

**Religion, Education and Attitudes Towards Homosexuality Among Dutch Adolescents:  
A Moderation Analysis**

Luc Heijnen (6922775)

Dr. Birol Akkuş

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This thesis has been written as a study assignment under the supervision of a Utrecht University teacher. Ethical permission has been granted for this thesis project by the ethics board of the Faculty of Social and Behavioral Sciences, Utrecht University, and the thesis has been assessed by two university teachers. However, the thesis has not undergone a thorough peer-review process so conclusions and findings should be read as such.

### **Abstract**

Literature on attitudes towards homosexuality is growing, but not all relations have yet been thoroughly explored. While it is known that a negative relation between religiosity and attitudes towards homosexuality exists, not enough is yet known about whether this is different for different religious denominations and what role educational attainment plays. In this moderation analysis study, a sample of Dutch Catholic, Muslim and Protestant adolescent participants of the 2017 HBSC study ( $n = 2,139$ ) is used. The results indicate evidence for a significant moderating effect of religious denomination between religiosity and attitudes towards homosexuality. Specifically, this suggests that the relation between religiosity and attitudes towards homosexuality may depend on the religious denomination one adheres to. Educational attainment, however, was not found to have a significant moderating effect, indicating that the relation between religiosity and attitudes towards homosexuality is not altered by higher or lower educational attainment. Results regarding the moderating effect for religious denomination are discussed from a cultural and social perspective. Special attention is given to the minority status of Muslim adolescents in the West. Regarding the role of educational attainment, implications for further research are discussed.

**Abstract in Dutch**

De literatuur over attitudes tegenover homoseksualiteit neemt toe, maar nog niet alle verbanden zijn grondig onderzocht. Hoewel bekend is dat er een negatieve relatie bestaat tussen religiositeit en attitudes tegenover homoseksualiteit, is er nog niet genoeg bekend over de vraag of dit verschilt voor verschillende religieuze denominaties en welke rol opleidingsniveau hierin speelt. In dit moderatie-analyseonderzoek wordt een steekproef van Nederlandse katholieke, moslim- en protestantse adolescenten van het HBSC-onderzoek uit 2017 ( $n = 2.139$ ) gebruikt. De resultaten duiden op een significant modererend effect van religieuze denominatie tussen religiositeit en attitudes tegenover homoseksualiteit. Concreet suggereert dit dat de relatie tussen religiositeit en attitudes tegenover homoseksualiteit afhangt van de religieuze denominatie die een persoon aanhangt. Opleidingsniveau bleek echter geen significant modererend effect te hebben, wat aangeeft dat de relatie tussen religiositeit en attitudes tegenover homoseksualiteit niet verandert door een hoger of lager opleidingsniveau. Resultaten met betrekking tot het modererende effect van religieuze denominatie worden besproken vanuit een cultureel en sociaal perspectief. Speciale aandacht wordt besteed aan de minderheidsstatus van moslimadolescenten in het Westen. Met betrekking tot de rol van opleidingsniveau worden implicaties voor verder onderzoek besproken.

## Introduction

Although Dutch adolescents more often report being LGB (De Graaf et al., 2017; Kuyper, 2017), they are also remarkably less accepting of homosexuality than adults (De Roos et al., 2014). This may have severe consequences, as adolescents who experience homonegativity are more prone to depression, behavioural problems, anxiety disorders, suicidality, and substance abuse (Collier et al., 2014). This intensifies the need to extend our understanding of adolescents' attitudes towards homosexuality.

Similar to adults (Jäckle & Wenzelburger, 2014), factors commonly associated with homonegativity among Dutch adolescents include a Christian or Muslim faith, lower education, and higher religiosity, which refers to the extent and strength of one's personal religious beliefs (De Roos et al., 2014). Literature indicates that religiosity may be a predictor of homonegativity, with educational attainment (Zhang & Brym, 2019) and religious denomination (Zmyj & Huber-Bach, 2020) possibly moderating this relation.

Additionally, adolescents are predominantly more non-Christian and less religious than previous generations (CBS, 2017). Although religiosity as a predictor of attitudes towards homosexuality is consistent across adult populations (Jäckle & Wenzelburger, 2014), it could be valuable to measure this effect in adolescent populations (Collier et al., 2014). Understanding this is vital in combating adolescent homonegativity and its negative consequences.

This paper explores to what extent the relation between religiosity and attitudes towards homosexuality among Dutch adolescents is moderated by educational attainment and religious denomination. By doing so, it aims to contribute to the existing literature on attitudes towards homosexuality, particularly among adolescents. Thus, the research question is formulated as: "Is the association between religiosity and attitudes towards homosexuality moderated by religious denomination and educational attainment?"

## Theoretical Substantiation

### Educational Attainment

Higher educational attainment may predict more positive attitudes towards homosexuality, as those with a higher educational background may be more tolerant towards diversity (Lambert et al., 2006) and nonconformist behaviour (Ohlander et al., 2005). As Gaff (1983) notes, education "fosters the development of personal qualities, such as tolerance of ambiguity [and] empathy for persons with different values" (p. 8). This process is known as the *liberalising effect* of education (Hello et al., 2006; Zhang & Brym, 2019). Similar views are espoused by Farnworth et al. (1998), Zhang and Brym (2019), and La Roi and Mandemakers (2018), among others. Regarding this effect, several theories exist. While Hello et al. (2006) and others suggest that socialisation may play a role, Coenders and Scheepers (2003) propose that the effect is realised through expanding cognitive sophistication. Ohlander et al. (2005) particularly state that higher educational attainment increases tolerance for nonconformism, as students are exposed to diverse ideas and beliefs.

Though there are various proposed paths from educational attainment to tolerance, the general consensus holds that education "liberalizes people, and well-educated individuals are typically more tolerant than others" (Zhang & Brym, 2019, p. 502). This indicates that educational attainment may function as a buffer for predictors of homonegativity, in this case religiosity. Therefore, the current study tests educational attainment as a potential moderator.

### Religious Denomination

The relation between religiosity and attitudes towards homosexuality may be affected by factors related to religious denominations (Diehl et al., 2009), which is to say, religious communities sharing a tradition and identity. This suggests that the relation is different for different religious affiliations. Zmyj and Huber-Bach (2020) note that though "religion-specific" mechanisms may be believed to explain these differences, cultural explanations are likely more relevant. Like Van der Bracht and Van de Putte (2014), they propose that religious adolescents' integration level affects this relation (Zmyj & Huber-Bach, 2020). Hence, Zmyj and Huber-Bach (2020) conclude that "the relationship between religious denomination and homonegativity is not hard-wired" (p. 12) and related to social processes.

Similarly, Roggemans et al. (2015) theorise that in Western Europe, first-generation migrants primarily arrived from "underdeveloped" regions with traditional gender roles. For some young Muslims who are socialised by these values, homosexuality is considered a

violation of those values. Moreover, Roggemans et al. (2015) explain that, as a "reaction to the dominant position of Western societies" (p. 270), young Muslims stress their religious identities more than peers without a migration background, a process known as *reactive religiosity*. This is backed by Maliepaard and Lubbers (2013), who suggest that cultural minorities may cling more to the religious values of their upbringing. Voas and Fleischmann (2012) add that this mechanism may be reinforced by the stigmatisation of Muslims in the West. Therefore, young Muslims may turn to traditional (gender) norms and values because of their minority status and stigmatisation.

According to CBS (2017), the three main denominations among Dutch 15 to 25-year-olds are Catholicism (17%), Protestantism (11%) and Islam (8%). Within Christianity, the impact of denomination seems to be highly influenced by cultural factors, as findings across the world vary. Although in various instances Protestants have been found to be more homonegative than Catholics (Hooghe et al., 2010), it remains unclear to what extent this applies to the Netherlands and how this effect would work. Therefore, this paper also explores the possible differences between Catholics and Protestants.

### **Review of Empirical Studies**

Though education is presumed to liberalise students, this relation is not yet fully established. Federico et al. (2021) found the effect of religiosity on authoritarianism to be stronger in the presence of higher educational attainment. Additionally, Batten et al. (2018) did not find individual student performance and learning to be correlated with attitudes towards homosexuality. Nevertheless, many studies show support for the liberalisation effect. Zhang and Brym (2019) found in a large population sample of eighty-eight countries (including the Netherlands) that higher level of education was consistently associated with more positive attitudes towards homosexuality. Ohlander et al. (2005) found comparable results in a large American sample. Notably, unlike Batten et al. (2018), both these studies measure educational attainment by highest achieved educational diploma. Other studies mirror these findings in their respective samples (Lambert et al., 2006; Van de Ven, 1994).

Regarding religious denomination, Diehl et al. (2009) observed that German Muslims with a Turkish migration background scored lower on attitudes towards gender equality than Christians, which is correlated with homonegativity (Airton, 2009). Koopmans (2014) found comparable results: hostility towards value-violating out-groups, including homosexuals, was found to be much higher among orthodox Muslims than among orthodox Christians. In Muslim adolescents, Zmyj and Huber-Bach (2020) concluded that the integration level served as a buffer for the effect of religiosity on attitudes towards homosexuality. This echoes the findings of Roggemans et al. (2015), who found migration background to be a significant predictor of homonegativity. Correspondingly, Van der Bracht and Van de Putte (2014) also found that migrants' attitudes towards homosexuality are associated with both their origin and their destination country, strengthening the theory by Roggemans et al. (2015) of reactive religiosity.

### The Gap

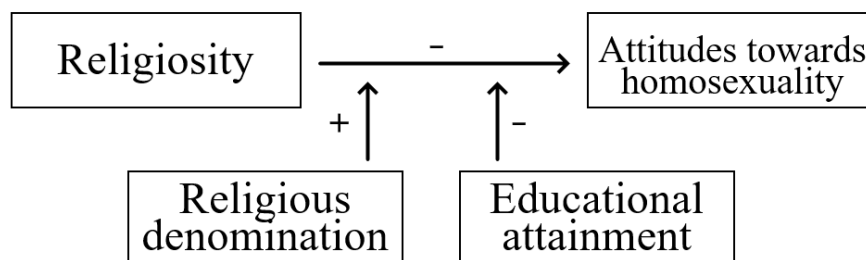
While research on religiosity and attitudes towards homosexuality exists, it has not yet been translated to the context of adolescents in the Netherlands. Moreover, there is no full consensus on the liberalising effect of education, which is believed to be the underlying mechanism for more positive attitudes towards homosexuality in the context of higher educational attainment. Additionally, although attitudes towards homosexuality are found to differ by educational track (Kuyper, 2015), many to most studies do not include educational attainment as a variable. Likewise, while research on Dutch adolescents' religious attitudes towards homosexuality exists (Collier et al., 2014), it has yet to be focused on religious denomination. Lastly, education and denomination have yet to be tested as moderators in this relation. Therefore, this paper aims to contribute to the literature by better understanding the relation between religiosity and attitudes towards homosexuality among Dutch adolescents, by considering the roles of educational attainment and religious denomination.

### Current Study

This study aims to find out whether the relation between religiosity and attitudes towards homosexuality is moderated by educational attainment and religious denomination. Consequently, there are three hypotheses: *H1* religiosity is a significant negative predictor of attitudes towards homosexuality; *H2* educational attainment is a significant moderator and negatively affects this relation, and; *H3* religious denomination is a significant moderator and positively affects this relation (Figure 1). For religious denomination, this entails that with Catholics as reference category, Protestant and Muslim denominations reinforce the effect of religiosity more and the most, respectively.

**Figure 1**

*Hypothesised Model*





## Methods

### Procedure

The data used in this study were acquired with the Dutch version of the international and cross-sectional Health Behaviour in School-Aged Children (HBSC) project, which was approved by the Faculty Ethical Review Committee of the Faculty of Social Sciences of Utrecht University (Stevens et al., 2018). For the current study, only data from secondary school pupils were used.

Data from the Dienst Uivoering Onderwijs (DUO) were used to recruit schools that provided regular education at the VMBO, HAVO and VWO levels. 237 schools were randomly selected, of which 85 participated. No noteworthy differences were found between the sample and non-respondents. Classes were also randomly selected (Stevens et al., 2018).

The questionnaires were completed in 2017. The students were informed about the anonymous and voluntary nature of the study. To participate, participants had to give explicit consent. Students and parents were informed about the study in advance. Parents could decide not to consent. The surveys were completed digitally, and alternatively on paper (Stevens et al., 2018).

### Sample

The HBSC study consists of secondary school pupils ( $n = 7,392$ ) from over 335 classes, with a total response rate of 91%. For the current study, the subsample of religious adolescents is used. Only Muslims, Protestants and Catholics were included. Other faiths ( $n = 62$ ), those with missing data on the question regarding their faith ( $n = 10$ ) and those who reported not being raised religiously ( $n = 70$ ) were excluded. There were some missing data for the attitudes towards homosexuality scale (305 participants; 18% Catholic, 29% Muslim). These participants were excluded as well, resulting in  $n = 2,139$ .

The size of the subsample is  $n = 2,139$ , which means that about 83% of the original HBSC sample is fit for analysis.  $M_{age} = 14.76$  ( $SD = 1.64$ ) with the range being 11-20. This range parallels the period from 10 to 20 cited by Sawyer et al. (2018) as a demarcation for adolescence. Other sociodemographic characteristics are presented in Table 1.

### Instruments

*Attitudes towards homosexuality* were measured with the three-item HBSC *Attitudes Towards Homosexuality* scale (Stevens et al., 2018). The items were “Homosexual boys and

girls are allowed to be my friends”; “I think it's gross when two boys kiss each other”; and “I think it's gross when two girls kiss each other” ( $\alpha = .77$ ). Answers were on a 1-5 scale, ranging from 1 = "Completely agree" to 5 = "Strongly disagree". The first item's scores were reversed to fit the scale (Stevens et al., 2018). Scale answers were made for participants who answered at least two items, and the mean was used to calculate the scale score. The scale scores, ranging from 1 to 5, were reversed, meaning that higher scores indicate more positive attitudes.

*Religiosity* was measured by a single questionnaire item, namely the question “How important is faith to you?”, which could only be answered after answering the question about which specific faith participants were raised in. Answers are on a 1-4 scale, ranging from 1 = "Very important" to 4 = "Not important at all". These scores were reversed for the current study, meaning that higher scores indicate more religiosity.

*Educational attainment* was measured by a single item asking the participant about which educational stream they belong to. The answers are 1 = VMBO-b/k, 2 = VMBO-g/t, 3 = HAVO, and 4 = VWO. In the Netherlands, these respectively stand for preparatory middle-level vocational education (b/k = basic/management programmes, g/t = combined/theoretical programmes), higher general secondary education, and preparatory university education. This item is treated as an ordinal measurement, with higher scores indicating higher educational attainment.

*Religious denomination* was measured by the single question “Are you being raised with a certain religion?”, for which the first three answers are 1 = “Roman Catholic”, 2 = “Christian Protestant” and 3 = “Islamic”.

Control variables for this study are *age* and *gender*. These were both measured by simple demographic questions. For age, values to two decimals have been measured. The variable gender is dichotomous, with male as the reference category.

## **Analysis**

The data were analysed with SPSS Statistics 28. Descriptive statistics for the independent variable (religiosity), moderator variables (religious denomination and educational attainment) and dependent variable (attitudes towards homosexuality) were retrieved, after which the assumptions for the data were tested. These include the assumptions of normality, linearity, multicollinearity, homoscedasticity, independence of observations and the absence of outliers. The correlation between the variables were considered using Pearson's *r*. For all analyses,  $\alpha = .05$  is used.

To test the hypotheses, a simple moderation analysis was performed with SPSS. This analysis tests the two moderator research model as described above. As religious denomination is categorical, two dummy variables are created, with “Catholic” as index category. The predictors were then centred. Next, interaction terms were created between religiosity and the moderator variables religious denomination and educational attainment, resulting in three interaction term variables. Age and gender are included as control variables. The dichotomous gender variable is included as a dummy variable with “male” as index category. These, the three moderation variables including the two dummy variables, the three interaction terms, and the independent variable, are the predictors in the model.

**Table 1***Sample Sociodemographic Statistics*

<b>Characteristic</b>	<b><i>n</i></b>	<b>%</b>
<i>Gender</i>		
Male	1,042	48.7
Female	1,097	51.3
<i>Educational track</i>		
VMBO-b/k	318	14.9
VMBO-g/t	552	25.8
HAVO	625	29.2
VWO	644	30.1
<i>Ethnicity</i>		
Dutch	1,352	63.2
Other Western	111	5.2
Moroccan	253	11.8
Turkish	146	6.8
Other non-Western	277	13.0
<i>Religious denomination</i>		
Catholic	351	16.4
Protestant	1,244	58.2
Muslim	544	25.4

## Results

### Assumptions

Since there are no  $r$  values of .8 or higher, assumed is that the assumption of multicollinearity is not violated (see Table 2). Using the Kolmogorov-Smirnov test, it was found that the assumption of normality was violated for religiosity,  $D(2139) = .23, p < .001$ , and educational attainment,  $D(2139) = .19, p < .001$ . However, due to the large sample size, no correction is necessary. Religious denomination was not tested for normality, as it is a categorical variable.

Linearity was tested with an ANOVA test in SPSS. Both religiosity,  $F(3, 2135) = 114.84, p < .001$ , and educational attainment,  $F(3, 2135) = 40.65, p < .001$ , showed a linear relation with attitudes towards homosexuality. Independence of observations is assumed, as there are no relations between the observations. No outliers were detected. Using Darlington's (1990) method for testing heteroscedasticity, it was found that while there is no indication for heteroscedasticity for religiosity,  $F(1, 2138) = 0.23, p = .631$ , this was borderline significant for educational attainment,  $F(1, 2138) = 3.98, p = .046$ .

### Correlation Analysis

Table 2 shows the correlations as well as the descriptive statistics of both the study's main variables and covariables. A significant correlation with attitudes towards homosexuality is observed for all variables. Most of these correlates of attitudes towards homosexuality are small ( $r \leq .3$ ), though it is medium for religiosity. The directions of the correlations are as expected: higher religiosity, lower educational attainment and age and male gender predict more negative attitudes towards homosexuality. While these significant correlations do not in themselves directly establish evidence for a moderation effect, they are a requirement for a moderation effect to exist.

Also shown in Table 2 are the correlations of the different religious categories (Catholic, Protestant and Muslim) compared relatively to each other. Of the three denominations, Muslim denomination correlates the most with religiosity and the least with educational attainment and attitudes towards homosexuality. Opposite correlations are observed for Catholic denomination, while Protestantism takes a position in between, exhibiting relatively moderate correlations with religiosity, educational attainment, and attitudes towards homosexuality.

**Table 2***Descriptive Statistics and Correlations*

<b>Variable</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b><i>n</i></b>	<b><i>M (SD)</i></b>	<b>Range</b>
1 Gender (female)	—	.02	.04	.28***	.04	.03	-.03	.01	2,139	1.51 (0.50)	1
2 Age		—	-.14***	.21***	.21***	.08***	-.07***	.01	2,139	14.76 (1.64)	9
3 Religiosity			—	-.34***	-.13***	-.35***	-.12***	.43***	2,139	2.98 (1.00)	3
4 Attitudes homosexuality				—	.23***	.20***	.07***	-.25***	2,139	3.29 (1.18)	4
5 Educational attainment					—	.14***	.05*	-.17***	2,139	3.75 (1.04)	3
<i>Religious denomination</i>									2,139	2.09 (0.64)	2
6 Catholic											
7 Protestant											
8 Muslim											

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

## Main Analysis

To investigate whether religiosity predicts attitudes towards homosexuality, and if this relationship is moderated by religious denomination and educational attainment, a simple stepwise moderation analysis was performed using SPSS. Specifically, a three-step linear regression analysis was applied to test whether there were any significant moderation effects. This analysis consisted of three models, each predicting attitudes towards homosexuality, for which see Table 3. The first model contained only the covariables age and gender. This model was significant,  $F(2, 2136) = 138.39, p < .001$ . Specifically, female gender and older age were significant predictors of more positive attitudes towards homosexuality. The variables together explained 11.5% of the variance in attitudes towards homosexuality.

Next, the predictors religiosity, Protestant and Muslim denomination, and educational attainment were added as predictors. This model was also significant,  $F(6, 2132) = 129.65, p < .001$ . The added predictors explained another 14.3% of the variance in attitudes towards homosexuality. So far, all variables significantly predicted attitudes towards homosexuality. Higher educational attainment predicted more positive attitudes, while higher religiosity and Protestant and Muslim denomination predicted more negative attitudes.

Finally, the three interaction terms between religiosity and educational attainment, Protestant denomination, and Muslim denomination, were added. This model tested the moderator effects between religiosity and attitudes towards homosexuality, and was overall significant as well,  $F(9, 2129) = 87.79, p < .001$ . In total it explained 26.4% of the variance in attitudes towards homosexuality. The interaction terms between religiosity and religious denomination were both significant. However, the interaction between religiosity and educational attainment was not found to be significant. In other words, religious denomination significantly and positively moderates the relation between religiosity and attitudes towards homosexuality, but educational attainment simply does not moderate this relation.

**Table 3***Results of Three Linear Regression Analyses with Attitudes Towards Homosexuality as Dependent Variable*

Variable	Model 1				Model 2				Model 3			
	<i>B</i>	<i>SE</i>	$\beta$	<i>t</i>	<i>B</i>	<i>SE</i>	$\beta$	<i>t</i>	<i>B</i>	<i>SE</i>	$\beta$	<i>t</i>
Constant	0.21	0.23		0.92	1.58***	0.24		6.70	1.79***	0.24		7.42
Age	0.14***	0.02	.20	9.73	0.10***	0.01	.13	6.89	0.10***	0.01	.13	6.90
Gender (female)	0.64***	0.05	.27	13.25	0.66***	0.04	.28	14.79	0.66***	0.04	.28	14.87
Religiosity					-0.30***	0.03	-.25	-11.67	-0.32***	0.03	-.27	-11.70
Educational attainment					0.15***	0.02	.13	6.70	0.15***	0.02	.13	6.58
Protestant denomination					-0.17*	0.06	-.07	-2.57	-.30***	0.08	-.13	-3.77
Muslim denomination					-0.47***	0.08	-.17	-5.74	-.45***	0.10	-.17	-4.48
Religiosity x Educational attainment									-.02	0.02	-.01	-0.71
Religiosity x Protestant denomination									-.18*	0.07	-.08	-.252
Religiosity x Muslim denomination									-.38***	0.10	-.12	-3.92
<i>Model statistics</i>												
$R^2$	.115				.258				.264			
$\Delta R^2$	.115				.143				.006			

*Note.* All marked variables are significant at the 95% confidence interval level. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

## Discussion

### Findings and Hypotheses

As mentioned, Dutch adolescents are less accepting of homosexuality than adults (De Roos et al., 2014). This could have problematic consequences: adolescents who experience homonegativity suffer more from depression, behavioural problems, suicidality, and substance abuse (Collier et al., 2014). Therefore, the current study aimed to better understand homonegativity in Dutch adolescents. As indications in the literature point to possible moderating effects of religious denomination and educational attainment in the known relation between religiosity and attitudes towards homosexuality, this study set out to test this model in religious Dutch adolescents.

The results showed that all predictors significantly predicted attitudes towards homosexuality in adolescents. Higher religiosity and lower educational attainment predicted more negative attitudes towards homosexuality, as well did younger age and male gender. Compared to Catholics, belonging to a Protestant or Muslim denomination also significantly predicted more negative attitudes towards homosexuality. Additionally, a significant interaction term was found for religious denomination and religiosity. This indicated support for a moderation effect of religious denomination, which will be elaborated upon in this section. The interaction term for educational attainment and religiosity, however, was not found to be statistically significant.

To properly understand these findings, they need to be elaborated upon further. The current study assessed three main hypotheses. *H1* aimed to evaluate the main relation of the proposed model and hypothesised that religiosity would be a significant negative predictor of attitudes towards homosexuality. Support for this hypothesis was found. This fits previous findings, such as those found by Dotti Sani and Quaranta (2020), Janssen and Scheepers (2019), Worthen et al. (2017), and others. Though this relation has previously been evaluated and often consistently found to be significant in many populations, both adolescent and adult, studies assessing this relation in Dutch adolescents are remarkably scarce. The notable exception is Collier et al. (2013), who found comparable results in adolescents living in Amsterdam, taking frequency of religious service attendance as a measure of religiosity. Collier et al. (2013) hence use a more behavioural measure of religiosity, whereas this study uses an experiential measure of religiosity. The current study's findings therefore contribute to the limited literature on the relation between religiosity and attitudes towards homosexuality in Dutch adolescents, as well as to the consensus on the existence of this relation.



*H2* evaluated whether educational attainment was a significant moderator that negatively affects the relation between religiosity and attitudes towards homosexuality. Higher educational attainment was found to significantly predict more positive attitudes towards homosexuality: students who pursued the VWO track were found to have the most positive attitudes towards homosexuality, whereas those pursuing VMBO-b/k held the least positive attitudes towards homosexuality. However, no evidence for a moderation effect was found, leading to the rejection of *H2*.

In line with the liberalisation theory as espoused by Zhang and Brym (2019) and others, it was hypothesised that higher educational attainment causes more positive attitudes towards non-conformist groups such as homosexuals, therefore challenging traditional religious beliefs and convictions and thus potentially altering the influence of religiosity on attitudes towards homosexuality. However, creedal dimension and the devotional dimension of religiosity appear to be more separate from each other than assumed, as is implied by Holdcroft (2006) as well. This suggests that purely religious and theological beliefs alone do not dictate attitudes towards value-violating groups, indicating that social and cultural constructs may play a more significant role instead. Thus, while educational attainment is often thought to challenge or even change one's personal religious beliefs (Stolz, 2020), this effect is not reflected in the observed relation between religiosity and attitudes towards homosexuality.

There is no complete consensus in the literature on the secularising influence of education (Schwadel, 2015; Stolz, 2020). While there is consensus on the liberalisation theory (Zhang & Brym, 2019), this does not per se consequently imply that it also has a secularising effect. Recently, some authors have doubted the existence of such an effect (Mayrl & Uecker, 2011; Reimer, 2010) or have even explicitly rejected it altogether (Schwadel, 2015; Stolz, 2020). Instead, Mayrl and Uecker (2011) suggest that changes in religious beliefs happen through social connections rather than formal educational. This fits the findings, suggesting that Dutch adolescents' religiosity is mostly unaffected by their educational attainment.

*H3* expected that religious denomination would be a significant moderator between religiosity and attitudes towards homosexuality, and that this variable would positively affect the relation. The results show support for this hypothesis: a significant interaction term was found for religiosity and religious denomination. The idea that religious denomination may play a moderating role is to some degree supported by previous research. For instance, Koopmans (2014) found that attitudes towards homosexuals are more negative in orthodox Muslims than in orthodox Christians. However, this specific pathway had not yet been

explored in published research yet.

Like educational attainment, religious denomination was expected to affect religiosity through personal religious beliefs, specifically affecting the creedal dimension of religiosity. For Muslims in this specific sample, it was presumed that they would score more negatively on attitudes towards homosexuality than Catholics and Protestants. This was expected, as migration background (Roggemans et al., 2015), lower integration levels (Zmyj & Huber-Bach, 2020) and religious minority status (Van der Bracht & Van de Putte, 2014) all significantly predicted less positive attitudes towards homosexuality. This may be explained due to the reactive religiosity theory. As a result of their minority position and stigmatisation, Muslim adolescents may turn to more traditional religious values (Maliepaard & Lubbers, 2013; Voas & Fleischmann, 2012), including those regarding gender and sexuality. This would imply that adolescent Dutch Muslims, more than their Catholic and Protestant peers, hold more traditional beliefs regarding the creedal dimension of their religiosity, regardless of the importance they ascribe to their faith.

### **Strengths and Limitations**

While considering these findings, it is important to note that this study has several methodological limitations. Issues arise with the operationalisation of constructs, particularly religious denomination. Participants were asked about their upbringing in a certain faith, identifying adolescents with their parents' beliefs. Moreover, participants not raised religiously were unable to report their religiosity, excluding them from this question. However, adolescents may very well convert to different religions or abandon religion altogether. This phenomenon has been observed in numerous studies (e.g., Christensen, 1965; Köse, 1996; Longo & Kim-Spoon, 2014), including on Dutch adolescents (Kox et al., 1991). In fact, conversion, being linked to personal development, is argued to occur during adolescence especially (Dew et al., 2020). The construct of religiosity included an answer option for "I was not raised religious," alongside other options. Although participants with this response were excluded from the study, both of these ambiguous options may have caused confusion. Such confusion could impact the findings' generalisability.

The analysis revealed that heteroscedasticity may impact the measurement of educational attainment, potentially weakening statistical power. Consequently, the resulting *p*-value may be inaccurate, leading to erroneous conclusions about its significance. Additionally, a considerable amount of data was missing for questions concerning sexual orientation and attitudes towards homosexuality. This also may affect generalisability.

In addition to these limitations, the current study possesses notable strengths. Foremost, it draws data from the HBSC study, which provides a substantial representative sample size. This is a large and diverse sample, allowing for a greater generalisability. In addition, the study demonstrated strong commitment to ethical guidelines, ensuring participant privacy, informed consent, and appropriate research practices.

As explained earlier, the study introduced an operationalisation of religiosity that is novel in research on religiosity and attitudes towards homosexuality in Dutch adolescents. It additionally assessed a novel model as well, regarding the moderating roles of religious denomination and educational attainment. This way, the study contributes to the advancement of knowledge in the field. Also important is that the study's findings have direct relevance for real-world purposes, providing insights that can be used to inform decision-making or interventions. These practical implications, as well as suggestions for future research, will be discussed further.

### **Implications and Future Research**

As stated, this study overlooked potential religious conversions or disaffiliation among adolescents. Previous research, however, has indicated that such changes in religious identity are not uncommon during adolescence. Therefore, future studies should consider a longitudinal design to provide a more comprehensive understanding of religiosity and attitudes towards homosexuality among adolescents.

Regarding the measurement of attitudes towards homosexuality, the HBSC uses a three-item scale. Using established scales like the ATLG (Herek, 1988) or MHS (Morrison & Morrison, 2002) could enhance the construct's measurement validity. Similarly, for measuring religiosity, the DRS (Joseph & DiDuca, 2007) or CRS (Huber, 2003) could be used instead of a single-item measure. It is recommended that future research adopts such measures.

Future studies should also address heteroscedasticity and use appropriate statistical techniques to minimise its impact on analysing the relation between educational attainment and attitudes towards homosexuality. To minimise missing data, future studies should employ careful data collection procedures. Note that due to the sensitive nature of the questions, imputation techniques should be avoided as the data are not likely missing at random.

Per the study's findings, religious communities may potentially play a pivotal role in challenging negative attitudes and promoting acceptance. By addressing religious and cultural beliefs within the context of their denomination, leaders and organisations may provide an

understanding and inclusive environment. Encouraging open conversations both with and within religious communities may help mitigate the impact of religiosity on attitudes towards homosexuality.

These insights have implications for policy and legislation concerning LGBT rights and anti-discrimination measures. Policymakers can use this evidence to advocate for inclusive policies and laws that protect the rights and well-being of gay and bisexual adolescents, particularly within religious contexts. As religious denomination affects the relation of religiosity and attitudes towards homosexuality, policymakers should adjust their policies accordingly. In addition, community and school organisations, LGBT advocacy groups, and youth support services can incorporate the study's findings into their programmes and initiatives. Such initiatives may include support groups, counselling services, awareness campaigns, and can help foster acceptance of and well-being among gay and bisexual adolescents. The findings suggest that targeted interventions tailored to different religious groups can be effective.

In the case of Dutch Muslim adolescents and other cultural-religious minorities, the reactive religiosity mechanism needs to be considered. As other authors have also noted and shown in neighbouring countries, the integration level of Muslim adolescents may mediate their attitudes towards homosexuality (Van der Bracht & Van de Putte, 2014; Zmyj & Huber-Bach, 2020). Other authors have also pointed out that discrimination against minority Muslim youth may actually cause them to strengthen their identity by turning to traditional values and norms (Roggemans et al., 2015). Assuming discrimination against these minorities reinforces their identity and traditional beliefs, pro-integration and anti-discrimination measures would likely benefit both Muslim and non-heterosexual adolescents. Both research and policy should focus and elaborate more on this phenomenon in the Dutch context.

## **Conclusion**

In conclusion, this study sheds light on the complex relations between religiosity, religious denomination, educational attainment, and attitudes towards homosexuality among Dutch adolescents. Despite the limitations of this study, it provides strengths, both on which future research may build on. Moreover, the findings suggest that denomination-specific approaches may help in challenging negative attitudes towards homosexuality. Religious, advocacy and government organisations can use this knowledge to improve attitudes towards homosexuality in adolescents. Incorporating these insights may foster the acceptance and well-being of gay and bisexual adolescents in the Netherlands.

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