while the others—never, once a year, several times a year—were combined into one. Non-affiliated respondents in wave 5 were assigned this lowest church attendance category. The resulting error is supposedly minor since in the other waves only 1.0 to 2.7 per cent of the non-affiliated stated to attend church monthly or more often. Apart from being able to exhaust all waves containing information on church attendance, this re-categorisation has two further advantages. First, the fluctuation between the three originally lowest categories might be subject to variations that do not reflect a genuine change in religiosity. Occasional church attendees usually partake in religious services at special times during the year (Christmas, Easter) or at family events which are celebrated in the church (baptism, wedding and the like). Alterations in the frequency with which such events are attended are arguably not related to a real shift in personal religiosity. Secondly, empirical analyses showed that the distances between the three final church attendance categories are strikingly equal by mean number of children in wave 6, providing further justification for such a classification.

Table 1 depicts the distribution of church attendance over waves. The percentage of missing values is as follows: 1.8 per cent in wave 1, 1.1 per cent in wave 3, 1.2 per cent in wave 4, 0.9 per cent in wave 5 and 3.0 per cent in wave 6. Note that the measurement points are relatively equally spaced with four to five years between them. A drop in the share of people who attend church monthly or more often from 20 per cent in wave 1 to

12.6 per cent in wave 6 can be noticed, representing a reduction of this group by 37 per cent within an interval of 18 years. A similar pattern of decrease in religiosity with age was described by Te Grotenhuis and colleagues (1997) for a pooled sample of seven European countries. Voas and Crockett (2005) and Crockett and Voas (2006) report a relatively flat age profile of religiosity for Britain. In our data, the steepest decrease is observed to take place during early adulthood, tying in with previous findings (Lesthaeghe and Surkyn 1988; Need and de Graaf 1996; Te Grotenhuis and Scheepers 2001). Young adults potentially face a number of important changes which possibly also leave their mark on religiosity: leaving the parental home, going abroad, obtaining higher education, entering the labour market, entering cohabitation, marrying or having a child.

TABLE 1 APPROXIMATELY HERE

Which processes happening between each two waves underlie these shifts? People who attend church several times a year at maximum are most stable in their behaviour (table not shown). Only 2-3 per cent of them increase their church attendance between each two waves. The middle category of monthly attendees emerges as the most unstable one, whose main tendency clearly is to reduce their church attendance. Between the first two waves, during young adulthood, as much as 56 per cent decrease their level; this share is lower in the following waves, but amounts at least to 36 per cent. On average between each two waves 7 per cent of monthly church attendees start going to church at least

weekly. The highest church attendance category is the second most stable one and becomes steadier with age. While 65 per cent remained in this category between wave 1 and wave 3, 79 per cent did so on average between each two of the following waves. This sketch of the changes suggests a high degree of turbulence in church attendance but by far the largest share of 81-87 per cent occupies the lowest church attendance category which barely changes their behaviour. Therefore the overall variation, depicted in Table 2, is relatively small. While between wave 1 and 3 still 13 per cent of young adults change their level of church attendance, the decrease typically amounts to only around 4 per cent and the increase to 2-4 per cent thereafter.

TABLE 2 APPROXIMATELY HERE

The number of children serves as a measure for fertility. Only biological children are considered, 54 cases with adopted or step children are dropped from the analyses. The mean number of children is 0.16 in wave 1, 0.41 in wave 3, 0.79 in wave 4, 1.27 in wave 5 and 1.63 in wave 6. Since the respondents were 36, 40 and 44 at wave 6 a large part has completed childbearing by the time of the last wave.

The possibility of selective attrition is a relevant issue in panel surveys. The PSIN is an unbalanced and non-compact panel. 1,202 respondents (70.3 per cent of the original sample) took part in wave 3, 908 respondents (53.1 per cent) participated in wave 4, 781

(45.6 per cent) in wave 5 and 695 (40.6 per cent) 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 3 attending church monthly was significantly ($p<0.05$) related to a higher probability of participation in wave 3. The predicted probability of participation in wave 3 is 8.7 per cent lower for individuals who go to church at most several times a year than for those who go to church monthly. From wave 3 to wave 6, there was no selective attrition with respect to church attendance and number of children.

To further assess non-random selection I proceeded in three ways for all multivariate models. First, results from the unbalanced panel were compared with those from the balanced sub-panel. Second, an indicator for present in all waves and third, an indicator for number of waves present were added to test their significance. It became apparent that the deviations in the coefficients estimated with the balanced sub-sample were small and that in only two cases significant coefficients for church-attendance became non-significant (Table 4, Model III; Table 5, Model II). The two indicator variables – present in all waves and number of waves present – were merely significant in one model (Table 3A, Model I). These findings affirm that selection has minor consequences for the results and that the overall conclusions are valid.

3.2 Methods

The effect of having a child on changes in church attendance is estimated by means of multinomial logit regression. The dependent variable has three categories (no change, increase and decrease) with the by far most prevailing option of no change constituting the baseline, which the two others are paired with. The model therefore consists of two equations, which are estimated simultaneously (Agresti 2007).

The analysis regards events between each two waves, because the rather short interval of four to five years between each pair is preferable to a longer one where more potentially confounding events might take place. Small numbers of respondents increase and decrease their church attendance between the measurement points which is why models are run on the pooled sample. The standard errors are estimated with the clustered sandwich estimator accounting for the fact that the observations are not independent.

To capture parity-specific effects, separate models are used for the transition to first and to second child. In the first set of models respondents who were already parents in the first wave are excluded while in the second set parents with two children in the first wave are disregarded. Next to having a first or second child between waves, the following predictors are considered: sex (female/male), age, age at first/second birth, change in residing with parents (living/not living with parents), obtaining higher education (i.e. higher vocational or university education), change in employment status (employed/not employed), change in cohabiting partnership independently whether cohabitation or marriage (living/not living with partner) and level of church attendance in the first wave (yearly/monthly/weekly). The results are displayed as predicted probabilities.

Linear regression models are employed in order to assess the effect of church attendance on the number of children in wave 6 (see also Lehrer 1996; Adsera 2006). They rely on the assumption that the dependent variable is continuous and normally distributed. The number of children in wave 6 is close to a normal distribution. The Skewness-Kurtosis test for normality rejected the null hypothesis that the variable is normally distributed only by a small margin. A comparison of the linear regression model to the Poisson and the Negative Binomial Model using Goodness-of-fit criteria revealed the better model fit of the linear model which is therefore given preference.

Having information on church attendance at different points during the life course allows its flexible specification. First, church attendance in wave 1 is included in the models preserving the chronological ordering, i.e. church attendance measured before childbearing. Second, church attendance in wave 6, is incorporated violating the temporal sequence like in usual cross-sectional analyses, i.e. church attendance after childbearing. Third, different church attendance trajectories are constructed, e.g. yearly church attendance in all waves or alteration of yearly and monthly. Fourth, the number of high attendance spells (weekly and monthly) serves as explanatory variable.

Since one of the aims of this investigation is to evaluate the bias in common cross-sectional models by countering results obtained from including church attendance in wave 1 with those considering church attendance at wave 6, I abstain from using panel data analysis. Anyhow, modelling fertility accurately as dynamic process, i.e. repeated decision-making between each couple of waves, is rather complex. In addition, number of

children differs from other variables in the sense that it cannot decrease and that group-specific divergences in intentions are already present in young adulthood but only unfold as age advances.

Besides church attendance the following independent variables are included: religious affiliation (no affiliation/Roman Catholic/Protestant/other Christian), sex (female/male), birth cohort (1961/1965/1969), parents' affiliation (both not affiliated/both affiliated) highest level of education (six levels: primary school, lower vocational education, lower secondary general education, higher secondary/medium vocational education, higher vocational education and university), employment and living with partner. The last two variables are coded as proportions of waves in the respective status, that is if a person was integrated in the labour market for two out of five waves, he or she is assigned the value 0.4. This approach was validated through a sensitivity analysis specifying the variables alternatively. For instance, the sum of the waves in a status was computed disregarding missing values or missing values were imputed with the mean of the neighbouring waves. Results proved to be very robust to different specifications. Employment and union status are highly endogeneous to childbearing, but as key factors they are considered in the models.

4 The impact of childbearing on church attendance

Does having a child lead to changes in its parents' church attendance? Figure 1 exemplifies the distribution of church attendance by months before and after the birth of the first child. As can be seen, the share of yearly church attendees remains unchanged whereas there is some variation in the two higher frequency groups. Considering the confidence intervals, however, reveals that these alterations are not significant. This finding does not comply with the evidence from previous literature that church attendance changes following the birth of a child. The pattern for second birth closely resembles the one displayed.

FIGURE 1 APPROXIMATELY HERE

The results from the multinomial models are presented in Table 3. The predicted probabilities (in per cent) are read as follows (Table 3A, Model I): a person who becomes a parent between any two waves has a 4.3 per cent average chance of decreasing, 2.9 per cent of increasing and 92.8 per cent of no change in church attendance within this interval. The corresponding figures for a person remaining childless are 6.5 per cent, 2.7 per cent and 90.8 per cent. Since the estimates do not differ significantly from each other, an effect of the birth of a child cannot be substantiated. In the multivariate models, these shares apply to a person with the characteristics of the reference groups.

TABLE 3 APPROXIMATELY HERE

The covariates entering Model II only explain a marginal part of the variance in short-term changes in church attendance. Whereas there is coherent evidence that women are more religious than men (for a review see Walter and Davie 1998), we may not conclude that sex is a significant determinant for alterations in church attendance (see also Te Grotenhuis and Scheepers 2001). Studies disagree as to whether an age-related downturn in the frequency of attending services persists (e.g. Te Grotenhuis et al. 1997; Te Grotenhuis and Scheepers 2001; Voas and Crockett 2005). Age is found to be non-significant here. The inclusion of age at first birth was stimulated by the study of Stolzenberg and colleagues (1995) who report that integration into a church network is more probably for parents who bear children at conventional ages. This claim cannot be supported with the data at hand; an interaction with having or not having a first child did not turn out to be significant either. Leaving the parental home is not related to a significant change in church attendance (see also Te Grotenhuis and Scheepers 2001). Regarding education, some studies observe a negative relationship and make the point that education is positively associated with modernization (Hunsberger 1978; Ruiter and van Tubergen 2009). Other studies find, by contrast, that higher education is coupled with elevated church attendance (Albrecht and Heaton 1984; Brown and Taylor 2007). In their study on the Netherlands Te Grotenhuis and Scheepers (2001) assert that educational level does not affect the probability to diminish church attendance which complies with our findings. Participating in the labour force goes along with a lower level of church

attendance (de Vaus and Allister 1987; Ruiter and van Tubergen 2009). Embedment into the parish community may loosen because having a job entails time constraints, also offers integration into a social network and can be an alternative source of identity and interest. Moreover, the instrumental orientation of many occupations may not be easily reconcilable with church values (de Vaus and Allister 1987). In line with these arguments, exiting employment is significantly related to an increase in church attendance in our model. Previous studies emphasised the importance of partner's religiosity for one's own religious development (Kalmijn 1998; Voas 2003). Te Grotenhuis and Scheepers (2001) discover a particularly strong effect of partner's affiliation on the respondent's prospect of reducing church attendance. I do not dispose with adequate information on partner's religiosity but cannot testify a general impact on change in partnership status on change in church attendance.

So far, the discussion in this section focused on the relation of the regressors with the dependent variable. Certainly, there exist complex three-way interactions with having a child as well. To illustrate, entering a religiously heterogamous partnership may lead both to a change in partner's church attendance as well as affect fertility. Since the main interest is to estimate the effect of having a child and not exploring these multifaceted relations, I will not elaborate on them in more depths.

The model is further expanded with church attendance in wave 1 (Model III). As expected from the descriptive part, monthly church attendees are most unstable in their behaviour. Their church attendance tends to fade over the life course. To a smaller extent, this also holds for weekly church attendees. Interestingly, the effect of initial church

attendance overwhelms by far those of the other factors. An interaction with childbearing turned out to be not significant.

Next, equivalent models are estimated for the transition from first to second child (Table 3B). In a bivariate framework having a second child is found to prevent a steeper decrease in the frequency of church attendance but does not lead to an increase (Model 1). The joint occurrence of two events within the same period does not allow finally establishing causality since the order of events is unknown. It is also possible that a person decreases church attendance and forgoes the second child as a consequence. In any case, the introduction of other covariates in Model II renders this variable insignificant. As in the previous models there is indication that exiting employment fosters an increase in church attendance (p-value slightly above 5 per cent). Leaving the parental home involves a decrease. Conforming with prior results, the initial level of church attendance is of prime importance (Model III). What is more, an interaction with having a second birth proves to be significant (model not shown). A closer look reveals that initially weekly attendees who have a second child are less likely to decrease church attendees than their counterparts who remain at parity one (on 10 per cent significance level). Differences between the other pairs are not significant.

In conclusion, the findings confute the assumption that having a first or second child triggers a change in the frequency of the parents' church attendance. This is in disagreement with conclusions from US studies; possible reasons for this contradiction are addressed at length in the concluding chapter. For the transition to second child there

is weak indication that people who went to church weekly during young adulthood tend to decrease attendance of services less if they have a child.

5 The impact of church attendance on childbearing

Let us now come to the reverse direction of influence, the effect of church attendance on fertility. The very high stability in the frequency of visiting church services suggests that the association between religiosity and childbearing shown by a large body of research can primarily be attributed to an effect of religiosity on the number of children. By far the largest part of the respondents, namely around 80 per cent, remains at exactly the same level of church attendance across all five waves.

Figure 2 reveals sizeable differences in the mean number of children by level of church attendance in the wave before. While the mean number of children of yearly and monthly church attendees turns out to be very similar between waves 3 and 5, weekly church attendees are evidently characterised by higher fertility. Ultimately, however, the gaps in the mean number of yearly, monthly and weekly church attendees are strikingly equally spaced with weekly attendees reaching 2.6, monthly ones 2.1 and yearly ones 1.6 children on average. The most conspicuous contrasts between the three categories emerged for parity 3+, which over 60 per cent of weekly church attendees arrive at compared to 33 per cent of monthly and 16 per cent of yearly ones.

FIGURE 2 APPROXIMATELY HERE

Again, one condition for substantiating causality is that the cause must lie before the effect. This temporal order is confused in usual cross-sectional studies, which is potentially problematic as religiosity may be endogenous to childbearing. Some previous investigations were sensitive to this issue. To overcome it, Lehrer, for instance, made use of a retrospective question on affiliation before marriage (1998) and relied on religious participation and affiliation at age 14 to study union formation (2004). However, such measures might be subject to recollection bias (Adsera 2007) and the relatively long span between the reference point and the event entails a high probability of change in the level of church attendance unrelated to the event. Using panel data is therefore advantageous. The subsequent multivariate analyses assess the margin of error between an approach respecting the chronological order necessary to establish causality (church attendance measured before childbearing) and the conventional cross-sectional approach (church attendance measured after childbearing). To this end, the number of children at wave 6 is regressed on church attendance at wave 1, then on church attendance at wave 6 (Table 4).

TABLE 4 APPROXIMATELY HERE

The mean numbers of children when church attendance is measured in wave 1 (Model I) are strikingly close to the averages when church attendance is recorded in wave 6 (Model III): they are 1.5 versus 1.6 for yearly attendees, 1.9 versus 2.1 for monthly attendees and 2.4 versus 2.5 for weekly attendees.

These similarities are by and large retained when controlling for a number of covariates (Table 4). Respondents partaking monthly in religious services have on average 0.39/0.23 children more than yearly attendees. Weekly attendees surpass them by 0.65/0.76 children. The confidence intervals overlap in each case. Even though the composition of respondents differs between the observation points lying 18 years apart (15 per cent change their category), the effects come close. One explanation for this finding is the high stability in church attendance over age. A second reason may be that even though church attendance declines the fertility pattern does not adjust in parallel. This possibility will be empirically addressed in the successive set of models. To sum up, frequencies of church attendance at different points in life give reasonably similar predictions of the number of children close to the end of the reproductive career, at least in a secular environment marked by moderate changes in church attendance.

Between the first and the last wave, the share of non-affiliated grows from 48 to 59 per cent with a larger relative drop among Protestants (22 to 17 per cent) than among Catholics (28 to 25 per cent). Knippenberg (1998) argued that the comparatively high percentage of non-affiliated in the Netherlands may be rooted in its bi-denominational structure which increased religious consciousness and as a consequence led to the

perception that apostasy should be reported. A higher share of Protestants attends church services at least monthly (wave 1 to 6: 60 to 51 per cent) and their loss is gentler than for Catholics (wave 1 to 6: 23 to 13 per cent). The Catholics' tendency to declare belonging even though their participation is modest at best is commonly attributed to their former minority status whereby Catholiscism became an important trait of cultural identity.

Judging from the regression coefficients Roman Catholics and Protestants are characterised by a larger family size than the non-affiliated, but they do not differ significantly from each other. A distinction between more conservative and more liberal Protestants was not feasible due to small numbers. Obviously, the major part of fertility differences between the Christian denominations can be explained by different intensities of religious participation and not genuine variations in religious teachings. An interaction revealed that the effects of church attendance do not differ by denomination.

Fertility differences along denominational lines had largely converged by the mid-1960s (Somers and van Poppel 2003) but some distinctions remain: members of the orthodox Protestant churches show the highest fertility levels followed by liberal Protestants (then: Dutch Reformed Church), Roman Catholics and the non-affiliated (Centraal Bureau voor de Statistiek 2001, p. 10; Berghammer 2009).

The results of the other covariates are as follows: Men have a lower number of children than women for the reason that they are usually several years older than their partners and continue reproduction at higher ages. The oldest cohort (aged 44) had almost finished childbearing while a certain part of fertility will still be realised by the younger ones. The net effect of education is not significant. Conversely, prior studies observe that a higher

education associates with a lower number of children for Dutch women but not for men (de Meester et al. 2005; Fokkema et al. 2008, p. 771). Being employed over large passages of life is negatively related to the number of children (see also Keizer et al. 2008) whereas a durable partnership is positively linked (see also de Meester et al. 2005). Parent's religiosity has no independent effect. If religious transmission to the next generation is successful, parents and children share the same set of values influencing fertility behaviour.

It is a drawback of these kinds of analyses that respondents had not finalised their reproduction fully. To validate the results, all models in this section were also estimated for women aged 40 to 44 only (models not shown). Typically, the sizes of coefficients are smaller and significance is obtained in fewer cases due to reduced sample size, however, the main conclusions stay the same.

In the remainder of this analysis, the respondents' religious biography, based on information from the five measurement points, is included in two ways (Table 5). To begin with, five patterns of church attendance trajectories are added to the model, namely "yearly in all waves", "combination of yearly and monthly", "decrease from monthly or weekly to yearly", "monthly in all waves or combination of monthly and weekly" and "weekly in all waves". It would surely have been desirable to consider more categories, for instance to divide respondents exhibiting the decreasing pattern in those with an early versus late decrease, but the small case numbers did not permit a greater diversification. Finally, the proportion of monthly or weekly attendance spells is introduced. Respondents

with information on the number of children in wave 6 and a missing value on church attendance in at most one wave are considered in the analyses to follow.

TABLE 5 APPROXIMATELY HERE

Three quarters of respondents went to church yearly throughout their lives and evince with 1.5 the lowest number of children ever born (Table 5, Model I). Their religious counterparts, continuous weekly attendees, comprise roughly 4 per cent and bear the largest number of children, 2.7 on average. The other groups are in between these extremes.

Controlling for a number of covariates does not alter the order of the effect strengths of religious trajectories (Model II). Yearly/monthly and weekly/monthly attendees differ significantly from the reference category but not from each other. Persistent weekly church goers stand out with their high number of children. The enduring observation that the fertility behaviour of respondents who decrease from monthly/weekly to yearly is closer to the other intermediate categories than to uninterrupted yearly attendees demands an explanation. Either church attendance had changed after childbearing or past church attendance continues to exert an impact even if it has faded. Internalised values may be deeply rooted and social influence of religious relatives or friends and acquaintances may continue to impact childbearing decisions.

The estimates on the high attendance spells show a continuous gradient of increase in the mean number of children with 0.77 or 0.66 children more for a respondent who always partook in church services monthly or weekly compared to one who never did (Models III and IV).

The coefficients of the covariates are similar to the previous models in Table 4 with the exception that the effect of affiliation decreases as church atteandance is accounted for more exhaustively.

6 Discussion

Previous studies demonstrated that religious people in Europe have larger families. Based on the evidence from the US and theoretical reasoning I speculated that the relationship between church attendance and having children could work in both directions. Contrary to expectations, the results suggest a one-way effect: 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 a change in the frequency of church attendance. These results diverge from findings for the US where several studies have endorsed the importance of having children for subsequent religiosity.

What could be the reasons for these contradictory findings? We have to consider that different measures of religiosity are used. 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 religious indicators is hence only partially comparable.

An important reason for inconsistent results might be the differences in the role of religion in the US and in the Netherlands. In a more vivid religious environment such as the US, where people get in touch with religious peers and ideas more frequently, increasing their own religious activities might be more self-evident than in a secular context. Furthermore, in the US the composition of parishes as well as their functions could encourage an increase in church attendance after the birth of a child. While a modest trend of disengagement of church attendance with age has been reported for the US (Hout and Greeley 1987, p. 328), the birth cohort strongly determines the level of church attendance in the Netherlands, which is reflected in clear differences by age (Schmeets and Hendriks 2004). Meeting other people in childbearing ages is therefore more probable in US than in Dutch parishes. Differently from Europe, church communities in the US have strong welfare functions. Estimates indicate that around one quarter of the US population receives services from faith-based organisations annually (Johnson, Tompkins and Webb 2002, p. 7). Certainly, charitable activities are decisive for the Dutch churches as well. Both supply and demand, however, are lower than in the US since the Dutch welfare system is among the most generous in western Europe and the Netherlands are among the countries with the lowest poverty rates (Becker 2000, pp. 227-228). Besides, the motivation to increase church attendance when the children have

reached school age because churches provide religious teaching is less relevant 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 denominational schools. The latter also provide religious education at the secondary level (Alberts 2007, p. 344).

Next to addressing the topic of the direction of influence, the panel structure of the data allowed to assess the impact of church attendance at different points during the life course on the number of children. Interestingly, keeping the chronological order by studying the effect of church attendance at wave 1 on the number of children at wave 6 yielded hardly any different results than using the information on church attendance at wave 6 for the same purpose. This unexpected finding can, on the one hand, be attributed to the very high stability of church attendance and, on the other hand, to the fact that even if church attendance declines fertility behaviour is not in the same way adapting to the "low religiosity" pattern.

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 should investigate if the result holds for countries that are more religious than the Netherlands.

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Table 1: Distribution of church attendance over waves, in per cent

	Wave 1 (1987/88)	Wave 3 (1991)	Wave 4 (1995)	Wave 5 (2000/01)	Wave 6 (2005/06)
Yearly	81.0	84.3	86.6	87.5	87.4
Monthly	9.5	8.2	6.9	7.4	6.5
Weekly	9.5	7.5	6.5	5.2	6.1
n	*1,681*	*1,189*	*897*	*774*	*674*

Source: Panel Study of Social Integration in the Netherlands, 1987-2006

Table 2: Change in church attendance between the waves, in per cent

	Wave 1-Wave 3	Wave 3-Wave 4	Wave 4-Wave 5	Wave 5-Wave 6	Wave 1-Wave 6
No change	87.5	92.1	93.3	93.1	85.1
Decrease	9.4	4.2	4.4	4.4	11.9
Increase	3.1	3.7	2.3	2.5	3.0
n	*1,177*	*888*	*644*	*520*	*663*

Source: As for Table 1

Table 3: Predicted probabilities to decrease or increase church attendance (in per cent), multinomial logit models

(A) Childless to having a first child

	Decrease				Increase			
	I	II	III	*n*	I	II	III	*n*
Intercept	6.5***	5.6***	1.1***		2.7***	2.9***	2.1***	
Has a first child	**4.3**	**4.2**	**0.7**	*21*	**(2.9)**	**(2.6)**	**(1.7)**	*14*
Has no child (ref.)	**6.5**	**5.6**	**1.0**	*152*	**2.7**	**2.9**	**2.0**	*62*
Female (ref.)		5.6	1.1	*85*		2.9	2.1	*41*
Male		4.8	1.0	*88*		2.7	2.0	*35*
Age[1]		5.6	1.1	*173*		2.9	2.1	*76*
Age at first birth[2]		5.6	1.1	*103*		2.9	2.1	*47*
Stays in parental home (ref.)		5.6	1.1	*118*		2.9	2.1	*65*
Leaves parental home		8.8	1.7	*53*		(1.9)	(1.4)	*11*
Does not obtain higher education (ref.)		5.6	1.1	*131*		2.9	2.1	*57*
Obtains higher education		5.5	1.0	*42*		(3.0)	(2.1)	*19*
No change in employment (ref.)		5.6	1.1	*130*		2.9	2.1	*49*
Enters employment		5.2	1.4	*32*		(2.6)	(1.9)	*13*
Exists employment		(6.7)	(1.8)	*10*		(7.9*)	(6.4*)	*12*
No change in cohabitation status (ref.)		5.6	1.1	*125*		2.9	2.1	*65*
Starts living with partner		7.6	1.3	*43*		-	-	*8*
Ends living with partner		-	-	*5*		-	-	*3*
Wave 1 yearly church attendance (ref.)			1.1	*27*			2.1	*50*
Wave 1 monthly church attendance			28.7***	*93*			8.1***	*21*
Wave 1 weekly church attendance			17.2***	*52*			-	*5*
n	*1491*							
Pseudo R2	*0.00*	*0.03*	*0.23*					

Source: As for Table 1

Notes:
Significance levels: * $p \leq 0.05$; ** $p \leq 0.01$; *** $p \leq 0.001$
Brackets indicate that n<20, - indicates that n<10
[1] Age is centered around the mean of 28.05.
[2] Age at first birth is centered around the mean of 29.95.

(B) Having a first to having a second child

	Decrease				Increase			
	I	II	III	*n*	I	II	III	*n*
Intercept	6.9***	5.8***	1.0***		2.7***	3.4***	2.5***	
Has a second child	**3.6*** **	**4.0**	**0.7**	*32*	**2.7**	**3.5**	**2.6**	*24*
Has no second child (ref.)	**6.9**	**5.8**	**1.0**	*146*	**2.7**	**3.4**	**2.5**	*58*
Female (ref.)		5.8	1.0	*88*		3.4	2.5	*46*
Male		5.7	1.0	*90*		2.6	2.0	*36*
Age[1]		5.8	1.0	*178*		3.4	2.5	*82*
Age at second birth[2]		5.8	1.0	*91*		3.4	2.5	*43*
Stays in parental home (ref.)		5.8	1.0	*123*		3.4	2.5	*71*
Leaves parental home		12.1*	2.2	*53*		(2.0)	(1.7)	*11*
Does not obtain higher education (ref.)		5.8	1.0	*134*		3.4	2.5	*61*
Obtains higher education		5.5	0.8	*44*		4.6	3.4	*21*
No change in employment (ref.)		5.8	1.0	*134*		3.4	2.5	*55*
Enters employment		6.4	1.4	*32*		(1.8)	(1.4)	*13*
Exists employment		(7.5)	(1.5)	*11*		(7.6)	(6.1)	*12*
No change in cohabitation status (ref.)		5.8	1.0	*129*		3.4	2.5	*71*
Starts living with partner		6.0	0.9	*43*		-	-	*8*
Ends living with partner		-	-	*6*		-	-	*3*
Wave 1 yearly church attendance (ref.)			1.0	*28*			2.5	*54*
Wave 1 monthly church attendance			26.3***	*96*			8.9***	*23*
Wave 1 weekly church attendance			16.8***	*53*			-	*5*
n	*1583*							
Pseudo R2	*0.01*	*0.04*	*0.23*					

Source: As for Table 1

Notes:
Significance levels: * $p \leq 0.05$; ** $p \leq 0.01$; *** $p \leq 0.001$
Brackets indicate that n<20, - indicates that n<10
[1] Age is centered around the mean of 28.28.
[2] Age at second birth is centered around the mean of 31.81.

Table 4: Determinants of number of children in wave 6, linear regression

	I	II	*n*	III	IV	*n*
Intercept	1.50***	0.55 *		1.55 ***	0.60 *	
Yearly church attendance (ref.)	**in wave 1**	**in wave 1**	*554*	**in wave 6**	**in wave 6**	*589*
Monthly church attendance	**0.42****	**0.39****	*86*	**0.50****	**0.23**	*44*
Weekly church attendance	**0.86*****	**0.65*****	*77*	**0.91*****	**0.76*****	*41*
No affiliation (ref.)		in wave 1	*340*		in wave 6	*399*
Roman Catholic		0.20	*198*		0.17	*175*
Protestant		0.17	*157*		0.16	*114*
Female (ref.)			*412*			*393*
Male		0.07	*314*		0.04	*302*
Birth year 1961 (ref.)			*257*			*245*
Birth year 1965		0.02	*241*		0.04	*228*
Birth year 1969		0.08	*228*		0.13	*222*
Highest level of education		-0.01	*718*		-0.03	*688*
Employed (proportion of waves)		-0.56***	*726*		-0.50**	*695*
Living with partner (proportion of waves)		1.99***	*726*		1.94***	*695*
Parents not affiliated (ref.)			*180*			*177*
Parents affiliated		-0.03	*509*		0.07	*482*
n	*717*	*670*		*674*	*637*	
R2	*0.06*	*0.32*		*0.05*	*0.31*	

Source: As for Table 1

Notes:
Significance levels: * $p \leq 0.05$; ** $p \leq 0.01$; *** $p \leq 0.001$
"Other Christian" was controlled in Models I and II but is not shown.

Table 5: Determinants of number of children in wave 6, linear regression

	I	II	*n*	III	IV	*n*
Intercept	1.49***	0.48		1.50***	0.48	
Church attendance trajectory						
Yearly in all waves (ref.)			*474*			
Combination of yearly and monthly	**0.62*** **	**0.56*** **	*39*			
Decrease from monthly or weekly to yearly	**0.43** **	**0.46*** **	*57*			
Monthly in all waves or combination of monthly and weekly	**0.41**	**0.41***	*28*			
Weekly in all waves	**1.21*** **	**1.05*** **	*23*			
High attendance spells (proportion of waves)				**0.77*** **	**0.66*** **	*634*
No affiliation in wave 6 (ref.)			*363*			*363*
Roman Catholic in wave 6		0.07	*163*		0.07	*163*
Protestant in wave 6		-0.01	*104*		0.00	*104*
Female (ref.)			*365*			*365*
Male		0.12	*269*		0.11	*269*
Birth year 1961 (ref.)			*227*			*227*
Birth year 1965		0.02	*209*		0.04	*209*
Birth year 1969		0.10	*198*		0.13	*198*
Highest level of education		-0.01	*628*		-0.01	*628*
Employed (proportion of waves 0-1)		-0.52**	*634*		-0.53***	*634*
Living with partner (proportion of waves)		1.95***	*634*		1.98***	*634*
Parents not affiliated (ref.)			*159*			*159*
Parents affiliated		0.02	*442*		0.06	*442*
n	*634*	*594*		*634*	*594*	
R2	*0.07*	*0.33*		*0.04*	*0.31*	

Source: As for Table 1

Notes:
Significance levels: * $p \leq 0.05$; ** $p \leq 0.01$; *** $p \leq 0.001$
"Other trajectories" was controlled but is not shown.

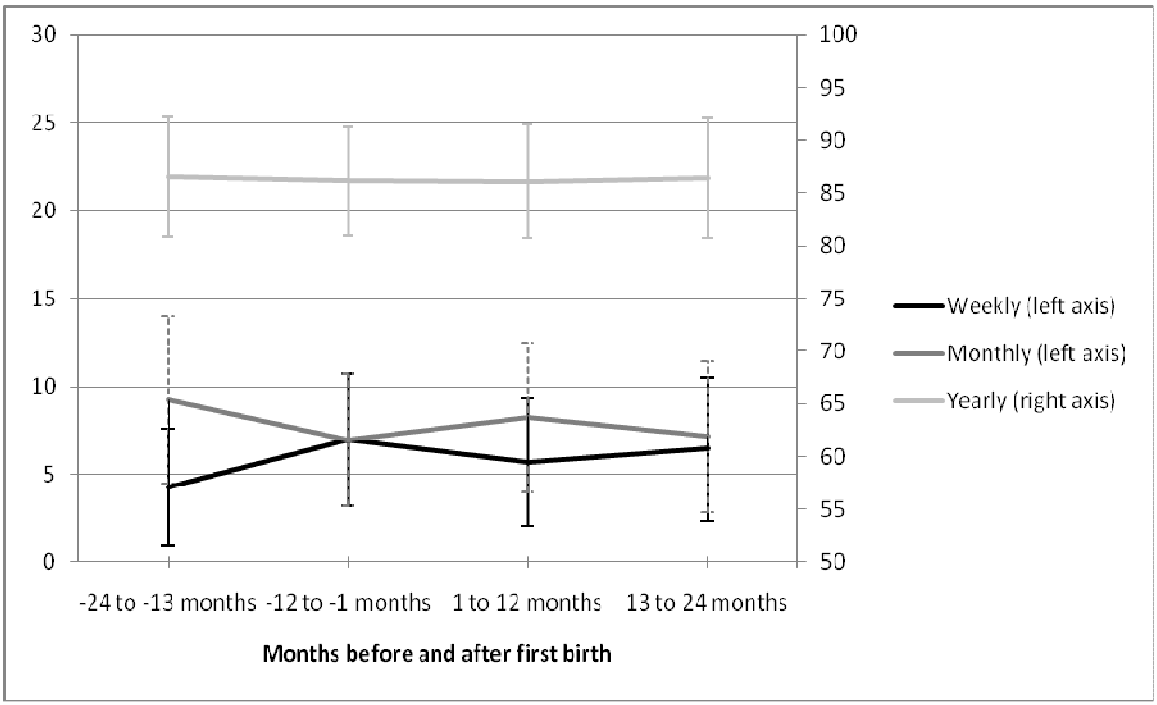

Figure 1: Distribution of church attendance by months before and after first birth, in per cent (95 per cent confidence intervals shown)

Source: As for Table 1

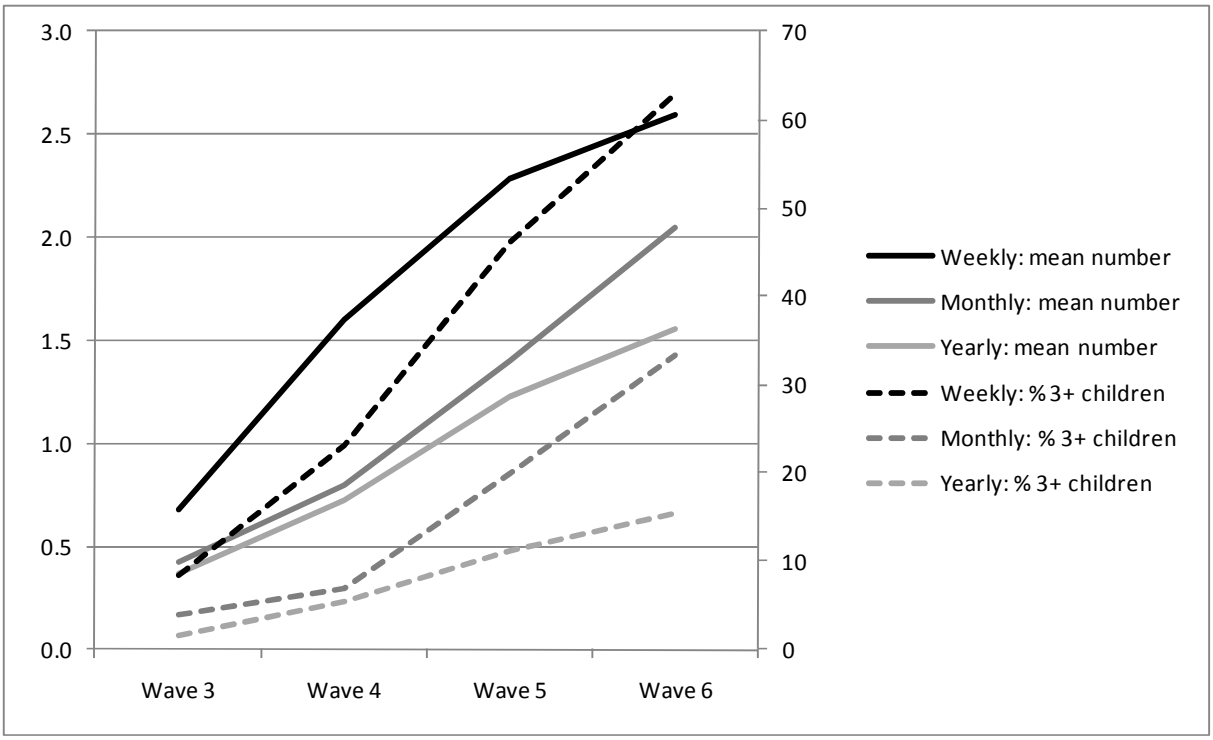

Figure 2: Mean number of children (left axis) and proportion with 3+ children (right axis) by frequency of church attendance in the previous wave

Source: As for Table 1