Religion, religiosity and the attitudes towards homosexuality - A multi-level analysis of 79 countries

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Author Note

Abstract

Although the attitudes towards homosexuality have become more liberal, particularly in industrialized Western countries, there is still a great deal of variance in terms of the worldwide levels of homonegativity. Using data from the two most recent waves of the World Values Survey (1999-2004, 2005-2009) this article seeks to explain this variance by means of a multi-level analysis of 79 countries. We include characteristics on the individual level, as age or gender, as well as aggregate variables linked to specificities of the nation-states. In particular, we focus on the religious denomination of a person and her religiosity in order to explain her attitude towards homosexuality. We find clear differences in levels of homonegativity among the followers of the individual religions

*Keywords***:** Homosexuality, Attitudes, Homophobia, Multi-level analysis, World Value Survey, Religion, Religiosity

Introduction – Research questions and semantic clarifications

Homosexuality seems to have become a socially acceptable part of daily life in many western industrial countries. At least this is what anecdotic evidence suggests: Today, gay and lesbian neighborhoods exist in almost every big city and attract homo- as well as heterosexuals; more and more celebrities – actors, sportsmen and politicians – show their homosexuality publicly; homosexual marriage as well as lesbian and gay adoption is possible in an increasing number of countries; and seeing the recent statements of President Obama lesbian and gay marriage can no longer be regarded a political taboo in the United States. Survey data corroborate this impression: For instance, the number of people from Germany, Spain or Sweden who would not like to have homosexuals[1] as neighbors has steadily declined over the past years.

However, this trend of declining homonegativity[2] in many western countries is less clear if one looks at other regions of the world: in several countries, such as Turkey or China, the percentage of people who would be opposed to having homosexual neighbors has remained mostly constant. In those countries, the reactions to gay and lesbian people are the same as 20 years ago. Thus, according to the results of the most recent wave of the World Values Survey (WVS) (2005-2007), the average levels of homonegativity lie very far apart from one another in a worldwide comparison.

This high level of cross-country variance leads us to the fundamental question: How can the varying degrees of homonegativity be explained? In focusing primarily on religion and religiosity as determinants of homonegativity this article takes a specific perspective, while well-known determinants of homonegativity such as age or education are controlled for. Consequently, the precise research question is as follows: How can adherence to a religion and the religiosity of an individual explain his or her homonegativity?

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[1] In this article, the word "homosexual" refers likewise to gay and lesbian people. Not only in public debates but also in surveys the difference between gay and lesbian people is not always explained, thus the word "homosexual" is often equalized with the word "gay". We recognize that this may lead to a false interpretation of the attitudes towards lesbian people. Due to constraints of the data – not distinguishing between attitudes towards lesbians and gays – this problem cannot be sorted out. All statements and wording on homosexuality and homosexual people in this article are to be understood with this in mind.

[2] We avoid using the term *homophobia*, as its etymological roots imply debates over the causes of fear of homosexual people. While these debates are legitimate, these debates are not to be mistaken for the structures of prejudice that are in the focus of our analysis.
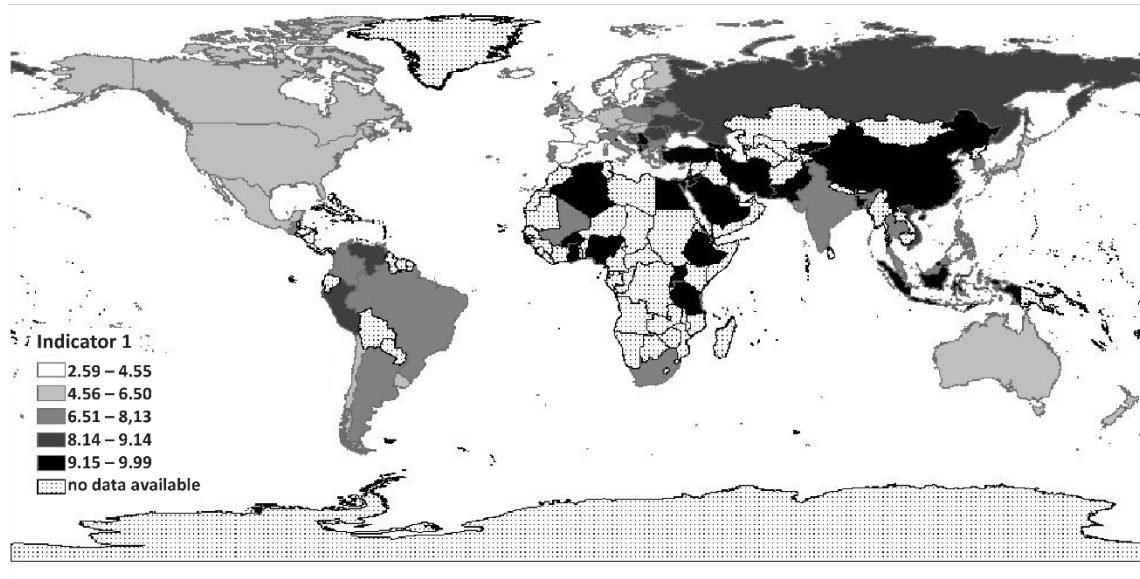
Figure 1
Homonegativity throughout the world

Figure 1. Map from: http://www.aprsworld.net/gisdata/world/.
Color classification according to the Jenks optimization method.
Source: WVS Question 38.

For the purposes of this article, homonegativity should be understood as an aversion to homosexuality as a social practice or way of life. To measure this concept we use a question of the WVS that asks whether homosexuality can be justified. This question can be answered on a scale of 1 to 10 where 1 means "always justifiable" and 10 stands for "never justifiable". The map in figure 1 shows not only the geographic variation but also a certain regional clustering of this indicator.

Some studies identify a further aspect of homonegativity which involves the question to what extent a person exhibits a negative, biased attitude towards gays and lesbians as individuals (going as far as aggressive prejudices and feelings of hate). These works show that homonegativity understood as a way of life and homonegativity understood as attitudes against individuals are two only partly corroborative aspects of the same phenomenon – both in terms of the theoretical conception as well as the empirical manifestation (Ford, Brignall, VanValey, & Macaluso, 2009; Štulhofer & Rimac, 2009). Even though we primarily use the first definition of homonegativity as discussed above, we will still cross-check whether the alternative concept leads to divergent results. We capture this second aspect of homonegativity using the already mentioned WVS question whether one dislikes a homosexual person as a neighbor (scale: 1 to 3) – an indicator that has been used in previous studies as well (Štulhofer & Rimac, 2009, p.

27)[3] Correlating the country averages for these two operationalizations of homonegativity shows that in spite of a strong correlation (r=0.81**), at the same time there are certain disparities which justify the cross-check of our results.

In addition to a high inter-country variation and differences between the two indicators, Table A1 in the annex reveals another striking result: The distribution of the values is heavily right-skewed, i.e. the values are highly concentrated on the homonegative side. Furthermore it is noteworthy that the range of the scale is not exhausted on the homopositive side of the scale: while the average of all polled Egyptians (9.99) is almost identical with the possible maximum value of homonegativity, the empirical mean for Sweden (2.59) as the least homonegative country still lies well above the minimum of the homonegativity scale.

Building on this descriptive overview, the following section will introduce a model to explain the variation between countries of attitudes toward homosexuality. We will focus in particular on the influences of religion and religiosity on homonegativity, and discuss several control variables, that have proven to be influential in previous research. Before turning to a statistical test of our theoretical expectation (section 4), we will briefly discuss the data and methodological issues. The final section concludes.

Previous research and theoretical implications

Our theoretical model touches upon two levels of analysis – the micro- and the macro-level. On the *micro-level*, individual characteristics can be expected to shape the attitudes of a person towards homosexuality. Previous studies have identified a slew of socio-demographic variables which influence a person's homonegativity – such as education, age, gender etc. (for an overview, see Kulik, 2005). These factors will be treated as covariates in the following analysis controlling for well-known associations. More importantly, our research question which asks if religion and religiosity impact on the homonegativity of a person is also located on the micro-level. The first part of this section will give some theoretical reasons why we expect a relationship between religion, religiosity and the attitudes towards homosexuality and what kind of relationship this could be. Moreover, we briefly summarize the theoretical underpinning for the covariates as well as the empirical connections found in previous studies.

On the *macro-level* characteristics of nation-states are expected to influence the homonegativity of individuals living within the specific country. We discuss these aggregate

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[3] Due to its larger range of values (10-point scale) the first operationalization of homonegativity, perceiving it as an objection to a social practice, is better suited for the actual analysis than the neighbor-variable – at least from a statistical point of view. Measuring on a three point scale and thus containing less information, this second operationalization seems to be predestined for the cross-check. An overall more precise operationalization of homonegativity is thwarted by the lack of data. In contrast to socio-psychological research, where much effort is made to construct homonegativity-scales out of a wide range of interview questionaire items (usually by means of a factor analysis) which best measure homonegativity (Davies, 2004; Hudson & Ricketts, 1980), the dependent variables used in this article have to be based on the existing data and therefore the questions of the WVS, which inevitably results in decreased accuracy. Many studies that do not conduct their own autonomous fieldwork and therefore must rely on secondhand data encounter this problem (Hooghe, Claes, Harrell, Quintelier, & Dejaeghere, 2010; Ohlander, Batalova, & Treas, 2005).

factors, such as economic development or the legal framework, in the second part of this section. The final part focuses on cross-level-interactions between the micro- and the macro-level.

Explanatory variables on the individual level

On the individual level, attitudes to homosexuality can be linked to a number of different explanatory factors. In this paper, we focus in particular on the effects of the religiosity and the religious affiliation of an individual. As there is a certain (theoretical) connection between these variables and the degree of 'postmodernism' of an individual, we discuss postmodernism along with religion in the following sections. In addition, a number of indicators which can be subsumed under the category 'socio-demographic factors' have proven to be explanatory in many empirical studies. These will be included in the statistical analysis in order to single out the influence of religion and religiosity. Table 1 gives an overview of these well-documented relationships which will therefore not be discussed in more detail here.[4]

Table 1

Factors influencing attitudes towards homosexuality on the individual level

Independent variable	Expected influence on attitudes versus homosexuality	Theoretical or empirical evidence for this relationship from previous studies
Age	Older → more homonegative	(Britton, 1990; Hayes, 1995; G. M. Herek & Gonzalez-Rivera, 2006; Michael et al., 1999)
Sex	Men → more homonegative	(Berkman & Zinberg, 1997; Finlay & Walther, 2003; Hudson & Ricketts, 1980; Kelley, 2001, p. 18; Kite, 1984; Oliver & Hyde, 1993; Schwartz & Lindley, 2005; Whitley Jr., 1995)
Education	Low level of education → more homonegative	(Hayes, 1995; G. M. Herek & Gonzalez-Rivera, 2006; Lambert, Ventura, Hall, & Cluse-Tolar, 2006; Ohlander, Batalova, & Treas, 2005; Walch, Orlosky, Sinkkanen, & Stevens, 2010).
Income & social status	Lower income/social status → more homonegative	(Sidanius & Pratto, 1999; Sidanius, Pratto, & Bobo, 1994; Six, 2009; Triandis & Triandis, 1960
Martial status	Married people → more homonegative	(Adamczyk & Pitt, 2009; Gregory M. Herek & Capitanio, 1995)
Size of family	Bigger size → more homonegative	(Adamczyk & Pitt, 2009)

[4] In addition to the here mentioned explanatory variables, a further set of individual factors is often tested through an "implicit association test" (IAT), particularly in psychology. These individual factors include, for example, having homosexual people as acquaintances, self-reported gender role characteristics (Black & Stevenson, 1984), as well as the essential extent of prejudice against minority groups or "right wing authoritarianism". Without having any primary data, these factors can nevertheless only be tested approximately using the data available from the WVS.

Religious affiliation and homonegativity.

The association between religious affiliation and homonegativity has been hitherto analyzed from two perspectives: on the one hand from a more moral-philosophical-theological and on the other hand from a psychological point of view.

Studies that examine this association from a moral-philosophical-theological viewpoint attempt to locate the basis for homonegativity within the holy writings of the individual religions, as well as within the interpretations thereof (Moon, 2002; Swidler, 1993). Previous research gains its insight mainly from the qualitative observation of single religions (for example Braun, 1993; Ellison, 1993; Wawrytko, 1993) whereas a genuine comparison of the positions of different religions toward homosexuality has not been conducted yet. However, a comprehensive assessment of these single case studies and the implicit comparisons of religions suggest that in particular Islam and – although to a lesser extent – Catholicism represent particularly homonegative positions (Carmody & Carmody, 1993; Duran, 1993; Simon, 2008). Buddhism and Hinduism seem to be less homonegative (Cabezón, 1993; Sharma, 1993).

Based on the findings of previous studies, religions can be qualitatively classified in order to make a systematic comparison feasible. We will use a rough ordinal ranking, based on an evaluation of the religions on three characteristics that have been extracted from previous research: The first criterion evaluates in what way homosexuality has a negative connotation in the holy writings of a religion, and particularly whether it is tied to a religious ban (for example not only in the Qur'an [sura 4 verse 16; sura 7 verses 80-81] but also in the Bible [Leviticus 20, 13; Romans 1, 25-27] can one find places which are, at least in conservative interpretations of same-sex acts, especially between men, classified as fornication and therefore sin). The second criterion assesses how religious leaders position themselves vis-a-vis the topic and how strong their influence on their followers is (in Catholicism, for example, Pope Benedict XVI is a religious leader who firmly spoke out against homosexuality[5] and who is a moral authority of a certain weight for believers). Finally, the third criterion evaluates how strongly pronounced the fundamentalist subgroups on the one hand and liberal currents on the other within each religion are.[6] An analysis of the secondary literature on the religions (Bellinger, 1993; Klöcker & Tworuschka, 1984; Laun, 2001; LSVD Berlin-Brandenburg e.V., 2004; Mohr, 2003; Swidler, 1993) enables us to create a matrix with the rough evaluations of each religion (high-medium-low) with respect to the three criteria developed above (Table 2).[7] We did not include the third

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[5] In his Christmas address to the Roman Curia in 2005, the Pope said that disrespecting the Catholic principle of "human being as man and woman" amounts to a "self-destruction of man himself, and hence the destruction of God's own work" (Benedict XVI, 2008).

[6] According to Jan-Erik Lane (Lane, 2008, p.232), religious fundamentalism constitutes one of the greatest challenges for a global and open society. This is especially true when fundamentalist preferences are officially accepted or even actively supported in a country. In Islam (Oliver Roy, 2004), in Evangelical Protestant Free Churches (Harris, 1998), as well as in Hinduism (Bhatt, 2001) particularly fundamentalist trends can be found. Radical Hinduism goes along with a strong nationalist component that advocates in particular a distinction with respect to Islam (cf. the Pakistan-Kashmir conflict) and is therefore less concerned with the moral-religious level than Islamic or Christian fundamentalism.

[7] Our coding of faith traditions is definitely a very crude measure and we would have loved to improve it by parsing out more theologically conservative types of certain religions from their more liberal counterparts, as one of the

large monotheistic religion, Judaism, as 1) there is no data on homonegativity for Israel – the only country where Jews are the majority – in the WVS and 2) as the USA, another country with a significant Jewish population had also to be excluded because of a lack of data for other WVS-variables (s. table A1). Hence, testing the impact of Judaism *without* Israel and the USA in the sample would distort our results heavily.

Table 2
Comparison of religions according to their stances towards homosexuality

	Islam	Roman Catholic/ orthodox Christianity	Traditional (European) Protestantism	Protest. Free Churches	Hinduism	Buddhism	Taoism/ Confucianism
Holy Scripture	high	high	high	high	low	low	low
religious leaders	high	high	low	average	low	low	low
fundamental/liberal groupings	high	low	low	average	low	low	low

Note: qualitative classification based on the following secondary literature (Bellinger, 1993; Klöcker & Tworuschka, 1984; Laun, 2001; LSVD Berlin-Brandenburg e.V., 2004; Mohr, 2003; Swidler, 1993).

As we only want to create a rough assessment of the religions with respect to their homonegativity, the three aspects are weighted equally for aggregation. This gives a ranking of religions, where Islam is the most homonegative religion, whereas Buddhism, Taoism, and Confucianism are the least homonegative religions. However, assuming that all religions tend to promote homonegativity[8], Atheism constitutes the end of the scale:[9]

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anonymous reviewers rightfully observes. However, there is nothing like the RELTRAD measure (Steensland et al., 2000) which enables researchers to classify faith traditions in the United States in a very concise way (particularly regarding the nuances in between the different Protestant denominations) that we could use for our analysis on a global scale. Neither is it possible based on the available WVS-data to create a further religious attitudes measure using for example literalism or inerrancy. These factors are just not asked in the WVS. Yet, we tried to build our categorization of religions on three criteria that cover a broad array of aspects relevant for the positioning of a religion with respect to the other faith traditions on a liberal-conservative scale. Furthermore, scriptural attitudes like inerrancy or literalism are important for the question of religiosity and we assume these two factors to be major determinants for the values of our religiosity measure (s. 2.1.2).

[8] This assumption for sure does not hold for every religious subgroup as for example in the United States there are certain denominations that have concrete gay and lesbian friendly policies at work, like the Evangelican Lutheran Church in America. This denomination opened its ministry in 2009 to "gay and lesbian pastors […] living in commited relationships" (ELCA News Service, 2009). We want to thank one of the anonymous reviewers for bringing up this fact. Yet, these denominations are still exceptions proving the rule that religions in general tend to promote homonegativity.

[9] There is difficulty in assigning some of the religions asked in the WVS (e.g. Bahaism, Jainism, and Zoroastrianism) to the bigger religions; they were therefore placed in a residual category which will not be further analyzed.

1. Islam[10]
2. Catholicism/Protestant Free Churches/Orthodox Christianity[11]
3. Traditional (European) Protestantism
4. Hinduism
5. Buddhism/Taoism/Confucianism
6. Atheism

Building on this operationalization of a religion's position on homosexuality, the influence of an individual's religious affiliation on its homonegativity can be investigated empirically. A positive association would mean that the positioning of a religion (in its writings, through its leadership, as well as its degree of fundamentalism) is reflected in the attitudes of the individual believer.

In contrast to the moral-philosophical-theological approaches, psychological studies approach the question of correlation between religion and homonegativity empirically. They research less the influence of various religions on the attitudes toward homosexuality; rather, they investigate which variables condition the correlation between a particular religious affiliation and the homonegativity of an individual. As experiments or interviews are often the foundation of analysis in psychology, studies are not dependent on secondary data and can therefore address more specific questions.

Despite fundamental methodological problems and despite the results of these studies are highly controversial within religious psychology, two psychological findings play a crucial role for the focus of this paper. First, the finding that self-reported homonegativity does not necessarily correspond to the implicitly existing aversion to homosexuality (Rowatt et al., 2006, p. 403; Steffens, 2005) is an outcome that can be seen as a relativization for all the results reported later.[12] The second aspect taken from psychological studies which is crucial for our argument is if intrinsically and extrinsically motivated individuals have significantly different structures of prejudice in general and how these structures impact on their attitudes on homosexuality. How to distinguish intrinsic from extrinsic motivation? Allport and Ross (1967, p. 434) determine the difference as follows: "the extrinsically motivated person *uses* his religion, whereas the intrinsically motivated *lives* his religion." Looking at the impact on homonegativity, an interaction effect is postulated where the kind of religious motivation

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[10] Studies written from a Muslim perspective – and thus not being Western biased – also show that (male) homosexuality is not as accepted in the Muslim world than for example in Western countries. These studies nevertheless emphasize that Muslims do not irrationally fear homosexuality, but they disapprove of it and this disapproval would not be irrational (Halstead & Lewicka, 1998; Sarwar, 2004).

[11] Catholicism and the Protestant Free Churches were assigned the same rank. This is because the religions do not differ in their holy texts; and though the Catholic leadership is more explicit in its rejection of homosexuality, this is offset by the greater influence of the fundamentalist currents of the Protestant Free Churches (Barton, 2010). With the Orthodox Christianity being comparable to the Catholic Church in terms of its organisational structure as well as its rigidity of religious statements, it is placed under the same category as well.

[12] In comparison to the measures that collect an implicit aversion, self-evaluations are subject to a greater risk of conscious manipulation and bias due giving "socially acceptable" answers (Banse, Seise, & Zerbes, 2001).

influences the correlation between religion and homonegativity. An example is an extrinsically motivated person, whose attitude relies heavily on the statements of fellow believers as well as religious leaders. This person is expected to be particularly homonegative if their peers and religious leaders speak out decidedly against homosexuality. It is conceivable that the attitude of an extrinsically motivated person would be built upon the abbreviated and therefore most likely more radical commentary of religious authorities. In comparison, intrinsically motivated persons will occupy themselves intensely with the foundations of their religion and in doing so will possibly come to a more sophisticated and therefore more liberal view of homosexuality.

The empirical evidence for the effects mentioned above as well as for further potentially relevant interaction effects between motivation and religion is mixed. All previous studies identify differences between intrinsically and extrinsically religiously motivated individuals, yet they do not agree on how the different motivations affect homonegativity (Fisher, Derison, Polley Iii, Cadman, & Johnston, 1994, p. 628; Ford et al., 2009, p. 147f.; Herek, 1987, p. 34; Wilkinson, 2004, p. 64). In order to contribute to the on-going discussion on an empirical basis, the extrinsic and intrinsic motivation of an individual as a conditional influence (interaction effect) will be tested. The operationalization bears particular problems as the WVS does not explicitly ask to what extent an intrinsic or extrinsic religious motivation is present. Following the assumption that the general extrinsic/intrinsic motivation of people also impacts on their attitude in relation to religious matters, the agreement to the following statement is considered as a proxy for extrinsic/intrinsic motivation: "I make a lot of effort to live up to what my friends expect" (WVS question 66).

Religiosity and Homonegativity.

According to the theory of value change, modernization processes in all societies are "conditioned by cultural and religious traditions" (Inglehart & Norris, 2003, p. 49). In societies characterized by a high proportion of postindustrial-oriented individuals, modernization went hand in hand with a secularization process which reduced the importance of religious (in this case Christian) values. In general, Inglehart and Norris find Max Weber's thesis of growing secularization (1920) to be confirmed. Concurrently, the authors identified a process of social liberalization characterized by the change of attitudes to classically religious topics such as abortion, prostitution, divorce, or homosexuality. In any case, the underlying mechanism of this covariation cannot be adequately explained due to the purely descriptive approach of the study, even if they see the reduction of religiosity as the causal explanation for liberalization.[13]

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[13] Concerning the primarily studied subject of gender equality, Inglehart and Norris refer to works from sociology, social-psychology, and anthropology which view religion in general as one of the "most important agencies of socialization determining social norms and moral values with regard to gender equality," (Inglehart & Norris, 2003, p.50). Furthermore they see the active attempts of single religions to strengthen social norms such as the subordination of women as an indication of a connection between secularization and a growing support for "gender equality".

Even if an indisputable weakening of religious values in postindustrial societies can be observed over time, religious aspects will continue to play a big role for the norms and social practices of everyday life as a substantial variance especially of religious values persists in the cross-section of countries (Inglehart & Baker, 2000, p. 46f.). It is for this reason that religiosity continues to be a possible explanation for the varying levels of homonegativity (a negative relationship between religiosity and homonegativity is expected). The religiosity of an individual is evaluated through two questions of the WVS: first the WVS evaluates if the respondent describes him- or herself as a religious person, a non-religious person, or an atheist (scale of 1 to 3); the second question assesses what importance God plays in the respondent's life (scale of 1 to 10).

Furthermore, an interaction effect for religiosity is expected (see above): The religiosity of followers of those religions which project a negative picture of homosexual people should impinge more strongly on homonegativity than the religiosity of the followers of religions which adhere to a more positive view of homosexuals. A second interaction effect should also occur in relation to religious motivation: the extrinsic and intrinsic motivation conditions the association between religiosity and homonegativity (see above).

Homonegativity and Postmodernism.

A prominent thesis from the value change literature postulates that post-materialist people have more positive attitudes toward homosexual people (Inglehart & Norris, 2003). Inglehart created the widely used four-stage Post-materialism Index (Inglehart, 1977) which is based on the WVS and can therefore be applied to both crossnational as well as temporal comparisons.[14] Regarding the research question on determinants of homonegativity, an association can be expected between the values of the index for one person and their attitude toward homosexuality: the more postmodern a respondent, the less pronounced their level of homonegativity.

Figure 2 sums up the expected associations on the individual level between religion, religiosity, postmodernism and the socio-demographic controls.

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[14] While the composition of the post-materialism index is criticized as insufficient, the basic assertion of the trend of modernization is largely undisputed (Kadishi-Fässler, 1993; Klages, Hippler, & Herbert, 1992).

Figure 2
Expected relationships on the individual level
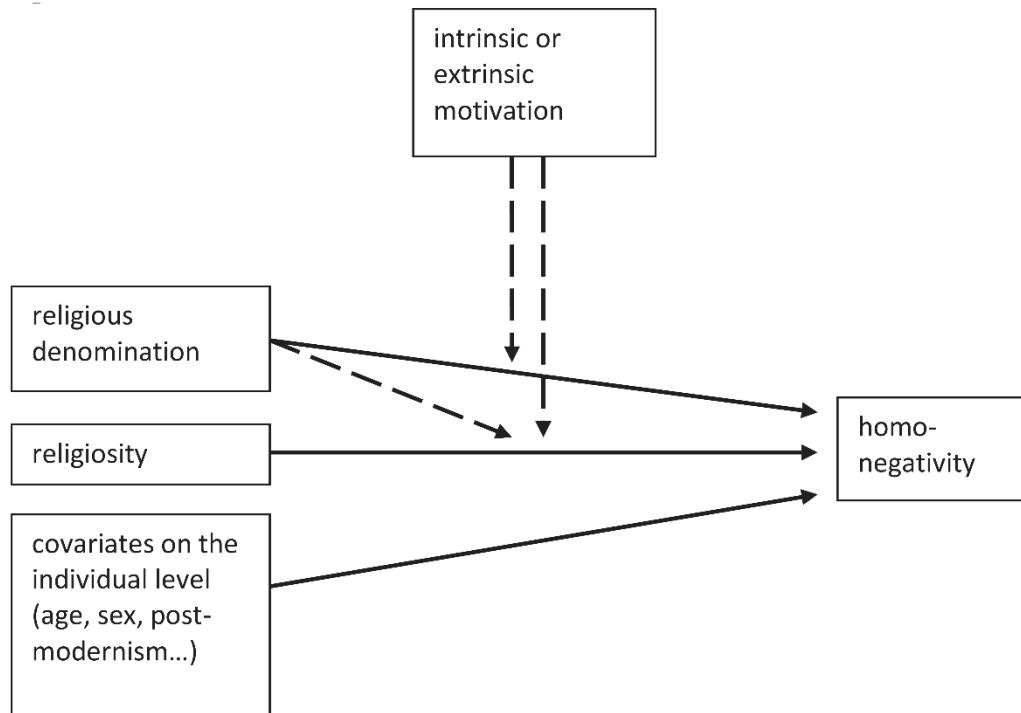
Explanatory Variables on the aggregate level

Moving away from the individual factors, it is reasonable to expect that characteristics on the country level are also responsible for the variance of attitudes to homonegativity. The data presented in the first section of this paper reinforces this thesis, as there exist substantial differences between countries.[15]

One often-mentioned influence on the aggregate level is the economic performance of a country. The results of previous studies suggest that societies with higher gross domestic product per capita are more tolerant toward homosexuality (Kelley, 2001, p. 19; Štulhofer & Rimac, 2009, p. 28f.). An explanation for this may be that people who are fighting to survive are generally less tolerant of minority groups and turn towards stronger, more conservative family values. In contrast, a person who lives in financial wellbeing has the leisure to be concerned with her subjective wellbeing, quality of life, and self-realization (Amy & Pitt, 2009, p. 339f.).[16] In this paper, the Human Development Index (HDI) that includes not only economic performance but also education and life expectancy, was tested in addition to the GDP.

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[15] The intra-class-correlation coefficient (see section 3) shows that the cross-country differences are indeed considerable.

[16] The purely economic argument can be linked to the shift from "survival orientation" to "self-expression" as described by Inglehart (1977); it can be applied as a characteristic of value change and its correlation to changed attitudes toward socially controversial topics such as prostitution or gender equality has been verified (Inglehart & Baker, 2000; Inglehart & Norris, 2003; Inglehart & Welzel, 2006).

As a second aggregate variable, Adamczyk and Pitt test the legal framework concerning homosexuality (ibid.2009, p. 346f.) (without finding a significant effect). The basic assumption is that liberalizations of the legislation or particularly strict legal bans will have repercussions on the individual attitudes toward homosexuality.[17] The recent developments in France where the introduction of a legislative bill allowing same-sex marriage was highly disputed in the public show very clearly that the impact of the legal framework is important in this respect. However, as the public in the French case show, the overall effect on attitudes might well go in both directions: It might well strengthen the homonegative attitudes of those already homonegative and the positive views of those that are already in favor of same-sex marriage.

In this article, the legal side will be examined on the basis of three different variables: First, if a country has signed the Declaration on Human Rights, Sexual Orientation and Gender Identity as introduced to the General Assembly of the United Nations (Herek, 1998; Pleming, 2009; UN, 2008) (Coding: 1 = support, 0 = indifference, -1 = rejection). The second variable in the analysis counts the number of years since homosexual practices became legal. The presumption here is that a society only accepts legal norms after a certain period of time. Therefore, countries where homosexuality was legalized comparatively early should have low homonegativity (Ottosson, 2009).[18] Third, an index comprised of data from the International Lesbian, Gay, Bisexual, Trans, and Intersex Association (ILGA) will be tested. This unweighted and additive index is created from the following four indicators: the legality of same-sex contact between men (legal = 1; illegal = 0), the possibility of same-sex marriage (marriage = 1; legal substitute = 0.5; no possibility = 0)[19], the possibility of adoption for homosexual pairs (adoption is possible = 1; partially possible = 0.5; not possible = 0), and the inclusion of sexual orientation in anti-discrimination labor laws (discrimination based on sexual orientation forbidden = 1; partially forbidden = 0.5; no legal provision = 0). It is assumed that the signing of the declaration, a liberal legal situation, as well as an early legalization or long period of legalization is reflected in the society and therefore in the individual attitudes.

A further possibly influential aggregate variable that should be tested is the degree of urbanization. This is without a doubt bound to industrialization and modernization and therefore correlated to a country's state of development. But beyond that, a specific influence of urbanization can be assumed: as cities, due not only to their size but also to their impersonal nature, present better opportunities for minority groups such as homosexual people to meet and

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[17] However, the opposite causal effect, where a liberal attitude already manifested within the society is set into law after a certain delay, should not be excluded. But even in such a case, a correlation between the legal configuration and the attitudes of the population should be found.

[18] There is without a doubt a problem of endogeneity with these particular variables: it is also plausible that attitudes toward homosexuality are not a result of legal provisions, but rather, that legal punishments for homosexual practices arise from predominant homonegativity within a society. Even if causality will not be clarified here, this article presumes the formative power of laws on society.

[19] The separate treatment of the legality of lesbian practices is here knowingly forgone, as the data is worse than that of gay men. The legality of gay contact also poses a harsher test than that of lesbians: when homosexual practices are forbidden between women, they are also forbidden between men. On the contrary, there are cases where homosexual practices between men are forbidden, however, they are allowed between women (such as in Ghana or Bangladesh).

to take part in social life (Florida, 2002; Lauria & Knopp, 1985)[20], homosexual people are more visible in public in urban areas than in rural regions.

Finally, it is assumed that a country's communist history influences the attitudes of its citizens toward homosexuality. The theoretical argument is as follows: as in socialism homosexuality is regarded as a phenomenon of a bourgeois and degenerate society (Kon, 1993, p. 99ff.), this heritage should (via socialization of the citizens) continue to have a negative effect on peoples' attitudes towards homosexuality. This logic may also apply to countries which are still communist – and explain the high level of homonegativity in China, for instance (see Fig. 1).[21]

Cross-Level Interactions

Correlations between independent and dependent variables are often not only linear-additive, but conditioned through a third variable: either through specific contexts or particular constraints (Brambor, Clark, & Golder, 2006, p. 63). Such effects can be statistically modeled as interactions (or as multiplicative terms in a regression equation).

With respect to the causes of homonegativity, several conditional effects can be expected. First, interaction effects on the individual level are probable as discussed above (cf. section 2). In addition, country-specific contexts affect very likely not only the *level* of homonegativity (main effects of the aggregate level), but also certain *relationships* on the individual level ("cross-level interactions"). Such an interaction concerns the hypothesis that the influence of religiosity on homonegativity is probably conditioned by communist heritage. Two variations are theoretically possible: on the one hand, it could be expected that the effect of religiosity on homonegativity in (post-) communist countries is weaker, because of the goal of communist ideology to systematically drive back religion and the church (Sedler, Schurich, & Schumann, 1995; Seidel, 2002). On the other hand, one could also argue that respondents in (post-)communist countries who indicate that they are religious are more strongly religious than in the rest of the world. As this very active decision in favor of a religion in the face of a non-religious surrounding should imply a more intensive occupation with the traditional teachings and therefore lead to a stronger adoption of religious and moral beliefs and ideas.[22] Accordingly, religiosity could also be a more influential factor with regard to attitudes towards homosexual people than in non-communist countries. In order to test the two competing theoretical expectations, a cross-level interaction between (post-) communism and the relationship between

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[20] Practical examples include urban neighborhoods that are known for their high proportion of homosexual residents and which have over time developed to generally fashionable neighborhoods, e.g. "Le Village" in Montreal, "The Castro" in San Francisco, or the "Glockenbach" quarter in Munich.

[21] Qualitative evidence nevertheless shows that attitudes are changing relatively fast towards a greater acceptance of homosexuality in nowadays China. Since 1997 when the hooligan law was abolished homosexuality is no longer seen as a crime and especially in cities like Shanghai or Hong Kong an open gay and lesbian scene could emerge largely unhindered by official authorities (Lau, 2010).

[22] The increasing relevance of converts within terrorist groups such as Al Qaeda fits this pattern of argumentation (Olivier Roy, 2010). Their worldview is often far removed from cultural roots and it presents a one-sided exaggeration of single aspects of a religious teaching.

religiosity and homonegativity will be tested in the analysis. The interaction effect following the first hypothesis is displayed in Figure 3 (an illustration of the second hypothesis would mean the interchange of the two lines).

Figure 3

Cross-Level-Interaction: post-communism and religiosity
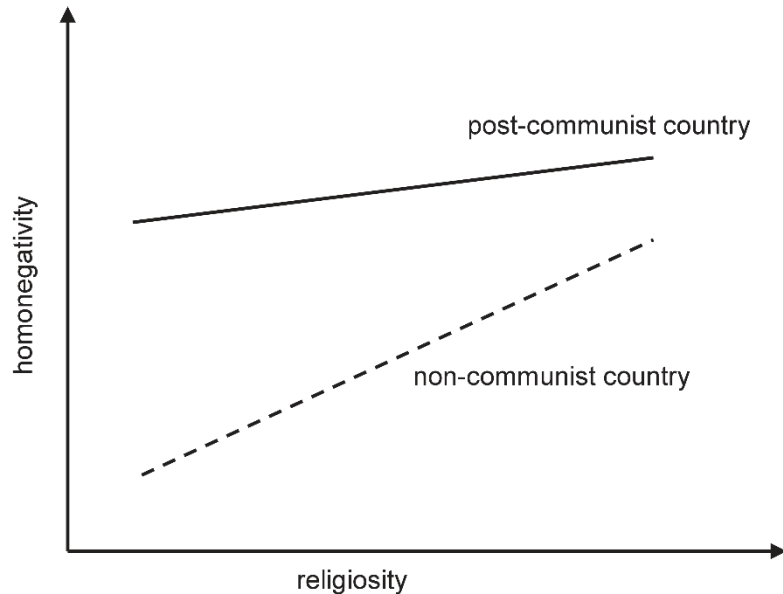
Figure 3. Technically speaking it is not correct to graph the marginal effects as a line, because the conditioning communism-variable is a dummy. For the sake of including both interaction effects in one figure this slight loss of preciseness may be tolerated.

Data and Methods

The selection of an appropriate analytical method depends on the research question, the underlying basis for the research design, and the structure of the data (Tacq, 1997, p. 31). For the investigation of the determinants of homonegativity, a multi-level analysis is appropriate, as the dependent variable is on the micro-level and the explanatory variables are on both the micro- as well as the macro-level. The databases used for this analysis, in addition to the WVS (for the variables on the individual level), include various international comparative databases (for the variables on the aggregate level): World Religion Database, CIA World Factbook, the database of the International Lesbian, Gay, Bisexual, Trans, and Intersex Association, and the database of the Human Development Report of the United Nations.

Whether a multi-level analysis is necessary will be identified through the inspection of the data structure and the calculation of the intra-class correlation coefficient (ICC). A multi-level analysis enables not only the investigation of the correlation between individual attributes and the dependent variables, but to concurrently integrate the country-specific differences

through the consideration of the respective error terms. The flexibility of the method lies in the ability to drop the error terms, if the assumption of country-specific differences does not hold. This is particularly relevant for error terms which assume that there are differences not only in level (random intercept) but also in influence of independent variables on the dependent variable (random slopes). The decision whether a variable will be estimated with "random intercept" or with "random slope" occurs through the inspection of the distribution of the variances and their significance test (chi-square).

The following quantitative analysis[23] of the determinants of homonegativity will follow the approach and logic of a multi-level regression analysis. First, an empty model will be created in order to determine whether the data structure demands a multi-level analysis. Here the calculation of the ICC gives complementary information on the necessity to run a multi-level regression. Second, we estimate different main effect models using the variables discussed in the previous section. This enables us to expect whether extent country-specific error terms are needed. In the second step, the interactions (on the individual level as well as cross-level) are included. The interpretation of the interaction effects is facilitated by graphing the influence of the conditional variables (Brambor et al., 2006; Kam & Franzese, 2007). Finally, in order to assess the quality of the estimated models, a full model with all the significant variables will be calculated and R-square will be determined using the method of Snijders and Bosker (1994, p. 350ff.; 1999, p. 99ff.).

Analysis

Main effects models

The results of the main effects model for our dependent variable (homonegativity as a social practice, Indicator 1) are displayed in Table 3. As a comparison, a model without explanatory variables was estimated (Model 0). Calculating the ICC from this model gives a value of 0.402 which indicates that the hierarchical structure of the data makes a multi-level analysis necessary (Hox, 2002, p. 184; Snijders & Bosker, 1999, p. 224).[24]

Table 3

Main effects models (dependent variable: Indicator 1, homonegativity as a social practice)

	model 0	model 1	model 2	model 3	model 4
Individual level					
Religiousness („importance of God"; 1 = unimportant, 10 = very important)		0.122*** (0.011)		0.120*** (0.011)	0.127*** (0.016)
Religiousness („religious person")			-0.302*** (0.045)		

[23] We used HLM 6.08.
[24] Hox (2002, p.184) gives several rules of thumb when using the ICC (from 0.05 to 0.3), whereby he indicates that an ICC of 0.3 is the "most stringent" criterion ("in those cases where on a priori grounds much higher intraclass correlations appear reasonable").

	Model 1	Model 2	Model 3	Model 4	Model 5
gender (male = 1, female = 2)		-0.499*** (0.061)	-0.519*** (0.061)	-0.505*** (0.061)	-0.964*** (0.118)
age		0.018*** (0.002)	0.016*** (0.002)	0.018*** (0.002)	0.022*** (0.004)
number of children		0.023*** (0.008)	0.025*** (0.008)	0.023*** (0.008)	0.059*** (0.019)
Family status (married = 1, has never been married = 2)		-0.166*** (0.043)	-0.134*** (0.044)	-0.159*** (0.042)	-0.203** (0.081)
Level of education		-0.176*** (0.023)	-0.152*** (0.021)	-0.157*** (0.021)	-0.275*** (0.039)
Income		-0.067*** (0.010)	-0.062*** (0.010)	-0.064*** (0.010)	-0.074*** (0.016)
Index of post-materialism			-0.313*** (0.035)	-0.317*** (0.036)	-0.582*** (0.056)
unemployed vs. employed			0.026 (0.032)		
students vs. employed			-0.117*** (0.061)		
housewife vs. employed			0.242*** (0.042)		
pensioner vs. employed			0.136*** (0.050)		
self-employed vs. employed			-0.008 (0.041)		
Index of religion		-0.103*** (0.030)	-0.115*** (0.033)	-0.098*** (0.031)	-0.158** (0.067)

Aggregate level

	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept level 2	3.444*** (0.219)	8.632*** (0.262)	10.062*** (0.299)	9.623*** (0.433)	13.959*** (0.505)
Communism-dummy		0.862*** (0.182)	0.876*** (0.198)	0.616*** (0.211)	1.325*** (0.431)
Level of urbanization		-0.015*** (0.004)	-0.005 (0.004)		
UN declaration			-0.510*** (0.110)		
HDI				-1.427** (0.660)	-4.997*** (0.828)
Duration of legalization				-0.004** (0.002)	
Index of law					-1.744** (0.616)

Random Effects

	Vk	X^2	d.f.	Vk	X^2	d.f.	Vk	X^2	d.f.	Vk	X^2	d.f.	Vk	X^2	d.f.
Variance comp. level 1 (r)	5,68			5.00			4.97			4.94			7.35		
Variance comp. level 2 (u_0)	3,82	44765	78	2.04	257	68	2.20	281	68	2.25	271	67	2.76	78	20
Iterations	3			41			85			39			71		
N (aggregate level)	79			79			79			79			27		

Note: Beta-coefficients with t-values in brackets. As the dependent variable is heavily left-skewed we calculate robust standard errors (Hox, 2002, p.200-203). * = p < 0,1; ** = p < 0,05; *** = p < 0,01.

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When the explanatory variables discussed in chapter 2 are tested, the results confirm the majority of the theoretical considerations, particularly in the case of the (socio-demographic) covariates. On the individual level, age, gender, marital status, number of children, income, and level of education show the expected influence (Model 1): Married men from older birth cohorts with a low level of education, a limited income, and a high number of children are particularly homonegative. The professional class (Model 2), operationalized through job dummies, indicates that students are significantly less homonegative than dependent employees (reference category). However, housewives and retirees exhibit higher homonegativity. The unemployed and self-employed can be found between these two poles as well as the reference category of the dependent employees.[25] Keeping these results in mind, it is not surprising that the post-materialism index is also significant: a person oriented toward post-modernism displays a lower aversion to homosexuality.

The results are also unambiguous in regard to the particularly interesting question of the influence of religion and religiosity: people who attribute great importance to God in their lives or who describe themselves as religious are more homonegative. The highly significant negative influence of the religion-index also shows that, as theoretically expected, Muslims as well as orthodox Christians and Free Church Protestants are more homonegative than, for example, Buddhists, Hindus, or atheists.[26]

On the aggregate level, the results correspond to the majority of the expectations, too. In Model 1, the residents of (post-) communist countries appear to be significantly more homonegative whereas a higher degree of urbanization inhibits homonegativity. The UN Declaration variable as tested in Model 2 is as expected negative and highly significant:[27] In states which signed the UN Declaration, homonegativity is lower. At the same time, however, the urbanization variable becomes insignificant. This interrelationship between the two variables is easy to explain as the group of signatory countries consists almost entirely of highly developed states. Hence urbanization does not seem to have an additional effect that would surpass the level of development. The results for the operationalization of the level of

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[25] Despite their significance, the employment dummies will not be further used in the following models. This is due to the high number of iterations (85) that is necessary for the assessment of model 2 indicating a comparatively poor convergence of the model.

[26] This result can also be confirmed provided that the individual religions are added as dummy variables. This type of approach would be preferable to the religion-index which was used, as it can more clearly convey the influence of single religions on homonegativity. In any case, the low variance of religious adherence in some countries reduces the sample size on the aggregate level or even circumvents a convergence of the model when more than one of these dummy variables are simultaneously applied to the model. A comparison of these models can become very difficult due to the respectively different number of cases. However, this problem does not exist to the same extent in the analysis of the religion-index. Alternatively, the dummy variables for the single religions can also be accommodated in separate models. When using this approach, the theoretically expected ranking for the religion index arises, with one exception. People identifying themselves as Catholics show a less homonegative stance than we would have expected beforehand. This demonstrates a comparatively large discrepancy between the clerical teachings and the actual attitude of the religious.

[27] This finding is not altered even if no other variables are tested on the individual level in comparison to model 1. In the interest of space, these two steps of the model construction were compiled in model 2.

development via the HDI in Model 3 or the GDP per capita (not shown in Table 3 because of high correlation with the HDI) also corroborate this finding. In Model 4 we test whether and to what extent the legal situation concerning homosexuality has an effect on the attitudes of the population. The results show the expected correlation: the more legal rights granted to homosexual people, the more positive attitudes the general population has toward homosexuality.[28]

In order to assess the robustness of the results, we cross-validated the results using a different dependent variable (as discussed in the first section). This second dependent variable (Indicator 2 in Table A1 (Annex)) is aimed at the personal level and asks if the respondent would want to live in the same neighborhood as homosexual people. Running a multi-level logit model on this dichotomous dependent variable yields *grosso modo* the same results than the regression above (Table A2 in the appendix). [29] However some minor deviations appear: the marital status is no longer significant in any of the models; the employment status is not significant in the same way than in Table 3 (students are no longer significant, whereas self-employed are); and the Communism dummy variable loses significance when one controls for development (either urbanization or HDI). The remaining effects change only slightly in comparison to the previous operationalization of the dependent variable; in particular, the religion and religiosity variables are very robust. For this reason, as well as the considerably worse convergence of the logistical models (cf. 95 iterations in model 3a), further interaction effects will be tested solely in relation to the first dependent variable (Indicator 1 in Table A1).

Models with interaction effects

In the following section, the conditional relations that have been laid out above will be examined. Therefore, the respective interactions are added to the main effects model 3, which serves as the base model. As the interpretation of the main effects changes with the inclusion of interaction terms (Friedrich, 1982), the following interpretation is limited to the interaction effects (cf. Section 3).

The first interaction hypotheses expected that the effect of religiosity on homonegativity depends on the religious denomination of a person. As we know from Table 3, the main effect of religiosity on homonegativity is positive. Figure 4 as well as Table 4 show that this positive effect is especially strong when the religion-index scores a high value, for example for Muslims. On the contrary, the effect of religiosity is lowest with Buddhists and especially with atheists. The confidence interval, in addition to the conditional t-values, shows that the coefficients of all the values are significant on the 0.05 level. This finding corroborates our theoretical expectations.

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[28] Due to the clearly low number of cases (caused by missing data for the law index in many countries), the results of this model can only be compared with the other indices to a limited extent. It is striking, however, that a number of previously significant factors remain significant even under the markedly reduced data set.

[29] It should be mentioned however that the models did not converge as well as in the GLS/ML estimation. For this reason, the threshold for the termination of the Maximum Likelihood iteration process was increased to a value of 0.01. This way, a stable solution can be more quickly found and will be able to hold a higher defectiveness.

Table 4

Interaction model 1 - (religiosity x religion index)

Index of religion	cond. coeff	S.E.	cond. t-values
1 (Islam)	0,142	0,015	9,615
2 (Catholicism, protestant Free Churches, Orthodox)	0,128	0,014	9,297
3 (traditional European Protestantism)	0,113	0,014	8,148
4 (Hinduism)	0,098	0,015	6,472
5 (Buddhism, Confucianism, Taoism)	0,083	0,017	4,791
6 (Atheism)	0,068	0,020	3,382
Random Effects			
	Vk	X^2	d.f.
Variance comp. level 1 (r)	4.94		
Variance comp. level 2 (u_0)	2.85	138.67	36
Iterations		51	
N (aggregate level)		79	

Figure 4

Marginal effects in interaction model 1 (religiosity x religion index)
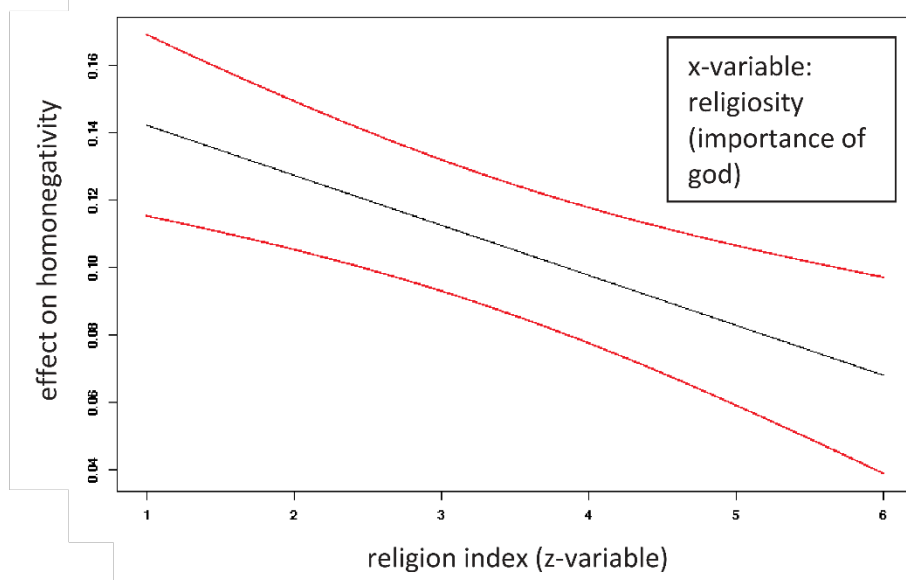
Note: The graphs for the marginal effects were created with an open source web application (http://people.ku.edu/~preacher/interact/hlm2.htm). Based on the coefficients from HLM and the variance-covariance-matrices this application generates an R-code that can be used to plot the graphs. For the exact bases of computation cf. (Preacher, Curran, & Bauer, 2006).

The second interaction effect postulated a correlation between a person's intrinsic motivation on the one hand, and their religiosity or religious affiliation on the other (see above). Considering religiosity first, interaction Model 2 (Table 5) tests the influence of a marginal

increase of religiosity on homonegativity conditioned by the motivation of the respondent. The results show (see Table 5 and Figure 5) that although an increase in religiosity leads to higher homonegativity (as already shown), this effect occurs more strongly for extrinsically motivated people.

Table 5
Interaction model 2 - (religiosity x ex-/intrinsic motivation)

ex-/intrinsic motivation	cond. coeff	S.E.	cond. t-values
1 (extrinsic motivated)	0,126	0,015	8,572
2	0,114	0,012	9,845
3	0,102	0,012	8,655
4 (intrinsic motivated)	0,090	0,015	5,927
Random Effects			
	Vk	X^2	d.f.
Variance comp. level 1 (r)	4.42		
Variance comp. level 2 (u_0)	4.38	164.69	31
Iterations		54	
N (aggregate level)		66	

Figure 5
Marginal effects in interaction model 2 (religiosity x ex-/intrinsic motivation)
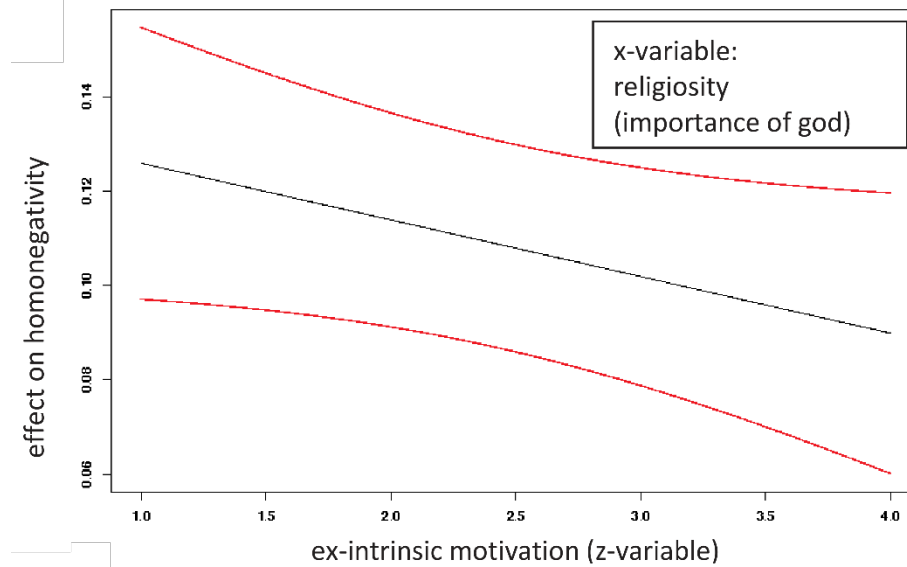
In order to verify the interaction between religious affiliation and intrinsic or extrinsic motivation, the ex-intrinsic motivation will be treated as the independent variable whereas the religion-index is the moderator. The result is as follows (Table 6, figure 6): In general, people who are more intrinsically motivated tend to be less homonegative. However, this effect is only significant for the first two categories of the religion index (i.e. for Muslims and Catholics/Protestant Free Churches/Orthodox Christs) on a 95% confidence level. This finding

also tends to support the results of psychological studies showing that intrinsically religiously motivated people have higher tolerance.

Table 6

Interaction model 3 - (ex-/intrinsic motivation x religion index)

Index of religion	cond. coeff	S.E.	cond. t-values
1 (Islam)	-0,097	0,037	-2,607
2 (Catholicism, protestant Free Churches, Orthodox)	-0,082	0,036	-2,250
3 (traditional European Protestantism)	-0,066	0,043	-1,523
4 (Hinduism)	-0,051	0,056	-0,910
5 (Buddhism, Confucianism, Taoism)	-0,035	0,070	-0,499
6 (Atheism)	-0,020	0,086	-0,227
Random Effects			
	Vk	X^2	d.f.
Variance comp. level 1 (r)		4.42	
Variance comp. level 2 (u_0)	3.36	160.69	29
Iterations		138	
N (aggregate level)		66	

Figure 6

Marginal effects in interaction model 3 (ex-/intrinsic motivation x religion index)
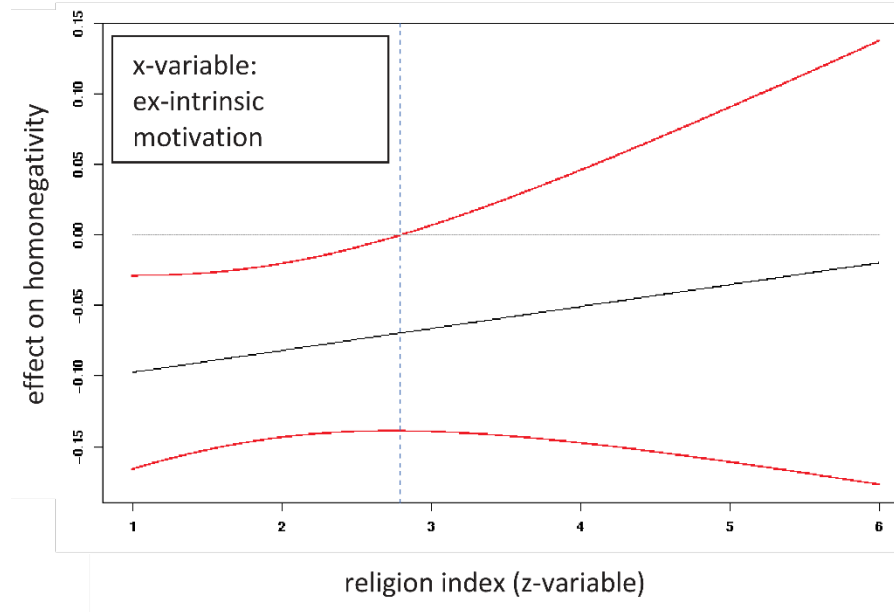
The final interaction effect to be tested will be the cross-level interaction between the (post-) communism dummy variable and religiosity. As Table 7 and Figure 7 show, religiosity increases homonegativity less strongly in (post-) communist countries than in other countries although the level of homonegativity is higher in (post-) communist countries (the lower slope

of the dotted line indicates a weaker influence of religiosity in (post-) communist countries). This effect is highly significant. Thus, Hypothesis 2, formulated above, is rejected.[30]

Table 7

Cross-level interaction model 4 - (post-)communism x religiosity)

(post-)communism	cond. coeff	S.E.	cond. t-values
0	0,150	0,011	13,197
1	0,0549	0,016	3,390
Random Effects			
	Vk	X^2	d.f.
Variance comp. level 1 (r)	4.944		
Variance comp.level 2 (u_0)	2.051	251.099	67
Iterations		36	
N (aggregate level)		79	

Figure 7

Conditional effects in cross-level interaction model 4 ((post-)communism x religiosity)
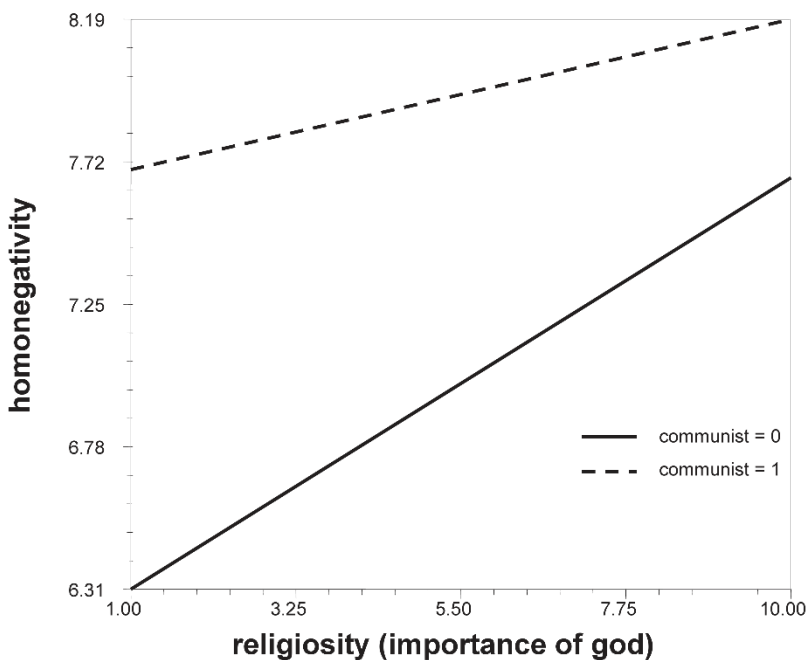
Goodness of Fit

The previous sections presented in detail what variables can explain the variance in attitudes towards homosexuality. However, we did not answer the question how well the variables can explain the variance. Therefore, we calculated a final model including all

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[30] This interaction effect can also be interpreted as a level effect, as homonegativity in (post-) communist countries is in any way higher than in the comparison group, implying that it can only increase less dramatically.

significant variables and interaction effects and calculated the goodness of fit. Although there are different measures that can be used to evaluate the goodness of fit for a multi-level regression, we used the R-square for multi-level models, as it can be interpreted analogously to the coefficient of determination of a simple OLS-Regression (Snijders & Bosker, 1999, p. 99ff.). On the individual level, the R-square for the final model for the explanation of homonegativity is 0.29. For the macro level, the R-square is 0.61. Hence, overall, the model fit is very satisfactory.

Conclusion

The comparison of levels of homonegativity in different countries has shown that there are substantial differences in the attitudes of people towards homosexuality. This unexplained variance constitutes the point of departure of this paper. More specifically, we examined if (and to what extent) the religious affiliation and the religiosity of an individual can explain their homonegativity. As potential explanatory factors include characteristics of the respondents as well as variables situated at the national level, a multi-level analysis was conducted. Before summarizing and discussing the main results, we want to point to some limitations of our analysis. Firstly, it is important to note that all results of this study are based on self-assessments. However, as we know from psychological studies, respondents often deviate from their true attitudes toward homosexuality due to social desirability, because in many countries homosexuality is still the subject of fierce and controversial societal debate. In the interpretation of the results, it is necessary to keep in mind that the statistical analysis cannot deal with this kind of problems situated on the level of data gathering and measurement. Furthermore, it was not possible to include certain covariates which could possibly influence the attitudes of people towards homosexuality due to data restrictions. For example, this is true for the question of whether a respondent is him or herself homosexual or if they have homosexual acquaintances. Finally, it must be noted that the WVS as a database features certain weaknesses. We tried to account for coding errors in the pre-analysis phase, for example in the classification of religious affiliation.[31] However, we cannot rule out that there still are coding errors in the database. Although a more reliable dataset is desirable for future analyses, we face at the present time a tradeoff between a largest possible country sample size and the reliability of the data. In this paper we chose in favor of a large sample size.

Despite these caveats, the analysis has revealed several important findings.[32] Firstly, the results confirm that individual socio-demographic characteristics determine a person's homonegativity: men are more homonegative than women, older people more so than young, married more so than unmarried, people with children more so than those without, people with low income more so than people with higher income, people with a lower education level more

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[31] One concrete case concerns the values for the religious affiliation of respondents which had to be recoded for several countries as the categories "Protestant" and "Evangelical" were not stringently applied.

[32] The fact that, despite the data problems the cross check with the alternative operationalization of homonegativity (wanting homosexuals as neighbors) confirms the results grosso modo (cf. Table A2), can be seen as an indication for the robustness of the analysis.

so than those with a higher education level. If the respondents are divided into groups based on their employment status, students and, contingent on the dependent variable, the self-employed present low homonegativity. In contrast, the attitudes of retirees, housewives, and the unemployed are more negative towards homosexuals. This insight integrates well into Inglehart's theory of value change: the more post-material a person is, the lower their homonegativity.

Secondly, the particular focus of this study centers on religion, religiosity, and attitudes toward homosexuality. The results indicate that there are clear differences in levels of homonegativity among the followers of the individual religions: Muslims make up the homonegative end of the scale, whereas Buddhists and atheists are on the other extreme. Regarding religiosity, we find that religious people are in general more homonegative. This effect is however conditioned by religious affiliation. More concretely, the religiosity of a Muslim affects his or her attitudes towards homosexuals more negatively than would the religiosity of a Buddhist. Also relevant for the attitudes toward homosexuality is the nature of religious motivation: Extrinsically motivation strengthens the negative effect of religiosity on attitudes towards gay and lesbian people. These results on religion and religiosity are in line with the claim of Gordon Allport who stated that "the role of religion is paradoxical. It makes and unmakes prejudice" (Allport, 1954, p. 444).

Third, the results of the multi-level regression analysis show that the aggregate variables help explain the variance with regard to homonegativity. Purely statistically speaking, the most influential aggregate-level variable is whether or not a country is a signatory to the UN Declaration on Human Rights, Sexual Orientation and Gender Identity. When observed causally, this variable not only indicates the reigning public opinions of the individual countries, but also the different development levels of the signatory countries. When looking for causality, it is therefore more accurate to examine the development level of a country, which is likewise highly significantly correlated with homonegativity. As theoretically expected, the duration of legalization also has an effect: the longer homosexual activities have been compliant with the law, the lower the homonegativity of the citizens. The current legal situation in terms of homosexuality also tends to influence homonegativity, even if the results cannot be claimed as valid for the entire sample of countries. In states where homosexual people have more legal rights, the population presents lower homonegativity. Lastly, the level of homonegativity in communist or post-communist countries is significantly higher than in non- or non-post-communist countries. Moreover, the communist legacy conditions the relationship between religiosity and homonegativity on the individual level. In communist or post-communist countries an increase in religiosity leads to a less strong rise in homonegativity than in non-communist countries. This can be explained by the suppression of religion in these countries during the communist rule.

With regards to the central question, the analysis shows that religion and religiosity affect the homonegativity of an individual not (only) directly and linearly but that religion and religiosity also interact with other influencing factors. Despite the explorative character of the

utilized religion index, the analysis supplies comparatively strong empirical evidence on the one hand for a direct and on the other hand for an interactive influence of religion and religiosity on the individual attitudes toward homosexuality.

Appendix

Table A1

Two indicators of homonegativity for 86 countries

Country	Indicator	Indicator	Country	Indicator	Indicator	Country	Indicator	Indicator
Albania	**Sep 52**	**82.6**	Great Britain	Mai 34	16. Mrz	**Philippines**	**07. Okt**	**24.0**
Algeria*	**Sep 74**	**80.7**	**Greece**	**06. Mai**	**26. Aug**	Poland	Jul 92	51.7
Andorra	Feb 76	05. Jan	Guatemala	Jul 86	15. Aug	**Portugal***	**Jul 64**	**25. Jun**
Argentina	Jun 66	14. Mai	**Hungary**	**Sep 56**	-	**Puerto Rico**	**Jul 49**	**21. Sep**
Australia	Mai 17	21. Aug	India	Jul 98	41.2	Ruanda	Sep 47	62.6
Austria	**Mai 79**	**26. Jul**	Indonesia	Sep 65	67.4	Rumania	Aug 92	61.1
Bangladesh	**Sep 95**	**04. Sep**	Iran	Sep 48	93.0	Russia	Aug 48	65.2
Belarus	**08. Sep**	**63.3**	**Ireland**	**Jun 80**	**27. Apr**	Saudi Arabia	Sep 62	-
Belgium	**Mai 75**	**17. Mai**	**Island**	**Mrz 81**	**07. Sep**	Serbia-Montenegro	**Sep 28**	**60.6**
Bosnia-Herzegovina	**09. Feb**	**64.2**	**Israel***	**06. Nov**	-	**Singapore***	**Aug 62**	**49.3**
Brazil	Jun 72	21. Mai	Italy	Jul 66	23. Jun	**Slovakia**	**06. Aug**	**44.0**
Bulgaria	Jun 88	49.5	Japan	Jun 23	-	Slovenia	Mai 52	35.1
Burkina Faso	Sep 24	80.5	Jordan	Sep 94	96.7	Spain	Apr 35	07. Apr
Canada	Mai 52	14.0	**Kirgizstan**	**Sep 23**	**66.0**	South Africa	Jul 94	43.2
Chile	Mai 87	33.3	**Latvia**	**09. Okt**	**45.5**	South Korea	08. Aug	85.4
China	Sep 37	68.3	**Lithuania**	**Sep 14**	**67.8**	Suisse	Mrz 84	11. Mai
Columbia*	Jul 29	45.9	**Luxemburg**	**05. Dez**	**19. Feb**	Sweden	Feb 59	4.0
Croatia*	**Aug 28**	**46.3**	Malaysia	Jul 98	70.6	Taiwan	Jul 22	55.5
Cyprus	Jul 30	51.3	Mali	Aug 13	66.2	**Tanzania**	**9.85**	**74.1**
Czech Republic	**Mai 50**	**19. Mrz**	**Malta**	**Aug 45**	**40.0**	Thailand	Jul 91	33.7
Denmark	**Apr 41**	**8.0**	**Macedonia**	**09. Jul**	**53.6**	Trinidad and Tobago	9.00	65.2
Egypt	**Sep 99**	-	Mexico	Jun 47	29. Aug	Turkey	Sep 25	87.5
Estonia	**Jul 98**	**45.8**	Moldavia	Aug 67	71.5	**Uganda**	**Sep 72**	**75.0**
Ethiopia	Sep 49	82.2	New Zeeland*	Mai 57	17. Mrz	Ukraine	Aug 35	57.3
Finland	05. Okt	23. Feb	Netherlands	Mrz 87	05. Feb	United States*	Jun 50	26. Mrz
France	Apr 55	28. Jul	**Nigeria**	**Sep 50**	**73.6**	Uruguay	Mai 34	16. Mrz
Georgia	Sep 85	92.6	Norway	Mrz 25	05. Jul	**Venezuela**	**Aug 56**	**57.4**
Germany	Apr 74	15. Sep	**Pakistan**	**Sep 95**	**100**	Vietnam	Sep 14	29. Jan
Ghana	Sep 24	79.0	**Peru**	**Aug 38**	-			

Note: Selection of countries according to the data availability.

Indicator 1 (WVS Question 202: mean of a 10-point indicator; "can homosexuality be justified?"; 10 means highest homonegativity).

Indicator 2 (WVS question 38: percentage of persons who do not like to have homosexuals as neighbors).

Wave 4 (1999-2004): bold font; wave 5 (2005-2007): normal font.

* The country cannot be included in the analysis because the WVS does not capture some of the independent variables for this country (e.g. there is no data on the number of children for the USA).

Table A2

Multi-level logit: (dependent variable: Indicator 2, homosexuals not wanted as neighbors)

	model 1		model 2		model 3		model 4	
Individual level	Betas	Odds	Betas	Odds	Betas	Odds	Betas	Odds
Religiousness ("Importance of God"; 1 = unimportant, 10 = very important)	0.046*** (0.010)	1.047			0,046*** (0,010)	1,047	0,052*** (0,012)	1,054
Religiousness ("religious person")			-0,102*** (0,036)	0,903				
Gender (male = 1, female = 2)	-0.339*** (0.043)	0.712	-0,366*** (0,043)	0,693	-0,342*** (0,042)	0,710	-0,665*** (0,087)	0,514
Age	0.009*** (0.002)	1,010	0,008*** (0,002)	1,008	0,010*** (0,002)	1,010	0,018*** (0,003)	1,018
Number of children	0.033*** (0.012)	1,033	0,031** (0,012)	1,031	0,313** (0,012)	1,032	0,042** (0,017)	1,043
Marital status (married = 1, has never been married = 2)	0.001 (0.030)	1,001	0,005 (0,031)	1,005	0,011 (0,030)	1,011	0,025 (0,034)	1,025
Level of education	-0.100*** (0.012)	0,905	-0,090*** (0,012)	0,914	-0,094*** (0,012)	0,910	-0,133*** (0,024)	0,875
Income	-0.041*** (0.008)	0,959	-0,038*** (0,008)	0,963	-0,040*** (0,007)	0,961	-0,058*** (0,012)	0.944
Index of post-materialism			-0,102*** (0,021)	0,903	-0,103*** (0,022)	0,903	-0,137*** (0.035)	0,872
unemployed vs. employed			0,116*** (0,039)	1,123				
students vs. employed			-0,077 (0,048)	0,926				
housewife vs. employed			0,166*** (0,039)	1,181				
retired vs. employed			0,149*** (0,039)	1,160				
self-employed vs. employed			-0,075** (0,038)	0,928				
Index of religion	-0.132*** (0.049)	0,876	-0,140*** (0,046)	0,869	-0,136*** (0,050)	0,873	-0.034 (0.027)	0,967
Aggregate level								
Intercept level 2	0.732 (0.592)	2,080	1,094** (0,496)	2,985	2,916*** (0,753)	18,471	-4,312** (1,977)	0,013
Communism-dummy	0.196 (0.252)	1,217	0,624*** (0,216)	1,867	0,194 (0,236)	1,214	1,124* (0.584)	3,076
Level of urbanisation	-0.009 (0.007)	0,991	-0,002 (0,007)	0,998				
UN declaration			-0,582*** (0,205)	0,559				
HDI					-2,937*** (0,781)	0,053	4,459*** (1,457)	86,41
Duration of legalization					-0,005*** (0,002)	0,995		

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	Vk	X^2	d.f.		Vk	X^2	d.f.		Vk	X^2	d.f.		Vk	X^2	d.f.
Index of law													-0,755 (0.900)	0.470	

Random Effects

	Vk	X^2	d.f.		Vk	X^2	d.f.		Vk	X^2	d.f.		Vk	X^2	d.f.
Variance comp. level 2 (u_0)	4.54	185	53		3,95	102	52		5,25	205	53		5,62	94	16
Macro-iterations		14				13				95				10	
N		77				77				77				25	

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