Title: Religion is good, belief is better: religion, religiosity, and substance use among young Swiss men.
Authors: Gmel G, Mohler-Kuo M, Dermota P, Gaume J, Bertholet N, Daeppen JB, Studer J
Journal: Substance use & misuse
Year: 2013 Sep
Volume: 48
Issue: 12
Pages: 1085-98
DOI: 10.3109/10826084.2013.799017

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Religion is good, belief is better:

Religion, religiosity, and substance use among young Swiss men

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Abstract

We examined the influence of religious denomination and religiosity/spirituality on licit and illicit substance use beyond the potential impact of parental variables. Data from a representative sample of Swiss men (n=5,387) approximately 20 years old were collected between August 2010 and November 2011. We asked single item questions about religious denomination and religious self-description (including aspects of spirituality). Alcohol use, smoking and illicit drug use was measured as outcome variables. Logistic regressions (adjusting for parenting and socioeconomic background) revealed that religiosity/spirituality was inversely associated with substance use and that it was more strongly associated than denomination. Religious denomination, particularly having no denomination, was independently associated with the use of most substances. The study's limitations, and the implications for future work are noted. This work was supported by the Swiss National Science Foundation.

Keywords: Religious self-description; religious denomination; parental monitoring; parental regulation; cannabis; alcohol; tobacco; cocaine; magic mushrooms; ecstasy

Zusammenfassung

Wir untersuchten den Einfluss von religiöser Denomination und Religiosität/Spiritualität auf den Gebrauch von legalen und illegalen Substanzen. Dabei wurde für den Einfluss elterlicher Variablen adjustiert. Zwischen August 2010 und November 2011 wurden Daten bei einer repräsentativen Stichprobe von Schweizern im Alter von etwa 20 Jahren erhoben. Dazu wurde je eine Frage zur religiösen Denomination und zur religiösen Selbstbeschreibung (einschliesslich

Spiritualität) gestellt. Alkoholgebrauch, Rauchen und der Gebrauch illegaler Drogen bildeten die abhängigen Variablen. Aufgrund logistischer Regressionen (adjustiert für elterliche Erziehungsstile und soziodemographische Variablen) wurde ermittelt, dass Religiosität/Spiritualität negativ mit dem Substanzkonsum assoziiert war. Diese Beziehungen war stärker als jene für die religiöse Denomination. Religiöse Denomination (insbesondere keiner Religion anzugehören) war dennoch unabhängig von Religiosität/Spiritualität mit dem Gebrauch der meisten Substanzen assoziiert. Grenzen der Studie und Folgerungen für zukünftige Studien wurden aufgezeigt. Die Studie wurde finanziell vom Schweizerischen Nationalfonds zur Förderung der wissenschaftlichen Forschung unterstützt.

Résumé

Nous avons étudié l'influence de la confession religieuse et de la religiosité/spiritualité sur l'utilisation de substances licites et illicites au-delà de l'influence du style éducatif des parents. Les données d'un échantillon représentatif de jeunes hommes (n = 5,387) d'environ 20 ans ont été récoltées entre août et novembre 2011. Les participants avaient indiqué leur confession religieuse et évalué leur propre niveau de religiosité (y compris certains aspects de leur spiritualité) au travers de questions uniques. Les variables dépendantes étaient la consommation d'alcool, de tabac et de drogues illicites. Les régressions logistiques (ajustées pour le style éducatif des parents et les variables sociodémographiques) ont révélé que la religiosité/spiritualité était inversement associée à l'utilisation de substances et ceci plus fortement que la confession religieuse. La confession religieuse, dont en particulier celle qui consiste à ne pas avoir de religion, était indépendamment associée à l'utilisation de la plupart des

substances. Les limites de l'étude ainsi que ses implications sont discutées pour de futurs travaux. Ce travail a été financé par le Fonds National Suisse de la recherche scientifique.

Resumen

Examinamos la influencia de la confesiòn religiosa y religiosidad/espiritualidad en el uso de sustancias lícitas e ilícitas más allá de la influenza del estilo educativo de los padres. Datos de una muestra representativa de los hombres suizos (n = 5, 387) de aproximadamente 20 años de edad se recogieron entre agosto de 2010 y noviembre de 2011. Los participantes an indicado su confesiòn religiosa, y evaluado su proprio nivel de religiosidad (incluidos algunos aspectos de su espiritualidad). Se midieron los usos de alcohol, tabaco y drogas ilícitas como variables dependientes. Las regresiónes logísticas (ajustadas a el estilo educativo parental y la situaciòn socio-económica) revelàron que la religiosidad/espiritualidad era inversamente asociada con el uso de sustancia y eso màs que la confesión. La confesiòn religiosa, particularmente el hecho de no tener confesiòn, se asoció independientemente con el consumo de la mayorià de las sustancias. Las limitaciones del estudio son comentadas para futuras investigaciònes. El trabajo fue financiado por el Fondo Nacional Suizo para la investigación científica.

Acknowledgements:

G. Gmel designed the study. J. Studer was responsible for design of the study and conduction of the statistical analysis. P. Dermota and M. Mohler-Kuo were responsible for data collection in the German-speaking part and provided critical comments and suggestions on earlier versions.

J.B. Daeppen and N. Bertholet discussed the analytical design with G. Gmel and provided comments at all stages of the analysis.

Introduction

Among young people in established market economies, substance use constitutes the greatest risk factor for morbidity and mortality (Rehm, Taylor, & Room, 2006). In a Swiss study using a sample similar to the present study, two thirds of young men approximately 20 years old engaged in at least one risky pattern of substance use, including cannabis (at least twice per week), alcohol (risky single occasion drinking of 6+ drinks on an occasion at least once a month or more than 20 drinks per week), or tobacco use (daily smoking) (Gmel et al., 2010). As argued by Ritt-Olsen et al. (2004), most studies focus on risk factors,[1] and less often on protective factors. This negative bias has often led to ignoring the protective characteristics of factors that could show a beneficial influence on important behaviors. Thus, the identification of potentially protective factors for adolescent and young adult substance use remains necessary (Piko, Kovacs, Kriston, & Fitzpatrick, 2012). We take here the perspective of the National Institute on Drug Abuse (Robertson, David, & Rao, 2003) that factors associated with greater potential for drug abuse[2] are called “risk” factors, while those associated with reduced potential for abuse are called “protective” factors.

Family is considered to have the most significant influence (both positively and negatively) on substance use as well as on non-use, aside from structural settings, such as price and restricted availability. Indeed, parental control can be the most powerful protective factor against the onset

[1] The reader is asked to consider that the concepts, risk and protective factors, represent a range of processes and are often noted in the literature, without adequately adequately noting their dimensions (linear, non-linear), their "demands", the critical necessary conditions (endogenously as well as exogenously; from a micro to a macro level) which are necessary for either or both of them to operate (begin, continue, become anchored and integrate, change as de facto realities change, cease, etc.) or not to, and whether their underpinnings are theory-driven, empirically-based, individual and/or systemic stake holder- bound, based upon "principles of faith" or what. Clarification of this is necessary if these terms are not to remain as shibboleths in a field of many stereotypes. Editor’s note

[2] The journal's style utilizes the category *substance abuse* as a diagnostic category. Substances are used or misused; living organisms are and can be *abused.* Editor's note.

as well as the continuation of adolescent problem behavior, including substance use (Graves, Fernandez, Shelton, Frabutt, & Williford, 2005). More recently, religiosity/spirituality (R/S) was also identified as being a potential protective factor. Thus, several literature reviews revealed that a strong beneficial effect of R/S on physical and mental health, including substance use, misuse, and dependence, was observed in most studies (Chitwood, Weiss, & Leukefeld, 2008; Cotton, Zebracki, Rosenthal, Tsevat, & Drotar, 2006; Dew et al., 2008; Moreira-Almeida, Neto, & Koenig, 2006; Rew & Wong, 2006). The present study sheds further light on the negative association between R/S and substance use, by controlling for the operation of potential confounding parental factors.

The impact of religion is generally measured by two components: religious denomination and religiosity. However, the measurement of religiosity varies across studies, and is based in some cases on private and public religious activities such as church attendance or prayer, in other cases on the degree of religiosity, e.g., identifying oneself as “very religious” vs. “mildly religious” or stating that religion is an important part of one’s life, or finally on religious beliefs, e.g., considering that one’s religious beliefs influence decision-making or that drug use is a sin (Dew et al., 2008; Edlund et al., 2010; Marsiglia, Kulis, Nieri, & Parsai, 2005). This heterogeneity in measurement has also increased as a result of today’s differentiation between religiosity and spirituality. Indeed, in the 1950s and 1960s, in the United States and other primarily Christian/Catholic cultures, a movement away from church-based beliefs developed (Ellingson, 2001). The term “spirituality” emerged, because the term “religious” became a somewhat pejorative term in part because of many organized religions' strict adherence to discriminatory and judgmental doctrines (Pardini, Plante, Sherman, & Stump, 2000).

There is still no established definition of spirituality (vs. religiosity), and the two concepts are highly correlated (Allen & Lo, 2010). Religiosity is commonly understood as being a connection with the public realm of membership in a religious institution with an official denominational system of beliefs, rituals, practices, and community, oriented toward the sacred. In contrast, spirituality refers to a more personal connection to God or a universal higher power, and to the individual beliefs and practices that accompany this connection. Spirituality may or may not be affiliated with a particular religious doctrine, and it may or may not be connected to an institution; it may even be non-religious (Fuller, 2001; Josephson & Dell, 2004). Compared with religiosity, spirituality has a stronger focus on oneself and personal freedom (Ellingson, 2001; Nasel & Haynes, 2005), and therefore, places less emphasis on God or a higher power. Nevertheless, spirituality is also a part of many religions and constitutes a large part of religious participation (Underwood & Teresi, 2002). Therefore, the measurement of spirituality often assesses religiosity among people with a religious denomination, as well as the belief in God among people not affiliated with a denominated Church. For example, individual prayer is typically defined as a measure of spirituality; however, individual prayer occurs both within the context of religious services and within the private religious practices of people. In general, proximal (e.g., spiritual support, religious coping, spiritual meaning) and distal (e.g., frequency of attendance at services,factors) impact on or are impacted by ethical values, norms and life styles (Cotton et al., 2006).

Thus, it is impossible to divide people into two distinct groups as being religious or spiritual, because most people are characterized by elements of both concepts, to varying degrees (Delaney, Miller, & Bisonó, 2007). Despite the heterogeneity in the measures used, the empirical evidence for an operating protective effect of R/S is very solid regarding the use of alcohol,

tobacco, cannabis and other drugs (Chitwood et al., 2008; Michalak, Trocki, & Bond, 2007; Nonnemaker, McNeely, & Blum, 2006; Ritt-Olson et al., 2004; Sinha, Cnaan, & Gelles, 2007; Sussman, Skara, Rodriguez, & Pokhrel, 2006). There is a need for caution, however, to assume that all different measures of religion, religiosity and spirituality necessarily have to go in the same direction of reduced substance use, as is suggested by the majority of studies. Most studies published on this subject have been conducted in the United States (Edlund et al., 2010; Ghandour, Karam, & Maalouf, 2009), where religious denomination may be much more strongly related to religiosity, in terms of the importance of religion in one's own life and religious practice, than in other locations, such as Europe. In addition, some religions have a strong proscription (Mormons, Muslims) of drug and alcohol use; therefore, proscription, religiosity, and religious denomination may be more strongly correlated in studies where there is more variability across different religious denominations (e.g., Jews, Catholics, Muslims, Mormons, and Seventh-Day Adventists). Thus, individuals from more proscriptive denominations are more "religious" (i.e., they see religion as being more important, practice more privately and in public) (e.g. see religion as more important, practice more privately and in public, Michalak et al., 2007) and drink less (e.g., Hodge, Cardenas, & Montoya, 2001), which may overshadow differences between religious denominations and religiosity in countries with a mostly Protestant/Catholic differentiation. In fact, Michalak et al. (2007) showed that Catholics in the US, who have a stronger ritual connection to wine (because it is used during worship), were at a higher risk for heavy drinking then individuals from other denominations. A study by Miller, Davies, and Greenwald (2000) revealed similar findings, and showed that the age at onset of alcohol use in Protestant adolescents was older and that they were more likely to abstain from drinking, than Catholic adolescents.

Differences in substance use according to religious denomination were observed in other countries as well, although the effects often disappeared after adjusting for religiosity (defined as the belief in God and religious practice) (e.g., Ghandour et al., 2009). Marsiglia, Ayers, and Hoffman (2012) revealed that in countries with a high religious salience, even external religiosity (i.e., church attendance) could have different effects than internal religiosity (i.e., the personal importance of religion), because external religiosity is the expected norm. These authors showed that the higher risk for substance use in Mexican adolescents was obtained in the groups for which church attendance was high, but personal importance of religion was low. Therefore, both aspects (religious denomination and religiosity) seem to be important factors to study, even outside of North America.

Similarly, when religiosity and spirituality can be differentiated, spirituality may not be negatively associated with substance use, as would be expected. Allen and Lo (2010) showed for the US that when controlling for religiosity (i.e., adjusting for the strong correlation between religiosity and spirituality), substance use *increased* along with increasing spirituality. Pokhrel et al. (2012) showed that spirituality was not associated with cigarette and alcohol use in Russian adolescents. In a Czech study, Lorencova (2011) found that higher spirituality was associated with increased cannabis use, mainly through a subscale of mysticism (indicated by items such as "I have experienced the feeling that my 'self' immerses in a reality which is greater than my 'self' "). Compared to individuals who endorsed a religion, individuals who defined themselves as atheists or "seekers" (defined as individuals who did not know whether they considered themselves "religious" or those who sympathized with Asian religions, esoteric beliefs, or Scientology) used cannabis more often, although these findings did not reach significance, probably because of the low sample size.

Overall, the negative association between R/S and substance use seems to be mostly related to one's own internal religiosity (e.g., individual beliefs and personal importance of religion) within a religious denomination, and not through spirituality in the New Age sense (defined as a combination of esotericism, astrology, outgrowths of humanist psychology, and Eastern thinking in a Western context). However, more data on this subject is needed from European countries.

Two main mechanisms through which the effects of religiosity may operate have been posited. One mechanism consists in social bonding, in that high levels of religiosity would be connected to high levels of social bonding and low levels of problem behaviors. Indeed, religious people may participate in social networks or peer groups in which beliefs create norms against substance use, and activities and social interaction do not involve substance use. In addition, the participation in these groups limits the participation in other networks that could promote the taking of risks (Allen & Lo, 2010; Edlund et al., 2010; Hodge et al., 2001; Smith, 2003a, 2003b). A second mechanism may connect substance use and religiosity through better mental health, particularly through better stress management and lower rates of depression (Edlund et al., 2010; Koenig et al., 1992; Nooney, 2005; Pokhrel et al., 2012; Wills, Yaeger, & Sandy, 2003). However, despite these theoretically appealing mechanisms, there is little evidence to support the fact that the association between religiosity and decreased substance use is strongly mediated through social support or mental health status (Edlund et al., 2010). In addition, there is generally little evidence that control variables eliminate the effect of religiosity (Rew & Wong, 2006).

A third mechanism, which has received less attention, is family attachment and parental attitudes (e.g. parental monitoring or permissiveness), which are known to have a strong impact on adolescent and young adult substance use, and could therefore influence the association between religiosity and substance use. Religiosity commonly begins at a young age, within the family and

through joint church attendance (S. Turner, 1994), and many decisions about adolescents' religious affiliation and participation may be strongly influenced by the parents (Marsiglia et al., 2005). Thus, parental religiosity has been shown to be associated with higher moral expectations and higher parental supervision (Smith, 2003a), which may in turn be associated with a lower level of social interaction with deviant peers (Rew & Wong, 2006). Granqvist, Ivarsson, Broberg, and Hagekull (2007) found that a positive attachment to parents in childhood was associated with religiosity in adulthood, while a low parental attachment was associated with New Age spirituality. Aspects such as "focus on the self," self-actualization, and individualism, which is inherent to some types of spirituality, are often associated with a low level of social bonding (Allen & Lo, 2010) and with non-conformity (Rose, 2001). This result may then also indicate that the negative association with substance use is mainly due to religiosity, and not to spirituality outside of a religious denomination.

Although several studies suggested that there could be a relationship between religiosity and positive parental functioning (Sansone, Kelley, & Forbis, 2012; Spilman, Neppl, Donnellan, Schofield, & Conger, 2012), few studies have taken parental variables into account when investigating the association between religiosity and substance use. Marsiglia and colleagues (2012) showed, in a sample of Mexican high school students, that although there was a strong negative association between parental monitoring and substance use, internal religiosity remained independently associated with lower alcohol use, but not tobacco use. In a US sample of 11- to 15-year-olds, Parsai, Marsiglia, and Kulis (2010) demonstrated the posited significant protective effects of parental monitoring, parental permissiveness, and parental norms for alcohol, cigarette and marihuana use, but no effect of religious involvement, when adjusting for

these factors. However, religious involvement was not associated with substance used even before adjustment in this study; therefore, there was no indication for a mitigating effect of parental variables in the association between religiosity and substance use.

The aim of the present study was to assess the association between religious denomination, religiosity, or parenting during adolescence, and substance use (including alcohol, tobacco, cannabis, and other illicit drug use), in young adults. We also examined the effect of spirituality, loosely defined as a belief in God without practicing a religion. The study hypotheses were the following: (i) the negative association between substance use and religious denomination is mainly due to religiosity; and (ii) the associations between religious denomination and religiosity on the one hand, and substance use on the other, are markedly reduced when variables such as parental monitoring, parental regulation, and relationship with parents are taken into account.

Methods

Enrolment procedure

The present study data are part of the Cohort Study on Substance Use Risk Factors (C-SURF), a longitudinal study designed to assess substance use patterns and their related consequences in young Swiss men approximately 20 years old (mean of 19.95 years). The Ethics Committee for Clinical Research of Lausanne University Medical School approved the study (Protocol No. 15/07).

Enrolment in the study took place between August 23, 2010, and November 15, 2011, in three army recruitment centers located in Lausanne (French-speaking), Windisch, and Mels (German-

speaking). These three centers cover 21 of the 26 Swiss cantons, including all French-speaking cantons. Switzerland has a mandatory army recruitment process: virtually all young men are called up at around 19 years of age for determination of their eligibility for military or civil service. It is important to note that therefore, not only those who were eligible to serve in the army could be enrolled in the study. As there is no pre-selection to army conscription, a virtually complete census of the Swiss male population in this age group was eligible for inclusion in the study.

Participants

A total of 15,074 young men visited the recruitment centers. Among them, 1,829 (12.1%) did not meet the research staff because they were sick (but not chronically ill), randomly selected to participate in another study (CH-X; Mohler-Kuo, Wydler, Zellweger, & Gutzwiller, 2006), or not informed about the study by the military staff. These non-inclusions were random and should not have influenced the findings. Of the 13,245 conscripts informed about the study (87.9%), 7,563 (57.1%) gave written consent to participate and 5,990 of those (79.2%) completed the baseline questionnaire.

Of the 5,990 participants, 1,868 (31.2%) were Roman Catholics, 1,174 (19.6%) were Protestants, 1,194 (19.9%) were other Christians (e.g., Orthodox, Christian Catholics), and 1,256 (21.0%) did not report any religious denomination. Due to insufficient sample size and because these religions are too different to be merged, 22 (0.4%) Jews, 244 (4.1%) Muslims, 106 (1.8%) who reported another religion (“other” category), and 126 (2.1%) who did not report their religious denomination, were excluded from the study. In addition, 105 individuals (1.7%) with

incomplete data on any of the variables studied in the present article were also excluded from the study. Thus, the final sample consisted of 5,387 participants.

Measures

Outcome variables

Alcohol use. Alcohol use was assessed through three measures: usual quantity, frequency of alcohol use, and frequency of risky single occasion drinking (RSOD, defined as the ingestion of 6+ standard drinks on a single occasion) during the past 12 months. To assess the drinking frequency, an open-ended question was posed regarding the average number of days per week during which alcohol is consumed, together with closed-ended categories for non-weekly consumption. The amount of alcohol was measured through an open-ended question regarding the number of standard drinks consumed during drinking days. Pictures of standard drinks containing approximately 10 to 12 grams of pure alcohol were provided. The volume of drinking was determined by multiplying the number of drinking days by the usual number of drinks on drinking days. At-risk volume drinking was defined as 21 or more drinks per week. At risk for RSOD was defined as having such occasions at least monthly. Drinking status was defined as having consumed at least one drink during the past 12 months.

Smoking. Participants were asked if they smoked (and how often), and if they ever or never smoked. At-risk smoking was defined as daily smoking of at least one cigarette.

Cannabis use. The frequency of cannabis use during the past 12 months was measured through the following categories: “never”, “once a month or less”, “2-4 times a month”, “2-3 times a

week", and "4 times a week or more". At-risk cannabis use was defined as a cannabis use at least twice a week.

Other illicit drug use. A series of questions was asked to measure the use of other illicit drugs during the past 12 months. The following three most prevalent drugs, apart from cannabis, were considered in this study: cocaine (prevalence of 3.3%), ecstasy (3.7%), and magic mushrooms (2.8%).

Independent variables

Religion. Two aspects of religion were considered: religious denomination (RD) and religiosity. Religious denomination was assessed with the question "What is your religion (even if you do not practice or believe in God)?" The nine possible categories were Roman Catholic, Protestant, Christian-Catholic, Christian-Orthodox, Other Christian (the latter three were combined as Other Christian), Jewish, Muslim, Other (individuals from the three latter categories were then excluded from the study as explained above), and No RD. Religious self-description (RSD), i.e., the first question on the Religious Background and Behavior Questionnaire (RBB; Connors, Tonigan, & Miller, 1996), was used to measure religiosity. Participants were asked to indicate which of the following five categories described them best: Religious ("I believe in God and practice religion"), Spiritual ("I believe in God but do not practice religion"), Unsure ("I do not know what to believe about God"), Agnostic ("I believe we cannot really know about God"), or Atheist ("I do not believe in God").

Parenting. Three variables were derived from questions from the European School Survey Project on Alcohol and other Drugs (ESPAD; see P. Miller & Plant, 2003). The participants' retrospective satisfaction with the relationship they had with their parents before the age of 18 was derived from two questions: "Before you were 18 years old, how satisfied were you usually with your relationship to a) your mother and b) your father?" The responses were given on five-point scales ranging from 1 ("very satisfied") to 5 ("not satisfied at all"). Then, the participants' satisfaction with the relationship they had with their parents was dichotomized at the median of the mean of the items assessing maternal and paternal relationships. Two questions were used to derive, retrospectively, parental regulation at the age of approximately 15 years: "My parents set definite rules about what I was allowed to do (a) at home and (b) outside the home." These two questions were scored on five-point scales ranging from 1 ("almost always") to 5 ("almost never"). The scores were then averaged and dichotomized at the median to obtain the parental regulation variable. Retrospective assessment of parental monitoring at the age of approximately 15 years was derived by averaging and dichotomizing the scores obtained from the responses to two five-point items: "My parents knew (a) whom I was with, and (b) where I was in the evenings."

Sociodemographic variables. The highest completed level of education was divided into three categories: primary (9 years of schooling), secondary (about 12 years of schooling), and tertiary (13 or more years of schooling, including university). Age was computed as the difference between birth date and questionnaire completion date. The language variable was divided into German- and French-speaking participants. Parental financial situation was divided into three categories: below average income, average income, and above average income.

Statistical analysis

A χ^2 test was used to perform bivariate associations between RD, RSD, and substance use. To examine the contribution of RSD over and above RD and the contribution of RD over and above RSD on substance use, two models of hierarchical logistic regressions were performed. In model 1, RD was entered first (using Roman Catholics as the reference group because they showed the lowest level of substance use) and RSD (using Religious as the reference group) was entered second. In model 2, RSD was entered first and RD second. To determine whether the associations between substance use and RD and RSD were influenced by socio-demographic and parenting variables, the above models were then repeated, entering education, age, language, family income, relationship with parents, parental regulation, and parental monitoring in the first step, and RD and RSD in the second step.

Results

The results of descriptive statistics on substance use and adjustment variables according to RD and RSD are shown in Table 1. Except for alcohol use, individuals without RD were more likely to be substance users and to present heavier use patterns among users than those with RD. Regarding alcohol use, individuals without RD were more likely to be abstinent than those with RD, although the proportion of at-risk alcohol users (for RSOD and volume drinking) did not differ between individuals with or without RD. Regarding RSD, the proportion of substance users among religious individuals was lower and their use pattern was weaker. Parenting variables also depended on RD and RSD. Religious individuals (practicing religion) and those with RD were more often satisfied with the relationship they had with their parents and

mentioned higher parental regulation and monitoring than non-believing, non-practicing (spiritual), agnostic, and unsure individuals and those without RD. Significant differences of sociodemographic variables were also found depending on RD and RSD.

Insert Table 1 about here

The independent contributions to substance use of RD over and above RSD and of RSD over and above RD are presented in Table 2. The contribution of RD over and above RSD was significant for all types of substance use, except for at-risk weekly volume drinking and 12-month ecstasy use. RSD contributed significantly to the predictive power of the model above and beyond the variance already accounted for by RD on all types of substance use. Adjusting for control variables did not substantively change the results, indicating that both RD and RSD provide a unique contribution to the prediction of substance use. Although the χ^2 values cannot be directly compared because of the differences in degrees of freedom, adding RSD to RD commonly had a stronger effect than adding RD to RSD (indicated by smaller p-values).

Insert Table 2 about here

The results obtained with the non-adjusted and adjusted logistic regressions for the associations with alcohol use are presented in Table 3. Individuals without RD were less likely to drink alcohol and less likely to be at-risk for RSOD than Roman Catholics. No difference was noted between Roman Catholics, Protestants and other Christians. RD was not significantly associated with at-risk weekly volume drinking. Regarding RSD, individuals reporting Spiritual (non-practicing), Unsure, Agnostic, and Atheist RSDs were more likely to be alcohol users, at-risk for RSOD, and at-risk for weekly volume drinking than Religious (practicing) individuals (although the difference was not significant in the case of individuals with a Spiritual RSD for at-risk

weekly drinking volume). The strongest odds ratios were obtained for individuals reporting an Agnostic RSD for and drinking status, and for individuals reporting an Unsure RSD for at-risk RSOD and for weekly volume drinking. Regarding parental factors, individuals with low parental monitoring presented a higher risk of RSOD and weekly volume drinking than those with high parental monitoring. The odds ratios for RD and RSOD remained significant after adjusting for control variables. The individuals reporting a Spiritual (non-practicing) RSD were those with the most similar results to the ones reporting a Religious (Practicing) RSD (i.e., the reference group) for both at-risk drinking variables.

Regarding tobacco use, individuals without RD were more likely to smoke in general and to smoke daily than Roman Catholics (Table 4), whereas no difference was noted for Protestants and other Christians. Those with Atheist, Agnostic, Unsure, and Spiritual (non-practicing) RSDs were more often smokers and daily smokers than Religious individuals (practicing religion). The strongest odds ratios were found for daily smoking in individuals with an Atheist RSD, and those with a Spiritual (non-practicing) RSD had the lowest odds after those with a Religious RSD (practicing). Participants reporting poor parental relationships or low monitoring were more likely to smoke and be daily smokers than those reporting high scores on these variables, but adjusting for these variables and other control variables did not substantively change the effects associated with RD and RSD.

Insert Tables 3 and 4 about here

The results obtained from regression models of illicit drug use are presented in Tables 5 and 6. Participants without RD were more likely to be cannabis users, at-risk for cannabis use, cocaine users, and magic mushrooms users than Roman Catholics. Protestants and Other Christians were

also more likely to be at-risk for cannabis use than Roman Catholics, and the proportion of magic mushroom users was higher in Other Christians than in Roman Catholics. Regarding parental variables, participants reporting low scores on parental relationships or parental monitoring were more likely to be cannabis users, at-risk for cannabis use (which is also true for parental regulation), and ecstasy, cocaine, and magic mushroom users than those with high scores for these variables. After adjusting for control variables, the unadjusted significant effect observed for Other Christians on magic mushrooms use ($p = .04$) became non-significant ($p = .11$). The effects observed for other RD remained significant after adjustment.

The proportion of cannabis users was higher among Atheist, Agnostic, Unsure, or Spiritual (non-practicing) individuals than in Religious (practicing) individuals, even after adjusting for control variables. Similarly, the proportion of at-risk cannabis users was higher among Atheist or Spiritual individuals than among Religious individuals, although these effects became non-significant after adjustment ($p > .06$). The proportion of ecstasy and cocaine users was also higher among individuals reporting other types of RSD than among Religious individuals (although the difference was not significant for those reporting an unsure RSD). After adjusting for control variables, all significant effects remained significant, except in individuals reporting a Unsure RSD for cocaine use (unadjusted $p = .04$; adjusted $p = .08$). Atheists were significantly more likely to use magic mushrooms than Religious individuals, although this effect became non-significant after adjustment (unadjusted $p = .03$; adjusted $p = .07$). However, in general, individuals reporting all other self-descriptions presented a higher risk of illicit substance use, although not always significantly so, than Religious individuals; the same was true for denominations other than Roman Catholic.

Insert Tables 5 and 6 about here

Discussion

This study was based on the hypotheses that the negative association between substance use and RD was mainly due to religiosity, and that the association between RD and religiosity on the one hand, and substance use on the other, would be markedly reduced if parental variables such as parental monitoring, parental regulation, and relationship with parents were taken into account. Both hypotheses must now be rejected.

Although religiosity, measured as RSD, had a stronger impact on substance use than RD, the latter had an incremental significant association with almost all types of substance use (except ecstasy use and at-risk volume drinking).

This effect, also observed in previous studies (e.g., Ghandour et al., 2009), did not disappear after adjusting for religiosity. It was mainly due to the differences observed between individuals without RD and Roman Catholics, individuals with other RDs lying usually, but not always, between the two extremes. However, significant differences were also found between Roman Catholics and "Other Christians" (for at-risk cannabis use; and a trend to significance of $p < 0.10$ for cocaine, ecstasy, and smoking status) and between Roman Catholics and Protestants (for at-risk cannabis use; and a trend to significance of $p < 0.10$ for cannabis use and RSOD). Roman Catholics, due to their highly ritualized ceremonies, may have more structured lives than individuals with other RDs, particularly compared to individuals without RD. Indeed, a more structured life is commonly associated with lower substance use (Kuntsche, Knibbe, & Gmel,

2009). Roman Catholics may also be more focused on the Catholic community in their everyday lives, and thus be part of a peer group with stricter norms against substance use (Allen & Lo, 2010; Edlund et al., 2010; Hodge et al., 2001; Smith, 2003a, 2003b). In contrary to what has been described in studies conducted in the US, particularly concerning alcohol use, in the present study Roman Catholics were not more permissive towards substance use than individuals reporting other RDs (Michalak et al., 2007; L. Miller et al., 2000). This highlights the need for more studies on religion and substance use from other countries and cultures. Switzerland, for example, is very tolerant towards alcohol use. In the present study based on young male subjects, 94% of participants consumed alcohol, which differs from what has been reported in the US. Therefore, being Roman Catholic may have a lesser impact on drinking status in a country where alcohol use is the norm for the abundant majority.

Our second hypothesis that parental variables could mitigate the significance of the association between religion and substance use could not be confirmed either. Indeed, parental variables were associated with both religion/religiosity (particularly parental monitoring during adolescence, but also positive relationships with parents) and substance use, as expected (Graves et al., 2005). However, the coefficients for RD and RSD remained almost unaltered when parental variables and socio-demographic variables were entered in the model. This observation is in line with the results of other studies in which adjusting for many variables commonly did not rule out the effects of religion and religiosity (Edlund et al., 2010; Rew & Wong, 2006). Thus, children may “learn” religion within their families, but effects on substance use relate to their own religiosity independent of parental influences, at least in young adulthood.

Study’s limitations

A limitation of the present study is that there was only one measure for religiosity, namely, RSD, which combines several aspects of religiosity such as the importance of religion or religious practice, and even as a very crude measure, spirituality. However, it would be very interesting to differentiate some of these effects for a deeper understanding of RD and religiosity. Participants reporting a Spiritual RSD, for example, presented the second most protective effect, after Religious individuals (except for illicit drug use). Therefore, it would be interesting to further examine what is the more conservative part of believing in denominated religions without practicing in "Spiritual" individuals, and what is the part of "New Age Spirituality" with a stronger focus on oneself, which may be related to some kind of mysticism and illicit substance use (Allen & Lo, 2010; Lorencova, 2011).

The assessment of substance use may always be subject to veracity and therefore validity of findings. However, given the rather high substance use prevalences of young men, and the confirmation of treating the data confidentially, we cannot see that there has been serious underreporting going on. This is in agreement with many studies in young populations showing that self-report data are generally valid (Denis et al., 2012; Johnston, O'Malley, & Bachman, 1993; J. Turner, Keller, & Bauerle, 2010).

Other limitations were that (i) we did not include measures on peers, which could help explain whether the posited protective effects of religion for substance use are mediated through non-using and religious peers; (ii) we did not use longitudinal data to measure parental influence in adolescence, but performed a retrospective analysis; and (iii) we only included conscripts of Swiss nationality so the RDs of foreigners, such as Muslims or Jews, were underrepresented and could not be analyzed.

Conclusions

In conclusion, the present study confirmed that RD and religiosity can operate as independent protective factors[3] for licit and illicit substance use, under conditions to be delineated, and that their effects do not only depend on parental influence in adolescents and young adults. The odds ratios obtained were of the order of 2.5 to 4, which corresponds to medium and large effect sizes (Rosenthal, 1996). Few factors in the field of substance use reach such strong, protective effect sizes. Therefore, high priority should be given to further research about the topic, including the necessary conditions (endogenous as well as exogenous ones; micro to macro levels), as well as dimensions, for them to operate, or not, particularly in countries other than the US.

[3] The reader is asked to consider that the implication of some type(s) of causal relationships needs delineation and is referred to Hills's criteria for causation would be helpful. These were developed in order to help assist researchers and clinicians determine if *risk factors* were causes of a particular disease or outcomes or merely associated. (Hill, A. B. (1965). The environment and disease: associations or causation? *Proceedings of the Royal Society of Medicine 58:* 295-300.).Editor's note.

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Glossary

Religious denomination: A subgroup within a religion that operates under a common name, tradition, and identity, e.g., Catholics or Protestants within the Christian religion.

Religious self-description: Description of one's self as being religious (practicing), spiritual (non-practicing), unsure, agnostic, or atheist.

Parental monitoring: A set of correlated parenting behaviors involving attention to and tracking of the child's whereabouts, activities, and adaptations (according to Dishion & McMahon, 1998, p. 61).

Parental regulation: The strictness with which rules for adolescents' activities are set and supervised.

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TABLES

Table 1. *Study Population Characteristics and Substance Use According to Religious Denomination and Religious Self-Description*

	Total		Religious denomination					Religious self-description					
	N	%	Roman Catholic	Protestant	Other Christian	No religion	*P*	Atheist	Agnostic	Unsure	Spiritual	Religious	*p*
Total	5,387		1829	1149	1173	1236		1650	935	678	1581	543	
Religious denomination													
Roman Catholic	1,829	33.9	-	-	-	-		20.5	36.4	36.0	43.5	40.3	<.001
Protestant	1,149	21.4	-	-	-	-		20.3	22.7	24.2	21.3	18.8	
Other Christian	1,173	21.8	-	-	-	-		14.8	18.0	23.3	24.8	38.9	
No religion	1,236	22.9	-	-	-	-		44.4	23.0	16.5	10.5	2.0	
Alcohol use													
12-month alcohol use	5,047	93.7	95.0	94.3	93.6	91.3		93.0	95.6	93.7	94.4	90.4	.001
At-risk volume* (≥ 21 units/week)	346	6.9	6.2	6.6	6.9	8.2		8.1	8.1	8.7	5.2	3.5	<.001
RSOD* (≥ once/month)	2,574	51.0	52.1	50.0	50.5	50.6		54.2	53.7	57.6	48.8	34.2	<.001
Cigarette smoking													
12-month smokers	2,567	47.7	44.7	45.6	47.5	54.0		52.1	50.7	48.2	45.3	35.0	<.001
At-risk smoking* (daily)	1,129	44.0	38.3	42.7	42.4	53.3		51.5	42.4	41.9	40.6	30.0	
Drug use													
12–month cannabis use	1,687	31.3	26.7	31.3	27.9	41.4		38.7	37.9	30.7	26.4	12.7	<.001
At-risk use of cannabis* (≥ once/week)	517	30.6	21.5	28.1	33.9	39.1		35.9	28.0	22.1	30.9	20.3	<.001
12–month ecstasy use	202	3.7	2.8	3.3	3.7	5.6		6.4	3.6	2.4	2.7	0.9	<.001
12–month cocaine use	176	3.3	2.2	2.9	3.2	5.3		5.1	3.1	2.4	2.7	0.7	<.001
12–month magic mushroom use	153	2.8	1.7	1.6	2.8	5.7		4.7	2.1	2.4	2.0	1.5	<.001

Table 1 (continued)

	Total		Religious denomination					Religious self-description					
	N	%	Roman Catholic	Protestant	Other Christian	No religion	P	Atheist	Agnostic	Unsure	Spiritual	Religious	p
Education													
Primary (9 years)	2647	49.1	54.9	47.3	44.2	46.9	<.001	49.0	53.0	48.4	47.4	48.6	.001
Secondary (12 years)	1381	25.6	23.6	24.2	31.6	24.3		26.2	19.0	27.9	28.0	25.6	
Tertiary and higher (> 13 years)	1359	25.2	21.4	28.5	24.1	28.8		24.7	27.9	23.7	24.6	25.8	
Age	19.95	1.18	19.78_{a}	19.85_{a}	20.07_{b}	20.18_{b}		20.00_{a}	19.85_{b}	19.83_{b}	20.01_{a}	$19.94_{a,b}$	
Language													
French	2962	55.0	35.8	55.1	69.3	69.7	<.001	61.8	52.2	51.6	51.9	52.1	<.001
German	2425	45.0	64.2	44.9	30.7	30.3		38.2	47.8	48.4	48.1	47.9	
Family income													
Below average	733	13.6	13.7	12.4	12.4	15.7	<.001	13.7	12.6	12.5	12.9	18.4	.006
Average	2208	41.0	37.0	36.6	48.8	43.5		41.0	37.8	41.7	43.2	39.0	
Above average	2446	45.4	49.3	50.9	38.8	40.8		45.3	49.6	45.7	43.9	42.5	
Relationship with parents													
Poor	1222	22.7	18.7	20.9	20.2	32.6	<.001	27.9	25.9	20.8	18.3	16.2	<.001
Satisfactory	4165	77.3	81.3	79.1	79.8	67.4		72.1	74.1	79.2	81.7	83.8	
Parental regulation													
Low	2206	41.0	39.5	39.3	40.6	45.0	.010	43.2	43.5	41.2	40.0	32.4	<.001
High	3181	59.0	60.5	60.7	59.4	55.0		56.8	56.5	58.8	60.0	67.6	
Parental monitoring													
Low	1431	26.6	23.7	24.7	25.0	34.1	<.001	29.5	26.6	26.8	25.7	19.7	<.001
High	3956	73.4	76.3	75.3	75.0	65.9		70.5	73.4	73.2	74.3	80.3	

Means with different superscripts differ at $p < .05$. RSOD = risky single occasion drinking. *Among users

Table 2. *Independent Contribution of Religious Denomination and Religious Self-Description on Substance Use Outcome*

	Religious denomination[c]				Religious self-description[d]			
	Non-adjusted		Adjusted[b]		Non-adjusted		Adjusted[b]	
	$\chi^2(3)$	*p*	$\chi^2(3)$	*p*	$\chi^2(4)$	*p*	$\chi^2(4)$	*p*
Alcohol use								
Drinking status	19.42	<.001	15.20	<.001	19.77	.001	17.97	.001
Binge drinking (> once/month)[a]	9.24	.005	8.93	.010	87.26	<.001	78.53	<.001
At-risk volume drinking (≥ 21 drinks/week)[a]	1.55	.391	0.53	.675	22.98	<.001	19.82	.001
Cigarettes								
Smoking status	13.66	.001	6.98	.028	41.06	<.001	35.38	<.001
Tobacco at-risk use (daily)[a]	17.15	<.001	9.43	.002	21.57	<.001	22.65	<.001
Cannabis								
Cannabis use	28.67	<.001	15.69	<.001	126.26	<.001	112.56	<.001
Cannabis at-risk use (> once/week)[a]	33.22	<.001	24.18	<.001	14.23	.007	11.40	.022
12-month ecstasy use	3.55	.138	4.19	.218	41.43	<.001	35.98	<.001
12-month cocaine use	8.76	.006	4.86	<.001	22.59	<.001	17.88	.001
12-month magic mushroom use	29.40	<.001	17.75	.002	11.56	.021	10.10	.039

[a] Among users; [b] Adjusted for age, language, education, family income, parental monitoring, parental regulation, and parental relationship; [c] Religious denomination was entered into the model after religious self-description. [d] Religious self-description was entered into the model after religious denomination

Table 3. *Logistic Regression for Alcohol Use According to Religious Denomination and Religious Self-Description*

	Drinking status				At-risk RSOD (> once/month)[a]				At-risk volume drinking (≥ 21 drinks/week)[a]			
	Non-adjusted		Adjusted[b]		Non-adjusted		Adjusted[b]		Non-adjusted		Adjusted[b]	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Denomination												
Roman Catholic	1.00		1.00		1.00		1.00		1.00		1.00	
Protestant	0.84	0.61-1.17[n.s.]	0.84	0.60-1.18[n.s.]	0.87	0.75-1.02[†]	0.88	0.75-1.03[†]	1.01	0.74-1.38[n.s.]	1.01	0.74-1.39[n.s.]
Other Christian	0.81	0.59-1.12[n.s.]	0.87	0.62-1.20[n.s.]	0.98	0.84-1.14[n.s.]	1.00	0.85-1.17[n.s.]	1.17	0.86-1.59[n.s.]	1.11	0.81-1.53[n.s.]
No religion	0.50	0.37-0.69***	0.54	0.39-0.74***	0.80	0.68-0.93**	0.80	0.68-0.95**	1.14	0.84-1.55[n.s.]	1.07	0.78-1.47[n.s.]
Self-description												
Atheist	1.84	1.27-2.68**	1.82	1.25-2.65**	2.50	2.01-3.13***	2.42	1.94-3.03***	2.41	1.41-4.11**	2.19	1.28-3.75**
Agnostic	2.64	1.71-4.08***	2.51	1.62-3.88***	2.34	1.86-2.95***	2.26	1.79-2.86***	2.46	1.42-4.24**	2.32	1.34-4.02**
Unsure	1.72	1.12-2.64*	1.68	1.10-2.59*	2.72	2.13-3.48***	2.61	2.04-3.34***	2.66	1.52-4.66***	2.45	1.39-4.30**
Spiritual	1.88	1.31-2.70***	1.89	1.31-2.72***	1.87	1.51-2.31***	1.83	1.48-2.27***	1.55	0.91-2.66[n.s.]	1.45	0.85-2.49[n.s.]
Religious	1.00		1.00		1.00		1.00		1.00		1.00	
Parental relationship												
High			1.00				1.00				1.00	
Low			0.98	0.75-1.28[n.s.]			1.11	0.97-1.28[n.s.]			1.22	0.94-1.58[n.s.]
Parental regulation												
High			1.00				1.00				1.00	
Low			1.10	0.87-1.39[n.s.]			0.97	0.86-1.09[n.s.]			1.04	0.83-1.31[n.s.]
Parental monitoring												
High			1.00				1.00				1.00	
Low			0.95	0.73-1.23[n.s.]			1.50	1.31-1.72***			1.85	1.45-2.34***

[a] Among drinkers. [b] Adjusted for age, language, education, family income, parental monitoring, parental regulation, and parental relationship

[n.s.] Non-significant; [†] $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

Table 4. *Logistic Regression for Cigarette Use According to Religious Denomination and Religious Self-Description*

	Smoking status				Daily smokers[a]			
	Non-adjusted		Adjusted[b]		Non-adjusted		Adjusted[b]	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Denomination								
Roman Catholic	1.00		1.00		1.00		1.00	
Protestant	1.00	0.86-1.16[n.s.]	1.02	0.87-1.19[n.s.]	1.15	0.92-1.45[n.s.]	1.22	0.96-1.54[n.s.]
Other Christian	1.15	0.99-1.34[†]	1.15	0.99-1.35[†]	1.20	0.96-1.49[n.s.]	1.16	0.92-1.48[n.s.]
No religion	1.29	1.10-1.50**	1.20	1.02-1.41*	1.58	1.27-1.97***	1.44	1.14-1.83**
Self-description								
Atheist	1.88	1.52-2.32***	1.80	1.45-2.23***	2.12	1.49-3.00***	2.19	1.52-3.15***
Agnostic	1.87	1.50-2.33***	1.83	1.46-2.29***	1.59	1.11-2.30*	1.67	1.14-2.44**
Unsure	1.71	1.35-2.16***	1.67	1.31-2.11***	1.58	1.08-2.32*	1.62	1.09-2.41*
Spiritual	1.54	1.25-1.88***	1.50	1.22-1.85***	1.57	1.11-2.22*	1.52	1.06-2.18*
Religious	1.00		1.00		1.00		1.00	
Parental relationship								
High			1.00				1.00	
Low			1.51	1.32-1.74***			1.60	1.33-1.93***
Parental regulation								
High			1.00				1.00	
Low			0.99	0.88-1.11[n.s.]			0.98	0.82-1.16[n.s.]
Parental monitoring								
High			1.00				1.00	
Low			1.68	1.48-1.91***			1.38	1.16-1.66***

[a] Among smokers. [b] Adjusted for age, language, education, family income, parental monitoring, parental regulation, and parental relationship

[n.s.] Non-significant; [†] $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

Table 5. *Logistic Regression for Cannabis Use According to Religious Denomination and Religious Self-description*

	Cannabis use 12 month				At-risk cannabis (> once/week)[a]			
	Non-adjusted		Adjusted[b]		Non-adjusted		Adjusted[b]	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Denomination								
Roman Catholic	1.00		1.00		1.00		1.00	
Protestant	1.18	1.00-1.39†	1.16	0.98-1.37†	1.39	1.01-1.91*	1.47	1.06-2.05*
Other Christian	1.12	0.95-1.32$^{n.s.}$	1.13	0.95-1.34$^{n.s.}$	1.95	1.42-2.68***	1.94	1.38-2.72***
No religion	1.56	1.32-1.83***	1.41	1.19-1.68***	2.19	1.63-2.94***	2.03	1.49-2.78***
Self-description								
Atheist	3.68	2.78-4.87***	3.54	2.67-4.70***	1.95	1.04-3.67*	1.87	0.98-3.57†
Agnostic	3.88	2.91-5.18***	3.69	2.76-4.94***	1.52	0.80-2.90$^{n.s.}$	1.56	0.80-3.03$^{n.s.}$
Unsure	2.87	2.12-3.89***	2.83	2.08-3.84***	1.11	0.56-2.20$^{n.s.}$	1.08	0.53-2.17$^{n.s.}$
Spiritual	2.40	1.82-3.17***	2.38	1.80-3.15***	1.88	1.00-3.55*	1.77	0.92-3.39†
Religious	1.00		1.00		1.00		1.00	
Parental relationship								
High			1.00				1.00	
Low			1.47	1.28-1.69***			1.32	1.04-1.69*
Parental regulation								
High			1.00				1.00	
Low			1.06	0.93-1.20$^{n.s.}$			1.30	1.04-1.62*
Parental monitoring								
High			1.00				1.00	
Low			1.61	1.41-1.84***			1.74	1.38-2.20***

[a] Among users. [b] Adjusted for age, language, education, family income, parental monitoring, parental regulation, and parental relationship

$^{n.s.}$ Non-significant; † $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

Table 6. *Logistic Regression for Illicit Drug Use in the Past 12 Months According to Religious Denomination and Religious Self-Description*

	Ecstasy				Cocaine				Magic mushrooms			
	Non-adjusted		Adjusted[a]		Non-adjusted		Adjusted[a]		Non-adjusted		Adjusted[a]	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Denomination												
Roman Catholic	1.00		1.00		1.00		1.00		1.00		1.00	
Protestant	1.03	0.67-1.59$^{n.s.}$	1.08	0.70-1.68$^{n.s.}$	1.19	0.74-1.90$^{n.s.}$	1.17	0.73-1.88$^{n.s.}$	0.85	0.47-1.54$^{n.s.}$	0.79	0.43-1.43$^{n.s.}$
Other Christian	1.33	0.88-2.02$^{n.s.}$	1.53	0.99-2.36†	1.47	0.94-2.32†	1.53	0.95-2.45†	1.67	1.02-2.75*	1.53	0.91-2.57$^{n.s.}$
No religion	1.34	0.91-1.98$^{n.s.}$	1.29	0.86-1.94$^{n.s.}$	1.81	1.19-2.77**	1.53	0.98-2.38†	2.72	1.72-4.30***	2.09	1.30-3.36**
Self-description												
Atheist	6.92	2.77-17.32***	6.17	2.45-15.51***	6.09	2.19-16.98***	5.13	1.83-14.40**	2.32	1.07-5.00*	2.05	0.94-4.48†
Agnostic	4.05	1.57-10.48**	3.54	1.36-9.20**	4.06	1.41-11.69**	3.36	1.16-9.74*	1.25	0.54-2.91$^{n.s}$	1.09	0.47-2.57$^{n.s.}$
Unsure	2.60	0.94-7.17†	2.37	0.86-6.56†	3.12	1.03-9.43*	2.74	0.90-8.33†	1.46	0.62-3.48$^{n.s.}$	1.31	0.54-3.14$^{n.s.}$
Spiritual	2.98	1.17-7.59*	2.83	1.11-7.24*	3.75	1.34-10.52*	3.47	1.23-9.80*	1.29	0.59-2.84$^{n.s.}$	1.19	0.54-2.65$^{n.s.}$
Religious	1.00		1.00		1.00		1.00		1.00		1.00	
Parental relationship												
High			1.00				1.00				1.00	
Low			2.43	1.79-3.30***			2.44	1.76-3.37***			1.77	1.25-2.52**
Parental regulation												
High			1.00				1.00				1.00	
Low			0.97	0.72-1.3$^{n.s.}$			0.95	0.69-1.31$^{n.s.}$			0.89	0.63-1.25$^{n.s.}$
Parental monitoring												
High			1.00				1.00				1.00	
Low			2.07	1.53-2.80***			2.90	2.10-4.02***			3.99	2.80-5.68***

[a] Adjusted for age, language, education, family income, parental monitoring, parental regulation, and parental relationship

$^{n.s.}$ Non-significant; † $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$