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Veröffentlichungsversion / Published Version

Zeitschriftenartikel / journal article

#### Empfohlene Zitierung / Suggested Citation:

Eriksson, K., Vartanova, I., Ornstein, P., & Strimling, P. (2021). The common-is-moral association is stronger among less religious people. *Humanities and Social Sciences Communications*, 8, 1-8. <https://doi.org/10.1057/s41599-021-00791-0>

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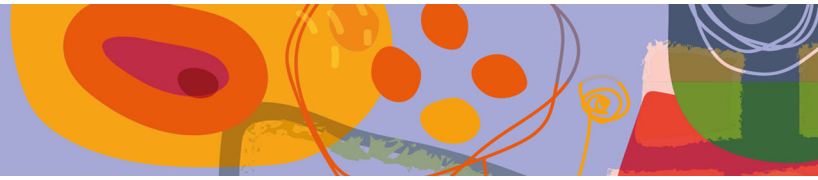
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<https://doi.org/10.1057/s41599-021-00791-0>

OPEN

# The common-is-moral association is stronger among less religious people

Kimmo Eriksson <sup>1,2</sup>✉, Irina Vartanova<sup>1</sup>, Petra Ornstein <sup>3</sup> & Pontus Strimling<sup>1</sup>

Questionable behaviours that are perceived as more common also tend to be judged as more morally justified. Here we explore this phenomenon in survey data from 31 countries in the European Values Study, allowing us to examine the universality of the common-is-moral association. More than 35,000 participants rated eight questionable behaviours (e.g., cheating on taxes, having casual sex) on how frequent they are and how justified they are. We estimated common-is-moral associations both across individuals for each behaviour and across behaviours within each individual; in both cases, the association tended to be positive. We further examined the hypothesis that the common-is-moral association would be stronger among less religious people, who are less likely to adopt their moral judgements from religious authorities and therefore should be more susceptible to the heuristic of using the perceived commonness of a behaviour as a guide to how it should be morally judged. Indeed, we found the common-is-moral association to be somewhat stronger among less religious people, whether the association was estimated across individuals or within individuals. We discuss alternative explanations, implications and directions for future research.

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## Introduction

How people make moral judgements is a much-debated topic (Ellemers et al., 2019). According to the social intuitionist school of moral psychology, moral intuitions tend to take primacy over moral reasoning (Haidt, 2001). But where do moral intuitions come from? Here we focus on one source: perceptions of how frequent a morally questionable behaviour is. In a classic paper, Kelley (1971) claimed that people depend on others' behaviour as evidence of what is right and wrong. Experimental psychological research has found that people tend to automatically use their perception of how frequent a behaviour is as a cue to how morally acceptable it is (Eriksson et al., 2015). Thus, people who rely on this intuition will rate a behaviour as more moral if they think it is more common. We will refer to the resulting statistical correlation between frequency perceptions and moral judgements as the common-is-moral association. Note that this association can be examined either across behaviours or, for a fixed behaviour, across individuals. The aim of the current study is to use a large cross-national dataset to examine the common-is-moral association for different behaviours, within different countries, and within different individuals.

**Literature review.** In terms of social norms, the common-is-moral association deals with the relation between "injunctive" norms, referring to beliefs about how you should behave, and "descriptive" norms, referring to beliefs about how people in fact behave (e.g., Anderson and Dunning, 2014; Brauer and Chaurand, 2010). Whereas norms are often conceived of as group-level phenomena, it is important to note that moral judgements and perceived descriptive norms are individual-level entities. The common-is-moral association speaks to this literature by referring to the individual-level correlation between moral judgements and perceived frequency of questionable behaviours.

The common-is-moral association has been observed in prior survey research. A study of the morality of tax evasion in a sample of 1885 Catholics in the United States found that the more prevalent a respondent perceived tax evasion to be within their community, the less likely the respondent was to judge the act harshly (Welch et al., 2005). Another study examined perceptions of 46 uncivil behaviours among 1048 participants in eight countries, including the United States and seven European countries (Brauer and Chaurand, 2010). The more people perceived a given behaviour to be common, the less the behaviour was seen to violate societal standards and lead to expressions of disapproval. The study did not examine whether the common-is-moral association varied in strength across different countries.

**Theory.** When a common-is-moral association is observed in a survey, there could be several underlying causes. One possible cause is conformity of behaviour to injunctive norms, either social or personal (White et al., 2009). By this, we mean that individual variation in moral judgements may cause variation in the behaviour individuals observe. For one thing, people may be especially motivated to refrain from a behaviour when they are around someone who finds that behaviour immoral, that is, conformity to social injunctive norms. For another, people around someone who finds a behaviour immoral may be more likely to share that judgement and therefore refrain from the behaviour, that is, conformity to their personal injunctive norms. Both mechanisms would lead to a common-is-moral association in survey data. The common-is-moral association could also arise from people making inferences from moral to frequency, that is, people who think a behaviour is very immoral tend to infer that it is probably very uncommon (Eriksson et al., 2015).

The mechanism we will focus on here is the one we outlined in the beginning: people depend on others' behaviour as evidence of what is right and wrong (Kelley, 1971). Eriksson and colleagues (2015) used a variety of experimental methods to demonstrate that inferences of moral judgements from frequency information are automatic. Based on this mechanism, we hypothesize that the common-is-moral association will be weaker among more religious people.<sup>1</sup> The reasoning behind this hypothesis is the following. Our starting point is that there is a "relationship between religion and morality, which many religious people believe are inseparable" (Graham and Haidt, 2010, p. 141). In a review paper on religion on morality, Bloom (2012) discusses how religion influences morality both by making explicit moral claims and by emphasizing certain aspects of morality. Among religious people, we therefore assume that moral judgements are often adopted from their religion and religious community. This source of moral judgements is in competition with an alternative source of moral judgements: the above-mentioned tendency of people to infer moral judgements of acts from their commonness. The scope for such inferences will be limited when people already have adopted explicit moral judgements from their religious community. The implication is that perceived commonness will be a less important determinant of moral judgements among religious people. Consequently, we expect the common-is-moral association to be weaker among more religious people.

While we know of no prior theory about individual differences in the tendency to infer moral judgement of a behaviour from its commonness, we note that there is a prior theory of how the strength of this tendency may vary across different behaviours. Namely, Trafimow and colleagues (2001) proposed that the sensitivity of moral attributions to frequency information will be higher for questionable behaviours that can sometimes be justified (violations of "imperfect duties") than for behaviours that can almost never be justified (violations of "perfect duties"). To our knowledge this has not been empirically tested before.

**The current study.** The aim of the current study is to broaden the cross-cultural perspective on the common-is-moral association by examining how universal it is and whether it varies in strength in a systematic way. Specifically, we shall test the hypothesis that the common-is-moral association is weaker among more religious people. We will also be able to examine how the common-is-moral association varies across different behaviours.

In the current study, we analyse data from 31 countries (treating Great Britain and Northern Ireland as separate countries) that participated in the 1999 wave of the European Values Study (EVS, 2011). This is a large-scale, cross-national survey on human values that is conducted through face-to-face interviews among samples of all adult citizens aged 18 years and older. The dataset is publicly available from the project's webpage ([www.europeanvaluesstudy.eu](http://www.europeanvaluesstudy.eu)). This dataset is eminently suited for studying the common-is-moral association as the survey included a range of questionable behaviours for which respondents were asked both to give a moral judgement and to report how common they perceived the behaviours to be in their country. In addition, the survey included a measure of religiosity, thus enabling us to examine how it relates to the common-is-moral association.

## Method

**Participants.** We use data on 37,154 participants from 31 countries in the 1999 wave of the European Values Study, 54% women, mean age 45.1 with SD 17.0.

## Measures

*Perceptions of how common certain questionable behaviours are.* The survey included the question “According to you, how many of your compatriots do the following?”, which was asked for eight questionable behaviours: cheating on taxes, claiming government benefits to which you are not entitled, having casual sex, paying cash to avoid taxes, speeding over the limit in built-up areas, taking soft drugs, and throwing away litter in public place. Our criterion for including items in our study was that the item had been asked in all countries. (Three additional items that were only asked in 13 out of 31 countries are therefore excluded.) Responses were given on a five-step scale: “almost none” (1), “some” (2), “many” (3), “almost all” (4).

*Moral judgements of the same questionable behaviours.* In another section of the survey, respondents were asked: “Please tell me for each of the following statements whether you think it can always be justified, never be justified, or something in between”. A list of questionable behaviours followed which included the eight behaviours used in the previous question. Responses for each behaviour were given on a ten-step response scale with endpoints labelled “never justifiable” (coded 1) and “always justifiable” (10).

*Religiosity.* As a proxy for the extent to which religion plays an important part in shaping the participant’s moral judgements, we use an item on how important religion is in the participant’s life. Responses were given on a four-step scale: not at all important (coded 1), not important (2), quite important (3), very important (4). As a reviewer pointed out, this is not the only variable in the European Values Study that could be used for our purpose. An alternative possibility would have been an item on how often the participant attends religious services. Unsurprisingly, this alternative variable is correlated with the variable we used and the results we present are qualitatively similar if we use the alternative variable instead (see results in Supplementary Table 1).

**Analytic strategy.** To examine the universality of the common-is-moral association and how it depends on people’s religiosity, we conduct a series of analyses. The data are complex and best analysed by mixed-effects models. However, such models are non-trivial to understand and readers may wonder what raw correlations look like. For this reason, we adopt a strategy in which we first examine raw correlations between frequency perceptions and moral judgements in various samples. We will examine the common-is-moral association both *within individuals* across behaviours and *between individuals* for a fixed behaviour.

1. Correlations within each individual are used to examine (a) whether most participants exhibit a positive within-individual common-is-moral association, (b) whether this holds in every country, and (c) whether the association tends to be weaker among more religious individuals.
2. Correlations between individuals for each fixed behaviour are used to examine (a) whether a positive common-is-moral association between individuals is present for every questionable behaviour, (b) whether this holds in every country, and (c) whether the association tends to be weaker within more religious subsamples.

The raw correlations approach is easy to understand but has two major drawbacks that mixed-effect models can address. One drawback is that analysing each subsample separately yields small sample sizes, which makes individual results less reliable. By contrast, the mixed-effects model utilizes the full dataset. Another drawback with raw correlations is that they may be confounded

by other variables. In the mixed-effects models below we include controls for standard demographic variables: age (in 10 years), sex, and education (with “primary or lower” as baseline and with dummy variables for secondary and tertiary education); we do not include income, as it was missing for up to 20% of cases in some countries. We analyse the common-is-moral association *within individuals* by estimating a three-level model with 277,341 individual ratings of eight different behaviours nested in 37,154 individuals nested in 31 countries. The model has the form

$$\text{Mo}_{kij} = (\beta_1 + u_{1j} + v_{1ij}) + (\beta_2 + u_{2j} + v_{2ij})\text{Co}_{kij} + \beta_3 \text{Relig}_{ij} + \beta_4 \text{Co}_{ij} \times \text{Relig}_{ij} + X_{kij} \quad (\text{M0})$$

Here,  $\text{Mo}_{kij}$  and  $\text{Co}_{kij}$  denote the ratings of moral justifiability and commonness, respectively, of behaviour  $k$ , as rated by individual  $i$  in country  $j$ .  $\text{Relig}_{ij}$  is the same individual’s religiosity score.  $X_{kij}$  is shorthand for terms representing the effects of individual-level controls, their cross-level interactions with  $\text{Co}_{kij}$ , and an error term.  $\text{Co}_{ij}$  is centred at the individual mean so that  $\beta_2$  represents the within-individual common-is-moral association, while  $\beta_4$  represents how this association is moderated by individual religiosity, which is centred at country means (the same as control variables). Random effects at the individual level ( $v_{1jk}$ ,  $v_{2jk}$ ) and the country level ( $u_{1k}$ ,  $u_{2k}$ ) follow a multivariate normal distribution with mean zero. Consistent with M1, we only include random slope for commonness ratings to check that additional random effects for religiosity and the interaction term would not affect the fixed effect estimates in a substantial way.

We analyse the common-is-moral association *between individuals* by estimating, for each of the eight behaviours, a two-level mixed-effects model with individuals nested in countries. The exact number of individuals varied between 32,799 and 36,242 depending on missing values. The model has the form

$$\text{Mo}_{ij} = (\beta_1 + u_{1j}) + (\beta_2 + u_{2j})\text{Co}_{ij} + \beta_3 \text{Relig}_{ij} + \beta_4 \text{Co}_{ij} \times \text{Relig}_{ij} + X_{ij} \quad (\text{M1})$$

Here,  $\text{Mo}_{ij}$  and  $\text{Co}_{ij}$  denote the ratings of moral justifiability and commonness, respectively, of individual  $i$  in country  $j$ . All predictors are centred at the country mean. Note that  $\beta_2$  now represents the between-individual common-is-moral association for the fixed behaviour, while  $\beta_4$  represents how this between-individual association is moderated by individual religiosity. Random effects at the country level ( $u_{1j}$ ,  $u_{2j}$ ) follow a multivariate normal distribution with means zero. We do not include random slopes for religiosity as that would reduce the model fit in three out of eight models; the effect on coefficient estimates is negligible anyway.

A potential problem with these model specifications is that the outcome variable (Mo) has a right-skewed distribution; specifically, the mode is at the lower end of the scale, “never justifiable”. This skew leads to a violation of the assumption of normality of residuals. However, it is unlikely to bias results. A recent simulation study found that linear mixed-effect models are robust to non-normality and yield unbiased, though less precise, estimates of fixed effects and group variance (Schielzeth et al., 2020). Nevertheless, we checked robustness by estimating additional models. To address the skew, we used a two-part model: part 1 models the probability that  $\text{Mo}_{ij} > 1$  (i.e., above “never justifiable”) with logistic regression, and part 2 is the same as M0 or M1 but estimated on the subsample of moral justifiability ratings above 1 and with  $\text{Mo}_{ij}$  log transformed before standardization. We also check the moderation effect of religiosity using an alternative item.

Analyses were conducted in the R programming language. Mixed models were estimated by maximum likelihood in the

**Table 1 Descriptive statistics for perceptions of how common and how moral eight questionable behaviours are, and the common-is-moral association.**

| Behaviour  | Common <i>M</i> (SD) | Moral <i>M</i> (SD) | Common-is-moral association between individuals |
|--|----------------------|---------------------|---|
| Cheating on taxes  | 2.76 (0.52)          | 2.59 (0.52)         | 0.14 [0.13, 0.15]                               |
| Claiming government benefits to which you are not entitled | 2.50 (0.52)          | 2.21 (0.52)         | 0.02 [0.01, 0.03]                               |
| Driving under influence of alcohol                         | 2.40 (0.43)          | 1.50 (0.43)         | 0.03 [0.02, 0.04]                               |
| Having casual sex  | 2.50 (0.45)          | 3.17 (0.45)         | 0.19 [0.18, 0.20]                               |
| Paying cash to avoid taxes                                 | 2.69 (0.52)          | 3.23 (0.52)         | 0.16 [0.15, 0.17]                               |
| Speeding over the limit in built-up areas                  | 2.74 (0.50)          | 2.27 (0.50)         | 0.15 [0.14, 0.16]                               |
| Taking soft drugs  | 2.26 (0.44)          | 1.85 (0.44)         | 0.09 [0.08, 0.10]                               |
| Throwing away litter in public place                       | 2.72 (0.60)          | 1.87 (0.60)         | 0.07 [0.06, 0.08]                               |

Based on more than 35,000 respondents in 31 countries in the 1999 wave of the European Values Study. The common-is-moral association is calculated as the Pearson correlation between the two ratings. 95% confidence intervals in brackets.

lme4 package (Bates et al., 2015). Restricted maximum likelihood was used in all linear mixed effect models except M2.1.

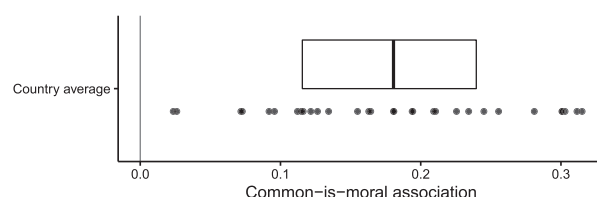
**Results**

Descriptive statistics of frequency perceptions and moral judgements for the eight questionable behaviours are presented in Table 1. Note that the average respondent rated the behaviours as moderately common, between “some” and “many” (mean ratings between 2.26 and 2.76 on the scale from 1 to 4) but quite immoral (mean ratings between 1.50 and 3.23 on the justifiability scale from 1 to 10). The last column of Table 1 shows the correlation between the two types of ratings in the entire sample, that is, the overall common-is-moral association. As expected, it was positive for all behaviours (*r* ranging from 0.02 to 0.19, with an average of 0.11).

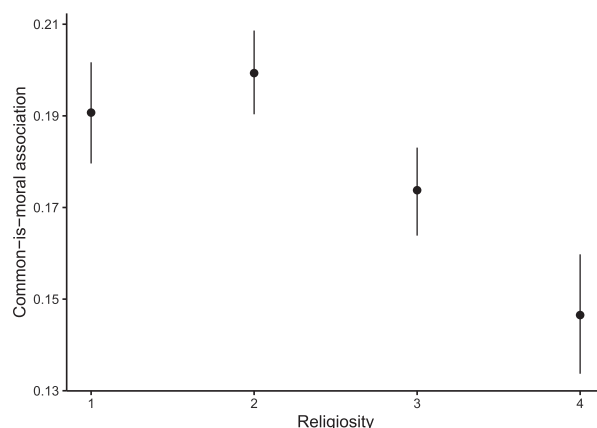
Inspired by the theory of Trafimow and colleagues (2001), according to which commonness should play a greater role for behaviours that are easier to justify sometimes, we examined whether the strength of the common-is-moral association for a behaviour (given by the last column) correlates with its mean justifiability rating (given by the preceding column). Indeed, the correlation was quite strong, *r* = 0.79, consistent with the notion that the common-is-moral association is stronger for more justifiable behaviours. However, a larger sample of behaviours would be required to properly test this idea.

**The within-individual common-is-moral association is typically positive.** For the analysis of within-individual correlations we include only those participants who rated at least seven behaviours on both morality and commonness, and whose ratings were not constant on either dimension. For each of these 23,787 participants we calculated the correlation of the two kinds of ratings across the rated behaviours, which we refer to as the within-individual common-is-moral association. The clear majority, 65%, of participants exhibited a positive common-is-moral association, with a mean value of 0.18 (SD = 0.41). Next, we examined the universality of this finding. We calculated the average within-individual common-is-moral association separately in each country and found it to be positive in all 31 countries (see Fig. 1). The outlier close to zero is Portugal. Thus, although the common-is-moral association varies in strength across countries, it appears to be quite universally positive with the possible exception of Portugal.

**The within-individual common-is-moral association is weaker among the more religious.** Next, we examined our hypothesis that the within-individual common-is-moral association is weaker among more religious people. We split the entire sample into four subsamples defined by the importance of religion



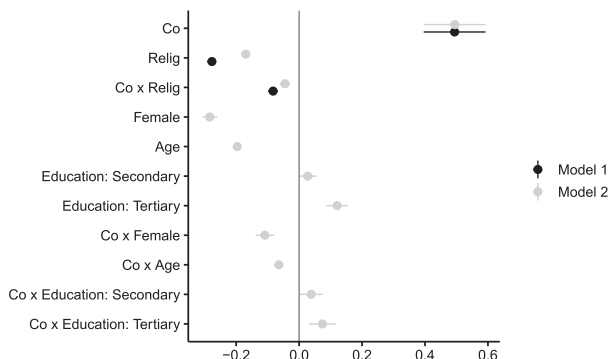
**Fig. 1 Plot showing the average within-individual common-is-moral association in 31 countries in the European Values Study.** Each dot represents a country. The box indicates the interquartile range, with the dark line in the box indicating the median.



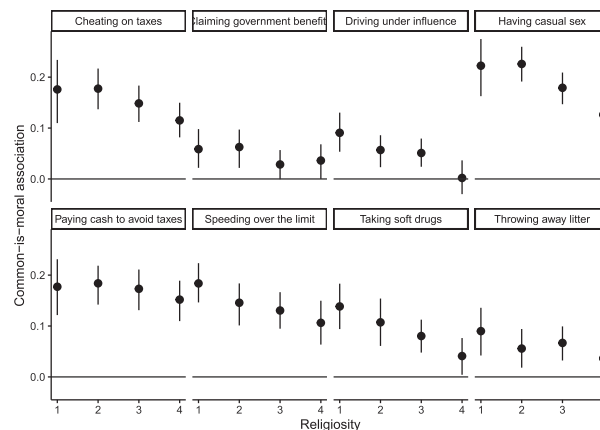
**Fig. 2 How the within-individual common-is-moral association depended on religiosity.** The graph shows the mean value, with a 95% bootstrap confidence interval, of the within-individual common-is-moral association in four subsamples of participants defined by their response to the importance of religion (1 = not at all important, 2 = not important, 3 = quite important, 4 = very important).

reported by the participant (not at all important, not important, quite important, or very important) and calculated the mean within-individual common-is-moral association within each subsample. The results are shown in Fig. 2. While there was little difference between two non-religious subsamples, the association was clearly weaker in the religious subsamples and weakest in the most religious one.

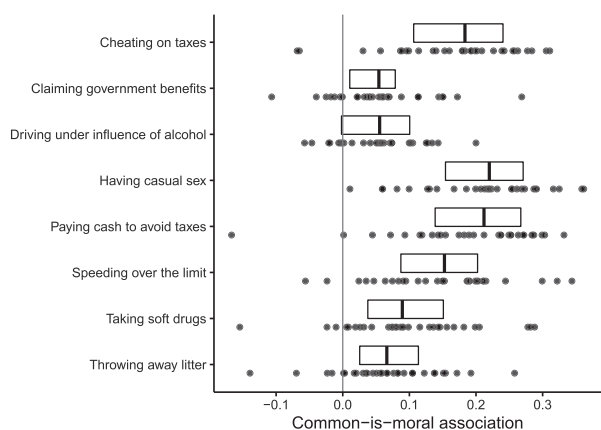
This finding was replicated when we instead used the three-level mixed-effects model of moral judgements (model M0). See fixed effect estimates in Fig. 3; for full results, see Supplementary



**Fig. 3** Fixed effect estimates, with 95% confidence intervals, from the three-level model of moral judgements with Co centred at the individual mean and the rest of the predictors centred at the country means. Model 1 (black) shows unadjusted coefficients of interest. Model 2 (grey) additionally include control variables.



**Fig. 5** How the between-individual common-is-moral association depended on religiosity. For each of the eight focal behaviours, the graph shows the mean value, with a 95% bootstrap confidence interval, of the between-individual common-is-moral association in four subsamples of participants defined by their response to the importance of religion (1 = not at all important, 2 = not important, 3 = quite important, 4 = very important).



**Fig. 4** Boxplots showing how the between-individual common-is-moral association for eight questionable behaviours varied across 31 countries in the European Values Study. Boxes indicate the interquartile range, with the dark line in the box indicating the median. Below each box, the exact distribution is represented by dots.

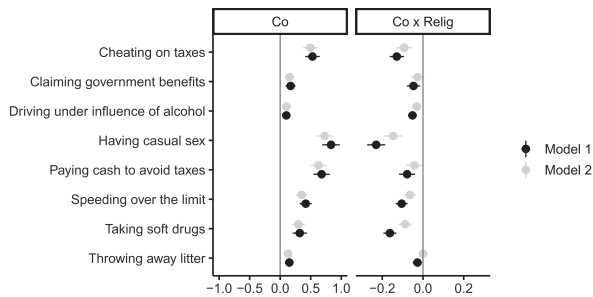
Table 1. The finding of a within-individual common-is-moral association is represented by the positive coefficient of commonness (Co). The finding that the common-is-moral association is lower among more religious people is represented by the negative coefficient for the interaction of commonness and religiosity (Co × Relig). Both effects remain solid after inclusion of the control variables and their interaction with religiosity in the model. Figure 3 further shows that highly educated people tended to give higher ratings for the morality of questionable behaviours while religious people, females, and older people tended to give lower ratings. The common-is-moral association is also lower among women, older, and less educated; these additional findings are interesting but beyond the scope of this paper.

**The between-individual common-is-moral association is typically positive.** To examine the universality of the common-is-moral association we calculated the correlation between frequency and justifiability ratings separately in each country. Figure 4 uses boxes and dots to show how these country measures of the common-is-moral association were distributed for each of the eight questionable behaviours (to see which values belong to which country, refer to Supplementary Table 2). Note that, for every questionable behaviour, a positive common-is-moral

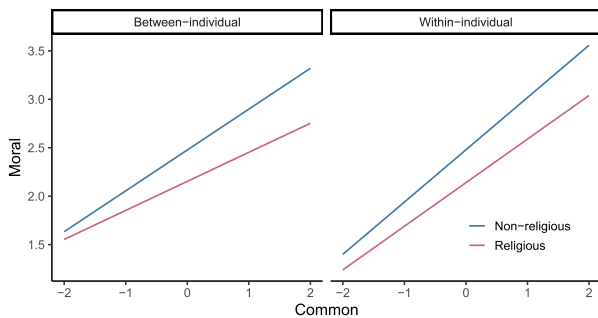
association between individuals was observed in the vast majority of countries, ranging from 71% to 100%; the average proportion was 88%. Moreover, out of the few negative estimates only six were significantly below zero, and five of these were in Portugal. Thus, although the between-individual common-is-moral association varies in strength across countries, it appears to be quite universally positive, with the exception of Portugal. These findings are remarkably similar to those obtained for the within-individual common-is-moral association above.

**The between-individual common-is-moral association is weaker among more religious people.** Next, we examined the hypothesis that the between-individual common-is-moral association is weaker among more religious people within a country. For each of the eight questionable behaviours and for each country, we calculated the common-is-moral association in each of four subsamples defined by the reported importance of religion (not at all important, not important, quite important, very important). The results, averaged across the 31 countries, are shown in Fig. 5. There was a clear common pattern across behaviours in that the common-is-moral association was weakest in the sample of the most religious people, although this trend was stronger for some behaviours than for others.

Next, we replicated these findings using mixed-effects models of moral judgements. Using model M1 for each behaviour, Fig. 6 shows fixed effect estimates of the coefficients for commonness (representing the common-is-moral association between individuals) and for the interaction between commonness and religiosity (representing how the association is moderated by religiosity). As in the previous analyses, we find for each behaviour a positive common-is-moral association which is weaker among the more religious. Adjusting for potential confounders does not make any difference for the estimates of common-is-moral association, while the moderation effect of religiosity become smaller though still solid for 6 out of 8 behaviours. See Supplementary Table 3A–H for full results. These tables show that the signs for the estimated coefficients of Co and Co × Relig were robust to the use of alternative religiosity variable (Model 3) and alternative model specifications (Models 4.1 and 4.2). The effect of control variables looks similar to that discussed for the three-level model.



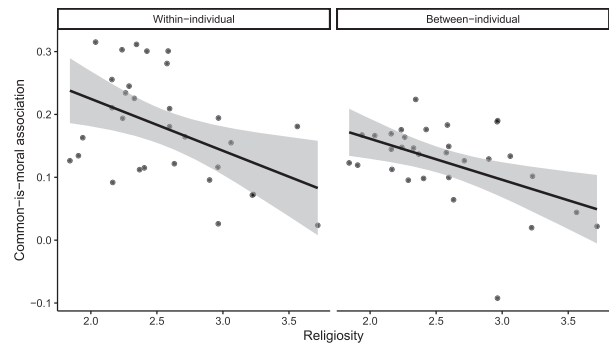
**Fig. 6 Fixed effect estimates, with 95% confidence intervals, of the common-is-moral association (Co) and its moderation by religiosity (Co × Relig) using mixed-effect model M1 with (black) and without (grey) inclusion of the control variables and their interaction with Co.** All predictors are centred at the country mean.



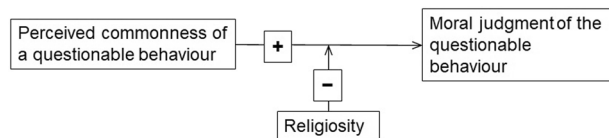
**Fig. 7 Religiosity moderates the common-is-moral association.** The slope of the blue line represents the estimated common-is-moral association for an average behaviour in the average country among non-religious individuals (1 scale unit lower than the average). The red line has less slope, representing the estimated common-is-moral association for an average behaviour in the average country among religious individuals (1 scale unit above the average).

To illustrate the meaning of these findings, the left panel of Fig. 7 shows how the estimated linear relation between moral judgements and commonness perceptions of a fixed behaviour (averaged across all behaviours) has a positive slope, which is less steep among religious people than among those who are not religious. For comparison, the right panel of Fig. 7 shows the estimated within-individual association across behaviours among religious and non-religious people. Note the similarity between the graphs, consistent with the two findings emanating from the same psychological mechanism.

**Country differences in religiosity partly explains country differences in the strength of the common-is-moral association.** Above we have established two main findings. First, the common-is-moral association (whether measured within individuals or between individuals) varied in strength across countries but was typically positive in all countries except Portugal. Second, within countries the common-is-moral association was stronger among more religious people. Taken together, these two findings beg the question whether country differences in the strength of the common-is-moral association are explained by country differences in religiosity. To examine this question we calculated the mean religiosity in each of the 31 countries ( $M = 2.56, SD = 0.47$ ) and used this variable to predict the country estimates of the within-individual common-is-moral association (i.e., the values depicted in Fig. 1). As illustrated in the left scatter plot in Fig. 8, there was indeed a negative correlation,  $r = -0.46, [-0.70, -0.13]$ . Next, we calculated country measures of the between-individual common-is-moral association



**Fig. 8 Country differences in religiosity partly explain country differences in the strength of the common-is-moral association.** The scatter plots show country-level religiosity plotted against country-level estimates of the within-individual common-is-moral association (left) and the between-individual common-is-moral association averaged across behaviours (right).



**Fig. 9 Conceptual diagram of the hypothesis.** Religiosity may negatively moderate the positive effect of perceived commonness on how moral a questionable behaviour is judged to be.

by averaging the estimates in Fig. 4 across behaviours ( $a = 0.86$ ). These measures too were negatively correlated with country-level religiosity,  $r = -0.49, [-0.72, -0.17]$ , as illustrated in the right scatter plot in Fig. 8.

**Discussion**

When respondents are asked to rate the morality and commonness of a questionable behaviour, these ratings are often positively correlated. We examined the universality of this common-is-moral association using European Values Study data from representative samples in 31 countries. Across a range of different questionable behaviours, we found a positive common-is-moral association, between individuals as well as within individuals, in almost all countries (Portugal seemingly an exception in this dataset). Our conclusion is that the common-is-moral association is a phenomenon of considerable universality. While the large number of countries in our study is a strength, it is a limitation that all countries are located in the European region of the world. It would be interesting to examine the universality of the common-is-moral association further, in countries outside Europe and for an even wider range of questionable behaviours than the set included in the European Values Survey.

In addition to finding a positive common-is-moral association, we found that this association was weaker among more religious people. This negative relation with religiosity was observed whether we looked at the common-is-moral association within individuals (across different questionable behaviours) or between individuals (for a fixed behaviour). Moreover, country differences in the strength of the common-is-moral association were partly explained by country differences in religiosity. These findings are consistent with the theory, outlined in the section “Introduction”, that people may use the perceived commonness of a behaviour as a cue to moral judgements and that this cue would have less influence on people whose moral judgements are already shaped by their religious identity. The proposed mechanism is illustrated in Fig. 9.

While our findings support this theory, they do not rule out alternative explanations. For example, prior experimental work has found the common-is-moral association to be bidirected (Eriksson et al., 2015), so the associations we measure may to some extent reflect people adapting their perceptions of commonness to their moral judgements, rather than the other way around. We see no theoretically grounded reason why religiosity would moderate this alternative effect, but the possibility cannot be excluded. The common-is-moral association could also arise from conformity to moral expectations, but again we see no theoretically grounded reason why conformity effects would be weaker among more religious people. Nevertheless, experimental research is required to fully exclude alternative explanations. Corresponding to the horizontal arrow in Fig. 8, prior experimental research has observed effects on moral judgements from manipulating how common a behaviour is perceived to be (Eriksson et al., 2015; McGraw, 1985; Trafimow et al., 2001). This experimental paradigm could be combined with measuring participants' religiosity to compare the effect of the manipulation of frequency perceptions between more and less religious participants.

In this research we examined the common-is-moral association in survey data on eight different questionable behaviours. In line with prior experimental work by Trafimow et al. (2001), we found that the strength of the association varied substantially across behaviours in a predictable manner: the association was stronger for those questionable behaviours that received higher average justifiability ratings. In other words, it may be that only acts that are not too immoral are cast in a better light when performed by many people.

An implication of our research is that biases in perceptions of commonness of behaviours may be important for moral judgements. For instance, previous research has found that students tend to overestimate how much other students drink (Carey et al., 2006), that people tend to overestimate how common their own behaviour is (Ross et al., 1977), and that people tend to overestimate the frequency of things that are easy to imagine (Tversky and Kahneman, 1973). By inference, these biases may have systematic downstream effects on moral judgements, and they would presumably be stronger among less religious people.

Here we have pointed at religion as a source of explicitly moral judgements, but it is not the only source. People could adopt moral judgements from traditions, political movements, etc. From the theoretical argument presented here, we expect the common-is-moral association to be weaker among people who tend to adopt explicit moral judgements from any institutions, not just religious ones.

We may also look beyond the common-is-moral association to other cues influencing moral judgements. If lower religiosity increases the scope for perceived commonness to influence moral judgements, it may similarly increase the scope for other cues to do so. To give just one example, consider people's tendency to reduce cognitive dissonance (Festinger, 1957). Cognitive dissonance occurs when a person acts in a way that contradicts their belief; this is generally disconcerting, and people have a tendency to change either their beliefs or their actions so that they concur. Our hypothesis suggests that among less religious people, the tendency to adapt one's moral beliefs could be stronger and thereby yield a greater concurrence between actions and moral belief than among more religious people.

To conclude, we have presented evidence that moral judgements of questionable behaviours are near universally (at least in Europe) associated with perceptions of how frequent the behaviours are, and more strongly among less religious people. As religiosity appears to be declining, a global trend that has been

particularly clear in the last decade (Inglehart, 2020), it is possible that the common-is-moral association is growing in importance.

### Data availability

The datasets analysed during the current study are available from the GESIS Data Archive: <https://www.gesis.org/en/services/archiving-and-sharing/sharing-data/data-archiving>. See reference list for specific datasets. R code to reproduce results reported in the manuscript is available at <https://github.com/irinavrt/cm-by-autonomy>.

Received: 30 July 2020; Accepted: 20 April 2021;

Published online: 07 May 2021

### Note

1 In an initial version, our hypothesis was that the common-is-moral association will be weaker among those who value religion and obedience as more important than independence and perseverance. This composite of four values is a commonly used conceptualization of (low) individual autonomy. However, the composite measure turned out to have low cross-country measurement invariance. We therefore refocused specifically on the importance of religion, which we regard as the main source of explicit moral judgements. Results obtained using the composite measure instead are qualitatively similar to those presented here.

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### Funding

Open access funding provided by Mälardalen University.

### Competing interests

The authors declare no competing interests.

### Additional information

**Supplementary information** The online version contains supplementary material available at <https://doi.org/10.1057/s41599-021-00791-0>.

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