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ORIGINAL ARTICLE

A family member's death increases religious activity: Evidence from Germany

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Abstract

Religiosity influences economic behavior in various domains, but what determines religiosity? Using data from the representative Socio-Economic Panel Study for Germany (SOEP), this paper shows that religious activity increases after a family member's death. The life event's effect is larger after a partner's death when compared to a parent's death. Our results indicate that the influence of a family member's death on religious activity is temporary and are consistent with the religious coping hypothesis.

1 | INTRODUCTION

Empirical evidence shows that religiosity can *causally* influence individual characteristics such as grit and bear on economic behaviors such as cooperation, truth-telling, and prosocial behavior (e.g., Benjamin et al., 2016; Bryan et al., 2021; Hoffmann, 2022; Lane, 2021; Rand et al., 2014; Randolph-Seng & Nielsen, 2007; Tan & Vogel, 2008). In addition, there is *correlational* evidence that more religious people are more likely to save and less likely to borrow (Chunping et al., 2016; Renneboog & Spaenjers, 2012), have a different work ethic (e.g., Feess et al., 2014), complete more years of schooling (e.g., Basedau et al., 2018; Lehrer, 2006), tend to be more risk averse (e.g., Köbrich Leon & Pfeifer, 2017; Noussair et al., 2013), and show a lower preference for redistribution (Kirchmaier et al., 2018), for example.¹ In summary, much evidence suggests that religiosity is consequential for individual and social outcomes (e.g., Campante & Yanagizawa-Drott, 2015).

Religiosity varies markedly across and within countries (e.g., McCleary & Barro, 2006; Smith et al., 1998). Although a better understanding of the determinants of religiosity at the level of the individual is important in itself and particularly so in view of religiosity's relationship with economic decision-making and outcomes, knowledge on this issue

¹Greater religiosity may mean stronger believing (i.e., perceived religiosity) and/or more frequent religious activity. Whereas studies showing causal effects often rely on cognitive representations (using priming, for example) and cannot build on different activity levels as treatment variation, correlational studies can include belief intensity and activity. Our study focuses on religious activity, as explained below.

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remains limited (e.g., Buser, 2015; Iyer, 2016; McCleary & Barro, 2006). This paper contributes to this ongoing discussion by examining the *religious coping hypothesis*, which proposes that individuals draw on religious beliefs and activity to deal with adverse circumstances and life events (e.g., Ano & Vasconcelles, 2005; Pargament, 2011).

Coping generally involves using one or various mechanisms to reduce psychological stress. As explained in Gurvich et al. (2021), for example, common coping strategies include problem-focused coping (i.e., efforts to alter the situation or seek alternatives), seeking social support, and a positive appraisal of the situation (i.e., attempts at construing the stressful situation in a more positive light). Religion can, for example, help by providing meaning to the family member's death (e.g., Murphy et al., 2003). Pargament (2011) states that religion can serve coping by influencing, for example, impulse control, problem-solving, self-esteem and efficacy, and transformation.

We analyze how religious activity changes after a family member's death using the Socio-Economic Panel Study for Germany (SOEP). For our research design, a family member's death can be likened to a shock occurring between observations of religious activity at the level of the individual. Two possible hypotheses about the empirical relationship may be contrasted. First, an individual who suffered the death of a family member could turn to religion as a source of comfort and explanation (which is the religious coping hypothesis). In contrast, the occurrence of the adverse event may be interpreted as evidence of God's absence or indifference, which would call for a reduction in religious beliefs and activities (e.g., Exline et al., 2011).

Our paper contributes to the literature (discussed in Section 2) in three ways. First, we study a large sample representative of Germany and can include much information about survey participants in our empirical exercises. Second, our study design allows us to consider within-subject comparisons. We can condition on religiosity before the family member's death and follow the evolution of religiosity over time after the event to study how long a possible impact lasts. In addition, our paper considers the death of different family members, allowing us to compare the impact of the different events.

The precise implications of a family member's death for religiosity can be very case-specific. We can control for this specificity only to some extent. In our study, we consider the death of a parent or that of a partner. For example, Etile et al. (2021) find that the death of a partner has a stronger impact on psychological health than the death of a close relative (e.g., parent and sibling). In addition to the kind of relationship, the deceased's age, the quality of the relationship with the mourning individual, and the suddenness and cause of death will generally strongly influence how others experience a family member's death. The death of a family member often has health implications for the bereaved (e.g., Tseng et al., 2018). In addition, there are economic effects: For example, the death of a sick parent may relax the children's time and money budgets, while a spouse's death can bring economic hardship (e.g., Maczulskij & Böckerman, 2019; Van den Berg et al., 2011). Data limitations imply that we cannot, for example, address how the suddenness or the cause of death moderates the effect of a family member's death on religious activity in our analysis.

We find that individuals who mourn for a family member increase their religious activity on average. This effect is robust and economically meaningful. For example, the death of a partner increases the probability of attending a religious event at least monthly by 2.34 percentage points. Given that only 16.07% of the sample attend a religious event at least monthly, this is also economically significant.² Consistent with the idea that religion is used particularly for coping with both negative and unforeseen situations, we find evidence that the death of a partner is more influential than the death of parents. Our results also indicate that the effect of a family member's death on religious activity is only temporary. The effect we find arises *after* the event. In other words, we do not find evidence of an increase in religious activity in the period before the family member's death (which could be a way of coping with a serious illness of the family member ultimately causing the death, for example). In summary, our findings are consistent with the religious coping hypothesis.

²One may wonder whether a relative's death *automatically* raises a mourner's religious activity as a result of her attending the funeral. Such concerns are not valid since we focus on attending at least monthly.

2 | LITERATURE

The relationship between adverse life circumstances and events on the one hand and religion on the other has been considered before. For example, Clark and Lelkes (2005) use European survey data to study whether life satisfaction repercussions of adverse life events depend on the respondent's religiosity. Among other results, they find that religiosity can dampen the negative happiness effect of unemployment but may also aggravate the happiness implications of divorce or widowhood. Lechner and Leopold (2015) find a similar effect for unemployment. Dehejia et al. (2007) and Popova (2014) show that religiosity can help insure happiness against both individual income and aggregate shocks. In contrast to these studies, we do not consider religiosity as a fixed moderator of how the crisis influences the individual but are interested in how religiosity responds to a crisis. In this regard, our paper has many similarities with Kettlewell (2019), for example, who studies how risk preferences evolve after adverse life events using the HILDA data set. For the death of a partner or child, he does not find a significant effect of death on risk attitude.

Similarly focusing on religiosity as the endogenous variable, Bentzen (2019) considers how natural disasters influence religiosity. She uses survey data about religiosity and district-level information about earthquakes and finds that individuals become more religious if an earthquake happened recently in their district. Whereas Bentzen (2019) cannot condition the individual-level religiosity on the individual-level disaster experience, we use panel data comprising respondent-specific information about both religiosity and the adverse event. Bentzen (2021) considers country-level data to show that the demand for praying increased during the COVID-19 pandemic. Results from both papers are consistent with the religious coping hypothesis.

Cesur et al. (2020) and Shai (2022) present evidence consistent with the idea that individuals turn to religion to cope with the effects of wars. For example, Cesur et al. (2020) consider the causal effect of assigning US Armed Forces active-duty servicemen to combat instead of non-combat overseas deployment, finding a higher probability of attending religious services weekly and engaging in private prayer. Henrich et al. (2019) similarly study the link between war and religiosity, finding that people from Uganda, Sierra Leone, and Tajikistan with greater exposure to wars show a higher religious activity even years after the conflict. The data presented in Giles et al. (2023) are consistent with the notion that a lower utilization of religiosity as a coping mechanism in the United States is associated with *deaths of despair* (i.e., higher death rates from poisonings, suicides, and liver disease).

Most studies on religion in economics have relied on surveys and measures of religious beliefs and/or activity (e.g., Iyer, 2016; McCleary & Barro, 2006). We follow this path. In a recent innovative study, Dube et al. (2022) use phone data during prayer time windows to measure religious adherence in Afghanistan, providing a rare *revealed-preferences* approach that shows that economic adversity can increase religiosity.

Our paper also builds on earlier work regarding religious coping from disciplines other than economics, some of which is synthesized in Ano and Vasconcelles (2005). For example, Thompson and Vardaman (1997) contacted 150 family members of homicide victims and showed that they tend to engage in religious coping. Whereas their study uses mostly African-Americans from Atlanta who were contacted only after the crime, our panel data is representative for Germany and allows us to make within-subject comparisons before and after the event while using a great deal of information about survey respondents. Additionally, we can follow individuals over many years and thus say something about the effect's longevity. Importantly, the exact nature of the relationship between adverse life events and changes in religious belief and activity remains uncertain as previous results are conflicting, as argued in Trainor et al. (2019), for example. In that paper, the authors propose that death and religiosity before the adverse event play an important role in the effect's level and direction. Our research design includes the death of different kinds of family members and allows us to condition on religiosity before the family member's death.

3 | DATA AND EMPIRICAL APPROACH

Our analysis is based on the German Socio-Economic Panel (SOEP), a nationally representative longitudinal data set created in 1984 (e.g., Wagner et al., 2007). We study how the death of a close family member influences religiosity in the aftermath. Our estimation sample includes only individuals between 20 and 70 years of age and only uneven survey years from 2003 to 2019.

The lower bound of the age restriction stems from the fact that we employ a 2-year lag in our analysis and that subjects enter the SOEP at 18. The upper bound of the age restriction results from considerations concerning the likely exposure to the death of family members and its perception as a shock. Our sample starts with the survey year 2003 because information about both the death of the mother and the death of the father is included in 2003 for the first time. Our sample ends with the survey year 2019, that is, the year before the start of the COVID-19 pandemic. Our final estimation sample includes 118,948 observations comprising 38,971 individuals in an unbalanced panel design for eight survey years.³

3.1 | Data on religiosity

In empirical studies about religiosity, religion is usually measured either in terms of religious beliefs (e.g., prayer and other indicators of *believing*) or in terms of religious activity (e.g., Iyer, 2016). Our survey measure belongs to the latter category. In uneven survey years, respondents are asked how frequently they attend religious events (including church service). The 4-point scale of the item are the following: (1) *never*, (2) *seldom/less than monthly*, (3) *at least once per month*, and (4) *at least once per week*. In some years, a 5-point scale with an additional category *daily* was included. We pool the two highest categories for these years when we report statistics.

Most respondents (55.87%) answer that they never attend religious events, and 28.06% attend sometimes but less than monthly. There are 8.67% of respondents attending at least monthly but less than weekly. Only 7.40% state that they attend religious events at least weekly. In our empirical analysis, we rely on a dummy variable equal to one if the respondent attends at least monthly. Based on the shares above, the baseline probability for this frequency is 16.07%.

3.2 | Data on death

The survey includes questions about the death of close family members (partner, father, and mother) since the beginning of the year before the survey year.⁴ For example, if a respondent completed the survey in May 2019, the relevant time interval starts January 2018 and runs until May 2019. We denote the survey year by t . Deaths of family members are very rare events. We create two dummy variables and use a time index for the variables *Death Partner* and *Death Parent* to distinguish dynamic effects.⁵ The data includes more deaths of parents than of partners. By the sheer size of the SOEP, we have 300 (3075) observations of a partner's death (parent's death) in our total sample, and between 29 and 56 (301 and 496) per survey year. The panel design allows aggregating deaths over time (aggregation of deaths in the relevant survey year t , the year preceding the survey year $t - 1$, and two years preceding the survey year $t - 2$).

³Because lags feature prominently in our empirical model as explained below, we use the survey years starting in 2005 for our regressions to ensure having the lagged values from 2003 and 2004.

⁴Starting in 2007, respondents are asked about the death of a child. However, there are very few reports of children's death in the data. For this reason and to be able to use the longer panel, we abstract from the death of a child.

⁵Note that survey participants indicate whether one of their parents died. There is no survey item about the death of a parent-in-law.

3.3 | Individual characteristics

We include many individual characteristics. We consider age, migration background (dummy variable), gender (dummy variable), schooling (no degree, basic school, middle school, high school), vocational degree (dummy variable), university degree (dummy variable), employment status (full-time employment, part-time employment, unemployment, retired, and to be in training/education), net per capita household income, survey years, and federal state of residence (16 German federal states). Our individual characteristics are closely aligned with those commonly included in studies of religiosity (e.g., Aleksynska & Chiswick, 2013). Several principally available characteristics, such as family status and household size, cannot be used as they may be endogenous to a family member's death.

Table A1 shows the descriptive statistics for our estimation sample.

3.4 | Empirical approach

We study how a family member's death influences religiosity. In our main analysis, we present findings from fixed-effects models. This enables us to identify the death's effect on religiosity better. The dependent variable equals one if the respondent attends a religious event at least monthly and zero otherwise. Our robustness checks present findings using different empirical models with and without fixed effects.

The coefficients of the covariates *Death Partner* and *Death Parent* are of interest. To account for possible differences in religious activity and address concerns about unobserved heterogeneity, we include information about attendance at religious events in year $t - 2$ (the last observation for this item) in our regressions.

The death of a family member occurs rarely in our sample. We also present results after aggregating family member's deaths over the three survey years to address this issue. In other words, the dummy variable *Death Parent* $_{t-2/t-1/t}$ is equal to one if a parent of the respondent died in either $t - 2$, $t - 1$, or t . In addition, we will explore the possibility of more religious activity in the year *before* the family member's death using a *lead* dummy variable denoted by $t + 1$.

4 | RESULTS

In our paper, we report coefficients for the variables of interest. Supporting information provides additional details of our empirical analysis.

4.1 | Main results

We find that religious activity increases after a family member's death. In column (1) of Table 1, we report results from fixed-effects linear probability regressions in which the variables of interest are dummy variables equal to one if a family member died either in $t - 2$, $t - 1$, or t and are equal to zero otherwise. The coefficients of the two dummy variables are significant, at least at the 5% level.

The coefficient of *Death Partner* $_{t-2/t-1/t}$ in column (1) of Table 1 signifies an increase in the probability of attending a religious event at least monthly by about 2.34 percentage points. This effect is relatively large relative to the baseline probability of attending a religious event at least monthly at 16.07%. The coefficient of *Death Parent* $_{t-2/t-1/t}$ signifies an increase in the probability of attending a religious event at least monthly by about 0.8 percentage points. The coefficients of *Death Partner* $_{t-2/t-1/t}$ and *Death Parent* $_{t-2/t-1/t}$ in column (1) of Table 1 are significantly different ($p < 0.01$). Compared to the death of a partner, the death of a parent is often a more predictable and natural event in many instances. This makes it likely that the impact of the death of a partner will be greater and require greater

TABLE 1 Family member's death and religious activity.

| | (1) | (2) | (3) |
|------------------------------------|----------------------|----------------------|------------------------|
| Death Partner _{t-2/t-1/t} | 0.0234** (0.0117) | | |
| Death Parent _{t-2/t-1/t} | 0.0080** (0.0035) | | |
| Death Partner _t | | 0.0368** (0.0176) | 0.0329* (0.0193) |
| Death Partner _{t-1} | | -0.0120 (0.0161) | -0.0123 (0.0181) |
| Death Partner _{t-2} | | 0.0410** (0.0187) | |
| Death Parent _t | | 0.0094* (0.0051) | 0.0115** (0.0055) |
| Death Parent _{t-1} | | 0.0037 (0.0048) | 0.0037 (0.0056) |
| Death Parent _{t-2} | | 0.0013 (0.0051) | |
| Death Partner _{t+1} | | | -0.0537*** (0.0168) |
| Death Parent _{t+1} | | | -0.0052 (0.0058) |
| Control variables | Yes | Yes | Yes |
| N | 118,948 | 118,948 | 91,327 |
| R ² | 0.0053 | 0.0054 | 0.0082 |
| No. of individuals | 38,971 | 38,971 | 29,833 |

Note: Results from fixed-effects linear probability models where the dependent variable is a dummy variable equal to one if the respondent's frequency of attending religious events is at least monthly and zero otherwise. The full results are displayed in Table S1 in our supporting information. Standard errors clustered at the individual level in parentheses.

* $p < 0.1$.

** $p < 0.05$.

*** $p < 0.01$.

coping effort. The marked difference of the coefficients of *Death Partner*_{t-2/t-1/t} and *Death Parent*_{t-2/t-1/t} is consistent with this interpretation.

Our findings shown in column (2) indicate that the effect of a family member's death on religious activity is temporary.⁶ When considering the death of a parent in greater detail, we find that the effect is significant only when the parent died in the survey year t . When considering the death of a partner, we find that the coefficient for the dummy variables for the survey year and the one for $t - 2$ are significant. This suggests that the adverse-life-event effect of a family member's death on religiosity is more short-lived when the respondent mourns for a parent instead of a partner. The coefficients of *Death Partner*_t and *Death Parent*_t are significantly different.

⁶Tseng et al. (2017) find transitory effects of spousal bereavement on depression. Kettlewell (2019) studies how life events such as death of a spouse influence risk attitudes and also concludes that effects are only temporary.

TABLE 2 Family member's death and religious activity: varying the empirical model.

| | (1) Pooled OLS | (2) FE OLS | (3) Logit | (4) FE Logit |
|------------------------------------|-----------------------|----------------------|-----------------------|----------------------|
| Death Partner _{t-2/t-1/t} | 0.0335*** (0.0111) | 0.0234** (0.0117) | 0.4103*** (0.1302) | 0.5149** (0.2162) |
| Death Parent _{t-2/t-1/t} | 0.0057* (0.0031) | 0.0080** (0.0035) | 0.0824* (0.0421) | 0.1849** (0.0738) |
| Control variables | Yes | Yes | Yes | Yes |
| <i>N</i> | 118,948 | 118,948 | 118,948 | 18,459 |
| <i>R</i> ² | 0.4773 | 0.0053 | | |
| Pseudo <i>R</i> ² | | | 0.4241 | 0.0160 |
| No. of individuals | | 38,971 | | 3979 |
| <i>F</i> | 827 | 5 | | |
| χ^2 | | | 19,876 | 219 |

Note: The dependent variable is a dummy variable equal to one if the respondent's frequency of attending religious events is at least monthly and zero otherwise. We use the aggregated death information. Column (1) shows results from pooled ordinary least squares regressions. In column (2), we show results from fixed-effects ordinary least squares regressions. Column (3) shows results from logit regressions. In column (4), we show results from conditional fixed-effects logit regressions. The full results are displayed in Table S2 in our supporting information. Standard errors clustered at the individual level (except for FE logit) in parentheses.

* $p < 0.1$.

** $p < 0.05$.

*** $p < 0.01$.

In column (3) of Table 1, we consider the possibility of more religious activity in the year leading up to the year the family member dies. This could be relevant, for example, when a family member suffers from a severe illness before death. The coefficient of the dummy variable *Death Parent*_{*t*+1} is insignificant. This is consistent with the possibility that our death data contains too few cases in which a long-lasting severe illness leads to a parent's death and that religious coping is less relevant before death. In contrast, the coefficient of *Death Partner*_{*t*+1} is significant and negative. This is compatible with the idea that activities other than attending religious events were using up time available while the partner was still alive.

4.2 | Robustness checks

To test the robustness of our results, we explore other empirical approaches using the aggregated death measure. In Table 2, we present results from pooled ordinary least squares regression, fixed-effects ordinary least squares regression (the baseline estimate from Section 4.1), logit regression, and conditional fixed-effects logit regression. Our main conclusions are very robust across approaches.

5 | DISCUSSION AND CONCLUSION

More salient religiosity has pronounced effects on economic behavior and outcomes. Religious beliefs and activity vary significantly across space and time, and the reasons for this heterogeneity are still not fully understood.

Using panel data from Germany and a research design that strongly suggests a causal interpretation of findings, we present results regarding whether people change their religious activity after the death of a close relative. We find that religious activity increases at least temporarily. Our results indicate that this effect is stronger after the death of a partner when compared to a parent's death.

Our finding is consistent with the religious coping hypothesis; that is, people turn to religion when coping with stressful events. This hypothesis is also consistent with the observed heterogeneity of the effect because the deaths of a partner are usually less foreseeable than the deaths of a parent.

Our result regarding the empirical relationship contributes to a better understanding of the demand side for religion. In addition, it is also very relevant in a wider sense because more salient religiosity is strongly connected to economic behavior. Even if this change is only temporary, the more salient religiosity after a family member's death may tilt the decision-making of mourners in terms of prosocial and investment behavior, for example.

From a social standpoint, the data presented in Giles et al. (2023) suggest that the availability of religiosity as a coping mechanism may be desirable. Friedman (2020), for example, shows that people may turn to smoking to cope with mental distress. Clearly, other coping mechanisms are also available (e.g., secular psychological services, Cesur et al., 2020), but they may have higher (perceived) costs associated with them.

We acknowledge that our contribution has its limitations. Although our study builds on a very large panel data set, the event's infrequency means that dissecting the overall effect for subgroups is not meaningful. Moreover, our dependent variable, how often individuals attend religious events, measures religious activity. This means that we lack information about the perceived intensity of believing. In addition, we lack information about whether non-religious aspects of religious activity (e.g., the benefit of social interactions and the feeling of belonging to a group; e.g., Lim & Putnam, 2010; Pargament, 2011) are important motives for increasing religious activity after a family member's death. Moreover, we focus on whether people turn to religious activity at a higher rate than people unaffected by a family member's death but do not report on whether this coping strategy is, on average, helpful. The study of issues such as these is left for future research.

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CONFLICT OF INTEREST STATEMENT

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the German Socio-Economic Panel. Restrictions apply to the availability of these data, which were used under license for this study. Data are available at https://www.diw.de/en/diw_01.c.601584.en/data_access.html.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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APPENDIX A

TABLE A1 Descriptive statistics: estimation sample.

| | Mean | Standard deviation |
|--|---------|--------------------|
| At least monthly religious activity | 0.1607 | 0.3673 |
| Death Partner _t | 0.0025 | 0.0502 |
| Death Partner _{t-2/t-1/t} | 0.0064 | 0.0798 |
| Death Parent _t | 0.0259 | 0.1587 |
| Death Parent _{t-2/t-1/t} | 0.0629 | 0.2428 |
| Age (years) | 46.7017 | 13.2604 |
| Migration background (dummy) | 0.1915 | 0.3935 |
| Female (dummy) | 0.5369 | 0.4986 |
| School degree: low (dummy) | 0.2521 | 0.4342 |
| School degree: middle (dummy) | 0.3269 | 0.4691 |
| School degree: high (dummy) | 0.3125 | 0.4635 |
| Apprenticeship degree (dummy) | 0.6912 | 0.4620 |
| College degree (dummy) | 0.2486 | 0.4322 |
| Full-time employment (dummy) | 0.4548 | 0.4980 |
| Part-time employment (dummy) | 0.1634 | 0.3697 |
| Unemployment (dummy) | 0.0548 | 0.2276 |
| Retired (dummy) | 0.0787 | 0.2693 |
| Net household income per capita in 1000 2015 euros | 1.2907 | 0.9917 |