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Predicting moral sentiment towards physician-assisted suicide: The role of religion, conservatism, authoritarianism, and Big Five personality

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Abstract

The issue of physician-assisted suicide is a highly contentious social issue and thus there is importance in understanding the factors that predict attitudes in this domain. In the current study we sought to examine individual differences in moral sentiment towards physician-assisted suicide with a particular focus on religion/religiosity, political ideology, authoritarianism, and Big Five personality traits, all of which were identified in an extensive review of previous studies as potentially relevant predictors. Based on N=1598 respondents from the Baylor Religion Survey (US) our results indicated an independent role for each of the predictors: being a Protestant or a Catholic (vs. no religion), higher levels of religiosity, higher levels of conservativism (vs. liberalism), and higher levels of authoritarianism uniquely predicted lower levels of support for physician-assisted suicide. Moreover, higher levels of extraversion independently predicted greater support for physician-assisted suicide. These results confirm a set of previously described predictors in an independent data set and extend prior research by showing that they independently predict moral sentiment towards physician-assisted suicide when modelled jointly. In summary, moral sentiment towards physician-assisted suicide reflects individual differences in a broad range of social and psychological factors.

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Key words: physician-assisted suicide; personality; religiosity; political ideology; authoritarianism.

1. Introduction

The issue of physician-assisted suicide is one of the most contentious contemporary social debates with considerable variation in public opinion on this matter (Cohen, Van Landeghem, Carpentier, & Deliens, 2014; Emanuel, 2002). Examining the demographic, social, and psychological factors that predict such attitudes is thus of importance in order to better understand the etiology of views on this important social issue. Previous research has highlighted that education, religious denomination and religiosity, and political attitudes, among other factors, are predictive of attitudes towards physician-assisted suicide and euthanasia in general (e.g. Baume, O'Malley & Bauman, 1995; Burdette, Hill & Moulton, 2005; Sørbye, Sørbye, & Sørbye, 1995; Verbakel & Jaspers, 2010). However, this work has often been restricted to modest sample sizes (i.e. $n < 200$; Anderson & Caddell, 1993; Ho & Penney, 1992; Kemmelmeier, Wieczorkowska, Erb & Burnstein, 2002). Moreover, little work to date has comprehensively examined whether these established predictors reflect independent effects, a question of some interest given the close links between constructs such as religiosity, political conservatism, and authoritarianism (Ludeke, Johnson, & Bouchard, 2013; Saucier, 2000).

To address these issues, we used a survey sample of adults from the United States to answer the following questions: 1) are religiosity, political conservatism, and authoritarianism independently associated with moral sentiment towards physician-assisted suicide?; 2) do the Big Five personality traits provide incremental prediction for moral sentiment towards physician-assisted suicide? Next we provide a brief overview of work in the field to date.

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1.1. Predicting Sentiment Towards Physician-Assisted Suicide: A Brief Overview

Although our focus in the current study specifically centers on moral sentiment towards physician-assisted suicide, many studies have used the terms active euthanasia (i.e. acting intentionally to end a person's life: Ho, 1998) and physician-assisted suicide/euthanasia (i.e. providing a patient with the knowledge or means necessary to end life: Canadian Medical Association; 2007) interchangeably (Emanuel, Daniels, Fairclough & Clarridge, 1996; Kemmelmeier, et al., 2002) and participants tend not to distinguish between these types (Ho, 1998). As such, our review of previous research includes findings concerning both forms.

A number of studies have identified predictors of attitudes towards physician-assisted suicide/euthanasia (see Table 1 for a more detailed overview). For example, several studies have reported that those with higher levels of education are more likely to be in favor of physician-assisted euthanasia (Cohen et al., 2006; Holden, 1993; Ward, 1980; Verbakel & Jaspers, 2010). Similarly, a broad body of research has overwhelmingly shown that both religious denomination and levels of religiosity predict attitudes toward euthanasia. Perhaps unsurprisingly given the condemnation of euthanasia by most organized religions (Larue, 1996), atheists are more likely to hold favorable opinions of euthanasia than Protestants and Catholics (Baume et al., 1995; Burdette et al., 2005; Cohen et al., 2006; Verbakel & Jaspers, 2010). Differences are also apparent across religious denominations with Protestants being more accepting of physician-assisted suicide than Catholics in the United States (Anderson & Caddell, 1993; Verbakel & Jaspers, 2010), Australia (Baume et al., 1995), and in much of Europe (Cohen et al., 2006; Verbakel & Jaspers, 2010). Of note, however, Cohen et al. (2006) found widely

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varying attitudes toward euthanasia throughout European countries with religiosity and religious group as main predictors, which points to the importance of cultural and/or societal influences. More broadly, whereas religious denomination predicts attitudes towards physician-assisted suicide, level of religious commitment is also of relevance. For instance, a study using General Social Survey (1977-1991) data to examine the attitudes of the elderly found attendance at church services (religious denomination was not detailed) to be associated with lower levels of support for euthanasia (Leinbach, 1993), suggesting that it is not only denominational affiliation that influences attitudes towards euthanasia but also religious commitment (also see Anderson & Caddell, 1993 and Burdette et al., 2005).

Although religiosity and religious denomination are robustly associated with attitudes towards euthanasia, this effect has been noted to be accounted for by conservatism (Ho & Penny, 1992); however, other studies report independent effects of religion and political ideology (e.g. Burdette et al., 2005). Moreover, while further studies have confirmed negative links between conservativism and attitudes towards euthanasia (e.g. Burdette et al., 2005; Sørbye, Sørbye, & Sørbye, 1995), in some studies this effect has been accounted for by level of education (Ward, 1980). Finally, related work has highlighted that authoritarianism – the tendency to value traditions and social hierarchy (Altemeyer, 1981) – may also be associated with lower levels of support for euthanasia. In a sample of German university students those who self-reported higher in authoritarianism were less supportive of euthanasia (Kemmelmeier et al., 2002)[1]. Of note,

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[1] Note, the study by Kemmelmeier et al. (2002) was primarily concerned with the links between individualism and support for euthanasia (with the authors finding a robust positive association): the Baylor Religion Survey does not provide an individualism variable for our secondary analyses and so we do not discuss this observation further here.

however, the same study reported a null effect in a Polish sample of university students indicating that this link requires further examination. And Verbakel & Jaspers (2010), using World and European Values Survey data from 33 countries, reported that those who value autonomy more highly were more likely to be in support of euthanasia.

Relatively few studies have examined personality traits as predictors of attitudes toward euthanasia. However, of the research in this domain to date, support for euthanasia has been negatively associated with conscientiousness (Aghababaei & Wasserman, 2013) and agreeableness (Aghababaei, Wasserman & Hatami, 2014; Wasserman, Aghababaei & Nannini, 2016), and positively associated with openness (Aghababaei et al., 2014; Wasserman et al., 2016).

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Table 1. Overview of previous work assessing multiple psychosocial predictors of attitudes towards euthanasia

Authors	Sample	Measures	Core Findings
Aghababaei & Wasserman (2013)	**Participants**: 284 **Demographics**: 40% male, 60% female (age M=20.8. SD=2.9). All participants Muslim. **Country**: Iran	**Definition of PAS/euthanasia:** Attitude Toward Euthanasia Scale (ATE), includes active/passive, voluntary/involuntary PAS **Variables**: HEXACO Personality Inventory; Ashton & Lee, 2009), motivations toward religion (intrinsic/extrinsic/ extrinsic social), interest in religion, life satisfaction	• Males more supportive of PAS than females • Life satisfaction (-), interest in religion (-), intrinsic and extrinsic motivations for religion (-), honesty-humility (-), conscientiousness (-) correlated with acceptance of euthanasia **Regression**: • Intrinsic (-) and extrinsic motivations for religion (-), interest in religion (-) significant predictors when personality, life satisfaction, age, and gender controlled for
Aghababaei, Hatami & Rostami (2011)	**Participants:**233 **Demographics:** 49.3% male, 50.2% female (age M=23.18) **Country:** Iran	**Definition of PAS/euthanasia:** Active and passive euthanasia examined separately using Euthanasia Attitude Scale (Tordella & Neutens, 1979) **Variables**: Big Five personality traits, motivations toward religion (intrinsic/ external social/ external individual), trolley dilemma	**Regression:** • Internal religious orientation (-) associated with attitudes toward active euthanasia • Internal (-) and external religious orientation (-) predict combined euthanasia attitudes • Individual external religious orientation (-) predicted attitudes toward passive euthanasia

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Aghababaei, Wasserman & Hatami (2014)	**Participants**: 165 **Demographics**: 64.8% male, 35.2% female (age M=23.3, SD=3.4). All participants Muslim. **Country**: Iran	**Definition of PAS/euthanasia:** Euthanasia Attitude Scale (Tordella & Neutens, 1979), omitting "I have faith in the medical system to implement euthanasia properly" **Variables**: HEXACO Personality Inventory (examining honesty-humility, emotionality, extraversion, agreeableness, conscientiousness, openness; Ashton & Lee, 2009), curiosity/exploration, religiosity	• Openness (+), agreeableness (-), honesty-humility (-), extraversion (-) correlated with positive attitudes toward euthanasia **Stepwise regression**: • Honesty-humility, extraversion, agreeableness no longer significant when controlling for the above, religiosity, and openness • Openness (+) predictor of attitudes toward euthanasia
Anderson & Caddell (1993)	**Participants:** 63 health care (oncology) professionals including nurses (63.5%), pharmacists (20.6%), social service workers (9.5%), and others (6.3%) **Demographics:** 12.7% male, 87.3% female (age M=38.43, SD=9.26); Protestants (65%), Catholics (22.2%), and others (12.7%) **Country:** Midwest, USA	**Definition of PAS/euthanasia:** "Active euthanasia", demonstrated through vignettes given to participants **Variables:** Religious denomination, religiosity, previous experience in withholding treatment, years in medical profession, age, gender, marital status	• Catholics less accepting of PAS than Protestants **Multivariate regression:** • Religiosity (-) predicts attitudes toward PAS • Religious denomination not significantly related to attitudes on PAS

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Baume, O'Malley & Bauman (1995)	**Participants:** 1,238 doctors **Demographics:** Catholics (19.4%), Anglicans (18.6%), non-theists (29.2%) and others; gender/age not reported **Country:** New South Wales, Australia	**Definition of PAS/euthanasia:** "Active voluntary euthanasia" and "Physician-assisted suicide" **Variables:** Religious denomination	• Non-theists more accepting of PAS than theists • Protestants more accepting of PAS than Catholics **Logistic regression:** • Catholics, Protestants less accepting of PAS than non-theists
Burdette, Hill & Moulton (2005)	**Participants**: 1,111 **Demographics:** 57% female, 43% male (age M=45); mainly white (80%); average of 13 years in education; 27% conservative religious groups, 17% no religion **Country:** USA	**Definition of PAS/euthanasia:** "Physician-assisted suicide" **Variables:** Religious denomination, religiosity, age, sex, education, region, political orientation, race, previous contact with terminal illness, support of palliative care	**Regression**: • With all variables controlled for, race (non-whites less supportive than whites; mediated through church attendance), political conservatism (-), denomination (Conservative Protestants less supportive than non-religious), and religiosity (-) predict PAS attitudes • Religiosity accounts for effects of moderate Protestantism and Catholicism
Cohen et al. (2006)	**Participants:** 41,125 **Demographics:** 47.5% female, 52.5% male; ages range from 18-29 (23.6%), 30-39 (19.8%), 40-49 (18.9%), 50-59 (14.7%), 60-69 (12.9%), and 70+ (9.5%) **Country:** 33 European countries	**Definition of PAS/euthanasia:** "Euthanasia (terminating the life of the incurably sick)" **Variables:** Religious denomination, self-determination, religiosity, country, age, sex, marital status, education level, social class, agricultural class	• Acceptance of PAS varied between countries • Men more accepting than women • Education (+), age (-) correlated with acceptance of PAS • Effect of religious denomination different in different countries **Multivariate analysis:** • Religiosity partially explained effect of age, country, education, class

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Danyliv & O'Neill (2015)	**Participants:** 8099, consisting of 6 different groups measured in 1983, 1984, 1989, 1994, 2005, and 2012, respectively **Demographics:** Across all years: no religion (36.6%), Catholic (10%), Church of England (34.1%), other (19.3%); age/gender not reported **Country:** Britain	**Definition of PAS/euthanasia:** "Suppose a person has a painful incurable disease. Do you think that doctors should be allowed by law to end the patient's life, if the patient requests it?" (Considered active voluntary) **Variables:** Religious denomination, religiosity, age, sex, household income, marital status, satisfaction with health care system, autonomy	**Multivariate logistic regression** • Increase in support for PAS over time • Religiosity strongest predictor across all years, negatively predicts support of PAS • Catholics less supportive of PAS than the non-religious

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Emmanuel, Daniels, Fairclough & Clarridge (1996)	**Participants**: 703 **Demographics:** 355 oncologists (age M=48.3; 87% male; mainly white (87.8%); 29.5% Protestant, 22.1% Catholic, 33.7% Jewish), 155 oncology patients (age M=52.5; 39.4% male; mainly white (94.1%); 19% Protestant, 52.9% Catholic, 18.3% Jewish), 193 members of public (age M=54.5; 40.4% male, mainly white (85.5%); 23.4% Protestant, 65.5% Catholic, 7.6% Jewish) **Country:** USA	**Definition of PAS/euthanasia:** Description active voluntary PAS **Variables:** age, sex, ethnicity, marital status, religious denomination, importance of religion, religiosity, income, education, employment, health, possession of advance care directive, participation in decisions of end of life Oncology patients/public: depression, pain, physical functioning Patients only: support group, self-perceived chance of cure, disease status Oncologists: hospital admission in past year	**Multivariate Logistic Regression:** • Religious denomination (Catholics least supportive), age (-) predicted PAS attitude • Non-religious and higher income participants more likely to have taken steps toward euthanasia • High religiosity predicted less consideration of euthanasia
Ho (1998)	**Participants**: 420 **Demographics:** 38.3% male, 61.7% female; aged 17 to 60 (M=31); 63% employed **Country:** Australia	**Definition of PAS/euthanasia:** Considered active, passive, voluntary, involuntary euthanasia separately and in combination **Variables:** gender, age, education, employment status, occupation	• Active and passive euthanasia considered similarly • Strong distinction between voluntary and involuntary euthanasia

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Ho & Penney (1992)	**Participants**: 168 **Demographics:** Men (40.4%), women (59.5%), aged 16 to 61 (M=29); 50% enrolled in or finished tertiary education **Country:** Australia	**Definition of PAS/euthanasia:** Passive euthanasia and active euthanasia, examined individually **Variables:** Religiosity, conservatism, abortion sex, age, education level, employment, type of employment, income	• No gender difference for PAS; weak correlations between age, education, SES, income and attitudes toward PAS • Religiosity (-) and conservatism (-) correlated with attitudes toward PAS and abortion **Multiple regression:** • With conservatism controlled, religiosity no longer predicts PAS • Conservatism predicted attitudes toward active and passive PAS
Holden (1993)	**Participants:** 922 , **Demographics:** 785 right-to-die group members (38.9% male, 61.1% female, age M=64.9), and 161 pro-life group members (34.2% male, 65.8% female, age M=41). Right-to-die group had higher proportion of Whites, Jews, non-theists, white-collar-workers, and was more educated, non-Christian, and older. **Country:** California, USA	**Definition of PAS/euthanasia:** Not specified beyond "approval/disapproval of a terminally ill person's right to euthanasia" **Variables:** religious denomination, political stance and philosophy, sex, age, race, income, marital status, education, occupation, belief in afterlife, abortion	• Being Christian (as opposed to non-Christian) (-) associated with support for PAS • Pro-life group: PAS attitude more strongly influenced by religious upbringing than death-proximate experiences • Right-to-die group: PAS attitude more strongly influenced by death-proximate experiences than religious upbringing
Kemmelmeier et al. (2002)	**Participants:** *Study 1*, 100 *Study 2*, 102; *Study 3*, 72; *Study 4,* 1158 **Demographics:** *Study 1*: 56% male, 44% female (age M=22.5, SD=2.2) *Study 2*: 21.6% male, 78.4%	**Definition of PAS/euthanasia:** *Study 1* Euthanasia: "Help of a physician in ending the life of terminally ill person"; participants used euthanasia and PAS interchangeably *Study 2* Examined both PAS (active, voluntary), and	**Regression analyses:** *Study 1*: • Horizontal collectivism (+) predicts PAS attitudes *Study 2*: • Horizontal individualism (+) and authoritarianism (-) predict PAS attitudes *Study 3*: • Individualistic priming led to more positive PAS

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female (age M=24.1, SD=7.5) *Study 3*: 44.4% male, 55.6% female (age M= 19.4, SD=1) *Study 4*: 43.6% male, 56.4% female **Country:** Study 1: Poland, Study 2: Germany, Studies 3, 4: USA	involuntary euthanasia *Study 3* PAS *Study 4* Active voluntary euthanasia/PAS **Variables:** *Study 1:* PAS attitude importance, individualism, authoritarianism *Study 2*: PAS attitude importance, individualism, authoritarianism *Study 3*: Collectivist or individualistic self-manipulation, PAS attitude importance *Study 4*: State individualism (previously measured by state, not measured for each participant)	attitudes *Study 4*: • Individualism by state (+) correlates with PAS attitudes

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Leinbach (1993)	**Participants:** 3,980 (9 cohorts across 15 years) **Demographics:** Aged 45 to 85 **Country:** USA	**Definition of PAS/euthanasia:** "When a person has a disease that cannot be cured, do you think doctors should be allowed by law to end the patient's life by some painless means if the patient and his family request it?" **Variables:** Religious attendance, region, income, age, race, political party, socializing, employment, religious conviction, political views (27 total included for regression)	• Age did not affect PAS attitude as cohort became older **Multiple Classification Analysis:** • Religious attendance, strength of religious conviction, race, region accounted for most variance in PAS attitude
Lester, Hadley & Lucas (1990)	**Participants:** 223 **Demographics**: 48% male, 52% female (age M=20, SD=1.5) **Country:** Not given. Authors work in USA	**Definition of PAS/euthanasia:** "Turning off the life-sustaining machines for someone who is in a coma and will never recover consciousness" (passive involuntary), "Ending the life of someone who is severely ill and disoriented and is expected to get worse, as in Alzheimer's Disease" (unspecific), "Ending the life of a child who is severely retarded and deformed and who will have to endure considerable pain and be institutionalized for all of his/her life" (unspecific)	• Viewing euthanasia as moral (-) associated with lying **Factor analysis:** • Factor 1 defined by: viewing suicide, refusal of medical treatment, abortion, and euthanasia as moral; (+) associated with psychoticism • Factor 2 defined by: viewing war, execution, and cannibalism as moral; (-) associated with neuroticism, lying, and irrationality

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		Variables: Psychoticism, extraversion, neuroticism, lying, irrationality, sex, age; attitudes toward war, executions, cannibalism, suicide, refusal of treatment, abortion, euthanasia	
Sorbye, Sorbye & Sorbye (1995)	**Participants:** 289 nursing students **Demographics:** 16% male, 84% female (age M=25.4, SD=5.11) **Country:** Norway	**Definition of PAS/euthanasia:** Active voluntary euthanasia **Variables:** Strength of religious belief, political conservatism, perception of life as meaningful, 3 vignettes about people of varying levels of illness wanting to die	**Regression**: • Religious belief (-), political conservatism (-), life as meaningful (-) predict PAS attitudes
Verbakel & Jaspers (2010)	**Participants:** 37,393 **Demographics:** Aged 18 to 75 **Country:** 31 European countries, USA, Canada	**Definition of PAS/euthanasia:** "Euthanasia" unspecified **Variables:** Religiosity, religious denomination, "slippery slope" (control over one's life, age, employment, marital status, dependent children), social activity, widowhood, autonomy (education, attachment to personal autonomy), sex, country-level variables (permissiveness toward euthanasia, religiosity, health system, autonomy value,	• Protestants have more favourable attitudes toward PAS than Catholics, who have more favourable attitudes than Muslims • Age (-) control over one's life (+) social activity (+), education (+), autonomy (+), religiosity (-) predict PAS attitudes • Country-level religiosity (-), denomination (Catholic less permissive than Protestant), health case (+), autonomy (+; although insignificant with all other country-level variables controlled), suicide (+) predict PAS attitudes

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		health, suicide rate)	
Ward (1980)	**Participants:** 1,530 **Demographics:** 45.3% male, 54.7% female (age M=44.7); 87.5% white **Country:** USA	**Definition of PAS/euthanasia:** "When a person has a disease that cannot be cured, do you think doctors should be allowed by law to end that patient's life by some painless means if the patient and his family request it?" **Variables:** religiosity, political conservatism, death penalty, abortion, attitude toward suicide, age, sex, race, education, income, health, satisfaction	**Regression:** • Age (-), education (+), religiosity (-), religion (highest acceptance in non-religious > Jews > Catholics > Protestants) predicted PAS attitudes • Males and whites more positive PAS attitudes • Those accepting PAS also accepted abortion and capital punishment • Correlation between political conservatism and PAS attitude accounted for by education level
Wasserman, Aghababaei & Nannini (2016)	**Participants:** 165 Iranians, 156 Americans **Demographics**: Iran: 64.8% male, 35.2% female; USA: 38.5% male, 61.5% female. Americans were significantly older than Iranians **Country**: Iran, USA	**Definition of PAS/euthanasia:** Euthanasia Attitude Scale (Tordella & Neutens, 1979), omitting "I have faith in the medical system to implement euthanasia properly" **Variables**: HEXACO Personality Inventory, spirituality	• Americans significantly more supportive of euthanasia than Iranians • Honesty-humility (-), agreeableness (-), openness (+), spirituality (-) correlated with euthanasia attitudes **Regression**: • With all variables controlled for, openness (+) and spirituality (-) predict euthanasia attitudes in both Iranians and Americans • Groups differed when analysed on ethical and practical consideration subscales

Notes. PAS = physician-assisted suicide; (-) = negative association/correlation, (+) = positive association/correlation; M = mean; NB this table only includes studies that assessed multiple psychosocial predictors of physician-assisted suicide/euthanasia in order to most closely relate to the approach taken in the current study. As such, we do not include studies that, for example, only assessed religiosity.

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1.2. The Current Study

While previous work has provided important foundations for understanding individual differences in attitudes towards physician-assisted euthanasia, at least two important questions remain unanswered. Firstly, while religious denomination and religiosity are robustly associated with attitudes towards physician-assisted euthanasia, it is currently unclear whether these associations reflect independent effects, or whether related constructs, such as authoritarianism and political ideology more accurately define the link. This issue of interest because the link between religious denomination and being opposed to physician-assisted suicide may be a reflection of adherence to doctrinal teachings (e.g. Christian leaders broadly condemn physician-assisted suicide), or attributable to psychological characteristics associated with religiosity – e.g. rigidity to change, traditionalism, authoritarianism (Altemeyer & Hunsberger, 1992). And these perspectives are of course not mutually exclusive. Secondly, limited work to date has addressed broader psychological links to physician-assisted suicide, such as basic dimensions of personality. To this end we sought to also examine how Big Five personality traits predict moral sentiment towards physician-assisted euthanasia.

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2. Methods

2.1. Participants

We used data collected from the Baylor Religion Survey, Wave II (2007), administered by the Gallup Organization. In the first phase of data collection, Gallup contacted by telephone 1000 households using a random digit telephone sample. Of these, 624 agreed to be sent questionnaires by mail, 456 of which were completed and

returned. In a second phase, Gallup sent by mail 1836 additional questionnaires to pre-selected households in the national Random Digit Dialing database. Of these, 1192 responded, for a final sample of 1648.

Participants were aged between 18 and 96 (mean=50.95, SD=16.42). The sample consisted of 775 males (47%) and 873 females (53%) living across the United States in both rural and urban areas, and of varying socio-economic classes. Participants completed a self-administered 16-page booklet addressing a variety of issues.

2.2. Measures

2.2.1. Moral sentiment toward physician-assisted suicide

Moral sentiment towards physician-assisted suicide was assessed with the following question: *How do you feel about the morality of the following? Physician-assisted suicide*. Possible responses ranged from 1 (Always wrong) to 4 (Not wrong at all).

2.2.2. Religion

Religious denomination was measured with a question asking participants to select their religious tradition from a list of seven options. For the purpose of this study these responses were then condensed into Protestant, Catholic, Other, and None. Religiosity was assessed with the question: *How religious do you consider yourself to be*? Possible responses ranged from 1 (Not at all religious) to 4 (Very religious).

2.2.3. Authoritarianism

Authoritarianism was measured with the following three items: *Obedience and respect are the most important things kids should learn*; *we must crack down on troublemakers to save our moral standards and keep law and order; people should be*

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made to show respect for America's traditions. Responses were made on a 5-point Likert scale, from 1 (Strongly disagree) to 5 (Strongly agree). A score for each participant was constructed as the mean response across the three questions. Cronbach's alpha was .79.

2.2.4. Political ideology

Participants' political sentiment was measured with the question: How would you describe yourself politically? Possible responses ranged from 1 (Extremely conservative) to 7 (Extremely liberal), with the midway point (4) being Moderate.

2.2.5. Personality

Big Five personality traits – Extraversion, Agreeableness, Conscientiousness, Emotional stability/Neuroticism, and Openness to experiences – were assessed using the Ten Item Personality Measure (TIPI; Gosling, Rentfrow & Swann, 2003). Participants were asked: *Here are a number of personality traits which may or may not apply to you. Please indicate the extent to which you agree or disagree with each trait. I see myself as…*[adjective]. The adjectives were as follows: extroverted, quiet (measuring extraversion), dependable, disorganized (measuring conscientiousness) open to new experiences, uncreative (measuring openness to experiences), anxious, calm (measuring emotional stability/neuroticism) and critical, sympathetic (measuring agreeableness). Participants answered on a 5-point Likert scale from 1 (Strongly disagree) to 5 (Strongly agree). Item scores were reversed where relevant. A score for each participant for each of the Big Five traits was constructed as the mean response across the relevant two items measured from 1 (Strongly disagree) to 5 (Strongly agree). The Spearman-Brown reliability statistic ranged from .17 (openness) to .62 (extraversion).

2.2.6. Demographics

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Demographic information was collected with questions about age, sex, education ("What is the highest level of education you have completed?" 1 = 8th grade or less; 7 = postgraduate work/degree), and race (White; Black or African American; American Indian or Alaska Native; Asian; Native Hawaiian or other Pacific Islander; Other: separate yes/no questions for each race).

3. Results

Descriptive statistics are presented in Table 2. In summary, the sample was largely white, with over half of participants reporting as Protestant, and almost all having at least a high school diploma. Moral sentiment towards physician-assisted suicide was fairly evenly spread, as were political orientation and religiosity.

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Table 2. Descriptive statistics of study variables

	N	Valid Percent
Moral Sentiment Towards Physician-assisted Suicide		
Always wrong	589	35.7%
Almost always wrong	240	14.6%
Only wrong sometimes	367	22.3%
Not wrong at all	402	24.4%
Missing	50	3.0%
Sex		
Male	735	44.6%
Female	913	55.4%
Education		
8th grade or less	16[a]	1.0%
9th-12th grade no diploma	92[a]	5.6%
High school graduate	369[b]	22.4%
Some college	392[b]	23.8%
Trade/technical/vocational training	123[b]	7.5%
College graduate	316	19.2%
Postgraduate work/degree	305	18.5%
Missing	35	2.1%
Race[c]		
White	1432	86.9%
Black or African American	106	6.4%
American Indian or Alaska Native	66[d]	4%
Asian	13[d]	0.8%
Native Hawaiian or other Pacific Islander	7[d]	0.4%
Other	54[d]	3.3%
Not a single one specified	42[d]	2.5%
Religion		
Catholic	384	23.3%
Protestant	900	54.6%
Other	139	8.4%
None	175	10.6%
Missing	50	3.0%
How religious do you consider yourself to be		
Not at all religious	173	10.5%
Not too religious	233	14.1%
Somewhat religious	676	41%
Very religious	520	31.6%
Don't know	15	0.9%
Missing	31	1.9%
Political Liberalism		
Extremely Conservative	84	5.1%
Conservative	433	26.3%
Leaning conservative	159	9.6%
Moderate	470	28.5%
Leaning liberal	152	9.2%
Liberal	231	14.0%
Extremely liberal	66	4.0%

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Missing	53	3.2%

	M	SD
Authoritarianism (missing = 34)	3.72	.97
Age (missing = 0)	50.95	16.12
Personality Traits		
Extraversion (missing = 59)	2.93	1.04
Agreeableness (missing = 54)	2.50	0.74
Conscientiousness (missing = 42)	4.04	0.73
Neuroticism (missing = 53)	2.66	0.90
Openness (missing = 43)	3.90	0.73

NOTE. [a]These categories were combined for regression since too few respondents were in the 8th grade or less category; [b]These categories were merged since they are not clearly ordered in terms of increase in education; [c]Respondents could choose more than one; [d]These categories were combined since too few respondents were in them individually dummy code: "Race Other".

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Ordinal logistic regression with survey weights provided by the survey team was used to examine the role of our key variables as predictors of physician-assisted suicide. Analyses were run in Stata 14 (Stata Corp, 2015) and used the SPost commands (Long & Freese, 2014). Dummy variables were created for sex (male=1) using female as the reference category, and race (White, Black, American Indian, Asian, Native Hawaiian) using White as the reference category. Dummy variables were also created for religious denomination (Catholic, Protestant, other, and no religion) with 'no religion' as the reference category. For Education, we merged 8th grade with 9-12th grade because of the low numbers of 8th graders (n=16) in the data set. We also merged the categories High School Graduate, Some College, and Trade/technical/vocational training, since they are not clearly ordered in terms of increases in education level and reflect broadly equivalent levels of achievement.

The model revealed a number of significant effects. Support for physician-assisted suicide was positively predicted by age, level of education, being White (compared to being Black), having no religious denomination (compared to being Protestant or Catholic), higher levels of political liberalism, lower levels of religiosity, and higher levels of extraversion (see Table 3).

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Table 3. Results of weighted ordinal logistic regression analyses predicting Moral Sentiment Towards Physician-assisted Suicide; results presented in odds-ratios

	Observed Data[a]	CI95%	Imputed Data[b]	CI95%
Age	1.01**	1.00 - 1.02	1.01**	1.00 - 1.02
Education	1.18*	1.01 - 1.38	1.20*	1.03 - 1.40
Sex	0.83	0.64 - 1.07	0.84	0.66 - 1.07
Black[c]	0.21***	0.09 - 0.50	0.23***	0.11 - 0.46
Race Other[c]	1.12	0.73 - 1.70	1.09	0.74 - 1.59
Protestant[d]	0.45**	0.28 - 0.73	0.56**	0.36 - 0.86
Catholic[d]	0.46**	0.28 - 0.78	0.60*	0.37 - 0.97
Religion Other[d]	0.91	0.48 - 1.73	1.02	0.57 - 1.86
Religiosity	0.45***	0.38 - 0.54	0.48***	0.40 - 0.57
Political Liberalism	1.37***	1.25 - 1.50	1.35***	1.24 - 1.47
Authoritarianism	0.87	0.76 - 1.01	0.83*	0.73 - 0.96
Extraversion	1.19**	1.06 - 1.34	1.17**	1.05 - 1.31
Agreeableness	0.98	0.82 - 1.17	1.01	0.85 - 1.20
Conscientiousness	1.06	0.89 - 1.26	1.06	0.90 - 1.25
Neuroticism	1.15	1.00 - 1.34	1.21	0.97 - 1.29
Openness	1.05	0.87 - 1.27	1.05	0.88 - 1.26
Threshold 1	0.31	0.06 - 1.55	-1.05	-2.62 - 0.53
Threshold 2	0.79	0.16 - 3.92	-0.18	-1.75 - 1.39
Threshold 3	3.00	0.60 - 15.00	1.13	-0.44 - 2.70
Observations	1,427		1,598	

Note. *** p<0.001, ** p<0.01, * p<0.05; [a]Pseudo-R^2 = .16; [b]Based on 40 multiple imputation chained equation runs based on all independent variables; [c]White as reference category; [d]No religion as reference.

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As a sensitivity analysis we used multiple imputation by chained equations (Azur, Stuart, Frangakis, & Leaf, 2011) to impute missing values on the independent variables (40 imputations, 100 burn-in iterations, overall 4000 iterations). The imputed data results are presented in Table 3. The results from this subsidiary analysis remained largely unchanged from those in our principal analysis, with two exceptions. First, the odds ratio for Catholic (compared to No Religion) was notably different – changing from 0.46 to 0.60, and with wider confidence intervals – although still in the same direction and still significant. Second, authoritarianism was now formally significant, with higher values of authoritarianism predicting lower levels of support for physician-assisted suicide.

The ordinal logistic regression model assumes that the link function between each predictor and each category of the dependent variable has the same shape. This can be examined with the Brant test (Brant, 1990; Williams, 2006), which assesses whether binary logistic regressions result in the same set of regression coefficients, independent of how the dependent variable has been dichotomised (i.e., 1 vs. 2+3+4; 1+2 vs. 3+4; 1+2+3 vs. 4). The test indicated potential violations for four of the sixteen variables. For education level ($\chi^2_{df=2} = 10.10$, $p = .006$) the relationship with moral sentiment towards physician-assisted suicide decreased in strength from $b = .39$ to .06; for religiosity ($\chi^2_{df=2} = 21.21$, $p < .001$) the relationship decreased from $b = -1.11$ to -.62; for political liberalism ($\chi^2_{df=2} = 16.52$, $p < .001$) the relationship decreased from $b = .42$ to .18; and for openness ($\chi^2_{df=2} = 10.41$, $p = .006$) the relationship with moral sentiment towards physician assisted suicide increased from $b = -.01$ to .22. In summary, then, education level, religiosity, and political liberalism were predictors of moral sentiment towards physician-assisted suicide; however, the magnitude of these predictions was less

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pronounced among those holding higher levels of support for physician-assisted suicide. And the reverse was true for openness, here showing greater predictive power among those holding lower levels of support for physician-assisted suicide.

4. Discussion

A range of studies have examined individual differences in attitudes towards physician-assisted suicide, highlighting a number of predictors, including education level (Verbakel & Jaspers, 2010), religious denomination and religiosity (Cohen et al., 2006; Verbakel & Jaspers, 2010), authoritarianism (Kemmelmeier et al., 2002), and political ideology (Ho & Penny, 1992). Little work to date, though, has sought to examine the independent effects of such predictors. This is an important task because of the often moderate-to-large associations observed for variables such as religiosity, political ideology, and authoritarianism (e.g. Ludeke et al., 2013; Saucier, 2000). In addition, we sought to examine whether Big Five personality traits provided incremental prediction.

We observed a number of independent predictors of support for physician-assisted suicide: specifically, age (older respondents were more supportive), higher levels of education, being White (compared to being Black), having no religious denomination (compared to being Protestant or Catholic), higher levels of political liberalism, lower levels of religiosity, and higher levels of extraversion. Authoritarianism was not a significant predictor in our initial analysis, but in our sensitivity analyses (using multiple imputation to handle missing values) we observed that lower levels of authoritarianism predicted support for physician-assisted suicide.

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These results broadly conform to findings of previous studies (e.g. Kemmelmeier et al., 2002; Leinbach, 1993; Sørbye et al., 1995; Verbakel & Jaspers, 2010), although provide the additional information that the reported effects represent independent associations (see more discussion on this point below), as well as showing that personality – notably, trait extraversion – holds incremental prediction. It should be noted, however, that our finding of a positive association between extraversion and physician-assisted suicide sits in contrast to work by Aghababaei and colleagues (Aghababaei & Wasserman, 2013; Aghababaei et al., 2014; Wasserman et al., 2016) who reported negative links with agreeableness and conscientiousness, and positive links with openness. These contrasting findings might reflect differences between the US and Iran (where the majority of the prior personality/euthanasia research was conducted), or measurement instrument (TIPI vs. HEXACO), and so further research is recommended. More generally, these observations highlight that moral sentiment towards physician-assisted suicide reflect a large number of underpinning factors, some of which provide moderate prediction (e.g. religious denomination) whereas other factors are more modest in their levels of prediction (e.g. authoritarianism, extraversion). These results, then, highlight that physician-assisted suicide is a complex social issue with many underlying determinants.

A number of these findings are of particular interest. Prior to our study, while it was apparent that both religion and authoritarianism were associated with moral sentiment towards physician-assisted suicide, it was unclear whether these associations represented independent effects. As noted earlier, such a relationship may be a reflection of adherence to doctrinal teachings, or because of psychological characteristics that are

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associated with religiosity – e.g. rigidity to change, traditionalism, authoritarianism (Altemeyer & Hunsberger, 1992) – driving attitudes towards physician-assisted suicide. Our findings are consistent with both accounts, although the link with religious denomination was most pronounced and these results might be taken as evidence for the role of religious identity driving attitudes concerning physician-assisted suicide rather than rigidity to social norms per se. In addition, the results of the Brant test illustrate that some predictors may matter more for differentiating between those who are less supportive of physician-assisted suicide (i.e. Education, Religiousness, Political Liberalism), while others may only matter for differentiating between those showing greater support for physician-assisted suicide (i.e. Openness to Experience). To our knowledge such non-linear relationships have not yet been explored and thus may represent a promising avenue for future research.

Moral sentiment towards physician-assisted suicide and its determinants matter in several contexts. For example, patients' moral sentiments towards physician-assisted suicide are more favorable and homogenous once they are facing severe illness or death, which has been interpreted as a call for legislative/ societal action (Hendry et al., 2013). Attitudes of doctors (Cohen, Van Wesemael, Smets, Bilsen, & Deliens, 2012; Emanuel, Onwuteaka-Philipsen, Urwin, & Cohen, 2016) and the general population (as discussed above) are far more varied and see this as a more contentious issue. The determinants of moral sentiment towards physician-assisted suicide can thus help to clarify the underlying issues at least within a cultural context and help building a framework for discussion and consensus finding on this topic.

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4.1. Strengths and Limitations

A clear strength of the study is the use of a large survey sample, which improves on the quality of a number of related studies currently in the field (Anderson & Caddell, 1993; Ho & Penney, 1992; Kemmelmeier et al., 2002). It further allowed us to control for a number of factors that are known to be relevant correlates of attitudes towards physician-assisted suicide. In addition, the use of an imputation procedure as a sensitivity analysis further reduced bias introduced by selective non-response.

A number of limitations require mention. Firstly, our single-item measure of moral sentiment towards physician assisted suicide. The term, although previously accepted as interpreted similarly to active euthanasia (Baume et al., 1995), does not differentiate between active and passive euthanasia, leaving the potential for open interpretation by participants. In addition, the observation of non-linear prediction of moral sentiment towards physician-assisted suicide may reflect methodological artifacts such as response-styles (Wetzel, Böhnke, Brown, 2016) that are more prevalent in single-item measures. Future work, then, is recommended to use more sophisticated assessment of attitudes regarding physician-assisted suicide. Secondly, this study used archival data and was unable to determine the selection of questions. As such, we were unable to include some broader variables that previous studies have found to be relevant, such as individualism (Kemmelmeier et al., 2002). In addition, the abbreviated version of our measures for authoritarianism (3 items) and Big Five traits (2 items per dimension) were not ideal (see reliabilities reported in method section). The challenge of balancing large-scale data collection with psychometrically sound instruments is well-known especially for personality research (Gosling et al., 2003; Rammstedt, & Beierlein, 2014). It is

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important to note, however, that scales with just a small number of items, particularly when attempting to assess a broad construct space, such as is the case with Big Five personality traits, will typically produce conventionally unacceptable internal reliability estimates (Rammstedt, & Beierlein, 2014). With this in mind, some authors have recommended using alternative metrics for validating short-form instruments, such as test-retest reliability and convergent validity (Rammstedt, & Beierlein, 2014; Ziegler, Kemper, & Kruyen, 2014). Of note, the TIPI has shown acceptable performance in both of these domains (Gosling et al., 2003; Rammstedt & John, 2007) indicating the utility of this instrument. Nonetheless, such brief instruments should only be used when time constraints force the choice between a short-form personality assessment versus no personality assessment (Rammstedt, & Beierlein, 2014). Therefore, future work is recommended to use longer-form measures or adaptive assessments (Makransky, Mortensen, & Glas, 2013) in order to more accurately assess personality traits and their links to attitudes concerning physician-assisted suicide. Fourthly, while the significant predictors were largely robust across the full range of the dependent variable, we observed that this was not the case for education, religiosity, political liberalism, and openness. These variables were less able to differentiate respondents at the top end (at the bottom end for openness) of our dependent variable. Finally, while this was a large survey sample and the use of the survey weights should adjust for over-/under-sampling from the US population, our results are limited in their ability to be generalized outside the United States as there are wide differences in euthanasia attitudes across European countries, depending on factors such as religious belief and national traditions (Cohen et

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al., 2006). Moreover, this data was collected in 2007 and attitudes toward euthanasia change over time (Danyliv & O'Neill, 2015).

4.2. Conclusions

In conclusion, this study built upon previously identified predictors of attitudes toward physician-assisted suicide by controlling for other, often linked, predictors and determined that education, race, religious denomination, strength of religiosity, political orientation, and authoritarianism were all independent predictors of these attitudes. In addition, we found that extraversion provided incremental prediction for attitudes towards physician-assisted suicide.

5. Declaration of Conflicting Interest

The authors declare that they do not have any conflicts of interest.

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