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# **Human rights: Why countries differ**

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## Abstract

Countries differ considerably in their respect for and political recognition of human rights. Using the cross-country CIRI data (Cingranelli & Richards;  $N = 74$  to 191 countries), we tested two main theories: First, the cognitive-moral enlightenment theory going back to Piaget and Socrates postulates that individuals and nations with higher levels of cognitive ability think and behave in a way more conducive to human rights. Second, the culture-religion theory going back to Weber, Sombart and Voltaire postulates that different religious beliefs shape attitudes, and propel societies toward institutions that are more or less supportive of human rights. Two measures of cognitive ability were utilized: the average level of cognitive ability within society, and the level within the society's intellectual class. Two measures of religious belief were also utilized: percentage of Christians, and percentage of Muslims. In path analyses, we controlled for the effects of education, political institutions, wealth, evolution and marriage patterns (consanguinity). Average cognitive ability had a positive impact on human rights but its effect varied substantially depending on the country sample ( $r = .26$  to  $.51$ ,  $\beta = .10$ ). Cognitive ability of the intellectual classes had larger effects ( $r = .52$ ,  $\beta = .35$  to  $.38$ ). Most important was religion, the effects of which were observed in both cross-sectional and longitudinal models. Percentage of Christians had a positive impact ( $r = .62$ , total effect  $\beta = .63$ ), and percentage of Muslims had a negative one ( $r = -.57$ , total effect  $\beta = -.59$ ). Political institutions are highly correlated with human rights (democracy:  $r = .70$ , rule of law:  $r = .65$ ), but religion appears to be the decisive background factor.

Is: 272 words.

**Keywords:** human rights, religion, democracy, education, cognitive ability, intellectual classes, GDP

## Research highlights

- Cognitive ability, religion, education, wealth, institutions and evolution.
- These factors were tested for their impact on human rights.
- Religion (percentage of Christians vs. Muslims) was decisive.
- The effect of religion was found in cross-sectional and longitudinal models.
- Cognitive, economic, political, evolutionary effects were less stable.

## Human rights: Why countries differ

The signing of the *Virginia Declaration of Rights* in 1776 was the first time in history a statement approaching universal human rights had been expressed. The opening section of the declaration reads: “That all men are by nature equally free and independent and have certain inherent rights.” This moral and legal idea reappeared in the French *Declaration of the Rights of Man and of the Citizen* from 1789, article 1 of which states: “Men are born and remain free and equal in rights.” In 1948, the United Nations adopted the idea once again when it drafted the Universal Declaration of Human Rights. Article 1 proclaims: “All human beings are born free and equal in dignity and rights. They are endowed with reason and conscience and should act towards one another in a spirit of brotherhood.” The main principles embodied in the UN Declaration are: universality (for all), equality (all people are equal in rights including women, children and people of other religions or races) and indivisibility (e.g. freedom from torture, and freedom of speech). Substantively, these principles comprise both negative rights, such as freedom from torture and slavery, as well as positive rights, such as the right to a fair trial.

Although the Virginia Declaration of Rights was the first clear articulation of humans’ inalienable rights, there were a number of historical precursors: the *Bill of Rights* from 1689 in England, which enunciated the rights of parliament; the *Habeas Corpus Act* from 1679 in England, which prohibited unlawful detention of prisoners; the *New Laws* from 1542 in Spain and Latin America, which prescribed more humane treatment for native Americans, as advocated by the Dominican friar Bartolomé de Las Casas; and the *Magna Carta* from 1215 in England, which articulated the rights of the church and nobility with respect to the monarch, e.g. “No free man shall be seized or imprisoned”. The historical process went from rights for certain groups in certain countries, e.g. for the noblemen in England, to rights for all people in all countries and cultures.

While human rights are philosophically well-grounded and widely lauded by politicians and lay-people, there are large differences in the respect and political

recognition that they enjoy in different countries (e.g., Posner, 2014). Human rights – as well as related political institutions such as the rule of law, democracy and press freedom – are rare phenomena, seeming to have only arisen in history under very specific, propitious conditions. Each year, both Amnesty International and Human Rights Watch publish reports detailing the state of human rights in different countries. Large discrepancies are consistently documented. But why do such discrepancies exist?

## **1 Theories on the development and practice of human rights**

A first insight into the origins of cross-country differences in human rights can be found in their historical development (e.g. Ishay, 2004; Lauren, 2011). Human rights were developed almost exclusively in Western countries – mainly England, North America and France. Consistent with this claim, human rights have been criticized for being “Western” by the American Anthropological Association (1947), as well as by Islamic countries. Saudi Arabia, for example, argued that the concept of human rights violates the sacred law of Islam, Sharia (Russell, 2012). According to this view, human rights are a Western secular concept of Judeo-Christian origin, incompatible with the divinely sanctioned legal tenets of Islam. In 1990, Muslim countries signed their own *Cairo Declaration on Human Rights in Islam*, whose content differs from that of the 1948 UN Declaration. For instance, article 10 states that “Islam is the religion of unspoiled nature. It is prohibited to exercise any form of compulsion on man or to exploit his poverty or ignorance in order to convert him to another religion or to atheism.” This statement clearly prioritizes Islam over other religions. Similarly, article 19 prescribes the application of the Sharia for the punishment of criminals: “There shall be no crime or punishment except as provided for in the Sharia.” The Sharia, however, contains methods of penalization that would be considered unusual and cruel by Western standards, and are proscribed by the UN Declaration. A further inconspicuous but instructive detail is that an important member of the drafting committee for the Universal Declaration, the Arab Charles Malik (1906-1987) from Lebanon, was in fact a Christian, rather than a Muslim. All of the preceding hints that *culture* seems to be important.

A second insight into the origins of cross-country differences in human rights can be found in the wording of the declarations themselves. For example, article 16 of the

Virginia Declaration from 1776 states: “That religion, or the duty which we owe to our Creator and the manner of discharging it, can be directed by reason and conviction, not by force or violence”. Similarly, article 1 of the 1948 Universal Declaration of Human Rights states: “All human beings ... are endowed with reason and conscience...” In both of these cases, we see the proclamation being accompanied by a reference to *reason*, to cognitive faculties, to the ability to argue in a reasonable way. This hints that *education* and *cognitive competence* could be relevant factors.

A third insight into the origins of cross-country differences in human rights can be found in empirical relations. For example, in countries where the rule of law is applied more even-handedly, and where democracy and freedom prevail, human rights tend to enjoy greater respect and political recognition (see Table 2). This hints that *politics* and *institutions* might play a role. We will now describe the respective theories in more detail.

### 1.1 *The cognitive-moral enlightenment theory*

The Swiss psychologist Jean Piaget (1948/1932, 2001/1947) devised a cognitive-moral development theory for children: According to his theory, cognitive development comprises four successive stages, the last of which is abstract formal thinking that encompasses role-taking, hypothetical reasoning and metacognition (thinking about thinking). The process of cognitive development represents an advancement from cognitive egocentrism to decentered thinking. According to Piaget, moral development – the ability to judge ethical problems in an impartial and unbiased way – relies on prior cognitive development. Indeed, cognitive and moral development are structurally similar. In both is acquired a well-founded, reasonable structure. As Jean Piaget (1948/1932, p. 404) stated: “Parallelism exists between moral and intellectual development: ... Logic is the morality of thought just as morality is the logic of action.” And this parallelism is based on the cognitive nature of morality, e.g. to behave ethically one has to take the perspective of third parties.

This theory has roots in both the enlightenment and classical philosophy. The idea that evil is a result of ignorance can be found in the dialogs of Socrates (Protagoras 358c, Plato, 1997/-350):

“Do you say that ignorance is to have a false belief and to be deceived about matters of importance? ... No one goes willingly toward the bad or what he

believes to be bad; neither is it in human nature, so it seems, to want to go toward what one believes to be bad instead of to the good.”

This idea can also be found in Aristotle’s *Nicomachean ethics* (2000/-322, III, 1, p. 39): “In fact, every wicked person is ignorant of what he should do and refrain from doing, and missing the mark in this way makes people unjust and generally bad.”

Piaget’s ideas were invoked by Kohlberg (1984) and others, who elaborated the cognitive-moral enlightenment theory and provided evidence for it. Cognitive ability and moral judgement have been found to correlate at  $r = .62$ ; and if age is partialled out the correlation is still an impressive  $r = .50$  (Krebs & Gillmore, 1982). Cognitive ability is the result of cognitive development, and the Piagetian development level correlates with psychometric test scores at about  $r = .50$  to  $.70$  (Hattie, 2009, p. 43; Jensen, 1980, p. 674). McNamee (1977) compared stages of moral development with helping behavior by means of an experiment. Individuals who were deemed to be at a higher stage of moral development, as measured by Kohlberg’s approach, were more likely to help a person in need, by giving some advice ( $r = .63$ ) or via personal assistance ( $r = .60$ ). Similarly, Kohlberg (1984, p. 70, p. 546) found that in Milgram’s fictitious torture experiment, fewer individuals at higher stages of moral development followed the order to torture a third party. Likewise, in Milgram’s experiment on obedience, participants were asked to subject another person to electric shocks in order to improve their learning; only 13% of participants at the highest stage followed this order versus 75% of participants at the lowest moral stage.

Further support can be found in negative correlations between cognitive ability and criminality. Correlations using different tests and various real world crimes are around  $r = -.23$  (e.g. Cunha et al., 2006, p. 751, own reanalysis). Note that this correlation is due not only to a direct effect of cognitive ability (i.e., reflecting on the consequences of one’s own behavior), but also to its indirect effects via variables such as personal income and social status. There is also some evidence that cognitive ability correlates with pro-social attitudes (see Solon, 2014).

The cognitive-moral enlightenment theory has been applied by sociologists and philosophers to the level of whole societies, cultures and historical developments: According to Jürgen Habermas (1984/1981), societies that are able to operate at the highest cognitive level – the so-called formal operational stage (e.g., “decentration of an

egocentric understanding of the world”; Habermas, 1984/1981, p. 69) – are well-placed to enhance and broaden rationality including institutions, ethics and culture (e.g., “rationally motivated mutual understanding ... consensus formation that rests in the end on the authority of the better argument”; Habermas, 1984/1981, Vol. 2, p. 145).

Rational discourse and fair argumentation can constitute the cornerstone of rule of law including human rights (Habermas, 1996/1992).

Similarly, Georg W. Oesterdiekhoff (e.g. 2009a, 2009b, 2014, 2016) has applied the Piagetian approach, bringing together psychogenesis and sociogenesis to many societal and historical phenomena. For example, rising cognitive ability level (i.e., the Flynn effect) contributed to the disappearance of cruelty in punishment and in public theatrical performances (arena games), as well as fundamentally changed the concepts of legal rights, leading to the improved treatment of others including women, children, animals and enemies (see also Pinker, 2011).

Finally, the cognitive ability levels of intellectuals (i.e., members of the intellectual class: philosophers, scientists, politicians, business elites etc.) may be crucial because it is precisely these individuals who build-up institutions and shape the worldview on which the next generation of scientific and social innovations are based. For example, scholarly works pertaining to rights and laws were promulgated by such enlightenment philosophers as John Locke, Du Marsais, Baron d’Holbach, Montesquieu and Immanuel Kant.

## *1.2 Culture, worldviews and religion*

Culture *prescribes* values for individuals, groups and entire nations, which guide ways of thinking and living. In its every-day usage, culture refers to dietary habits, clothing customs, artefacts, works of art, architecture, literature and music. While these are the more tangible and easily observable manifestations of culture, they arguably do not constitute its core. Rather, its core comprises the descriptive and normative elements of worldviews. By influencing thinking and behavior, these worldviews *shape* the physical, social and mental environment of individuals and groups alike. Religions provide worldviews that have transcendental content, usually comprising elements such as a distinct founder as well as some supernatural and wondrous epiphenomena. They also have secular content, are gradually blended with non-religious traditions, and undergo historical developments, including changes in interpretation and practice over

time. Religions constitute a central element of culture, influencing everyday habits and orientations in non-religious domains (e.g. Burckhardt, 1943/1905, pp. 86f.).

Religious texts make prescriptions concerning behavior, ethics and how to deal with others, especially those who are different. Religion may affect beliefs and social organization via (1) its original message, (2) the 'role model' function of its founder, (3) later interpretations of its original message, and (4) its lived practice. Different religions may have markedly different impacts on human rights. The history of human rights indicates that two religions are especially important, namely Christianity and Islam. It is on these two that we shall focus.

Christianity – which was originally based on Judaism, was later reshaped by Greek, Roman and European traditions, and was further developed by scholastic theology, Protestantism, the Enlightenment and burgher society – arguably provides a supportive foundation for the development of human rights: In Judaism and Christianity, “God created man in his own image” (Gen 1:27 ESV). Humans being the image of God, “God-likeness”, implies treating humans in a respectful way. Of course, at first blush, history reveals large discrepancies between the message of Christianity and the actual behavior of Christians. However, this does not mean that such behavior was consistent with the Christian message, and in many cases it was criticized by prominent Christians at the time. The Christian message had a corrective function. For instance, the inhumane treatment of American Indians by Spanish colonists was criticized by the Dominican priest Bartholomé de Las Casas (as mentioned above). The abolitionist movement was organized by Protestants and led by the Evangelical Christian William Wilberforce. The horrors of war were mitigated by charities such as the Red Cross, which was founded by the evangelical Christian, Henry Dunant.

Within Christianity, Protestantism stresses conscience, individual guilt, internal control, autonomy and self-responsibility (Weber, 2008/1904). All these traits are conducive for liberty, the rule of law, democracy and human rights (e.g., “Whatever cannot obey itself, is commanded.”; Nietzsche, 2009/1885, p. 76). As Alexis de Tocqueville (2010/1835, Vol II, Part II, Chapter 9, p. 467) noted in his seminal work, ‘Democracy in America’, religion supported the development of liberty, democracy and rule of law in North America:



“They brought to the New World a Christianity that I cannot portray better than by calling it democratic and republican: This will singularly favor the establishment of the republic and of democracy in public affairs. From the onset, politics and religion found themselves in accord, and they have not ceased to be so since.”

Whereas Max Weber emphasized the difference between Protestantism and Catholicism, Werner Sombart (1998/1913) saw in Protestantism merely an intensification of Catholic Christian teachings. For example, while Thomas Aquinas pioneered rationalist philosophy and Leon Battista Alberti advocated a rational lifestyle, both did so from within the Catholic tradition. Early modernity arguably began in northern Italy, a Catholic country; while France, another Catholic country, was also a trailblazer (of course, Protestants played an important role there too).

In contrast, Islam has arguably served to stymie the development of human rights. This starts with the original message, is amplified by the role model function of the founder, is continued in the later understanding of the original message, and is bolstered by lived practice. Compared to Jesus, who is not reported to have killed anybody, Muhammad took part in wars, executions, cruel punishments (e.g., stoning) and enslavement. There are many instances within the Koran in which unbelievers, Christians, Jews, women, sinners (e.g. adulterers) and enemy combatants are treated in an unequal, disparaging or cruel way. While Christian saints are depicted as victims, who are sacrificed through violence, e.g. Jesus, John and Paul, the sword in Paul’s hand is the sword by which he was executed, the opposite message is true of Islamic ones.<sup>1</sup>

Equally important is the prominence of *ethical dualism* within Islamic scripture: “Muhammad is the Messenger of Allah; and those with him are forceful against the disbelievers, merciful among themselves.” (Sura 48:29) Many of these aspects were

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<sup>1</sup> Some examples: “And when the sacred months have passed, then kill the polytheists wherever you find them and capture them and besiege them and sit in wait for them at every place of ambush.” (Sura 9:5) “Indeed, the penalty for those who wage war against Allah and His Messenger and strive upon earth [to cause] corruption is none but that they be killed or crucified or that their hands and feet be cut off from opposite sides or that they be exiled from the land.” (Sura 5:33) On Jews: “Say, ‘Shall I inform you of [what is] worse than that as penalty from Allah? [It is that of] those whom Allah has cursed and with whom He became angry and made of them apes and pigs and slaves of Taghut.’” (Sura 5:60) “Allah has promised you much booty that you will take [in the future] and has hastened for you this [victory] and withheld the hands of people from you – that it may be a sign for the believers and [that] He may guide you to a straight path.” (Sura 48:20)

criticized by Western intellectuals early on, such as Voltaire (*“Fanaticism, or Mahomet the prophet”*; 2013/1736), and Marx (1854), who wrote:

“The Koran and the Mussulman legislation emanating from it reduce the geography and ethnography of the various people to the simple and convenient distinction of two nations and of two countries; those of the Faithful and of the Infidels. The Infidel is “harby,” i.e. the enemy. Islamism proscribes the nation of the Infidels, constituting a state of permanent hostility between the Mussulman and the unbeliever.”<sup>2</sup>

Of course, the contents of religious texts have to be understood within the particular social, political and cultural context of the time that they were written. The effects of religion are interwoven with effects of local traditions. Moreover, most people do not simply take a book, and blithely follow its message. Very few Christians elect to be crucified. Only a small minority of Muslims have maltreated disbelievers. Later Rabbinic reinterpretations modified the original intentions, the at many places cruel message of the Tanakh (e.g.: “Do not spare them; put to death men and women, children and infants, cattle and sheep, camels and donkeys”; Old Testament: 1 Samuel 15:3). Religious messages, the role model of the founder, later interpretations and the lived practice of religion (which is influenced by many religious scholars) all shape a general cultural climate in which human rights could or could not be stymied.

Is there any empirical evidence as to the effects of religion on behavior related to human rights defined more narrowly or more broadly to include such as violence, corruption and criminality? According to a study by the Criminological Research Institute of Lower Saxony in Germany, more religious Muslims tend to be more violent, whilst more religious Christians tend to be less violent (Baier et al., 2010, pp. 117f.). And for education the pattern is reversed: higher religiosity among Muslim youth is associated with lower education, while among Christians, higher religiosity is associated with higher education (Baier et al., 2010, pp. 90f.). In a broader sample of six West European countries, more Muslims exhibited out-group hostility than Christians (Koopmans, 2014). For example, 54% of Muslims but only 11% of Christians agreed with the statement, “Don’t want homosexual friends”, while 44% of Muslims but only

9% of Christians agreed with the statement, “Jews cannot be trusted”. Many terrorist groups in different parts of the world (e.g. the Taliban, Al-Qaeda, Al-Shabaab, Boko Haram, ISIS, Abu Sayyaf, Uyghur terror groups) explicitly refer to Islam and jihad – Islamic holy war. Across Western countries, the higher the percentage of Muslims, the greater the threat of Islamist violence ( $r = .59$ ; Carl, 2016, 2017a). While it could be countered that this is a trivial result (who else but Muslims would carry out violence in the name of Islam?), non-religious violence is also associated with Islamic affiliation. In Scandinavia, the rate of immigrant crime across different groups is related to the percentage of Muslims in the home country ( $r = .60$ ,  $\beta = .37$ ) and to the home country’s average IQ ( $r = -.57$ ,  $\beta = -.37$ ), but less to the home country’s GDP per capita ( $r = -.43$ ,  $\beta = -.28$ ; Kirkegaard, 2014a, 2014b). An association between criminality and percentage of Muslims in the home country has also been observed across Dutch immigrant groups ( $r = .24$ ), which was higher for second generation immigrants ( $r_{2G} = .54$  vs.  $r_{1G} = .12$ ), and increased when income was controlled ( $r = .36$ ; Kirkegaard, 2015). The effect on crime appears to be robust across countries and control variables.

Other studies have documented that, in Protestant countries, trust is higher, corruption is lower and levels of social and economic freedom are higher (Delhey & Newton, 2005; Harrison, 2013). People tend to be more self-controlled, having internalized social rules, meaning that harsh and violent control by the state is not needed. In addition, domestic violence is more frequent in the Middle East than in Europe (37% vs. 25%; e.g. WHO, 2013, pp. 17f.).

The evidence adduced above suggests that religion not only exerts an effect on attitudes towards disbelievers or towards particular transgressions (e.g., adultery, homosexuality), but may also exert a diffuse effect on aspects of personality such as self-regulation and impulse control: The phenomenon is broader. There is not only a direct effect on specific behavior motivated by the verbatim religious message. Personality, worldviews and culture are shaped in interaction with developed institutions and the effects of groups, e.g. multiplier and aggregated effects in schools, neighborhoods and societies. Of course, it is hard to disentangle the effects of say, Protestantism, from a general civilizing process (Elias, 2000/1939), which may itself

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<sup>2</sup> “Harby”, an Arabic term, today written “harbi”, literally means to “belong to the war”. It is a concept of Islamic law referring to those non-Muslim people, who are not subjected and do not

have been influenced by other factors, such as cognitive ability, historical contingency and evolution. Furthermore, religion may also have had an effect through education. For example, Protestantism placed emphasis on reading and autonomous thinking (e.g. older studies Sombart, 1998/1913; Weber, 2008/1904; or newer studies Becker & Woessmann, 2007; Harrison, 2013; Steppan, 2010). Religion may enhance or impede cognitive ability, thereby exerting an indirect effect on ethics (cognitive-moral enlightenment theory).

### *1.3 Institutions and political-historical processes*

Culture is not only shaped by religion but also by past political, historical and institutional processes. Moreover, these processes have a direct impact on human rights via parliaments, elections and courts, as well as via the behavior of individuals within the police and prison services, who may or may not choose to violate individuals' human rights. For example, Greek democracy and Roman law are two important institutional advancements from which the modern interpretation of the rule of law benefited.

According to the institutionalist view (e.g. North, Wallis & Weingast, 2009), historical progress towards liberty, democracy and the rule of law (including human rights) can be seen as an interaction between institutions, the economy, and the interests of various important societal groups, especially the bourgeoisie (McCloskey, 2006). Each stage in the progress was built upon past achievements. The British and French experiences, which led to the modern Western society, can be seen as examples. In addition, the wealth of a society may make their officials less prone to corruption. Note that institutions do also have an impact independent from religion and culture, insofar as they influence law, economy and society. For example, institutions imposed by British and French colonists appear to have exerted a positive impact on economic development on islands in the Pacific, Atlantic and Indian oceans, relative to those imposed by the Spanish or Portuguese (Feyrer & Sacerdote, 2009).

### *1.4 Further supportive or impeding factors: Evolution and consanguinity*

There is no genetic theory relating specifically to the establishment of human rights or to ethical behavior. However, there is a theory concerning *pacification* and *behavioral*

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pay special taxes.

*self-control* (Frost, 2010), which are both clearly conducive to ethical behavior. The gradual build up of Roman institutions via a central authority, including the courts, guards and military, led to the monopolization of violence manifested in the Pax Romana. In hunter-gatherer societies, male violence typically has a positive effect on fertility (Chagnon, 1977), yet the powerful Roman state punished males who engaged in competitive violence. Over the long run, this may have had not only a culturally pacifying impact but also a genetically pacifying impact on the Romans: Violent males and their genes were removed from reproduction. In Europe, this process was interrupted between the 5<sup>th</sup> and 11<sup>th</sup> centuries. But from 11<sup>th</sup> to the 19<sup>th</sup> century, strong states backed by the worldviews of the church and later of enlightenment philosophers sought to stamp out violent crime by means of capital punishment and lifetime incarceration. About 0.5 to 2% of all men were removed from each generation through court-ordered executions or imprisonment, which may have contributed to a long run genetic pacification. Accordingly, murder rates declined from between 20 and 40 to between 0.5 and 1 homicides per 100,000 (Frost & Harpending, 2015).

A complementary theory was developed by Gregory Clark (2007): In Britain, from the mediaeval times on until the 19<sup>th</sup> century, the middle-class and the rich had more surviving children than the poor. In addition, membership of a particular class was not only dependent on one's parents' class but also on one's own behavior. In other words, individuals who were able to make it into the higher social classes, i.e. those with traits such as conscientiousness, predictability, discipline, peaceableness, delay of gratification and industriousness, left more surviving children. Society therefore gradually came to be populated by individuals with "burgher" traits, which were more conducive to economic development.

This theory can be broadened (to Western Europe) and deepened (i.e., grounded in a specific cultural pattern) by appeal to the *Western European marriage pattern* (Hajnal, 1965). By the end of the sixteenth century, it was socially prescribed that an individual (especially a man) could only marry if he could make a living for himself, a spouse and his children – i.e., only if he had achieved a certain position within society, e.g. possessing a farm, being a master craftsman, or practicing as a professional. This led to late marriage, high rates of childlessness (of about half of the cohort), more rights for women, and large investments in education. Going further than Hajnal himself did, it

arguably also enhanced delay of gratification, self-control (especially of sexuality), conscientiousness, frugality, industry and cognitive ability. The causes of this marriage pattern can be traced to Roman, Germanic and Christian traditions, to the interests of the church, and to the interests of landlords and guilds. Its impact via both culture and evolution, via both personality and ability, laid the foundation for burgher society, for industrialization and for the socio-political ascent of the West.

All three theories (Frost's, Clark's and Hajnal's) describe a process of *embourgeoisement*, a gentrification of society in personality, manners, orientations and behavior (resembling the historical-sociological theory of Elias, 2000/1939). However, although all three theories are well-supported by circumstantial evidence, none has been supported by direct evidence of selection on individual genes. We do not yet know precisely which genes contribute to the various psychological and behavioral traits in question, so we cannot run tests for positive selection using genomic data. But there are genetic markers (markers of evolution and ancestry, which can be used (e.g., Becker & Rindermann, 2016; Putterman & Weil, 2010).

A second genetic approach concerns *consanguinity*: that is marriage between close relatives (usually between cousins). Insofar as they bring together two copies of rare recessive alleles, consanguineous unions tend on average to exert a deleterious neurological-cognitive effect on children, which results in a lowering of IQ by about –3 to –6 IQ points (inbreeding depression; Jensen, 1983; te Nijenhuis, 2010). Other health and personality effects that have been linked to consanguineous unions include personality disorders and psychosis (Bener et al., 2016).

In addition, consanguinity within society acts to reduce cooperation between unrelated persons insofar as it makes such cooperation less useful and riskier; and consanguinity decreases both trust and individualism – all of which have a negative effect on democracy. In the study of Woodley and Bell (2013), the correlation between consanguinity and democracy was  $r = -.63$ ; in regressions the negative effects were about  $\beta = -.45$  to  $-.74$  (and see Carl, 2017b; Schulz, 2017).

Finally, for all mentioned processes apply that they are related to culture: They depend(ed) on a certain culture and they produce(d) a certain culture.

## 2 Our approach

Our approach is a statistical one, based on country-level data from the 20<sup>th</sup> and 21<sup>st</sup> centuries. We utilize cognitive ability (as measured by student assessment and intelligence tests), as well as religion (as measured by percentages of adherents), and analyze their effects on respect for human rights. We employ regression analysis to help us answer the questions: How large is the statistical effect of cognitive levels compared to the one of religion in explaining cross-country differences in human rights? Are there relationships between country differences in cognitive ability or religion on the one hand, and country differences in human rights on the other?

We use international data sets. We assume the larger the statistical effect, the closer the relationship, e.g. between ability and human rights, and the larger is the impact of ability on human rights. In order to justify such conclusions, besides theoretical substantiation, possible additional factors have to be controlled and reasonable intervening factors considered. We start with simple bivariate correlations. However, a correlation between two variables obviously does not necessarily represent a causal effect. E.g. cognitive ability may influence human rights; human rights may influence cognitive ability; or a third variable, e.g. religion, may influence both cognitive ability and human rights.

We attempt to deal with this problem in the following ways: first by presenting (what we hope is) a convincing theory, namely, that cognitive ability enhances human rights (see above); second by controlling for potentially confounding variables (possible “real causes”) via partial correlations, regressions and path analyses; third by including intervening variables to showing direct and indirect effects, e.g. the effect of education on human rights via cognitive ability; fourth by using cross-sectional and longitudinal models, the latter being capable of analyzing reciprocal effects, e.g. of ability on human rights and of human rights on ability; and fifth by employing different indicators of the same construct, and checking the robustness of effects, e.g. for human rights general vs. women’s rights.

*Limitations:* Our analyses do not represent a study of ideas and their influences over historical time. We do not conduct an analysis of the history of ideas in co-development with society and institutions. However, we have outlined the historical processes above, and we have described why cognitive ability, religion, institutions and other factors

might have an impact on the development of human rights and their practice today. Nevertheless, a thorough historical analysis remains a task for historians and philosophers.

### 3 Method

#### 3.1 Data

*Human rights:* Data on human rights were taken from the CIRI Human Rights project (Version: 2014.04.14; Cingranelli, Richards & Clay, 2014). CIRI does not present one global human rights indicator, but rather several different ones. We have chosen the most important indicators which, in our view, constitute the core of human rights. For example, we did not use “Independence of the Judiciary”, which is arguably a measure of the rule of law more than of human rights per se. Our four chosen indicators are: 1. *Physical Integrity Rights Index*. This quantifies the absence of torture, extrajudicial killing, political imprisonment, and disappearance. 2. *Freedom of Speech*. This quantifies the extent to which public speech and the press are not constrained by government censorship. 3. *Freedom of Religion*. This quantifies the extent to which citizens can exercise and practice their religious beliefs including attempts to convert other persons. 4. *Women’s Rights*. This comprises three separate indicators of women’s rights: economic rights (e.g., free choice of profession or employment without the need to obtain a husband or male relative’s consent); political rights (e.g., the right to vote, measured from 1981 to 2005); and social rights (e.g., the right to enter into marriage on the basis of equality with men). These three women’s rights indicators correlate between  $r=.50$  and  $.82$ , homogeneity of the mean is Cronbach- $\alpha = .82$  (for the year 1981).

Data are given for the years 1981 ( $N = 136$  countries) to 2011 ( $N = 191$ ). For our cross-sectional analyses, we chose the years 2010 and 2011, and averaged them. Taking two years leads to higher reliability and validity of data. For our longitudinal analyses, the first period comprises the first half of the nineteen eighties (1980 to 1984).

For the purposes of coding, CIRI uses the country overviews provided by the *US State Department Country Reports on Human Rights Practices* and *Amnesty International’s Annual Reports* (described by Cingranelli & Richards, 1999; Cingranelli



& Richards, 2010; Cingranelli et al., 2014). CIRI codes the human rights *practices* of *governments* toward their *own people* – not what is the official law, not the behavior of military groups, terrorists or average people, and not government behavior towards immigrants or citizens of other countries. Thus the operationalization is somewhat narrower than the by inhabitants of a country experienced human rights situation some other definitions have been used in the past (Landman, 2004). The coding is done independently by at least two coders for each country using a standardized procedure, which is guided by a coding manual described in detail by Cingranelli et al. (2014).

*Educational level of society*: Standardized values of three measures were averaged: 1. Adult literacy rate – the ability to read and write simple sentences or similar basic literacy (e.g., filling out an application form) – for the population 15 years old or older, from Kurian (2001, pp. 349f.,  $N = 195$ ). 2. Percentage of persons between 12 and 19 years old for the years 1960-1985 (in the interval of student assessment studies, from the 1990s on they are adults) who have graduated from secondary school ( $N = 117$ ), from Mankiw, Romer and Weil (1992). 3. The mean of years of schooling of persons 25 years or older for 1990, 1995 and 2000 ( $N = 107$ ), from Barro and Lee (2000). All authors used data from UNO or similar sources. The sum ( $\alpha = .93$  in 101 common countries) is given for  $N = 195$  countries.

*Cognitive ability*: Data from various *student assessment studies* were combined: 1. PISA, Programme for International Student Assessment – reading, mathematics and science literacy of 15 year old students, 2000, 2003, 2006, 2009, 2012; TIMSS, Trends in International Mathematics and Science Study, 1995, 1999, 2003, 2007, 2011, mathematics and science of 4<sup>th</sup> and 8<sup>th</sup> graders; PIRLS, Progress in International Reading Literacy Study, 2001, 2006, 2011, reading literacy of 4<sup>th</sup> graders. 2. If for certain countries no data could be obtained from PISA, PIRLS and TIMSS, older, regional or less representative studies were considered: IEA-Reading Literacy Study 1991 (International Association for the Evaluation of Educational Achievement, 9-year-old and 14-year-old students), the IAEP-II 1991 (International Assessment of Educational Progress, mathematics and science – 9- and 13-year-old students), LLECE 1997 and 2005-2006 (Laboratorio Latinoamericano de Evaluación de la Calidad de la Educación, in third to sixth grade reading, mathematics and science), SACMEQ 1995-1998, 1999-2004, 2007 (Southern and Eastern Africa Consortium for Monitoring

Educational Quality; reading and mathematics in sixth grade), MLA 1999 (Monitoring Learning Achievement; literacy, numeracy and life skills in fourth grade), PASEC (Programme d'Analyse des Systèmes Éducatifs – French and mathematics in second and fifth grade; due to low comparability we took only mathematics), and results in the International Mathematical Olympiad (IMO). The scores from student assessments were combined with *psychometric intelligence test data* from Lynn and Vanhanen (2012).

Before averaging, the data were (where possible) corrected for *age* (depending on the country, students may be older or younger than the international average) and *school attendance rates* (depending on the country, more or less young people may attend school than is the case on average, internationally). Student data from countries with only regional data were corrected so as to be more nationally representative (e.g., Shanghai for China). IQ estimates that were not directly measured were also corrected. Obviously incorrect data were excluded or corrected (e.g., TIMSS 2007 Kazakhstan, psychometric IQ for Bosnia). Student assessment scores and psychometric IQ test results are highly correlated, and form a strong international *G*-factor (*rs* around .80 to .92; Coyle & Rindermann, 2013).

Many student assessment studies also provide data for the *95%-ability level* (i.e., intellectual classes, high achievement groups). All data were standardized in an IQ-metric (also see Rindermann, Kodila-Tedika & Christainsen, 2015). The assumption is that student-based data are good proxies for the general (adult) ability level in a society. Data are given for  $N = 200$  (cognitive ability mean) or  $N = 99$  countries (95%-ability level); these correlate at  $r = .97$  ( $N = 99$ ; see Figure 1). Correlations with the ability compilations of other researchers are high (see Rindermann et al., 2015). Overall levels change across time, but patterns across regions and populations are quite stable (e.g. Rindermann & Thompson, 2013, 2016).

*Rule of law* captures the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. Mean of 2009-2011,  $N = 200$ , Kaufmann, Kraay and Mastruzzi (2010, update 2012).

*Political freedom*: Freedom House (2013) surveys freedom of expression and belief, of association and organizational rights, the rule of law and respect for human rights, personal autonomy and economic rights. As for other political variables, there is some

conceptual overlap between political freedom and human rights. Mean of 2008-2012,  $N = 196$ .

*Democracy*: Data were taken from Vanhanen and Åbo Akademi (2013), measuring competition (the smaller parties' share of the votes cast in parliamentary or presidential elections) and participation (percentage of the total population who actually voted in the election) in voting decisions for parliamentary or presidential elections, as well as referendums ( $N = 167$ ). A second *Democracy-index* was taken from Marshall, Gurr and Jagers (2013), which provides an evaluation of essential political indicators: presence of institutions and procedures through which citizens can express effective preferences about alternative policies and leaders; constraints on the exercise of power by the executive; and guarantees of civil liberties to citizens in their daily lives and in acts of political participation ( $N = 188$ ). The two correlate at  $r = .89$ , Cronbach- $\alpha = .94$ . Mean of 2007-2012,  $N = 190$ .

*Government effectiveness*: Data were taken from the World Bank (Kaufmann, Kraay & Mastruzzi, 2010, update 2012) and measure the quality of public services, their independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. Data for the period 2009-2011 are given for  $N = 200$  countries.

*Gender equality*: Gender equality in economic participation and opportunity, educational attainment, health and survival and political empowerment (Hausmann, Tyson & Zahidi, 2011). Mean of 2006-2011,  $N = 135$ .

*Wealth (income, production)*: Per capita gross domestic product (GDP) 2010 from the Penn World Tables (Heston, Summers & Aten, 2012) in 2005 constant prices, with purchasing power parity (PPP) adapted to the international dollar (Laspeyres). Because an increase at a lower level arguably has much more impact on the quality of life, we applied the natural logarithm of GDP. It transforms nonlinear, exponential increases in "currency units" to linear increases in more realistic "quality of life units". Data are given for  $N = 189$  countries. As a second measure, we took logged GDPs from Maddison in 1990 international dollars (Maddison, 2008; 2010 from Bolt & van Zanden, 2013). Because the newer Maddison data set has information on fewer countries ( $N = 117$  vs. 159), we combined – after standardization – data from 2010 and

2008;  $N = 161$ . While the Maddison data are better for longitudinal comparisons (more past measurement points), the Penn data are better for current analyses (more countries).

*Religion:* Data for religions (percentages) are from the German Department for Foreign Affairs ([www.auswaertiges-amt.de/www/de/laenderinfos](http://www.auswaertiges-amt.de/www/de/laenderinfos)), from a country encyclopedia (“Länderlexikon”; Jahrbuch, 2004) and from the CIA World Factbook ([www.cia.gov/cia/publications/factbook](http://www.cia.gov/cia/publications/factbook)). Data, especially for developing countries, are frequently missing, mixed or odd and needed to be estimated or corrected. For East Asia Confucianism was seen as the dominant religion. Data are given for  $N = 202$  countries.

*Evolution:* Two indicators for the evolutionary-genetic background are used: Skin brightness (or skin lightness, usually “skin color”), a good proxy for ancestry (Shriver et al., 2003), taken from Biasutti (1967, p. 224, numbers were assigned to map shading by a third person, a student). Data for currently living populations in America, Singapore, Australia and New Zealand were estimated based on frequencies of countries of origin. Correlations based on non-colonized regions with data from Jablonski and Chaplin (2000, pp. 74f.) and Templer and Arikawa (2006, pp. 124f., also based on Biasutti) are  $r = .92$  ( $N = 48$ ) and  $r = .98$  ( $N = 129$ ). We combined the two independent sources: Jablonski and Biasutti (Cronbach- $\alpha = .96$ ;  $N = 193$ ).

The second evolutionary indicator was brain size (cranial capacity; Beals, Smith & Dodd, 1984, p. 304, their Figure 3). In a similar procedure, a student assigned numbers to different countries based on map shading; data for currently living populations were estimated based on frequencies in countries of origin. This variable correlates with a variable based on the same source of Beals et al. but smoothed from Gerhard Meisenberg (personal communication, 25. November 2014) with  $r = .84$  ( $N = 178$ ).

In a factor analysis of both evolutionary variables (skin brightness, cranial capacity) the first unrotated factor, the  $g$ -factor, was used as a global indicator of evolution and ancestry. Data are given for  $N = 183$  countries. This factor does *not* represent direct genetic effects on human rights, i.e., from genes to neurological structures, to attitudinal and behavioral patterns, to institutions and societies. Rather, it stands in for the possible effect of evolution that could be detected in the future by detailed genetic-psychological studies, whilst controlling for important background factors such as religion and other important environmental factors, e.g. politics and wealth.

*Consanguinity* measures the percentage of unions to close relatives, i.e., the degree of inbreeding (in a biological language). Information is taken from Woodley (2009) and supplemented by Tadmouri et al. (2009). The two correlate at  $r = .87$  ( $N = 15$ ). Their common most important source is Bittles (2001). Countries without data were substituted for countries from the same region (Nigeria, Australia, Slovakia) or neighboring countries (Netherlands). Data are given for  $N = 77$  countries.

The data given on background variables are far from optimal (e.g., somewhat old, not based on the largest samples, few research groups, difficult to measure). Because the data are less reliable, correlations will be lower than otherwise would be the case. Thus observed correlations may represent the lower bounds of the possible effects of background factors.

### 3.2 *Statistical analyses*

We performed correlation, regression and path analyses. Regression and path analyses are used to calculate direct, indirect, net and sum effects of variables. In these analyses the standardized path coefficients ( $\beta$ ) between different variables are the most relevant. Correlations are always added in parentheses. Differences between correlations and path coefficients help to quickly estimate the influence of other variables in a model (the larger the difference, the larger is the influence of other variables), and they make it possible to check the model ( $\sum r\beta = R^2 = 1 - \text{residual}$ ; residual/error is the unexplained variance), and to calculate the proportion of the variance explained by each factor ( $R^2 = \sum r\beta$ ). “Good” values for fit indices (if models are not saturated) are  $\text{SRMR} \leq .08$  or  $\text{SRMR} \leq .05$  and  $\text{CFI} \geq .95$  or  $\text{CFI} \geq .97$ , and “acceptable” fit is reached with  $\text{SRMR} \leq .10$  and  $\text{CFI} \geq .95$ . For the analyses, SPSS 22 and Mplus 5.21 were employed. Significance tests were not used for interpretation (for an in-depth justification, see, e.g., Armstrong, 2007; Cohen, 1994; Gigerenzer, 2004). They are of questionable value for scientific reasoning at the macro-social level (Pollet, 2013). For cross-sectional analyses (presented in Figures 1 to 6), we used full-information maximum likelihood (FIML). This means no listwise deletion in the case of missing data. All given information is used; the sample sizes and country compositions may differ from one path to another (see tables for bivariate correlations).

We present standardized coefficients. First, they are comparable across differently scaled predictors and criteria. Second, a majority of the variables do not have natural, understandable and widely-used scales. Thus, unstandardized results would be less meaningful.

## 4 Results

### 4.1 *Check of human rights data*

The four subconstructs of human rights – namely physical integrity, freedom of speech, freedom of religion and women’s rights – correlate on average at  $r = .48$  (years 2010 and 2011 were averaged beforehand). The correlations, especially those with women’s rights ( $r = .37$ ), are lower than one might expect for measures of a single construct. The combined metric for human rights (averaged after single values had been standardized) for 2010-2011 has a homogeneity of Cronbach- $\alpha = .79$ . This metric correlates with its subconstructs at  $r = .78$ , on average.

The correlational results are somewhat surprising; they are too low for measures all purporting to measure the same underlying construct, namely human rights. The weakness of the correlations implies that some countries are high in physical integrity but low in freedom of speech, and that some are low in freedom of religion but high in women’s rights, and so on, which seems somewhat difficult to believe. The correlations of the human rights subconstructs with rule of law, political freedom, democracy and gender equality are also not as high as expected. For example, the correlation between the rule of law and physical integrity is only  $r = .62$ , the correlation between political freedom and freedom of speech is only  $r = .74$ , and the correlation between gender equality and women’s rights is only  $r = .71$  (Table 2).

On closer inspection of the human rights data, it appeared that peculiarities in the values for particular country-years could help to account for these low correlations. For example, in 1981 Israel achieved the same result for physical integrity (2) as North Korea and Bolivia. Spain (4) is identical in physical integrity to Cuba but scores worse than Haiti, Egypt and Sudan (5). In 2011, Russia had the same physical integrity result (0) as Libya and Eritrea. Sweden (7) scores worse than Singapore (8), and Israel (2) scores worse than Iraq (3). There seem to be some coding issues (Wood & Gibney,

2010). However, we suspect the bigger issue is that their initial data bases either from the US State Department or from Amnesty International are biased. Some countries, especially Israel and Russia, seem to be judged more strictly than others.

However, after averaging across the four indicators, and across, different years, the values are altogether more valid. For the period from 1981 to 1984, Israel (4.37, rank 96 of 161) now scores better than both North Korea (2.33, rank 149) and Bolivia (4.13, rank 109). In the period form 2010 to 2011, Russia now scores better than 0 (1.15 and rank 183 of 190); Sweden (7.68, rank 20) now scores far better than Singapore (5.13, rank 99); and Israel (3.49, rank 138) now scores better than Iraq (1.31, rank 182). Both Russia and Israel still score unexpectedly low.

Furthermore, the pattern of correlations between the subconstructs of human rights and the various measures of political conditions shown in Table 2 makes sense: There is a stronger correlation between political freedom and freedom of speech ( $r = .74$ ) than there is between either of these variables and any of the others in the table. Similarly, there is a stronger correlation between gender equality and women's rights ( $r = .71$ ) than there is between either of these variables and any of the others. The validity of the human rights subconstructs is therefore supported by a multitrait-multimethod matrix approach.

Additionally, the overall (averaged) human rights construct exhibits a higher correlation with the criterion variables than the average of the correlations of each subconstruct with each criterion variable. For example, in Table 2, rule of law and human rights correlate at  $r = .65$ , whereas the average correlation of the four human rights subconstructs with the rule of law is only  $r = .50$  (based on .62, .43, .32, .64).

Finally, our two conceptually identical measures of GDP per capita, Maddison and Penn, correlate at only  $r = .76$  ( $N = 158$ ). It is only when the natural logarithm of each indicator is used, that the correlations reaches a respectable level of  $r = .94$ . In summary, the human rights data are not perfect, but do show some validity, which is improved through statistical adjustments.

#### 4.2 *Human rights, education and cognitive ability – the cognitive-moral enlightenment theory*

According to the cognitive-moral enlightenment theory, higher cognitive ability contributes to ethical behavior as manifested in respect for human rights. Education is a

proxy for cognitive ability, but also captures the effects on other variables, such as personality and attitudes.

*Table 1 around here please*

Cognitive ability measures correlate positively with human rights (see Table 1). The correlations are higher for the overall human rights construct than for the individual subconstructs. This is a typical result, and can be attributed to the impact of averaging on reliability. However, of the human rights subconstructs, physical integrity and women's rights appear to correlate most strongly with the cognitive ability measures. We do not have a straightforward explanation for this. Why should freedom of speech and religion depend less on cognitive development? It may simply be attributable to contingencies of the data construction process. When all the predictor variables are compared in the same sample of countries ( $N = 95$ , in parentheses), two patterns can be detected. First, education is slightly more highly correlated with human rights than cognitive ability is ( $r = .54$  vs.  $.50$  to  $.51$ ). This may be because attitudes fostered by education have an effect on human rights, over and above the impact of cognitive ability. Second, the intellectual class measure of cognitive ability is slightly more highly correlated with human rights than is average cognitive ability ( $r = .52$  vs.  $.48$ ). The social, political and legal institutions that support human rights are constructed and disproportionately maintained by members of the intellectual class. Thus differences among countries in the cognitive ability level of institution builders are more important than differences in the cognitive level of the average person or of lower ability groups.

### 4.3 Institutional hypothesis

*Table 2 around here please*

Next we check correlations of the human rights measures with political and economic conditions. The correlations with political conditions also represent a check on the validity of our human rights measure, especially the correlations with the rule of law measure – given its conceptual proximity to human rights. Wealth can be seen as



another potential determinant of respect for human rights. Of course, human rights and political conditions influence each other, and both may depend on the same factors.

All the correlations between political and economic conditions and human rights are positive (see Table 2). Contrary to expectation, the correlations with the human rights measures are highest for political freedom, not for the rule of law ( $r = .84$  vs.  $.65$ ). Women's rights appear to especially benefit from well-functioning effective governments ( $r = .65$ ), but – unsurprisingly – is most strongly correlated with gender equality ( $r = .71$ ), which supports that measure's validity. Similarly, freedom of speech is most strongly correlated with political freedom ( $r = .74$ ). Human rights measures are more strongly correlated with political conditions than with GDP per capita ( $r = .41$ ), which supports the validity of the human right measures.

#### 4.4 *Background factors: Religion, evolution and consanguinity*

*Table 3 around here please*

Correlations with potential background factors are displayed in Table 3. Christianity (measured as the percentage of Christians in a society) is the single variable most highly correlated with human rights ( $r = .62$ ). It is the rights of women that appear to be most strongly protected in Christian societies ( $r = .53$ ). Of Christian denominations, Protestantism appears to be the most important ( $r = .48$ ), closely followed by Catholicism ( $r = .42$ ). As to their effects on human rights, there seems to be no categorical difference between Protestantism and Catholicism, but rather only a gradual one – at least when measured by today's shares of adherents in a society.

The reverse pattern holds true for Islam. As the percentage of Muslims in a country increases, the human rights situation worsens ( $r = -.57$ ). Freedom of religion is the most negatively affected subconstruct ( $r = -.54$ ; see also the Cairo Declaration on Human Rights in Islam, § 10). A Christian-Muslim contrast (share of Christians minus share of Muslims) combines both effects, leading to the highest correlation ( $r = .64$ ). The higher the number of Christians, and the lower the number of Muslims, the greater is the respect for human rights in a society, whether measured as religious freedom ( $r = .56$ ), women's rights ( $r = .54$ ), freedom of speech ( $r = .50$ ), or physical integrity ( $r = .41$ ). The correlation of human rights with religion is higher than the one with education ( $r =$

.38), and the one with cognitive ability ( $r = .26$  to  $.51/.52$ ). In summary, while the cognitive-moral enlightenment theory receives support, the culture/religion theory seems to provide a better empirical-statistical explanation for cross-country differences in respect for human rights. All religions other than Christianity and Islam are less important.

However, one interesting methodological point should be mentioned: it is most difficult to measure Animism. There is no single church, and certainly no official membership; Animism is of course more an orientation or practice than an organized religion (e.g., Voodoo, Candomblé, Macumba). Nonetheless, the pattern of correlations supports the validity of this measure. While Animism does not generally have a positive impact on human rights ( $r = -.03$ ), it does have a positive impact on religious freedom ( $r = .31$ )! Syncretism is possible, such as with major religions like Christianity and Islam (but not from their perspective). This was and is a special feature of Animism. So the validity of both the human rights data and the religious data finds support; their quality is better than expected.

The correlations of human rights measures with evolutionary indicators are also positive (Table 3). Skin brightness is more highly correlated with human rights than is cranial capacity ( $r = .25$  vs.  $.18$ ). Of course, skin color itself is unlikely to exert any effect; it constitutes a marker for evolutionary pressures that may be associated with culture (see Introduction). However, in the case of cranial capacity, a causal effect is more plausible, because brain size may be a proxy for intelligence, working via the cognitive-moral enlightenment path.

Finally, consanguinity is very strongly and negatively correlated with human rights ( $r = -.65$ ). The negative correlation with women's rights ( $r = -.64$ ) is particularly large. When comparing these correlations to those with other variables, it has to be kept in mind that the consanguinity data are only given for 74 nations. If the correlations with religion are re-estimated in that same sample of 74 countries, they become much larger in magnitude: the Christian-Muslim contrast and human rights are correlated at  $r = .80$  (consanguinity and human rights at  $r = -.65$ ). In a multiple regression analysis, the effects differ dramatically, with the one for religion being much larger:  $\beta_{\text{CMC} \rightarrow \text{HR}} = .76$ ,  $\beta_{\text{Cons} \rightarrow \text{HR}} = -.05$  ( $N = 74$ ; correlation between Christian-Muslim contrast and consanguinity  $r = -.79$ ). This indicates that country samples have to be comparable, and

that there can be also indirect effects, here from religion to consanguinity. Path analyses must take this into account.

#### 4.5 Path analyses comparing and integrating factors

*Figure 1 around here please*

To begin with, we tested the cognitive-moral enlightenment theory against the culture-worldview-religion theory while only considering cognitive ability and religion – measured as the percentage of Christians (Figure 1): Both show a positive effect ( $\beta_{CA \rightarrow HR} = .10$ ,  $\beta_{Christ \rightarrow HR} = .59$ ,  $N = 191$ ; if listwise  $\beta_{CA \rightarrow HR} = .10$ ,  $\beta_{Christ \rightarrow HR} = .60$ ,  $N = 187$ ). The effect of cognitive ability becomes stronger when using the intellectual class variable ( $\beta_{95\% \rightarrow HR} = .38$ ,  $\beta_{Christ \rightarrow HR} = .53$ ,  $N = 191$ ;  $\beta_{95\% \rightarrow HR} = .35$ ,  $\beta_{Christ \rightarrow HR} = .58$ , listwise  $N = 96$ ). Although both theories are supported, the effect of religion is noticeably stronger than the effect of cognitive ability. In addition, religion has also a strong indirect effect via modifying cognitive ability ( $\beta_{Christ \rightarrow CA} = .28$ ,  $\beta_{Christ \rightarrow 95\%} = .25$ , based on  $N = 187$  or  $N = 96$ ). The total effect of religion is  $\beta_{Christ \rightarrow HR} = .59 + (.28 \times .10) = .62$  compared to an effect of cognitive ability of .10 or .38. Even if we switch the direction of the effects between religion and cognitive ability ( $\beta_{CA \rightarrow Christ}$ ), the total effect of religion is still larger ( $\beta_{CA \rightarrow HR} = .10 + (.28 \times .59) = .26$ ,  $\beta_{Christ \rightarrow HR} = .58$ ).

*Figure 2 around here please*

Based on theory and the preceding empirical results, we estimated a second model (model 2) which includes a number of intervening variables. Religion, measured as the percentage of Christians in a society, again has a positive impact on human rights. The model controls for political conditions – democracy. In a second version of the model, the effect of wealth (GDP/c Penn) is added (dashed arrow on human rights in Figure 2). Both depend positively on cognitive ability in a society, especially on the level of its intellectual class. We had initially assumed, based on the cognitive-moral enlightenment theory, that cognitive ability has a direct effect on human rights. However, when

political conditions are assumed to depend on cognitive ability, the direct effect of cognitive ability becomes around zero. This direct effect was therefore excluded.

In this model (see Figure 2), religion (percentage of Christians) has a strong direct effect on human rights ( $\beta_{\text{Christ} \rightarrow \text{HR}} = .31$ ). Its total effect including indirect effects (e.g. via democracy  $.48 \times .52 = .25$ , which has to be added) is  $\beta_{\text{ChristTot} \rightarrow \text{HR}} = .63$ . So religion is the most important variable. The strongest direct effect is exerted by democracy ( $\beta_{\text{Demo} \rightarrow \text{HR}} = .52$ ), but its causal impact is less clear. There is obviously a conceptual overlap between the constructs of democracy and human rights, meaning that the relevant paths may have been somewhat over-controlled. Even under these conditions, religion exerts a strong direct impact on human rights. And if GDP per capita is added, the direct effect of religion is only reduced from  $\beta_{\text{Christ} \rightarrow \text{HR}} = .31$  (.308) to  $\beta_{\text{Christ} \rightarrow \text{HR}} = .30$  (.303) – a negligible change. GDP per capita itself has only a weak impact on human rights ( $\beta_{\text{GDP} \rightarrow \text{HR}} = .10$ ). Differences in human rights between countries can therefore be explained primarily by differences in culture, i.e., religion. Looking more closely at the model, education has a positive effect on cognitive ability ( $\beta_{\text{Educ} \rightarrow \text{CA}} = .74$ ), and the general cognitive ability level of a society on the cognitive level of its intellectual class ( $\beta_{\text{CA} \rightarrow 95\%} = .85$ ). Intellectual classes have a positive impact on wealth ( $\beta_{95\% \rightarrow \text{GDP}} = .52$ ) and democracy ( $\beta_{95\% \rightarrow \text{Demo}} = .31$ ). For all three variables the model is rather uncomplex: First, cognitive ability increases education, not only education increases cognitive ability. Second, the ability level of intellectual classes also increases the general ability level of a country. Finally, intellectual classes have also a positive impact on the general cognitive ability level of a society via research, education and institutions. All models have their limits.

*Figure 3 around here please*

In a third model, we added the second background factor, namely evolution (g factor of evolution; Figure 3). Compared to the effect of religion (percentage of Christians), the effects of evolution on education and cognitive ability are much stronger ( $\beta_{\text{Evo} \rightarrow \text{Educ}} = .51$ ,  $\beta_{\text{Evo} \rightarrow \text{CA}} = .56$ ,  $\beta_{\text{EvoTot} \rightarrow \text{CA}} = .56 + (.51 \times .40) = .76$ , vs.  $\beta_{\text{Christ} \rightarrow \text{Educ}} = .33$ ,  $\beta_{\text{Christ} \rightarrow \text{CA}} = .33 \times .40 = .13$ ). Adding a direct path from religion to cognitive ability results in a small negative effect ( $\beta_{\text{Christ} \rightarrow \text{CA}} = -.05$ ). The strong effects of evolution on education and

cognitive ability also mean that the indirect effects of evolution via education, cognitive ability, intellectual classes, democracy and wealth are larger. However, for the central question, explaining national differences in human rights, religion is decisive. First, there is a large direct effect of religion on human rights ( $\beta_{\text{Christ} \rightarrow \text{HR}} = .31$ ; Figure 3), this effect is identical to the one where evolution is omitted (Figure 2). Adding evolution does not alter the effect of religion. Second, if a direct path from evolution to human rights is added, the magnitude of the effect is near zero ( $\beta_{\text{Evo} \rightarrow \text{HR}} = -.04$ ). Third, religion also has an indirect effect on human rights via democracy ( $.51 \times .40 = .24$ ). For understanding international differences in human rights, religion is crucial.

*Figure 4 around here please*

In the fourth model, we substituted democracy for the rule of law, which is conceptually closer to human rights (Figure 4). Religion remains the most important predictor of human rights ( $\beta_{\text{Christ} \rightarrow \text{HR}} = .43$ , via indirect effects e.g. via rule of law  $.17 \times .48 = .08$  is  $\beta_{\text{Christtot} \rightarrow \text{HR}} = .63$ ). Its total effect is identical to the one using democracy as an intervening variable (Figure 2). Again, religion appears crucial for human rights.

*Figure 5 around here please*

In the fifth model, we substituted the percentage of Christians for the percentage of Muslims (Figure 5). The higher the percentage of Muslims in a society, the lower its respect for human rights ( $\beta_{\text{Mus} \rightarrow \text{HR}} = -.33$ ). The pattern of effects here is a mirror image of the one for percentage of Christians: the impact on education is negative ( $\beta_{\text{Mus} \rightarrow \text{HR}} = -.34$ ), as is its impact on democracy ( $\beta_{\text{Mus} \rightarrow \text{Demo}} = -.38$ ). Its total effect on human rights including indirect effects is  $\beta_{\text{Mustot} \rightarrow \text{HR}} = -.59$ .

*Figure 6 around here please*

In the sixth model, we substituted the overall human rights construct for the women's rights subconstruct (Figure 6). And we added consanguinity (percentage of marriages between cousins, uncles and nieces). The assumption here is that the practice of

consanguinity reduces the liberty of women. Additionally, a higher degree of genetic kinship reduces individual freedom (because relatives have more of an interest in one another's behavior) and reduces outside cooperation (because non-related persons become less important). Religion remains the most important factor (direct:  $\beta_{\text{Christ} \rightarrow \text{HR}} = .37$ ; Figure 6), but consanguinity does have a direct impact:  $\beta_{\text{Con} \rightarrow \text{HR}} = -.18$ . This was not found for evolution (see Figure 3, when a direct path was added, the general positive effect turned into a small negative one). Consanguinity also has a negative impact on cognitive ability ( $\beta_{\text{Con} \rightarrow \text{CA}} = -.20$ ), an observation that could be explained by detrimental genetic effects on health. A correlation was assumed between consanguinity and education. On the one hand, education affects cognitive ability, knowledge, personality and attitudes, which may increase psychological and economic autonomy, thereby decreasing the frequency of mating among relatives. On the other hand, consanguinity decreases personal freedom, the positive effects of education (especially for women), and worsens health, all of which may reduce educability. The empirical correlation at the level of countries is  $r = -.64$ , while the correlation between the errors is  $r = -.48$ .

Finally, the percentage of Christians has a very strong negative effect on consanguinity ( $\beta_{\text{Christ} \rightarrow \text{Con}} = -.71$ ). Christians do not generally marry relatives ( $r = -.71$ )<sup>3</sup>, but in Muslim ( $r = .80$ ) and Animist ( $r = .18$ ) cultures the practice is widespread (see Schulz, 2017).

*Figure 7 around here please*

Finally, we analyzed longitudinal development by estimating cross-lagged effects (Figure 7). In such a model, variables are measured at two measurement points: human rights measured in the early 1980s vs. 2010/11; cognitive ability measured by student assessment studies in the late 1980s and early 1990s vs. around 2010. The exception is religion, which is only measured at a single point in time. The reasons are twofold. First, percentages of Christians and Muslims in the population are not available for different decades. Second, percentages of certain religious adherents not only capture a

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<sup>3</sup> According to Catholic Canon Law (Codex Iuris Canonici, § 1091) marriages between cousins from first to third degree are not allowed. Also the mediaeval scholar and Doctor of the Church Thomas Aquinas (1225-1274) proscribed consanguineous marriages (Supplementum Tertiae Partis, Questio 54).

short-run effect of people with certain beliefs but also a long-run effect of people with a more secular worldview shaped by religion: cultural, personality and institutional effects tend to persist even if religious affiliation and faith fade out, as has happened in most Western European countries (Harrison, 2013).

As in our cross-sectional analyses, cognitive ability and religion (percentage of Christians) each have a positive impact on human rights. Again, the effect of religion is stronger than the effect of intelligence and knowledge ( $\beta_{\text{Christ} \rightarrow \text{HR10}} = .36$  vs.  $\beta_{\text{CA90} \rightarrow \text{HR10}} = .27$ ). The reciprocal effect of human rights on cognitive ability is comparatively small ( $\beta_{\text{HR80} \rightarrow \text{CA10}} = .06$ ). Religion also has a positive impact on cognitive ability ( $\beta_{\text{Christ} \rightarrow \text{CA10}} = .12$ ).

The effect of religion on human rights (percentage of Christians:  $\beta_{\text{Christ} \rightarrow \text{HR10}} = .36$ ) is robust in longitudinal models when measuring religion as the percentage of Muslims ( $\beta_{\text{Muslim} \rightarrow \text{HR10}} = -.32$ ) or as a Christian-Muslim contrast ( $\beta_{\text{CMK} \rightarrow \text{HR10}} = .42$ ), as well as when utilizing education rather than cognitive ability ( $\beta_{\text{Christ} \rightarrow \text{HR10}} = .37$ ,  $\beta_{\text{Educ80} \rightarrow \text{HR10}} = .16$ ;  $N = 103$ ), or the rule of law rather than cognitive ability ( $\beta_{\text{Christ} \rightarrow \text{HR10}} = .44$ ,  $\beta_{\text{RoL96} \rightarrow \text{HR10}} = .28$ ;  $N = 125$ ). Religion appears to be the crucial variable for explaining international differences in respect for human rights.

Our final analyses concern effects for regional sub-samples. Within *sub-Saharan Africa*, which has a comparatively low ability level on average (Rindermann, 2013) the percentage of Christians is still positively (but weakly) related to human rights ( $r = .10$ ;  $N = 48$ ), and the percentage of Muslims is still negatively (but weakly) related to human rights ( $r = -.12$ ). Evolution has a somewhat larger positive effect ( $r = .25$ ;  $N = 42$ ), whereas cognitive ability does not ( $r = -.10$ , restricted variance;  $N = 47$ ). In a regression analysis, the effects of background variables become stronger: The Christian-Muslim contrast has a positive effect,  $\beta_{\text{ChMuC} \rightarrow \text{HR}} = .14$ , as does the evolution variable  $\beta_{\text{Evo} \rightarrow \text{HR}} = .31$  ( $N = 42$ ).

Within the “*Third World*”, a rough category comprising poor developing and emerging countries, the effect of religion is strong. The overall human rights construct has a strong correlation with the percentage of Christians ( $r = .51$ ;  $N=102$ ), and the percentage of Muslims ( $r = -.45$ ), but is essentially unrelated to the evolution variable ( $r = .03$ ;  $N = 91$ ), and does not have a positive correlation with cognitive ability ( $r = -.10$ ;  $N = 101$ ). Partialling out wealth (GDP per capita) is another strategy similar to a within

Third World analysis, but is less arbitrary (than the three worlds categorization), and uses variation across many more countries: It yields a correlation between Christianity and human rights of  $r_p = .56$ , a correlation between Islam and human rights of  $r_p = -.54$ , a correlation between evolution and human rights of  $r_p = .00$ , and a correlation between cognitive ability and human rights of  $r_p = -.06$ . Again: Religion is crucial for understanding international differences in human rights.

## 5 Discussion

The study has tried to answer the question of why nations differ in their respect for and recognition of human rights. The main hypotheses that we examined were: first, the *cognitive-moral enlightenment* theory, based on Socrates, Piaget, Kohlberg, Habermas, Oesterdiekhoff and others, namely that higher cognitive ability renders people better able to take the positions of others, and thereby act less self-interestedly and more ethically; and second, the *culture-religion theory*, based on Weber, Sombart, Harrison and others, namely that religions shape attitudes and psychological dispositions relevant to ethical behavior. Our analyses controlled for institutional (democracy, rule of law), economic (GDP per capita), evolutionary (ancestry) and familial-genetic (consanguinity) factors.

Cognitive ability had a positive impact on human rights ( $r = .26$  to  $.51$ ,  $\beta = .10$ ), as it does on many positively valued societal characteristics, such as economic productivity, income, wealth, democracy and health (e.g. Coyle, Rindermann & Hancock, 2016; Jones, 2016). However, its effect on human rights varied substantially depending on the country sample (i.e. lower in Africa and the Third World). Additionally, the level of intellectual classes had larger effects on human rights than the average ability level did ( $r = .52$ ,  $\beta = .35$  to  $.38$ ; similarly for the economy: Coyle et al., 2017). The cognitive-moral enlightenment theory was supported, yet the effect of religion was stronger and more robust, both in cross-sectional and longitudinal models, than the effect of cognitive ability. Percentage of Christians had a positive impact ( $r = .62$ , total effect  $\beta = .63$ ), while percentage of Muslims had a negative one ( $r = -.57$ , total effect  $\beta = -.59$ ).

Political institutions were highly correlated with human rights (democracy:  $r = .70$ , rule of law:  $r = .65$ ), but the background variable of religion also shaped political institutions ( $\beta = .17$  to  $.52$ , on average  $\beta = .40$ ). Political institutions are not



unimportant, but they depend on culture. Our empirical results therefore reinforce the statements made by Alexis de Tocqueville about 200 years ago:

“The influence that the geographic position of the country exercises on the continued existence of democratic institutions is exaggerated. Too much importance is attributed to laws, too little to mores. ... I am persuaded that the most fortunate situation and the best laws cannot maintain a constitution in spite of mores, while the latter still turn to good account the most unfavorable positions and the worst laws.” (Tocqueville, 2010/1835, Vol II, Part II, Chapter 9, p. 499)

There is of course some overlap between concepts and measures of human rights and political institutions: Rule of law, liberty, democracy and human rights all have commonalities, and the statistical effect on human rights may reflect some of their shared variance.

Education is an important intervening variable, and depends on religion. Wealth as measured by GDP per capita is comparatively unimportant for human rights. Evolution is important for explaining education and cognitive ability differences between countries (a view that is commonplace among experts, see Rindermann, Becker & Coyle, 2016), but its direct effect on human rights is small compared to that of religion. Finally, consanguinity has a robust negative effect on women’s rights.

Comparing different Christian denominations (measured by the percentages of adherents in the population), Protestantism and Catholicism both exerted strong effects of similar magnitude, whereas Orthodox Christianity exerted weak effects. Thus, the contention of Sombart, namely that Protestantism is an accentuation of a trend established by Catholicism, is supported more than that of Weber, who argued that there is a categorical difference between the two denominations. However, it must be stressed that, during the course of the reformation, the enlightenment and burgher society, Protestantism had an influence on Catholicism. Catholicism today is clearly different from the Catholicism of the 15<sup>th</sup> century, and this is not only due to internal progress but also due to Protestantism – both its direct and indirect effects. It has been shown empirically (e.g. by Becker & Woessmann, 2007, p. 29) that Catholics living in predominantly Protestant counties in Germany have a higher literacy level than those living in predominantly Catholic counties, i.e., they benefited in education from the

presence of Protestants. Such evidence hints that it is not just the initial message (e.g., the holy book) and the founder of a religion that are relevant (both are identical for the two denominations), but also later interpretations of the religion's initial message. Religions evolve over time, and may eventually amalgamate into the local culture. Attributes of peoples and ideas of intellectuals are important; factors, that are not independent from evolution and sometimes accidental historical occurrences: For example, no European power has ever been strong enough to rule the entire continent. There were the emperor vs. the pope, center vs. periphery, nobles vs. cities, citizens vs. knights, northern vs. southern vs. western vs. eastern powers (e.g. Weede, 2012).

Note that our study is not historical in nature. It does not trace the development of ideas and religions over historical time. However, studies that do attempt this could obviously shed further light on the development of human rights. Such studies could also examine the interplay between culture and society by considering how factors such as education, cognitive ability and intellectual classes (e.g. Scholastic philosophy) altered religious messages and religious thinking during the course of history. The evidence we have presented supports the view that religion, especially Christian Protestantism, has contributed to the development of universal human rights.

Finally, historical-hermeneutic or empirical-statistical case studies may help to further enhance our understanding of the determinants of human rights. Studies comparing countries with a common origin that today have rather different levels of human rights are particularly revealing: e.g. Turkey, Greece and Arabian countries – which are all descendants of the Ottoman Empire. The same is true for Israel and Egypt. Similarly, the former British colonies of Pakistan, India, Sri Lanka and Bangladesh, which have different dominant religions, could be compared. Case studies might also contrast pairs of countries with different roots, but with important common characteristics: such as Canada versus Mexico, both are former colonies, but one in the British-Protestant and one in the Spanish-Catholic tradition; Sweden versus Spain, both are smaller European countries which have long been independent, but one is Protestant and one is Catholic; Russia versus Iran, both are old empires with no democratic tradition, but one is Christian Orthodox and one is Shiite Muslim; or Britain versus China, both are old empires at high levels of cultural and cognitive achievement, but one is Protestant and one is Confucian.

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*Table 1: Correlations between education, cognitive ability measures and human rights*

<b>Variables</b>	<b>N</b>	<b>Human rights</b>	<b>Physical Integrity</b>	<b>Freedom of Speech</b>	<b>Freedom of Religion</b>	<b>Women's Rights</b>
Educational level of society	186 (95)	.38 (.54)	.40 (.52)	.22 (.37)	.08 (.41)	.49 (.50)
Cognitive ability (grand mean)	187 (95)	.26 (.51)	.29 (.53)	.15 (.30)	-.09 (.28)	.49 (.54)
SAS (all, mean)	105 (95)	.49 (.50)	.54 (.53)	.29 (.29)	.23 (.27)	.54 (.53)
SAS (PTP, mean)	96 (95)	.50 (.50)	.53 (.53)	.29 (.29)	.27 (.27)	.53 (.53)
SAS 95% (intellectual class level)	96 (95)	.52 (.52)	.55 (.55)	.32 (.32)	.29 (.30)	.54 (.54)
SAS 05% (low ability level)	96 (95)	.48 (.48)	.51 (.51)	.28 (.28)	.27 (.27)	.52 (.52)

*Notes:* Human right measures are for 2010 and 2011; all ability measures are corrected (for being estimated, for age, for school attendance rates, region etc.); SAS: student assessment studies; PTP: only PISA, TIMSS, PIRLS; in parentheses correlations for the same  $N = 95$  country sample (better comparable); correlations  $>.26$  significant at the 1%-level, correlations  $>.20$  significant at the 5%-level.

*Table 2: Correlations between political and economic conditions and human rights*

<b>Variables</b>	<b>N</b>	<b>Human rights</b>	<b>Physical Integrity</b>	<b>Freedom of Speech</b>	<b>Freedom of Religion</b>	<b>Women's Rights</b>
Rule of law	191	.65	.62	.43	.32	.64
Freedom (political)	191	.84	.69	.74	.62	.58
Democracy	189	.70	.53	.60	.48	.58
Government effectiveness	191	.57	.52	.37	.24	.65
Gender equality	135	.63	.49	.37	.43	.71
GDP (per capita, log, Maddison)	157	.44	.44	.30	.10	.56
GDP (per capita, log, Penn)	184	.41	.46	.22	.08	.51

*Notes:* All measures are from the year ~2010; all correlations significant at the 1%-level except for .10 and .08 (n.s.).

*Table 3: Correlations between cultural and evolutionary background factors and human rights*

<b>Variables</b>	<b>N</b>	<b>Human rights</b>	<b>Physical Integrity</b>	<b>Freedom of Speech</b>	<b>Freedom of Religion</b>	<b>Women's Rights</b>
Animism (traditional)	189	-.03	-.12	-.01	.31	-.29
Judaism	189	-.04	-.09	.02	-.06	.01
Christianity	189	.62	.43	.48	.49	.53
Catholicism	189	.42	.26	.33	.36	.37
Orthodox	189	-.07	-.02	.01	-.22	.01
Protestantism	189	.48	.39	.33	.34	.44
Islam	189	-.57	-.33	-.44	-.54	-.47
Christ-Muslim contrast	189	.64	.41	.50	.56	.54
Hinduism	189	-.07	-.10	-.05	-.08	.02
Buddhism	189	-.18	-.17	-.16	-.18	-.05
Confucianism (mixed with local)	189	-.01	.00	.02	-.04	.00
Evolution-ancestry ( <i>g</i> factor)	174	.23	.31	.16	-.12	.39
Skin brightness	182	.25	.32	.16	-.14	.45
Cranial capacity	175	.18	.25	.13	-.06	.26
Consanguinity	74	-.65	-.43	-.48	-.58	-.64

*Notes:* Background measures (religions: percentages of adherents) from around 1960 to 2000; correlations >.20 significant at the 1%-level, correlations >.15 significant at the 5%-level.

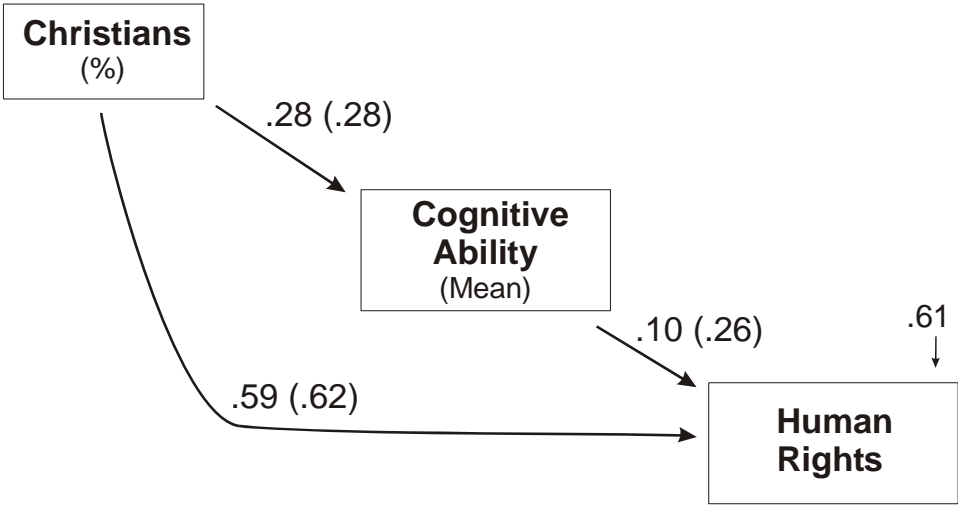


Figure 1: Path analysis with only religion and cognitive ability for explaining cross-country differences in human rights (standardized path coefficients, correlations in parentheses, FIML, error term as unexplained variance, saturated model),  $N = 191$  nations

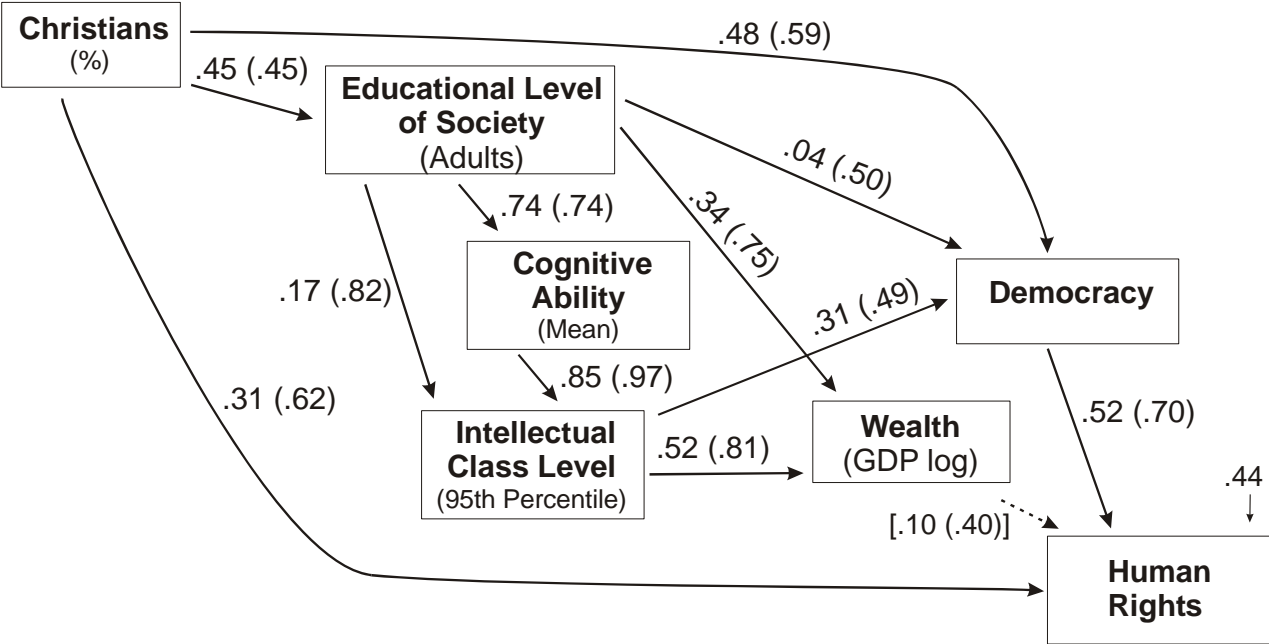


Figure 2: Path analysis including intervening variables for explaining cross-country differences in human rights (CFI = .98, SRMR = .05),  $N = 191$  nations

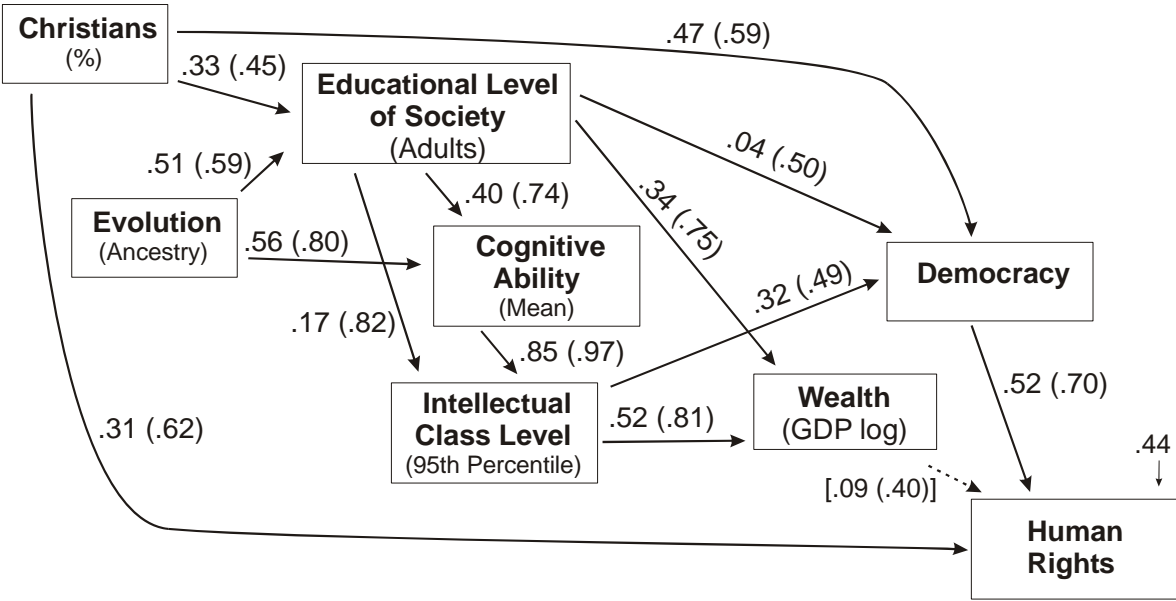


Figure 3: Path analysis for explaining cross-country differences in human rights including evolution (CFI = .99, SRMR = .04), N = 191 nations

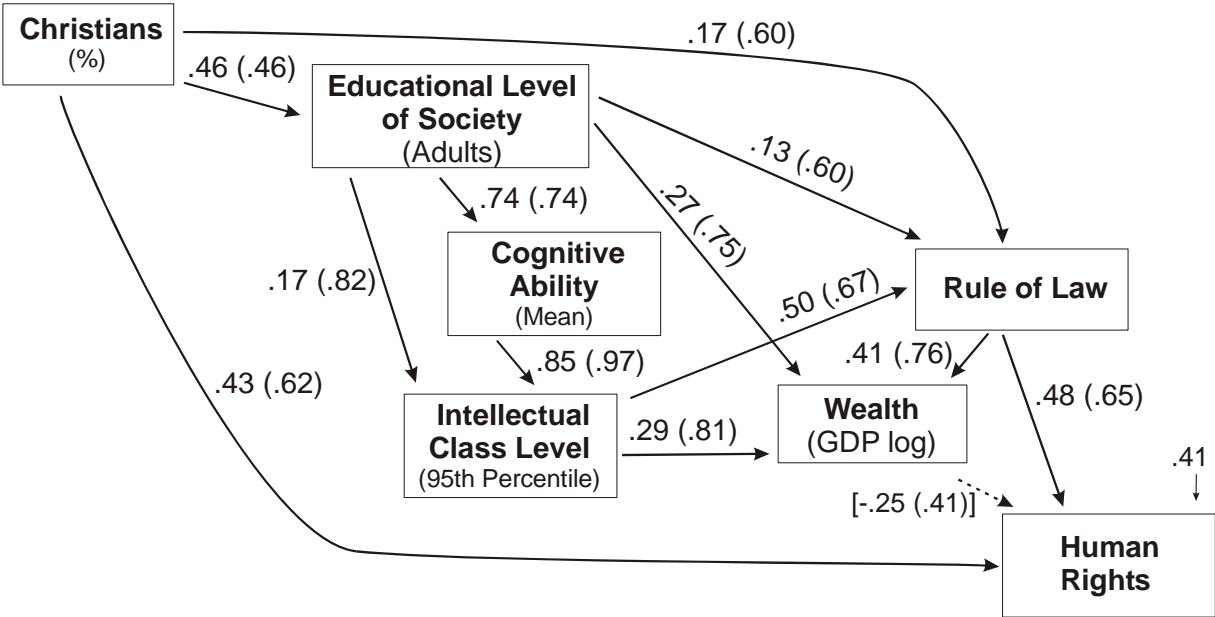


Figure 4: Path analysis for explaining cross-country differences in human rights with rule of law (CFI = .97, SRMR = .07), N = 191 nations

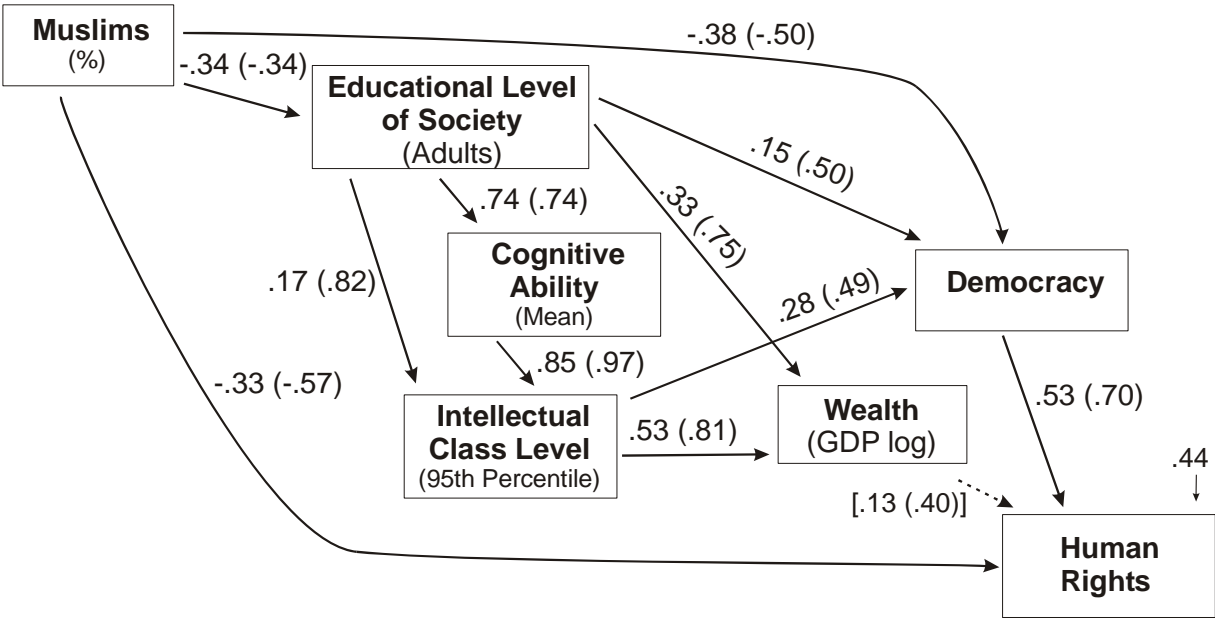


Figure 5: Path analysis for explaining cross-country differences in human rights with percentage of Muslims (CFI = .97, SRMR = .06),  $N = 191$  nations

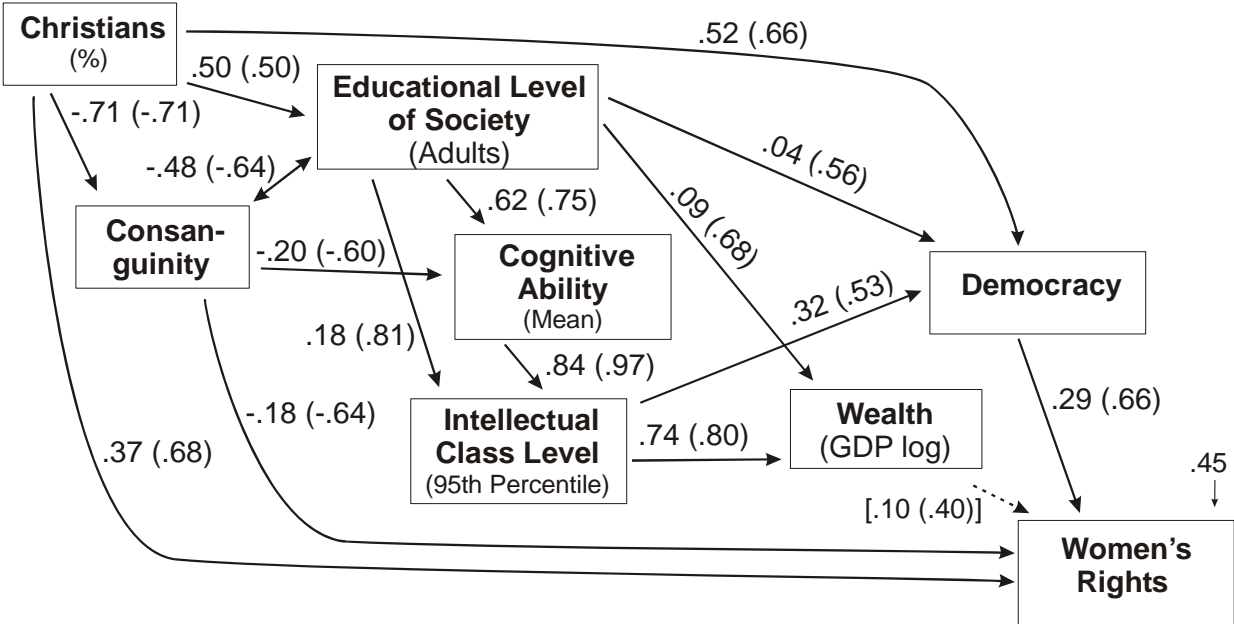


Figure 6: Path analysis for explaining cross-country differences in women's rights with consanguinity (CFI = .97, SRMR = .04),  $N = 74$  nations with data on consanguinity

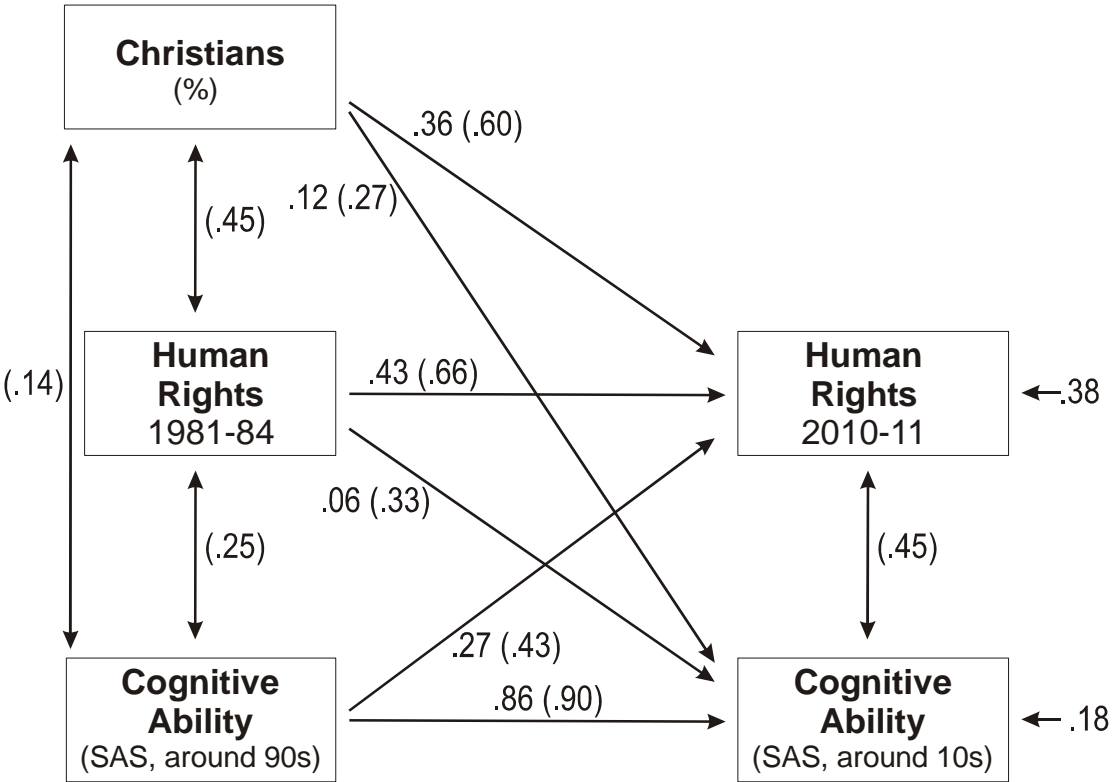


Figure 7: Longitudinal analysis showing cross-lagged effects with percentage of Christians, cognitive ability (student assessment studies SAS) and human rights (standardized path coefficients, correlations in parentheses, error term as unexplained variance, saturated model),  $N = 51$  nations with information for all variables