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## Childhood Religious Affiliation and Alcohol Use and Abuse Across the Lifespan in Alcohol-Dependent Men

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### Abstract

The current study examined the relationship between childhood religious affiliation and alcohol use across the lifespan. A sample of 931 men (average age of 51) from the Vietnam Era Twin Registry, which includes an over-representation of alcohol-dependent men, completed the Lifetime Drinking History interview, which assessed drinking across the lifespan. Childhood religious affiliation was obtained from the men's spouse/partner. Affiliations were subdivided into four categories: non-religious, accommodating (religions that are relatively more accepting of the larger culture), differentiating (religions that set themselves apart from the larger culture), and Catholic. Differences in a variety of alcohol use variables by religious affiliation were examined, as well as the protective effect of childhood religious affiliation on three alcohol use variables at five-year intervals from age 20 to age 50. Significant differences were found for abstinence, regular drinking, and current quantity-frequency (QFI) scores, with individuals in differentiating religions having the highest rates of abstinence/non-regular drinking and the lowest consumption levels. When examining QFI and alcohol dependence symptoms and diagnoses over time, the non-religious group had more alcohol use than the religious groups, with the differentiating affiliations showing the least alcohol use. The differences between affiliations were not always significant, but the consistent pattern suggests that childhood religious affiliation may continue to affect alcohol use even into adulthood.

### Keywords

religion; religious affiliation; alcohol use; alcohol dependence

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The protective effect of religiousness against excessive alcohol use has been supported by past research (e.g., Beeghley, Bock, & Cochran, 1990; Kendler, Liu, Gardner, McCullough, & Prescott, 2003; Spilka, Hood, Hunsberger, & Gorsuch, 2003). This research has involved examining a range of religiousness variables (e.g., church attendance, overall religiousness, and religious well-being) as well as a wide variety of alcohol use variables (e.g., abstinence,

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alcohol consumption levels, and alcohol dependence; Gorsuch & Butler, 1976). The mediating and moderating mechanisms underlying the protective effect of religion on alcohol use are still being investigated, but likely mediators include increased social support, non-drinking norms, socialization of norms, and relieving of suffering (Beeghley et al., 1990; Spilka et al., 2003).

Evidence supporting the role of religious social norms and rules as a mediator of the religion-alcohol relationship includes research on religious affiliations (Francis, 1994; Haber & Jacob, 2007; 2009). Not only does commitment to and involvement in a religious affiliation play a role in decreasing alcohol use behavior, the specific type of affiliation with which one identifies has also been shown to be important. For example, previous researchers have found that belonging to a fundamentalist Christian religion, as opposed to mainline Protestant or Catholic affiliations, is associated with lower rates of using alcohol, problem alcohol use, alcohol dependence (AD) diagnosis, and/or negative attitudes towards substance use in both adolescents (Francis, 1997; Miller, Davies, & Greenwald, 2000) and adults (Beeghley et al., 1990; Bock, Cochran, & Beeghley, 1987; Kendler, Gardner, & Prescott, 1997). It seems that belonging to an affiliation that has well defined rules and guidelines against the use of alcohol is protective in that the initiation of alcohol use is delayed (Heath et al., 1999) and the frequency of use and severity of consequences is lower (Larson et al., 1998; Koenig et al., 2001, see Ch. 11).

A categorization scheme for religious affiliations has been developed that distinguishes affiliations based on their norms, values, and ideals (Johnson, 1963; Bainbridge & Stark, 1980). Differentiating affiliations (Type D) are religious groups that set themselves apart from the larger culture by emphasizing distinctive beliefs and conservative views. Accommodating affiliations (Type A) are those that identify as part of the larger cultural atmosphere and blend in with typical cultural beliefs. For example, those in Type D (differentiating) affiliations would likely endorse prayer in school, banning of abortion, and the literal truth of the Bible. Those in Type A (accommodating) affiliations, in contrast, would likely endorse social and religious tolerance, women in church leadership, and socially progressive issues. The influence of these norms and values would be expected to extend to attitudes toward alcohol and substance use. Differentiating affiliations are likely to have a more prohibitive stance on alcohol consumption, and the overarching value system of differentiating groups and consequent socialization pressure could play an important role in inhibiting alcohol consumption by its members and reducing subsequent alcohol problems.

Past research has found that individuals in Type D affiliations have reduced problem use while individuals in the Type A affiliations are more similar to the non-religious group in their alcohol consumption and problem use. For example, Haber and Jacob (2007), in a sample of adolescent females (age 13–19), found that while having any religious rearing was associated with fewer current alcohol dependence symptoms, there was also an important interaction between the type of religious affiliation and family history of alcoholism on child alcohol dependence symptoms. When family history was negative, all affiliation groups (accommodating, differentiating, Catholic, and non-religious) had the same low level of AD symptoms. When family history was positive, however, having a Type D or Catholic affiliation was protective against an increase in AD symptoms; that is, high risk individuals having a Type D or Catholic affiliation had the same low level of AD symptoms as those without a family history of alcoholism while high risk individuals having a Type A affiliation or a non-religious background were significantly higher in AD symptoms. Haber and Jacob (2009) then examined a national sample of young adult offspring. In this older group, those raised with a differentiating affiliation, whether at high or low risk due to family history of alcoholism, had lower AD symptoms compared to other types affiliation

types and the non-religious group. This differentiating affiliation effect met statistical criteria as an inverse mediator of the religion-alcohol relationship.

This work, however, has been completed with adolescents and young adults, and little is known about the effect of these Type D and Type A religious affiliations on alcohol use problems in later adulthood. Kendler et al. (1997) has shown that institutional conservatism is associated with lower rates of alcohol use and AD and Beeghley and colleagues (Beeghley et al., 1990; Bock et al., 1987) have shown the effect of conservatism on abstinence in adult samples. In addition to studying adults, we were interested in examining the effect of childhood religious affiliation on alcohol use across the lifespan. Though church attendance and religious views may change over one's life, a childhood upbringing in a church (specifically a differentiating type of church) could well affect views on excessive alcohol use into later life. We used retrospective reports of lifetime drinking history to investigate whether childhood affiliation (categorized as differentiating, accommodating, Catholic, and non-religious) had a lasting effect on alcohol use. Drinking history was examined for several major indices of problem alcohol use across the lifespan, including current and past alcohol dependence diagnosis and quantity-frequency of consumption.

Based on previous research, we expected that men who were raised without a religious affiliation during childhood would have the highest levels of alcohol use, and that those raised with a Type D religious affiliation would have the lowest levels of alcohol use. Also, we expected that Type A and Catholic affiliation during childhood would be in between these two groups. Finally, we hypothesized that the protective effect would be strongest for alcohol use variables at younger ages, given that the affiliation variable was based on childhood upbringing. This hypothesis was based on the work of Beeghley et al. (1990), who found a stronger effect of current conservative religious affiliation, in contrast to childhood religious affiliation, on current alcohol misuse.

## Methods

### Participants and Procedure

The 931 participants in the study were male twins from the Vietnam Era Twin Registry (VETR), who were born between 1939 and 1957 and served in the military during the Vietnam Era (1965–1975). These men have completed a number of earlier assessments, and the reader is referred to other sources for more information about the sample, recruitment, and other VETR studies (Eisen, True, Goldberg, Henderson, & Robinette, 1987; Goldberg, True, Eisen, Henderson, & Robinette, 1987; Henderson, et al., 1990). For the current study, data were used from a phone interview conducted in 2000 as part of the Children of Alcoholics study (Jacob, et al., 2003) when participating men (with a history of AD) were, on average, 50.8 years old ( $SD = 2.7$ ). Though the data collection included a total of 1295 men, missing data on the childhood religious affiliation variable reduced the sample size for the current study (see below). The COA study recruited a subset of VETR participants and over-sampled twins who had obtained an alcohol dependence diagnosis in an earlier VETR assessment. The COA assessment also included phone interviews with the offspring of the participants, as well as the mothers of those offspring (who were the spouses/partners or ex-spouses of the twins), but these offspring and mothers are not the focus of this report (although the participant's religious affiliation was obtained from the spouses/partners).

### Measures

**Childhood religious affiliation**—Childhood religious affiliation for each participant was coded based on spousal/partner report. When interviewing the mother(s) of the twin's

children, she was asked to report the religious affiliation in which the twin was raised [with 19 options including various Christian denominations (e.g., Lutheran, Methodist, Catholic), other religions (e.g., Jewish, Buddhist), and no religion]. Data from spousal report was directly available for 818 of the men. However, after manipulating these reports (including discarding those not associated with the major religious categories and those with conflicting co-twin reports, and imputing the affiliation of men whose co-twin has a spousal report though they themselves did not), the total sample size for with religious affiliation data was 931.

In coding childhood religious affiliation, reports for men with multiple partner/spouses ( $N = 31$ ) were first resolved. In 25 cases, the two reports agreed. For the 6 remaining men, 4 were resolved by matching the report to the affiliation report of the co-twin, 1 was resolved by taking the eldest spouse/partner (the mother of the eldest child), and 1 by taking a mom's report over the stepmom's report (assuming, in the latter two cases, that the "first" mother's report, as the one who knew the twin during a younger age, would be most accurate).

The father's childhood religious affiliation was then coded into four categories based on the early work of Johnson (1963) and subsequent operationalizations by Bainbridge and Stark (1980), and the recent guidelines proposed by Haber and Jacob (2007; 2009). The men were divided into four major categories: a non-religious group (based on reports of the men growing up with no religious affiliation); an accommodating religious group (United Church of Christ, Lutheran, Methodist, and Presbyterian rearing); a differentiating religious group (Baptist, Mormon, and 'Other Protestant' rearing); and a Catholic group (created because of the large number of individuals with reported Catholic upbringing and because both differentiating and accommodating characteristics are seen in this group). Several of the original 19 affiliation categories had small sample sizes and represented less than 6.0% of the 831 men with a spousal/partner report; these were not included in the current report (Episcopalian,  $N = 14$ ; Jehovah's Witness,  $N = 3$ ; Jewish,  $N = 3$ ; Orthodox (Greek/Russian),  $N = 1$ ; Seventh Day Adventist,  $N = 3$ ; and other,  $N = 25$ ).

After each twin was coded with the appropriate religious affiliation type, each twin's report was compared to the cotwin's report to make sure they matched (the report was about childhood affiliation and all twin pairs grew up together, thus, they should have had the same report of childhood affiliation). If no co-twin existed in the sample, or if the co-twin did not have a partner/spouse report, the twin's report was considered accurate. [Note that the twin nature of the sample was used only for this purpose. All other results were based on the participants as individuals.] A total of 35 pairs were discordant on the childhood affiliation report, and these twins were discarded from the sample. Additionally, there were 294 twins in the full sample who could not be categorized because there was no spousal/partner report for the twin or the cotwin (due, in part, because of the exclusion of some of the specific religious affiliations when creating the four larger groups). This resulted in a total sample of 180 pairs of twins with a matching affiliation ( $N = 360$  men), 231 pairs with affiliation reported by only one twin for which we coded the co-twin as having an identical affiliation ( $N = 462$  men), and 109 individual twins who had a report of affiliation but had no cotwin in the sample. Thus, a total of 931 men had a report of childhood affiliation type: 47 (5%) non-religious, 283 (30.4%) accommodating (Type A), 292 (22.6%) Catholic, and 309 (23.9%) differentiating (Type D).

Although childhood religious affiliation was not obtained in the twin's report, use of his spouse's report on this characteristic was thought to be a reliable alternative for several reasons: a) studies show high rates of assortative mating for religion (Kirk et al., 1999; Koenig, McGue, & Iacono, 2009); b) religion is interwoven with a number of family and extended family traditions for many people, and changes of religion are frequently well

discussed; c) a “Don’t Know” response was available for those who did not know, so that if a spouse chose to guess their partner’s childhood religion, it would be likely that they would have a basis for their guess, and d) the differentiating and accommodating typology categories are quite broad, and if a spouse incorrectly named the twins childhood religion, the identified religion/denomination is likely to still be within the correct typology category. When two spouses of the same twin named his childhood religion, 80.6% (25 of 31) were in agreement for the specific religion (out of 15 categories). Of the 6 (19.4%) who disagreed, 2 selected the correct affiliation type, while the others selected an adjacent type (that is, no pair disagreed such that one partner said “no religion” and another said a differentiating religious affiliation). Two disagreed no religion vs accommodating type, 1 disagreed Catholic vs accommodating, and 1 disagreed disaffiliating vs accommodating.

**Alcohol use variables**—Several alcohol use variables were used to index problem alcohol use in the sample, which were obtained from the Lifetime Drinking History (LDH) interview (Jacob, 1998). The LDH is a retrospective interview about one’s entire drinking history including alcohol dependence (AD) criteria assessed via DSM-IV (American Psychiatric Association, 1994). Data were collected in phases, and the phases were then transformed to person-year data, thus providing data for every year of an individual’s drinking life. The measure has been shown to be reliable and valid (Jacob, Seilhamer, Bargiel, & Howell, 2006; Koenig, Jacob, & Haber, 2009). In the current study, a variety of variables, both for current and lifetime alcohol use, were examined, including several different dimensions of alcohol problem use. Variables assessing first use and first problem use of alcohol included a dichotomous indicator of lifetime abstinence, age of first drink, a dichotomous indicator of ever drinking regularly (defined as drinking once/month for 6 months or once/week for 8 weeks), age of first regular drinking, age of first AD symptom, and age of first AD diagnosis. Individuals who never drank, never drank regularly, and/or never experienced AD symptoms were excluded from the respective “age of event” variables, thus making sample sizes for these variables smaller. Additional indices of AD included a dichotomous indicator of current AD diagnosis, a current AD symptom count, a dichotomous indicator of lifetime AD diagnosis, a maximum AD symptom count across all ages, and a count of the number of years an individual received an AD diagnosis. A final set of alcohol use variables focused on alcohol consumption levels, with quantity-frequency index (QFI) scores representing the number of drinks per month an individual consumed (capped at 360). Individuals who never drank or never drank regularly were given zeros for consumption. Because QFI scores were highly positively skewed, natural log-transformed data were used:  $\ln$  current QFI, and  $\ln$  maximum QFI. (AD symptom count variables were also positively skewed, and analyses using log-transformed data were completed, but since the effects were not significant, the data presented uses the original metric for ease of interpretation.)

Additionally, three key alcohol use variables ( $\ln$ QFI, AD symptom count, AD diagnosis) were examined across the lifespan using the person-year structure. To simplify, the data for every fifth year (i.e., age 20, 25, 30, 35, 40, 45, and 50) was extracted and used as a marker of alcohol problem use around that age. Because not all individuals were the same age when assessed, the sample sizes for the last two ages were slightly smaller (age 45:  $N_s$  = 45 non-religious, 276 Type A, 290 Type D, and 305 Catholic; age 50:  $N_s$  = 32 non-religious, 184 Type A, 221 Type D, and 223 Catholic). To check that these ages were not outliers that provided unique results, analyses were also completed for five-year intervals from 19 to 49 and from 21 to 51. Results for these ages were very similar (tables available upon request) and increased confidence in using the five-year intervals from 20–50.

## Analyses

Because the childhood affiliation report was retrieved from the partner/spousal report of the men, and some of the men were missing this report, we completed analyses comparing the demographic characteristics and alcohol use of the men with and without affiliation reports. Mean differences between the groups were tested in SAS using Proc MIXED (to account for the correlated nature of the twin data; Littell, Milliken, Stroup, & Wolfinger, 1996; SAS, 2006) for continuous variables and in SPSS using chi-square analysis for categorical variables. Effect sizes for chi-square analyses were computed at Cramer's V. Effect size ( $d$ ) for mixed-model analyses were computed by calculating the mean difference between the two groups and dividing by an estimate of the pooled standard deviation in the mixed model. Both of these effect sizes can be generally interpreted as weak/small around .20, medium/moderate around .40–.50, and large around .80 (Cohen, 1988; Rea & Parker, 1992).

To examine the religion-alcohol relationship, means (for continuous variables: age of first drink, age of first regular drinking, age of first AD symptom, age of first AD diagnosis, maximum AD symptom count, number of years received AD diagnosis, log QFI, and log maximum QFI) and percentages (for dichotomous variables: lifetime abstinence, ever drinking regularly, and current AD diagnosis) of the alcohol use variables were calculated for each of the four religious affiliation categories. The differences in continuous alcohol use variables among the religious affiliations were each tested via PROC Mixed in SAS (Littell, et al., 1996), to account for the correlated nature of the data (i.e., the twins). Effect size ( $d$ ) for each pairwise mean comparison was calculated as describe above for mixed models. Effect sizes were calculated for the religious affiliation variable as a whole by comparing the total variance accounted for by a base model with the covariates to the total variance accounted for by a model with the covariates and the religious affiliation variable. Subtracting the ratio of these variances from 1 yields an  $R^2$ , which in mixed models is interpreted as the proportion of reduction in prediction error (Snijders & Bosker, 1999). These effect sizes are interpreted similarly to  $R^2$  in regression, such that effects that seem small magnitude can be important (e.g., .02 is 2% of the variance). Models included the covariates of current age, education (a continuous measure of years of education), and current household income (categorized into 19 income bands). There was some missing demographic data, however, so for the 55 individuals missing education and the 32 missing household income, a zero score was coded. Then, two additional dichotomous variables indexing whether an individual was missing the education or the income variable were also included in the model. (Results for religious affiliation varied very little whether or not the demographic covariates were included in the model. Analyses including the covariates are presented, though; only the significance of the religious affiliation variables is reported.) Because of the large number of variables examined, the alpha level for comparisons between religious affiliation and alcohol use variables was set at .01. If the omnibus test of religious affiliation was significant, post-hoc tests were completed using least squares mean contrasts with  $p$ -values for the pair-wise comparisons adjusted via the Tukey method (and  $p < .05$  considered to be significant). The associations between the dichotomous alcohol use variables and childhood religious affiliation were tested via chi-square analysis. The relationships between childhood religious affiliation and the continuous ln-QFI and AD symptoms variables and the categorical AD diagnosis variable were also tested at each five-year interval age from 20 to 50. Graphical depictions of changes in alcohol use over time for the separate religious affiliation groups were created.

Because, unlike the tests of mean differences, the chi-square tests with categorical outcomes (e.g., AD diagnosis) did not take into account the familial nature of the data, all chi-square analyses were re-run using only one twin (randomly chosen) of each pair. With the smaller sample size, the tests were less significant, but the only categorical change in  $p$ -value for any

chi-square analysis was for the comparison of AD diagnoses at age 30 (which became non-significant).

## Results

Analyses comparing the characteristics of the men with ( $N = 931$ ) and without ( $N = 364$ ) affiliation reports with respect to their demographic characteristics revealed small but significant differences between the groups for age (have affiliation,  $M = 50.8$ ,  $SD = 2.7$ ; missing affiliation,  $M = 51.3$ ,  $SD = 3.0$ ;  $t(760) = 11.9$ ,  $p < .01$ ,  $d = .27$ ) and education level (have affiliation,  $M = 13.6$ ,  $SD = 1.9$ ; missing affiliation,  $M = 13.9$ ,  $SD = 1.9$ ;  $t(740) = 3.9$ ,  $p < .05$ ,  $d = .14$ ). Also, the men with affiliation report were slightly more likely to have children (have affiliation, 98.4% have children; missing affiliation, 96.7% have children;  $\chi^2(1, 1295) = 3.9$ ,  $p < .05$ , Cramer's  $V = .06$ ). The two groups did not differ, however, on alcohol use; for instance, the average age of first drink (have affiliation,  $M = 16.4$ ,  $SD = 2.6$ ; missing affiliation,  $M = 16.5$ ,  $SD = 3.5$ ;  $t(753) = .26$ ,  $p > .05$ ,  $d = .03$ ) and the average lnQFI scores (have affiliation,  $M = 1.7$ ,  $SD = 1.7$ ; missing affiliation,  $M = 1.8$ ,  $SD = 1.7$ ;  $t(759) = .13$ ,  $p > .05$ ,  $d = .03$ ) did not differ. Also, approximately equal percentages of individuals were regular drinkers (83.7% for those with and 87.6% for those without affiliation report,  $\chi^2(1, 1292) = 3.3$ ,  $p > .05$ , Cramer's  $V = .05$ ) and were alcohol dependent (33.8% for those with and 35.7% for those without affiliation,  $\chi^2(1, 1294) = .45$ ,  $p > .05$ , Cramer's  $V = .02$ ). The percentage of men with AD, though equal across the two subgroups here, was higher than seen in the general population (estimated around 20–25%; Kendler, Prescott, Myers, & Neale, 2003; Kessler et al., 1994), because the current sample was over-selected for men with AD.

Table 1 reports the means or percentages of the various alcohol use variables by childhood religious affiliation. As can be seen, the only significant differences were for abstinence, regular drinking, and current lnQFI. A very small portion of the sample was completely abstinent from alcohol use, but the largest proportion of these men fell within the Type D affiliation (2.6%). The lowest rate of regular drinking was also seen in the Type D affiliation group, with 78% never drinking regularly, while the highest rate was found in the non-religious group, with 95.7%. For current lnQFI scores, the Type D men had significantly lower consumption levels than the non-religious, Type A, and Catholic men (effect sizes ( $d$ ) range from .27–.32 for the significant comparisons). For the other alcohol variables, differences between religious groups were seen in the same direction, though these differences were not significant.

The association between religious affiliation and alcohol use (lnQFI, number of AD symptoms, and percentage with AD diagnosis) across the lifespan is reported by graphical representation in Figures 1–3. By inspection, rates of AD and misuse of alcohol decreased between ages 25 and 50 for all four groups. For lnQFI, differences across groups were significant at all ages except for age 20. At age 25, lnQFI for Type D men was less than that for Type A men ( $d = .26$ ) and Catholic men ( $d = .31$ ) although Type D could not be statistically differentiated from the non-religious men ( $d = .33$ , who did have the highest mean, but which was not significantly different from Type D because of the smaller  $N$  of the non-religious group). At ages 30, 35, 40, and 45, lnQFI was significantly lower for the Type D affiliation as compared to the other three groups ( $ds = .27$ – $.52$ ), and at age 50, Type D affiliation was significantly lower than the non-religious ( $d = .60$ ) and Catholic groups ( $d = .32$ ). The non-religious men typically had the most alcohol use, but, again, the small sample size of this group hindered demonstration of statistical significance in comparing this group to the Type A and Catholic men. Effect sizes ( $R^2$ ) for religious affiliation on lnQFI scores were .005 at age 20, .02 at age 25, .03 at age 30, .02 at age 35, .02 at age 40, .03 at age 45, and .02 at age 50. The significance of the comparisons examining the number of AD

symptoms ( $R^2$  effect sizes for religious affiliation range from .00 at age 25 to .01 at age 30) and AD diagnosis (Cramer's V effect sizes range from .05 at age 25 to .10 at age 30) were not significant, though the effects were in the expected direction with Type D having the lowest number of symptoms and diagnoses, the non-religious group the highest, and the Type A and Catholic groups falling somewhere in between. This pattern can be easily seen in the three figures.

## Discussion

The current study examined the alcoholism-religion relationship in adulthood and across the lifespan using a retrospective approach. Findings confirmed the frequently reported inverse association between alcoholism and religion, and also identified some aspects of childhood religious upbringing that appeared to persist across the lifespan in their influence on subsequent alcohol use behaviors. As can be seen, results were generally consistent with expectations based on previous research conducted on younger samples.

Observed relationships varied according to the alcohol use indicator and the type of religious affiliation examined; that is, childhood affiliation influenced some alcohol variables and not others. Individuals in Type D affiliations exhibited increased lifetime abstinence from alcohol use, decreased frequency of ever drinking regularly, and decreased average current QFI scores. However, being raised with a differentiating affiliation did not appear to influence age-related alcohol variables, maximum problem use variables, or alcohol dependence variables. Thus, differentiating religious upbringing appeared most strongly associated with preventative influences such as avoiding, delaying, and minimizing alcohol use. The effect of childhood religious affiliation was most prominent when considering alcohol use variables that would occur during childhood and adolescence (e.g., first drink) and not those variables that would be observed at later ages (e.g., first AD diagnosis, or current adulthood symptoms). Other influences, such as personality traits or peer relationships, could enhance or diminish any effect of childhood differentiating religious upbringing once an individual leaves the family home. Type A and Catholic affiliations, however, did not differ significantly from the non-religious group on any alcohol use variable though they did have more moderate consumption scores and fewer AD diagnoses and symptoms. Protective associations were identified only for those endorsing Type D affiliations whereas the other affiliations were more similar to those raised in non-religious homes.

When examining the effect of childhood religious affiliation over time, the most robust pattern of effects observed in the current study was for quantity-frequency (QFI) measures of alcohol use. These tests indicated significantly lower QFI scores for Type D affiliations compared to those in other affiliation groups in every 5-year period from age 25 to 50. Thus, the effect of childhood religion on alcohol consumption level was consistent across time and continued to influence adult alcohol use rather than decreasing with time as was anticipated. Differentiating affiliations are those that distinguish themselves from mainstream culture through unique religious beliefs, values, and behavioral norms. While an individual's beliefs, values, and norms do not remain constant over time, childhood exposure to "differentiating" beliefs and perceptions appear to have longstanding effects. This might result from consequent personal differentiation or from a consequent attitude of caution toward risky behavior (such as alcohol use) that might remain relatively stable and influential across a person's lifespan. QFI scores for those at age 20, though only trending toward significance were also observably lower than the other religious groups and the non-religious group. Given that this age is in the period of highest alcoholism risk, social pressures may moderate the differentiating effect at this age. When QFI results were compared to the other two alcohol measures [alcohol dependence (AD) symptom count and



AD diagnosis], the same pattern in mean scores was evident: differentiating affiliations had the lowest alcohol scores; the non-religious group had the highest alcohol scores; and the accommodating and Catholic affiliations fell somewhere in between. However, religious upbringing effect sizes with the latter two alcohol measures were not sufficiently large to exceed the statistical power threshold (due to smaller sample sizes); effects were non-significant.

These results are consistent with previous studies reporting that most of the protective influence of religion was accounted for by the differentiating affiliation subgroup (Haber & Jacob, 2007; 2009). The current report extends these findings of association to the course of alcoholism over time, and demonstrates the stability of the influence of a differentiating religious upbringing across the lifespan through midlife. Further, though the current sample used spousal reports of the men's childhood affiliation, there were few differences between the men with and without spousal report with regards to demographic or alcohol use variables. Also, some of the missing affiliation data could be filled in because of the twins' spousal report. Though use of a third party report of childhood affiliation is not ideal, it does not seem that the sample was biased in any way by men who were missing these reports.

Further, there is a substantial literature that documents a reliable, inverse association between alcoholism and religion that is evident across many religious and alcohol variables (Gorsuch & Butler, 1976), and that has been demonstrated in both clinical and epidemiological studies (Kendler et al., 1997). As discussed above, other researchers have reported finding an inverse association between differentiating or conservative or fundamental religion and alcohol use and abuse (Beeghley et al., 1990; Bock et al., 1987; Francis 1994; Miller et al., 2000). These findings are consistent with other studies that found that religious subgroups with strong rules against alcohol consumption (Beeghley et al., 1990; Bock et al., 1987) and/or strong doctrinal positions on sin and redemption (Francis, 1994) were associated with lower rates of alcohol problems. Perhaps most convincing was a comprehensive study of Australian adult twins (Heath et al., 2003) where "other Protestant" affiliations (a group composed of smaller differentiating Protestant denominations) emerged as an inverse predictor of alcoholism risk beside the most important alcohol predictors in the literature (history of childhood conduct disorder, major depression, regular smoking, high alcohol sensitivity, and possession of the ADH2\*2 allele).

Given the extant literature and the current findings, it can be seen that support is increasing for the contention that the degree to which religious affiliations accommodate to or differentiate from prevailing cultural norms influences its member's attitudes and behavior regarding alcohol use. That is, given permissive cultural norms regarding alcohol use in the United States, if a religious affiliation differentiates itself from these cultural norms, then those who affiliate are likely to differentiate from these cultural norms as well, and in turn, alcohol use would be lower, and these affiliates would exhibit fewer alcohol-related outcomes compared to other affiliations and those who are nonreligious. These findings support the conclusion that social norms and reference groups have an impact on alcohol use and might be a mediator of the religion-alcohol relationship. As well, these findings suggest that the influence of childhood social norms persist well into adulthood.

Given the stability of religious affiliation over time, however, the impact of childhood religious affiliation may also indicate an effect of adult religious views. A recent survey by the Pew Forum (2009) showed that 71% of Americans endorsed a current religious affiliation that was of the same type as the one in which they were raised. Thus, it is likely that many of the participants encountered similar social pressures and norms across their lifespan, not just in childhood. In this way, religious socialization is not likely to be limited only to childhood experiences. Beeghley et al.'s (1990) work supports this conclusion, as

they found that when individuals changed from a more liberal to a more conservative denomination, or vice versa, the adulthood affiliation had the most impact on current alcohol misuse. That is, lower levels of misuse of alcohol were seen in those with a more conservative adulthood affiliation compared to a more liberal adulthood affiliation, regardless of their childhood affiliation.

Certain limitations in this study should be considered. For instance, childhood religious affiliation was collected via partner/spouse report, and these reports might not be as accurate as collecting the information directly from the participating men. But as stated above, the spouse reports seemed to be generally accurate representations of the men's religious upbringings. Further, we were missing childhood affiliation information for a portion of our sample, because they either did not have a spouse/partner or the spouse/partner did not participate in the study, and the men with missing data had slightly higher levels of education and more children. Thus, it is possible that our results may not be fully generalizable to these types of men. Finally, generalizability of results to women and to samples of men not over-sampled for AD may also be limited. A sample over-representing male alcoholics is likely to increase the prevalence of endorsements of no religious upbringing, but given that very few people in the sample grew up in a non-religious home, these AD men are well represented across all the religiously affiliated categories. However, it would be expected that this sample would have a higher prevalence of chronic alcoholism compared to the general population. A more representative sample, including both males and females and including a broader representation of alcohol users and non-users, should be used to replicate these findings and examine the effect of childhood religious affiliation on later alcohol use.

Finally, it is also important to emphasize that religious affiliation is only one aspect of the religion domain, and the study of the multidimensional nature of religion is ongoing. As described by Wulff (1997, p.218; citing von Hugel, 1908), religion is a "unitas multiplex"; that is, a domain with many dimensions that function together in an integrated manner. To the extent that this is true, one's religious affiliation will include a range of factors that reflect the particulars of that religious type, including social support, social learning, behavioral norms (e.g. proscribed and prescribed behaviors), community values, defined beliefs, etc. Thus, measurement of one factor, such as religious affiliation type, may also incorporate the effects of many other correlated religious dimensions. In this way, it is reasonable to suggest that differentiating religious affiliation may be a highly complex factor that encompasses a range of influences that yield a particularly strong inverse association with alcohol use. Understanding the mechanisms that contribute to this influence will be important to understanding the alcoholism-religion relationship in general, and the role of religious-spiritual influences in the development of and in the recovery for alcohol dependence. This is important to understanding the key mechanisms involved in successful alcoholism treatment provided by programs such as Alcoholics Anonymous, professional 12-step programs, faith-based programs, and perhaps religion-sponsored prevention programs. Future research should also investigate the possible moderators and mechanisms of the alcohol-religion relationship, both in the development of alcohol problems and in the recovery process.

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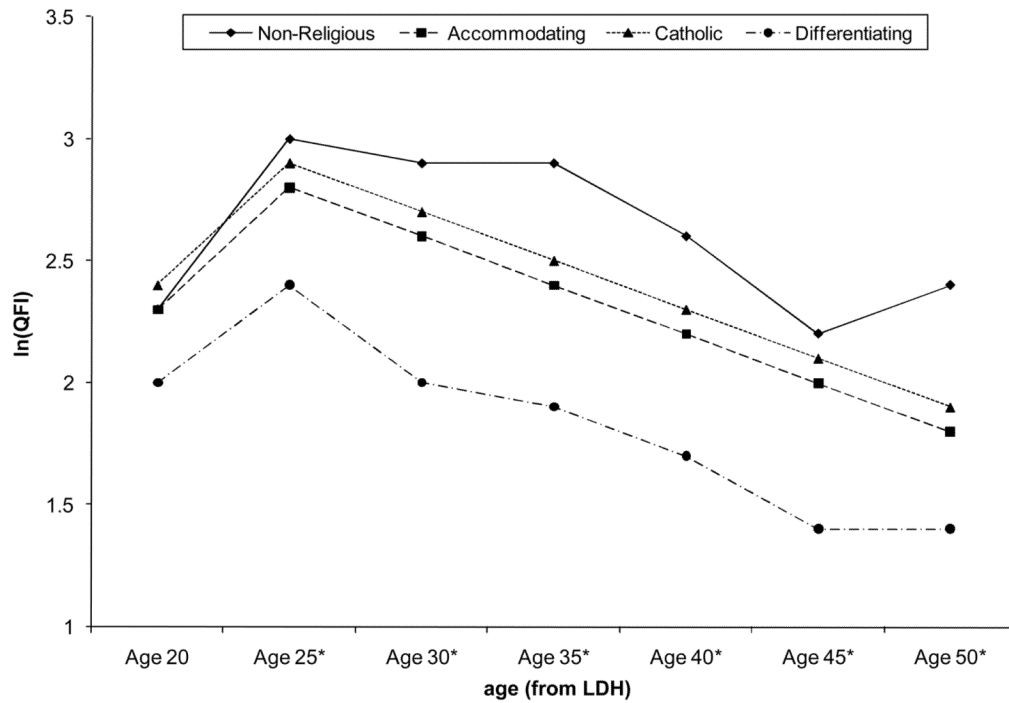
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## References

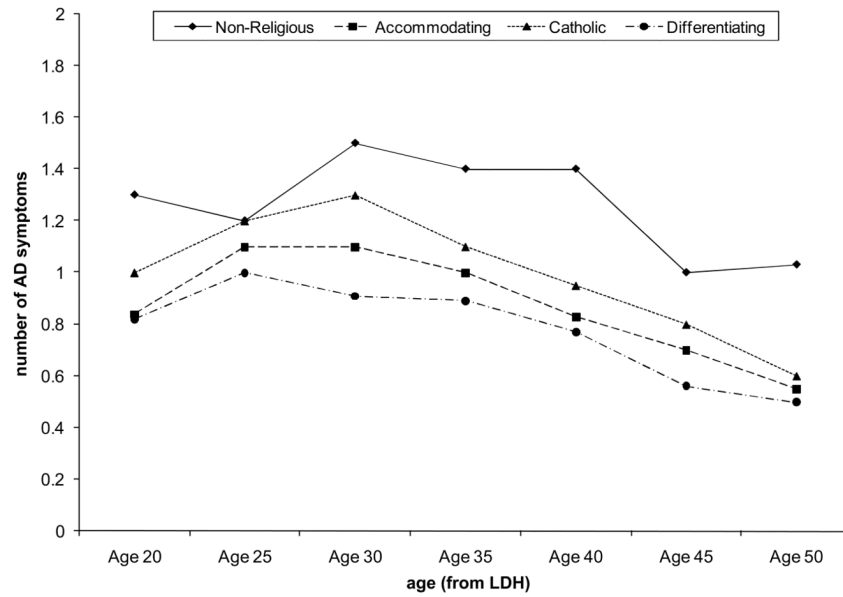
- American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 4. Washington, DC: American Psychiatric Association; 1994. (DSM-IV)
- Bainbridge WS, Stark R. Sectarian tension. *Review of Religious Research*. 1980; 22:105–124.
- Beeghley L, Bock EW, Cochran JK. Religious change and alcohol use: An application of reference group and socialization theory. *Sociological Forum*. 1990; 5:261–278.
- Bock EW, Cochran JK, Beeghley L. Moral messages: The relative influence of denomination on the religiosity-alcohol relationship. *The Sociological Quarterly*. 1987; 28:89–103.
- Cohen, J. *Statistical Power Analysis for the Behavioral Sciences*. 2. Hillsdale, NJ: Lawrence Erlbaum; 1988.
- Eisen SA, True WR, Goldberg J, Henderson W, Robinette CD. The Vietnam Era Twin (VET) Registry: Method of construction. *Acta Geneticae Medicae et Gemellologiae*. 1987; 36:61–66. [PubMed: 3673478]
- Francis LJ. Denominational identity, church attendance and drinking behaviour among adults in England. *Journal of Alcohol and Drug Education*. 1994; 39:27–37.
- Francis LJ. The impact of personality and religion on attitude towards substance use among 13–15 year olds. *Drug and Alcohol Dependence*. 1997; 44:95–103. [PubMed: 9088781]
- Goldberg J, True WR, Eisen S, Henderson W, Robinette CD. The Vietnam Era Twin (VET) Registry: Ascertainment bias. *Acta Geneticae Medicae et Gemellologiae*. 1987; 36:67–78. [PubMed: 3673479]
- Gorsuch RL, Butler MC. Initial drug abuse: A review of predisposing social psychological factors. *Psychological Bulletin*. 1976; 83:120–137. [PubMed: 1019281]
- Haber JR, Jacob T. Alcoholism risk moderation by a socio-religious dimension. *Journal of Studies on Alcohol and Drugs*. 2007; 68:912–922. [PubMed: 17960310]
- Haber JR, Jacob T. Mediation of family alcoholism risk by religious affiliation types. *Journal of Studies on Alcohol and Drugs*. 2009; 70:877–889. [PubMed: 19895764]
- Heath AC, Madden PAF, Grant JD, McLaughlin TL, Todorov AA, Bucholz KK. Resiliency factors protecting against teenage alcohol use and smoking: Influences of religion, religious involvement and values, and ethnicity in the Missouri Adolescent Female Twin Study. *Twin Research*. 1999; 2:145–155. [PubMed: 10480749]
- Henderson WG, Eisen S, Goldberg J, True WR, Barnes JE, Vitek ME. The Vietnam Era Twin Registry: A resource for medical research. *Public Health Reports*. 1990; 105:368–373. [PubMed: 2116638]
- Jacob, T. Unpublished measure. 1998. Modified Lifetime Drinking History.
- Jacob T, Seilhamer R, Bargiel K, Howell DN. Reliability of Lifetime Drinking History among alcohol dependent men. *Psychology of Addictive Behaviors*. 2006; 20:333–337. [PubMed: 16938072]
- Jacob T, Waterman B, Heath A, True WR, Bucholz KK, Haber JR, et al. Genetic and environmental effects on offspring alcoholism: New insights using a children-of-twins design. *Archives of General Psychiatry*. 2003; 60:1265–1272. [PubMed: 14662559]
- Johnson B. On church and sect. *American Sociological Review*. 1963; 28:539–549.
- Kendler KS, Gardner CO, Prescott CA. Religion, psychopathology, and substance use and abuse: A multimeasure, genetic-epidemiologic study. *American Journal of Psychiatry*. 1997; 154:322–329. [PubMed: 9054778]
- Kendler KS, Liu XQ, Gardner CO, McCullough ME, Prescott CA. Dimensions of religiosity and their relationship to lifetime psychiatric and substance use disorders. *American Journal of Psychiatry*. 2003; 160:496–503. [PubMed: 12611831]
- Kendler KS, Prescott CA, Myers J, Neale M. The structure of genetic and environmental risk factors for common psychiatric and substance use disorders in men and women. *Archives of General Psychiatry*. 2003; 60:929–937. [PubMed: 12963675]

- Kessler RC, McGonagle KA, Zhao S, Nelson CB, Hughes M, Eshleman S, et al. Lifetime and 12-month prevalence of DSM-III-R psychiatric disorders in the United States: Results from the National Comorbidity Survey. *Archives of General Psychiatry*. 1994; 51:8–19. [PubMed: 8279933]
- Kirk KM, Maes HH, Neale MC, Heath AC, Martin NG, Eaves LJ. Frequency of church attendance in Australia and the United States: Models of family resemblance. *Twin Research*. 1999; 2:99–107. [PubMed: 10480744]
- Koenig, HG.; McCullough, ME.; Larson, DB. *Handbook of religion and health*. New York: Oxford University Press; 2001.
- Koenig LB, Jacob T, Haber JR. Validity of the Lifetime Drinking History: A comparison of retrospective and prospective quantity-frequency measures. *Journal of Studies on Alcohol and Drugs*. 2009; 70:296–303. [PubMed: 19261242]
- Koenig LB, McGue M, Iacono WG. Rearing environmental influences on religiousness: An investigation of adolescent adoptees. *Personality and Individual Differences*. 2009; 47:652–656. [PubMed: 20161346]
- Larson, DB.; Swyers, JP.; McCullough, ME. *Scientific research on spirituality and religion: A consensus report*. Rockville, MD: National Institute for Healthcare Research; 1998.
- Littell, RC.; Milliken, GA.; Stroup, WW.; Wolfinger, RD. *SAS System for mixed models*. Cary, NC: SAS Institute, Inc; 1996.
- Miller L, Davies M, Greenwald S. Religiosity and substance use and abuse among adolescents in the National Comorbidity Study. *Journal of the American Academy of Child and Adolescent Psychiatry*. 2000; 39:1190–1197. [PubMed: 10986817]
- Pew Forum. *Faith in flux: Changes in religious affiliation in the US: Executive Summary*. Washington D.C: The Pew Forum on Religion and Public Life; 2009. <http://pewforum.org/docs/?DocID=409>
- Rea, LM.; Parker, RA. *Designing and Conducting Survey Research*. San Francisco: Jossey-Boss; 1992.
- SAS. *Statistical Analysis Software (Version 9)*. Cary, NC: SAS Institute Inc; 2006.
- Snijders, TAB.; Bosker, RJ. *Multilevel Analysis: An Introduction to Basic and Advanced Multilevel Modeling*. London: Sage; 1999.
- Spilka, B.; Hood, RWJ.; Hunsberger, B.; Gorsuch, R. *The Psychology of religion: An empirical approach*. 3. New York: Guilford Press; 2003.
- Wulff, D. *Psychology of religion: Classic & contemporary*. 2. New York: John Wiley & Sons, Inc; 1997.
- Von Hugel, F. *The mystical element of religion, as studied in Saint Catherine of Genoa and her friends*. 2. Vol. 1. London: J.M. Dent & Sons; 1908. 1923

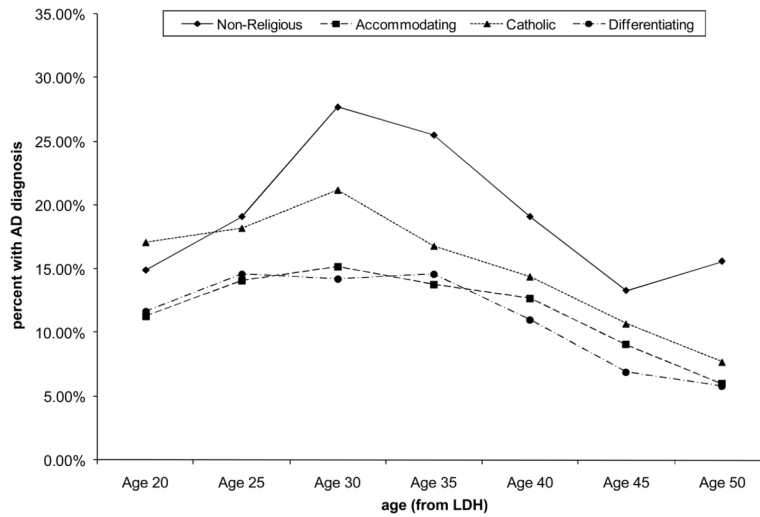


**Figure 1.**

Quantity-Frequency of alcohol consumption (log-transformed) across ages 20–50 for each childhood religious affiliation category: non-religious, Accommodating, Catholic, and Differentiation. LDH = Lifetime Drinking History assessment. \* significant difference across groups,  $p < .01$ . At age 25, the Differentiating group differed significantly from the Accommodating and Catholic groups. At age 50, the Differentiating group differed significantly from the non-religious and the Catholic groups. For all other ages, the Differentiating group differed significantly from all three other groups. No other group differences were significant.



**Figure 2.** Number of Alcohol Dependence symptoms across ages 20–50 for each childhood religious affiliation category: non-religious, Accommodating, Catholic, and Differentiation. LDH = Lifetime Drinking History assessment.



**Figure 3.** Percentage with an Alcohol Dependence diagnosis across ages 20–50 for each childhood religious affiliation category: non-religious, Accommodating, Catholic, and Differentiation. LDH = Lifetime Drinking History assessment.

**Table 1**  
Means (and SDs) or Percentages for Alcohol Variables by Childhood Religious Affiliation.

	Childhood religious affiliation, as reported by spouse				$\chi^2$ or F <i>p</i> -value*	Effect Size*
	No religion N ≤ 47	Accommodating N ≤ 283	Catholic N ≤ 292	Differentiating N ≤ 309		
Abstaining (%)	2.1%	0.0%	0.0%	6.5%	< .01	.20
Regular drinking (%)	95.7%	84.0%	87.3%	78.0%	.01	.13
Age of first drink <sup>†</sup>	15.9 (1.7)	16.5 (2.6)	16.2 (2.6)	16.7 (2.6)	.05	.01
Age of regular drinking <sup>†</sup>	20.0 (3.0)	19.6 (3.7)	19.9 (4.4)	19.9 (4.0)	.83	.00
Age first AD sx <sup>‡</sup>	23.1 (7.0)	21.4 (5.9)	21.4 (5.8)	21.3 (5.3)	.30	.00
Age first AD dx <sup>‡</sup>	26.2 (8.3)	25.6 (8.5)	24.2 (7.3)	24.6 (7.7)	.55	.00
Current AD dx (%)	8.5%	6.4%	6.8%	6.1%	.94	.02
Lifetime AD dx (%)	42.6%	32.2%	37.0%	31.1%	.24	.07
Number of yrs AD dx	6.5 (9.3)	4.4 (8.3)	5.3 (8.9)	4.5 (7.6)	.30	.00
Current number of AD sx	0.6 (1.2)	0.6 (1.1)	0.6 (1.2)	0.5 (1.3)	.83	.00
Maximum number of AD sx	2.6 (2.2)	2.1 (1.9)	2.2 (2.0)	2.1 (2.0)	.54	.00
Current QFI (ln)	2.2 (1.8) <sup>a</sup>	1.8 (1.6) <sup>a</sup>	1.9 (1.7) <sup>a</sup>	1.3 (1.7) <sup>b</sup>	<.01	.02 <sup>c</sup>
Maximum QFI (ln)	4.1 (1.1)	3.9 (1.2)	4.0 (1.2)	4.0 (1.3)	.90	.00

\* Dichotomous variables are reported in percentages and differences were tested by chi-square without post-hoc analysis, and effect sizes are Cramer's V. Continuous variables are tested by Proc MIXED with least squares means post-hoc contrasts, and R<sup>2</sup> effect sizes.

<sup>a/b</sup> Different lettered superscripts indicate significantly different means.

<sup>c</sup> Effect size for mean comparisons (*b*) between differentiating and the other three groups range from .27–.32.

<sup>†</sup> Individuals who never experienced these events (i.e., were abstainers, non-regular drinkers, or never had an AD symptom or diagnosis) were excluded from these corresponding age variables. Sample sizes for these variables were smaller, and the means represent the average age of first occurrence in individuals in each group who have experienced the event.

AD = Alcohol Dependence, sx = symptom count, dx = diagnosis, QFI = quantity-frequency index, ln = log-transformed.