The Religiosity of Polish Roman Catholics and the Meanings They Attribute to Homosexuality: Evidence from Network Analysis

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Abstract

Introduction Previous research suggests that negative views on homosexuality are fostered by higher levels of religiosity. Little is known, however, about what meanings religious people attribute to homosexuality, how these meanings connect with each other, what kind of network they form, and which of them are central.

Methods The research was conducted in 2020, based on a representative sample of Polish Catholics ($N = 874$). Religiosity was determined using latent class analysis. Based on an investigation of press discourse in Poland, six meanings of homosexuality were identified as positive (orientation, love, fulfillment) and negative (sin, deviation, disease). Network analysis was used to determine the relationship between religiosity and the meanings attributed to homosexuality.

Results The analyses showed that greater compliance of religious orientations with the Roman Catholic Church's expectations translates into increased acceptance of negative meanings of homosexuality (primarily sin). Weaker (negative) correlations were noted between religiosity and positive meanings, which we interpret as resulting from the absence of the negation of positive meanings in Roman Catholic teaching.

Conclusions The relationships between religiosity and positive and negative meanings of homosexuality were found to be asymmetrical, unbalanced, and designated by negativity bias. The weakening meaning of sin may play an important role in changing religious people's attitude toward homosexuality.

Policy Implications The absolution of homosexuality would reduce the likelihood of negative meanings such as deviance or disease. This could lead to a reduction in exclusionary perceptions of homosexuality.

Keywords Homosexuality · Meanings of homosexuality · Religiosity · Network analysis · Religion · Catholics · Roman Catholic Church · Poland

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Introduction

Religiosity and the Perception of Homosexuality in the Polish Context

Problems related to the acceptance of non-heteronormative sexual orientations have been the subject of fierce disputes in the public space in Poland over the past decade (Hall, 2015). Comparative studies show that social attitudes toward homosexuality vary and, even though over the 30 years of political and socio-cultural post-communist transformation they have gradually evolved toward acceptance, Poles' opinions are far more often negative when compared to those of citizens of Western European countries (Diamant, 2020).

The key question concerns the possible reasons behind this. One track leads toward the impact of the teachings of the dominant Roman Catholic Church (RCC) in Poland and the religiosity

of Polish society, which is among the highest in Europe (van der Noll et al., 2018). The clue is justified since, as research demonstrates, a clear link between religiosity and attitudes toward homosexuality exists even in heavily secularized countries, where people who declare no affiliation with religious institutions are more likely to accept homosexuality. This is also true for adherents of Catholicism, confessed by 86% of Poles, who are more likely to hold negative attitudes and advocate more conservative solutions to the issue of same-sex relationships, although these attitudes are less restrictive than those found among Muslims, evangelical Protestants and Orthodox Christians (Adamczyk, 2009; Crockett & Voas, 2004; Sullins, 2010).

Various studies have also considered other religion-related parameters besides affiliation, most notably the frequency of religious practice, which correlates strongly with attitudes toward homosexuality. People who attend church services less than once a month hold views similar to those who do not practice at all (Crockett & Voas, 2004), while those who declare weekly service attendance, including in Poland, are far more likely to declare negative attitudes toward homosexuality (Hall, 2020, p. 53). Other elements of religiosity, such as belief in God and God's significance in one's life, have a similar impact (Hayes & McKinnon, 2018).

In general, comparative analyses of many countries, involving large samples as well as national surveys and studies on targeted samples (often, for example, adolescents), report the regular finding that the higher the parameters of religiosity, the more often respondents declare negative attitudes toward homosexuality (Jäckle & Wenzelburger, 2015; Janssen & Scheepers, 2019; Roggemans et al., 2015; van den Akker et al., 2013). The universality of this finding is also confirmed by meta-analyses (Whitley, 2009). This should not come as a surprise, as higher rates of religiosity imply higher levels of orthodoxy and more frequent identification with the critical attitude toward homosexuality as presented by religious institutions (Kettell, 2013, 2019; Whitehead & Baker, 2012).

In Poland, the traditional, institutionalized form of religiosity is strong, and the indicators of religiosity, whether they be ideological, ritual, intellectual, communal, or consequential rank high, in a situation in which the dominant RCC is a significant actor in social life. Surveys of religiosity, conducted regularly since the late 1960s, most often with the application of slightly modified versions of Stark and Glock's concepts (Stark & Glock, 1974), indicate a high level of identification with Catholicism, a level of belief in God and Christ approaching 90%, with 40% of Poles engaged in regular weekly religious practices and with those practicing less regularly included—70% (Borowik, 2010; Piwowarski, 1976; Strassberg, 1988). Importantly, the changes that followed the collapse of communism in 1989 and Poland's accession to the European Union in 2004, which involved politics, economy, and lifestyles, have hardly affected the stability of religiosity (Borowik, 2017; Grabowska, 2017; Zdaniewicz, 2014).

In Poland, the image of homosexuality and LGBT communities seeking equality, as spread by the RCC and RCC-supporting organizations, movements, and the media, in strong association with the policies of the right-wing party in power since 2015, is decidedly negative (Kużelewska & Michalczuk-Wlizło, 2021; Tausch & Obirek, 2020). This stigmatization by the RCC and advocates of its teachings on homosexuality and the idea of the legalization of same-sex unions in Poland involves several thematic arguments: an essentialist view of femininity and masculinity, the promotion of the traditional family model, in which having offspring is seen as its key purpose and the proper manifestation of sexuality (Graff, 2009, 2010; Yatsyk, 2019; Żuk & Żuk, 2020). An alternative understanding of these elements is considered immoral, threatening the national identity of Poles, and incompatible with natural law, which is treated as the basis of the desired social order. The RCC, by way of constraining the aspirations of the LGBT community, lobbies intensively in the political environment, directly and indirectly, criticizing progressive politicians and praising those who support its position (Kowalczyk, 2019). In studies representing the experiences of non-heteronormative people, the RCC is perceived as homophobic (Hall, 2017), having a strong influence in Polish society and spreading "the language of sin" (Pogorzelska & Rudnicki, 2021).

The image of Poles' religiosity and the Church's discourse on homosexuality outlined above provide an important background for understanding the relationship between social attitudes and the attribution of meanings to certain phenomena. In this context, we are interested in the association between religiosity and homosexuality, but in terms of the meanings assigned to this phenomenon.

Research on the Meanings of Homosexuality

Surprisingly, the research in this area is limited; respondents who are questioned about their attitudes toward homosexuality are hardly ever asked about their understanding of homosexuality itself and it is rarely established how, if at all, their answers are linked to religiosity. In this little-explored area of research, one interesting thread concerns the origins of homosexuality, whether it is considered innate or a matter of choice. Negative attitudes toward homosexuality are linked to the second option, because it is then assumed that sexual orientation can be controlled, and therefore "wrong choices" are subjected to negative moral evaluation. It turns out that for people for whom the source of authority is religion, God, and Scripture are more likely to treat homosexuality negatively compared to those for whom the source of authority is knowledge, and who believe that the causes of homosexuality are innate, originating in biology (Whitehead, 2014; Whitehead & Baker, 2012; Wood & Bartkowski, 2004).

The results of qualitative research have led to interesting conclusions. An analysis of the legal discourse related to the struggle in the US for the legalization of non-heterosexual

marriages showed an understanding of homosexuality in behavioral categories (i.e., as a behavior related to the form of sex) as the dominant argumentation of the opponents, while the supporters treated homosexuality primarily as a broader category, related to the identity of gays and lesbians (Garlinger, 2004). Interestingly, other studies, similar to the one conducted in the USA, have shown a generational shift in the way homosexuality is understood in a direction similar to the arguments of supporters of same-sex marriage and the relationship of these changes to the growing acceptance of these unions. While the older generation is more likely to regard homosexuality as a lifestyle, associated with a certain behavior, their children's generation is much more likely to regard homosexuality as a certain type of identity (Hart-Brinson, 2016, 2018).

In general, the research to date on the meanings attributed to homosexuality demonstrates a clear dynamic shift from negative to positive meanings (example from the Netherlands: van Lisdonk et al., 2018; the USA as an example: Hart-Brinson, 2016). Using network analysis, Thomas Elliott demonstrated that a demedicalization and decriminalization of homosexuality took place in the period 1950–2010 (moving away from meanings of "disease" and "crime") toward meanings of human rights and respect (Elliott, 2015, p. 125). These changes are taking place in societies where the struggle for equality for the LGBT community has been going on for a long time, and are evidence that language is expressing a change in social consciousness in this regard.

Our research stems from a certain social conception of meanings, in which we recognize that their primary function is to shape the world of values. This approach allows us to distance ourselves both from objectivist lines of thinking that locate meaning in the objects of the extra-linguistic world (Katz & Postal, 1991) and subjectivist approaches that take the human mind to be the only space of meanings (Huta, 2017). We have assumed that meanings imply the value of the objects to which they refer—they have an axiological context, for they endow objects (understood sociologically, thus including people) with a positive or negative qualification. This axiological qualification via social meanings is made on the basis of a culture's prevailing knowledge of what is good and bad, right and wrong, important and trivial (Znaniecki, 2019). We have also assumed that religion and the teachings of religious institutions are one of the many sources of meanings, and are particularly relevant to those who are attached to them (Berger & Luckmann, 1990).

From Network Analysis to Social Policy

In our analyses, we intended to examine the links (networks) between the acceptance of the meanings given to homosexuality by Polish Catholics and the ways in which religiosity is related to it. In the absence of similar studies, we put forward the fairly general hypothesis that a higher level of compliance

between the religious orientation of Catholics and the requirements of the RCC would translate into a more frequent identification of homosexuality with its negative meanings, while at the same time it would be associated with a more frequent rejection of positive meanings. Due to a lack evidence, we did not put forward any hypotheses regarding the connections between religiosity and specific meanings of homosexuality (although it is plausible that religiosity would correlate most strongly with sin), or hypotheses about the relationship between different meanings. In this respect, we regard our (novel) research as exploratory.

It is our belief that an analysis of the relationship between religiosity and the social attribution of meanings to homosexuality can help us understand the social mechanisms shaping social policy toward sexual minorities and their rights. We assume that the general assumption of the social policy responsiveness hypothesis, according to which politicians have incentives to incorporate voters' preferences into social policies to reduce the risk of electoral loss (Brooks & Manza, 2006), also applies to sexuality policies. This belief is reinforced by research findings indicating the existence of a link between the state of public opinion and legislation toward sexual minorities and their rights. These studies prove the existence of a strong negative relation between various dimensions of social policy on homosexuality (e.g., the presence of legislation on homosexual marriage or same-sex partnership) and negative public attitudes toward homosexuality (Hooghe & Meeusen, 2013; Redman, 2018; Takács & Szalma, 2011).

They also show that transformations of religious orientations are accompanied by changes in public opinion about non-heteronormative relationships (Lee & Mutz, 2019). Thus, it seems that the identification of the relations occurring between religious thinking and the meanings given to homosexuality, as well as the relations between these meanings themselves, is not only of theoretical but also of practical value—especially in the case of countries where religiosity rates remain high and religious institutions influence not only state policy but also the state of social consciousness, as is the case in Poland (Stubbs & Lendvai-Bainton, 2020; Tatarczyk, 2020).

Methods

Plan of the Statistical Analyses

The analyses were conducted in two steps. In step one (Preliminary analysis) using latent class analysis (LCA), the respondents were assigned to one of the identified religiosity classes. In the next step (Main analysis), this variable was used in network analyses (as an indicator of religious orientation) to determine the relationship of religiosity with six (three positive and three negative) meanings of homosexuality.
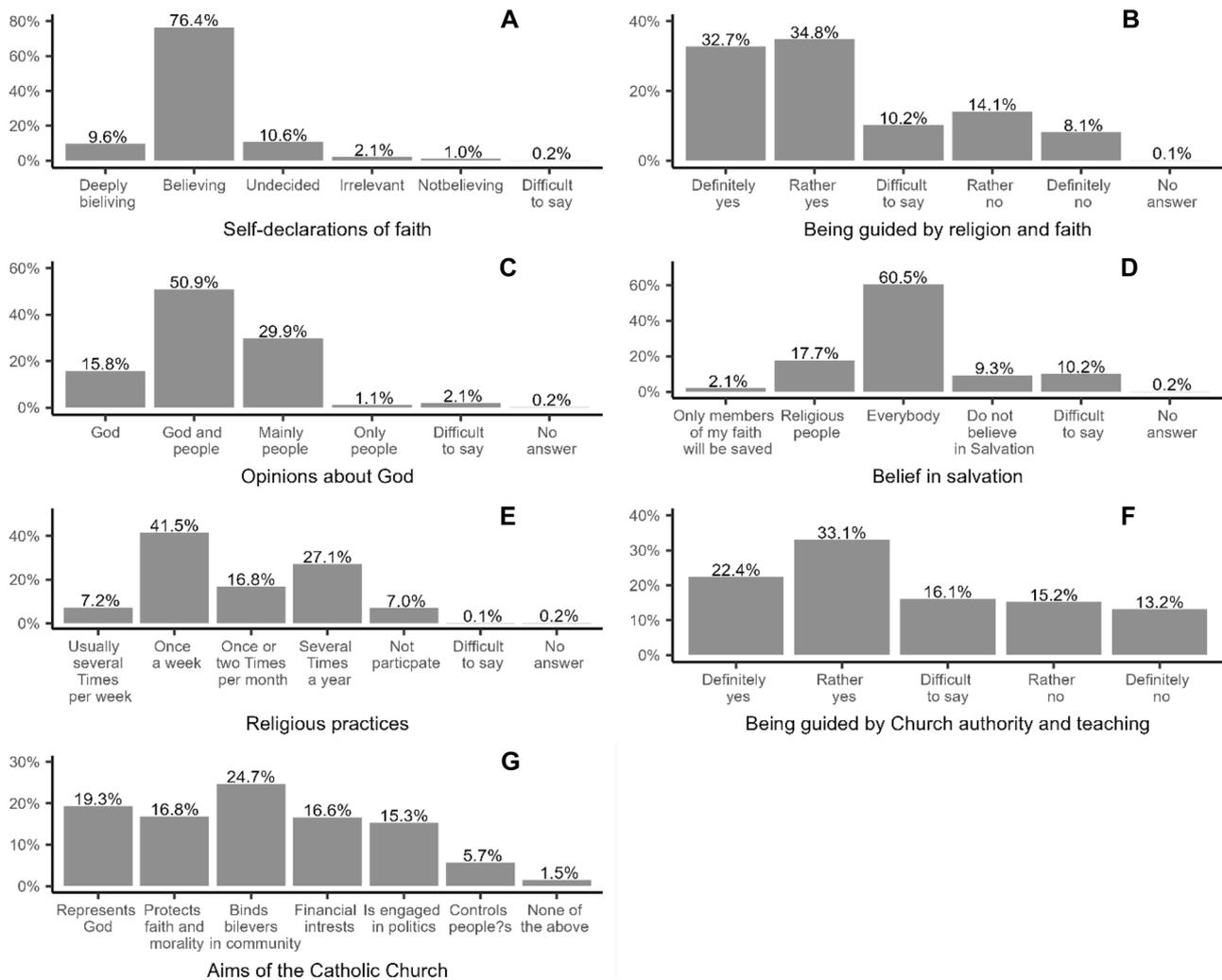
Fig. 1 Measures of religious orientation

Preliminary Analyses

In the analysis presented here, we have used latent class analysis (LCA) (Collins & Lanza, 2010) to capture the internal variations in Catholic religiosity. The use of LCA has both theoretical and empirical justification. In social studies of religiosity, it is accepted that religiosity is a multidimensional phenomenon and cannot be reduced to religious affiliation, practices, or single religious beliefs (Pearce et al., 2013). Previous research on the relationship between religiosity and biopolitical topics has been criticized for ignoring the complexity of religiosity and using single indicators of religiosity in research, mainly religious affiliation and religious practices (Adamczyk et al., 2020). Using the LCA allowed us to use seven different indicators of religiosity (see Fig. 1) and create a single synthetic variable based on respondents' answers. It should be noted that we did not have the possibility to use more traditional

methods, such as factor analysis, because the two indicators of religiosity were measured at a nominal level (see Fig. 1: panel C and G). LCA is without limitations related to the level of measurement of indicators (allows the use of nominal variables).

LCA is a statistical technique that categorizes respondents into groups with shared traits by detecting homogeneous subpopulations from observed variable patterns, or "indicators." These groups, called "latent classes," represent unobservable variables that can be indirectly measured through response patterns. In summary, LCA assigns individuals with comparable answers to survey questions into the same group. In the context of religiosity LCA, as a person-centered approach allows not only for a better understanding of how the multiple dimensions of religiosity are configured within individuals, reflecting their actual experiences more closely (Good et al., 2011), but also how different dimensions co-occur in the population and how profiles predict outcomes (Vasilenko

& Espinosa-Hernández, 2019). In recent years a growing number of studies, including on religiosity, have utilized this perspective (for a review, see Bravo et al., 2016).

A specific feature of LCA is that the identification of hidden or latent classes is not based on the (theoretical) assumptions of predetermined groupings (subtypes of religiosity), but results from empirical data (i.e., it is data-driven). The LCA model estimates the probabilities associated with each latent class. These probabilities include (1) class membership probabilities, which represent the likelihood of individuals belonging to a particular class, and (2) item-response probabilities, which signify the likelihood of a specific response to an item given the class membership.

In LCA, the number of latent classes is unknown and cannot be estimated directly but in a series of nested models with an accumulative number of classes (up to 7 classes in the case of our work). These were examined to determine whether a particular LCA model captures the data in an accurate and useful way. In the analyses described here, the best solution has been determined with reference to two a likelihood ratio test (i.e., the Vuong-Lo-Mendell-Rubin likelihood ratio test (VLMR LRT), the Lo-Mendell-Rubin adjusted likelihood ratio test (LMR-A), and four information criterion indices (i.e., the Bayesian Information Criterion (BIC), the Sample-Size Adjusted BIC (SSA-BIC), and the finite sample corrected AIC (AICc). Also, entropy values were computed as an overall measure of the degree of "fuzziness" in class membership (Kaplan & Keller, 2011).

The VLMR LRT and the LMR-A compare the fit of the specified class solution to models with one less class. A $p < 0.05$ suggests that the specified model provides a better fit to the data relative to the model with one less class. In the case of the AICc, BIC, and SSA-BIC, lower observed values indicate better model fit. In addition, entropy is a measure of model fit, with values closer to 1 suggesting better model fit and better separation between the classes. Although there are no clear cut-off points (Wang & Wang, 2012), a value of 0.80 is high, 0.60 is medium, and 0.40 is considered low entropy (Clark, 2010). An LCA was conducted using the Mplus 8.3 statistical package (Muthén & Muthén, 2017).

After the optimal number of classes was determined, participants were assigned to the one in which they had the highest probability of membership, and this variable was used in the subsequent analysis (network analysis).

Main Analyses

Previous research provides—as mentioned above—evidence that religiosity is related to negative attitudes toward homosexuality (Whitley, 2009). The most common quantitative methodology used in this type of research, but also other psychological constructs, such as psychopathological disorders, personality traits, abilities, and skills, is the latent

model (Bollen, 2002), which conceptualizes psychological constructs as invisible human qualities that underlie manifested behavior (such as answers to questionnaire items or test questions). In this view, mathematical ability (for example) is measured by observing how people perform on a set of mathematics tasks, which is based on the assumption that inter-individual differences in test scores are due to differences in mathematical skill levels. However, this popular and useful research perspective has some limitations. For example, presume that the co-occurrence (covariation) between observable (questionnaire) items, e.g., specific reactions of the respondent toward homosexuality (describing it as "sin" or "love"), is explained by underlying and unobserved common cause of all these variables, that is, by a latent construct, e.g., positive or negative attitudes toward homosexuality (Schmittmann et al., 2013). The latent model assumes, in turn, that observable indicators are locally independent and may be exchangeable (Dalege et al., 2016), analogously to the interchangeability of tasks in a math test. This implies that indicators do not have a direct causal influence on each other, so that there are no interactions between evaluative reactions. In general, the focus on the latent variable makes it difficult—as indicated by Fried and Nesse (2015)—to capture information on the ability of particular responses to cause others. Note that the relationships between elements of beliefs are important because they allow us to go beyond isolated reactions toward a specific object and reconstruct the respondent's coherent (more or less) system of meanings that underpins their understandings of the world and its objects (Turner-Zwinkels & Brandt, 2022).

More recent network approaches (Marsman & Rhemtulla, 2022) have described how specific reactions of the respondent (e.g., toward homosexuality) might influence one another in a dynamic and causal network.[1] The network perspective shifts the focus from a single underlying latent cause to the system of relationships between different (specific) reactions to a particular object. This system can be understood as a "belief system," in the sense given to that term by Converse (2006), i.e., as "a configuration of ideas and attitudes in which elements are bound together by some form of constraint or functional interdependence"

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[1] This new approach has recently been referred to as network psychometrics (Isvoranu et al., 2022). In our article, by using the concept of network we refer to network psychometrics and in this way, we distinguish our approach from the traditional understanding of networks (i.e., as mainly social)—we thank the anonymous reviewer for highlighting these differences. Both types of analysis have similarities, but also differences. For example, traditional networks, like social networks, concentrate on relationships between individuals or social entities, whereas in network psychometrics we examine relationships between psychological or related constructs (in our case: meanings given to homosexuality). In traditional social networks, nodes represent individuals or social entities, and edges signify social connections or interactions. In studies using network psychometrics, nodes represent components of a psychological or other construct, and edges indicate associations or relationships between these components.

(Converse, 2006, p. 3; see also: Boutyline & Vaisey, 2017; Brandt & Sleegers, 2021; Brandt et al., 2019). In such a system, the various elements are interrelated, and a change in one element (e.g., approval of the understanding of homosexuality as a deviation) leads to a change in another element included in the belief system (e.g., rejection of the notion of homosexuality being fulfilling for a person) (Daenekindt et al., 2017).

Consequently, the network modeling conceptualizes attitude elements (i.e., beliefs, feelings, and/or behaviors) rather as a complex system (network) of mutually interacting, often reciprocally reinforcing reactions toward a specific object than the effect of some latent (external) variable (Dalege et al., 2016). The set of nodes and edges jointly defines a network structure (Newman, 2010). From a network perspective, a node can represent any entity or variable, like evaluative reactions; for example, the level of acceptance that homosexuality is a "sin" or that it is an expression of "love." Edges, in turn, can represent bidirectional pairwise interactions between evaluative reactions (e.g., the relationship between understanding homosexuality as "sin" and as "love"), illustrating how strongly connected they are in the population (Newman, 2010).

It is important that the relationships (edges) between some of these will only be indirect, that is, through direct connections with other nodes. Moreover, the strength of these connections can be varied. As individual nodes may differ in the number and strength of connections, the role they play in the network may also vary—they may have a more or less central position. As the activation of more central nodes increases the probability that a connected (directly and/or indirectly) node also becomes activated, central nodes may be particularly suitable targets for intervention. So, analyzing the belief system as a network can help us in finding variables with the highest degree of interrelations with other variables that may be the most favorable candidates to be wagered on for intervention purposes (Sam Nariman et al., 2020). Thus, the analysis of the network structure can be significant not only in theoretical but also in practical terms, identifying the elements of beliefs that have the greatest influence on prejudice.

Note that the network approach has demonstrated its usefulness in many fields, such as physics, biology, psychiatry, psychology, communication, political science, and ethics (da Costa et al., 2011; Dalege et al., 2019; Newman, 2010). Importantly, these models were also used in ethnic prejudice research (Grigoryev et al., 2019; Sam Nariman et al., 2020; Sayans-Jiménez et al., 2019). Unfortunately, to the best of our knowledge, network analysis has not yet been applied to the study of evaluative reactions toward homosexuality. As such, the current study sought to explore the possible functional relations between religiosity and specific evaluative reactions of Polish Catholics toward homosexuality using network analysis.

The network of which the variables were a part were modeled as partial Spearman rank correlations (due to the ordinal nature of items), which measure the remaining association between two nodes after controlling for all other associations.[2] Partial correlations offer a clearer understanding of the unique associations between pairs of variables, while controlling for potential confounding effects from other variables.

Thus, each edge represents the relationship between a pair of nodes, controlling for associations with all other nodes in the network. We estimated network via a Gaussian Graphical Model (GGM) (Epskamp et al., 2018), using the EBICglasso algorithm (Epskamp & Fried, 2018), which combines graphical least absolute shrinkage and selection operator (GLASSO) regularization (Friedman et al., 2010) with model selection using the extended Bayesian information criterion (EBIC; Chen & Chen, 2008). This procedure generates 1000 different network models varying in sparseness, and the model with the lowest EBIC value is selected as the final model and given a certain value on the hyperparameter lambda (γ). This hyperparameter γ controls the balance between including false-positive edges and removing true edges. Lambda generally ranges from 0 to 0.5. As the value of γ nears 0.5, the EBIC will favor a simpler model that contains fewer edges. We set the starting value of γ to 0.5, as recommended by simulation studies (Epskamp & Fried, 2018). The aim of this procedure was to bring small non-zero partial correlations (which are presumably spurious) to zero and compute a parsimonious ("sparse") network that accounts for the most variance with the fewest number of edges—thus making networks more robust and simpler to interpret (Costantini et al., 2021). The network visualization is based on the modified version of the Fruchterman and Reingold algorithm (1991), which forces strongly correlated nodes closer together.

To better clarify the relationship between religiosity and the meanings attributed to homosexuality, we visualized the network structure also as a flow diagram using the Reingold–Tilford graph layout algorithm (Reingold & Tilford, 1981). This function places religiosity to the left and creates a vertical network that displays which nodes are directly or indirectly related to religiosity.

After estimating the network, to quantify the importance of each node in it we calculated the strength centrality indices (Opsahl et al., 2010). Because not all nodes are equally important (central) in determining the network structure, an important aspect of the analyses was to determine their centrality. Generally, centrality indices provide insight into the relative importance of a specific node compared to other

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[2] We chose Spearman correlations over polychoric ones, since Spearman correlations produce more stable networks, especially when the sample size is small, items have few response options, and are significantly skewed (Epskamp & Fried, 2018; Fried et al., 2021).

nodes included in the network (Rodrigues, 2019). One of the most frequently used measures of centrality is the strength of the node, that is, the sum of the weight of the edges (that is, partial correlations) that are connected to that node (Opsahl et al., 2010). In general, a node has a high strength if it has strong connections with many other nodes (Costantini et al., 2021). As a consequence, strength centrality can be particularly useful in understanding the cumulative influence a node has on a network and thus assessing the role it may play in the activation, persistence, and remission of the network (Zarate et al., 2022). We created centrality plots that depict these values as z-scores for ease of interpretation (higher values reflect greater centrality in the network).

In addition, we tested whether the strength of nodes significantly differed from one another by estimating confidence intervals around the difference of two bootstrapped centrality estimates: if 0 belongs in the confidence interval, then there is no difference between two strength indices. An analogous procedure was used to answer the question "is the relationship (edge) X significantly stronger than the relationship (edge) Z?" This is for checking the differences between the edge weights.

Next, we applied nonparametric bootstrapping techniques to check the stability of the regularized network. In the network perspective, stability refers to the network resistance to change if selected participants were to be dropped from the analyses. So, to quantify the stability (and thus interpretability) of the strength centrality indices, case-dropping bootstrap was performed. This procedure was used to estimate the correlation stability coefficient (CS-coefficient) (Costantini et al., 2019), which is the maximum proportion of the population that can be dropped so that the correlation between the recalculated indices of the obtained networks and those of the original network is at least 0.7. The simulation study (Epskamp et al., 2018) suggests that the CS-coefficient should not be lower than 0.25 and preferably above 0.5.

Participants and Procedures

In the study, we used a nationally representative sample of Polish adults (aged ≥ 18). The sample consisted of 1066 participants. Recruitment, face-to-face interviews, and data entry were conducted by the Public Opinion Research Center in Warsaw (CBOS). CBOS is a well-known and respected Polish research center, experienced in conducting research for over 40 years in various areas, such as politics, finances, social problems, etc. The sample was selected in four phases, on the basis of the PESEL of individuals, i.e., national identification numbers. Regional coordinators of interviewers receive information and the tool to be used in the research (i.e., in this case a questionnaire) in advance in order to test it and plan the work. The field work, i.e., administering the

questionnaires, took 1 week. All participants in the research received general information about it, explaining the procedure, the way in which interviewees were selected and the aim of the research. There are no honoraria predicted for participants. Data were collected using the computer-assisted web interviewing (CAWI) technique between 26 and 28 February 2020. Informed consent was obtained from all individual participants included in the study.

Further, 84.4% of our respondents declared an affiliation to a religious denomination (13.8% declared being non-denominational, 1.1% were not sure, and 0.7% refused to answer). Among the people who declared affiliation to a religion, RCC members clearly dominated (97.1%), but a small number of respondents declared that they belonged to the Orthodox Church (0.8%), Jehovah's Witnesses (0.4%), the Greek Catholic Church (0.2%), and one of the Protestant denominations (0.2%). A religion other than RCC was indicated by 0.8% of people declaring affiliation to a religion/church, while 0.4% refused to answer the question.

The socio-demographic characteristics of the respondents are presented in Table 1.

Measures

Religiosity

We have operationalized the concept of religiosity by combining a number of variables (see Fig. 1) measuring different aspects of religiosity, such as (1) self-declaration of faith; (2) belief in the importance of religion and faith in daily life; (3) faith in salvation; (4) the role of God in the lives of the respondents; (5) religious practices; (6) beliefs about the authority of religion and the Church in making life decisions; and (7) the functions performed by the Church as perceived by respondents.

The analysis of the distributions of seven religious variables indicates that almost 90% of Catholics identified themselves as religious or deeply religious. Fewer (approximately two-thirds) declared that they are guided in their lives by religion and faith and believe that God influences human life, and half admit that they are guided in their lives by the authority and teaching of the RCC and have positive opinions about it. At the same time, more than half believe, contrary to the RCC teaching, that anyone can be saved, and fewer than half participate in religious practices at least once a week. Thus, the religiosity of Catholics is quite strongly differentiated, depending on the parameter examined.

Meanings of Homosexuality

Based on the earlier phase of the research, which involved the analysis of the meanings attributed to homosexuality in the press discourse of 6 weekly opinion-forming weekly

Table 1 Socio-demographic characteristics of the participants

Characteristic	%/Mean (n = 874)
Sex (%)	
Men	47.7
Women	52.3
Age in years (Mean)	50.0
Place of residence—actual (%)	
Village	42.6
Town (≤ 100,000 residents)	33.9
Town (> 100,000 residents)	23.6
Place of residence—at 15 age (%)	
Village	50.2
Town (≤ 100,000 residents)	31.4
Town (> 100,000 residents)	18.4
Education (%)	
Primary	12.2
Vocational	27.3
Secondary	39.5
Higher	20.9
Marital status (%)	
Married	62.8
Single (never married)	20.1
Separated or divorced	7.3
Widowed	9.7
Income (per person in family) (%)	
Up to 1499 PLN	31.1
From 1500 to 2999 PLN	35.1
3000 PLN and more	9.7
Refusal to answer	24.0
Ideological self-placement (%)	
Right	38.7
Center	27.3
Left	17.0
Hard to say	16.9

publications in Poland,[3] six recurring terms to describe homosexuality were selected: three positive (orientation, love, fulfillment) and three negative (sin, deviation, disease).

The respondents were asked to answer the question "How would you define homosexuality?" Please indicate how much you agree or disagree that homosexuality is: …" for each of the six meanings of homosexuality. They could respond

[3] The survey was carried out as part of a research project exploring the relationship between religion and the legitimacy of positions taken in public discourses on biopolitics (abortion, in vitro fertilization and homosexuality). Phase 1 of the research analyzed content published in 2004–2014 in six of the most popular weekly opinion-making magazines: two conservative (*Do Rzeczy* and *W sieci*), two liberal (*Polityka*, *Przegląd*) and two Catholic (*Gość Niedzielny* and *Tygodnik Powszechny*). The positive and negative meanings selected for representative research were those most common in this discourse.

to each meaning on a 5-point Likert scale, where 1 meant "Strongly disagree"; 2—"Disagree"; 3—"Undecided"; 4—"Agree"; while 5—"Strongly agree."

The percentage distribution of choices made by respondents is shown in Fig. 2.

The average level of acceptance of all six terms (on a five-point scale, where 1 means "strongly disagree" and 5 means "strongly agree") was 3.35 ($SD = 0.55$). A one-sample t test showed a significantly higher than average level of acceptance for two of the six meanings: orientation ($M = 4.09$, $SD = 1.09$; $t(873) = 19.99$, $p < 0.01$; $d = 0.68$) and love ($M = 3.73$, $SD = 1.26$; $t(873) = 8.99$, $p < 0.01$; $d = 0.30$). All other meanings showed lower levels of acceptance, i.e., fulfillment ($M = 3.01$, $SD = 1.19$; $t(873) = -8.54$, $p < 0.01$; $d = -0.29$), disease ($M = 3.05$, $SD = 1.43$; $t(873) = -6.13$, $p < 0.01$; $d = -0.21$), sin ($M = 3.07$, $SD = 1.44$; $t(873) = -5.74$, $p < 0.01$; $d = -0.19$) and deviation ($M = 3.18$; $SD = 1.43$; $t(873) = -3.61$, $p < 0.01$; $d = -0.12$).

The zero-order rho Spearman correlations between meanings attributed to homosexuality and religiosity are provided in Fig. 3.

Results

Three Classes of Religiosity Among Polish Catholics

In applying LCA, the first step in the modeling process was to identify the number of latent classes by fitting models with different numbers of latent classes and assessing the quality of fit and interpretability of the latent class structure. Seven LCA models (consisting of 1 to 7 classes) were run and assessed for goodness-of-fit using VLMR LRT, LMR, AICc, BIC, and SSA-BIC. The fit indices for each of the seven latent class models are presented in Table 2.

The VLMR LRT, LMR-A was statistically significant for the two and three-class models but not for the four-class model. This suggests that model fit did not significantly improve when a fourth class was added to the model, and that the three-class model would be preferable. Also, the lowest values of BIC, SSA-BIC, and AICc indicated that a three-class solution fits the data best. The entropy of the three-class was 0.82, indicating the high level of reliability of this solution.

Table 3 shows the conditional item probabilities for each class in the three-class religiosity model. Class one is internally quite diverse. Although the Catholic respondents declared themselves to be members of the RCC and believers, the majority of people in this class felt distanced toward their basic beliefs and the Church was assessed critically. Taking into account other studies of religiosity (Borowik, 2017; Pawlik, 2017), it can be assumed that this class corresponds to the characteristics of an eclectic religiosity which is cultural at its core, and that is nominal in its nature and characterized by low-level institutionalization. For the
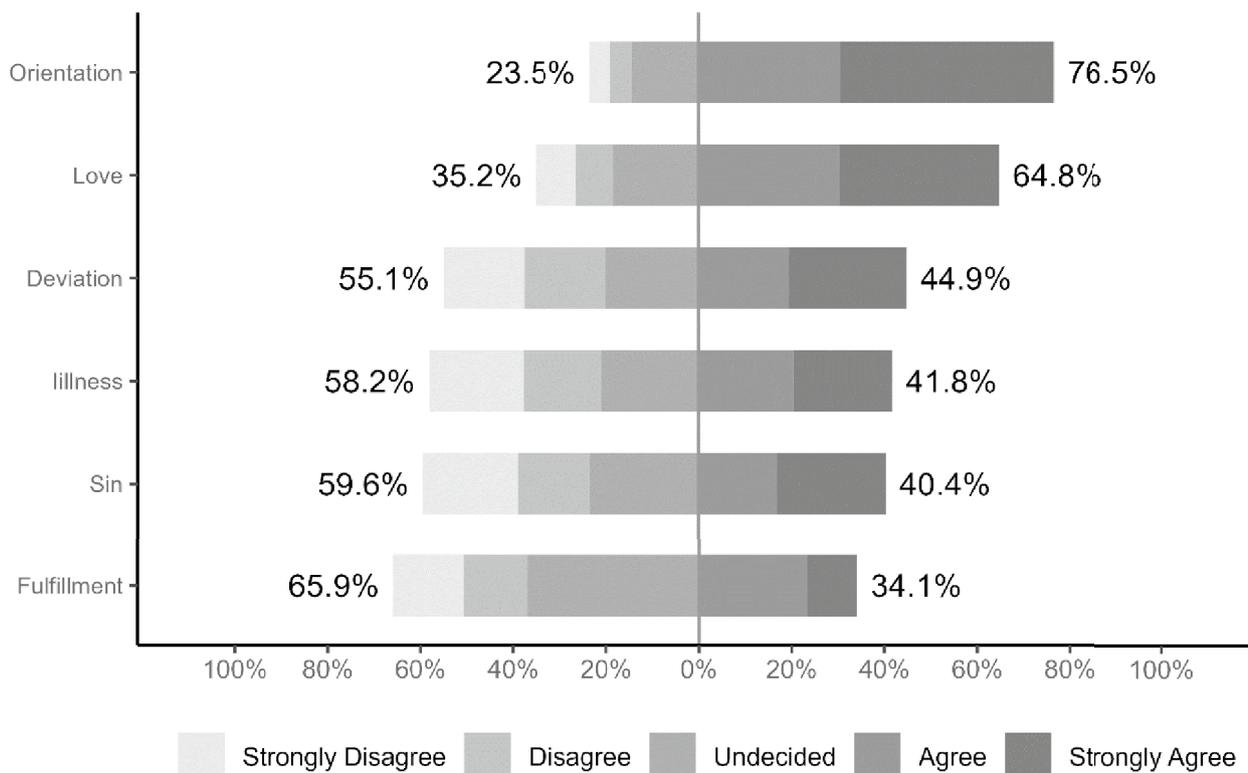
Note. Likert plot was used to graphically represent the participants' response to each item of the questionnaire

Fig. 2 The relationship of Polish Catholics to the meaning of homosexuality

purposes of this study and taking into account the criterion of conformity to the demands of the Church, we termed this class as *weakly institutionalized religiosity.*

The respondents in Class 2, who made up the largest group in our sample, almost without exception identified themselves as believers. The intensity of their beliefs within the framework of the individual indicators of religiosity, and thus also their conformity to the expectations of the Church, was higher than in Class 1, but definitely lower and less consistent than in Class 3. These respondents presented a type of religiosity closer to the orthodox model than Class 1, but inconsistently. Apart from declarations of affiliation and of being religious, each of the other indicators revealed a significant probability of beliefs that are inconsistent with the teachings and expectations of the Church. This is a type of selective, partially orthodox religiosity; hence, we call it *moderately institutionalized religiosity.*

The third and final class presents the type of religiosity most consistent with and closest to the RCC teachings. In fact, it is characterized by a very high degree of compliance with RCC expectations; the type of religiosity in this class is institutionalized to the highest degree in line with the authority

and teaching of the Church. Given these characteristics, we called this type *strongly institutionalized religiosity.*

In the next step of the analyses (Main Analysis), the membership of the three classes of religiosity (weakly, moderately, and strongly institutionalized) was used as an indicator of the religious orientation of Polish Catholics.

Main Analysis

The regularized partial correlation network (see Fig. 4) depicts two clusters of nodes, with 19 of 21 edges being nonzero (the average edge weight was 0.07). The first contains negative meanings of homosexuality (sin, deviation, illness). The second group, on the other hand, encompasses indicators of positive meanings (love, orientation, fulfillment).

Among positive descriptions of homosexuality, the largest edge-weight was between love and orientation, and between love and fulfillment. The largest edge weights in the negative network were between deviation and sin and between deviation and illness.
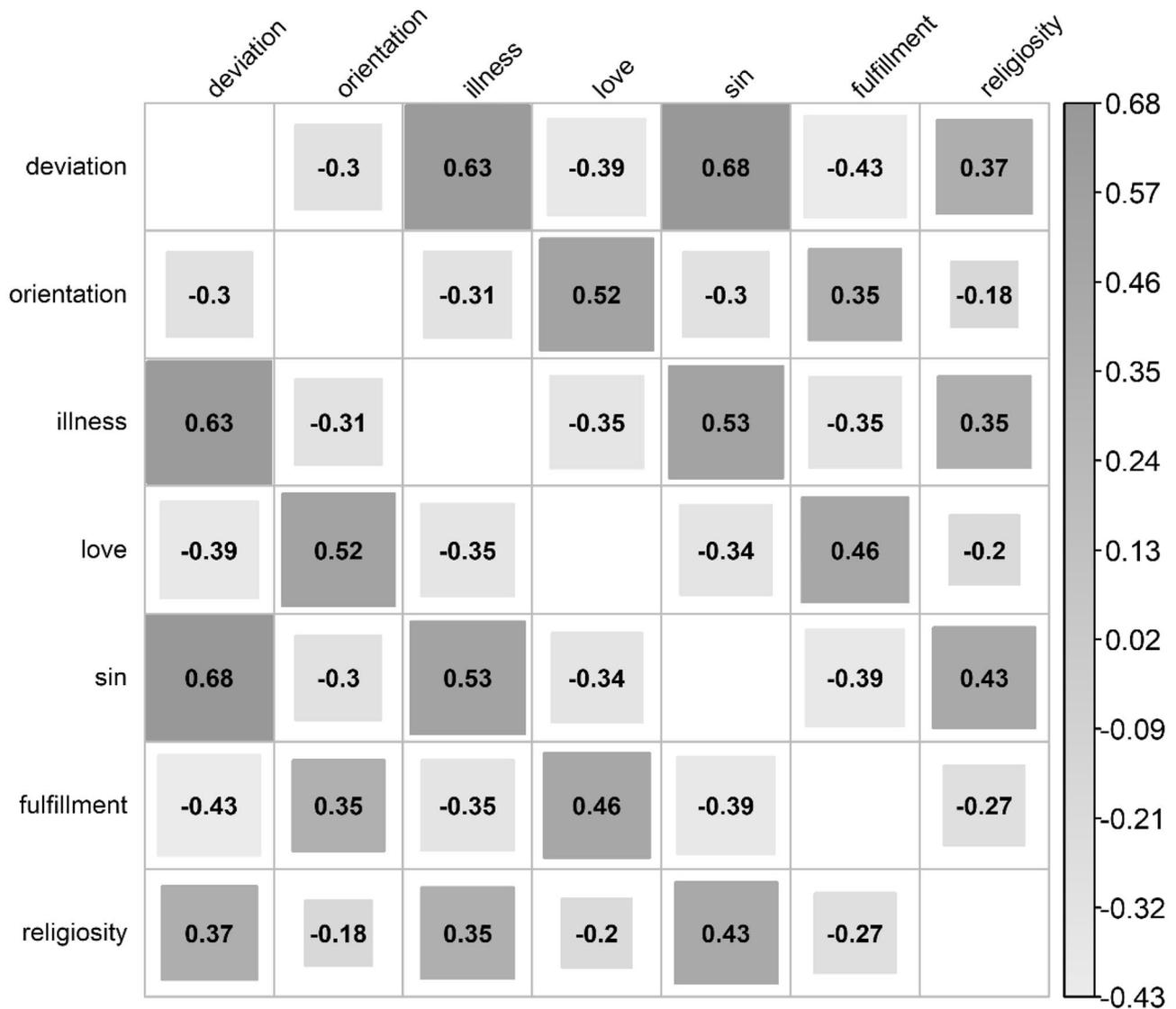
Fig. 3 Matrix of correlations between the studied variables

Religiosity was directly related to five of the six meanings of homosexuality: sin, illness, deviation, fulfillment, and orientation. The relationship between religiosity and love is only indirect, through one of these five meanings (see also Fig. 5).

After controlling for all other variables, the nodes with the strongest association with religiosity were categories of sin ($rho_p = 0.22$) and illness ($rho_p = 0.12$). The bootstrapped nonparametric 95% CIs of the estimated edge-weight

Table 2 Goodness-of-fit indices for testing seven subsequent latent class models (religiosity)

Nr of classes	Entropy	LL	AIC	BIC	aBIC	AICC	VLMR LRT p	LMR p
1	NA	-8129.17	16,330.34	16,502.17	16,387.85	16,333.53	NA	NA
2	0.86	-7315.60	14,777.21	15,125.64	14,893.81	14,790.71	0.00	0.00
3	0.82	-7120.21	14,460.42	14,985.46	14,552.62	14,377.75	0.00	0.00
4	0.82	-7011.91	14,317.82	15,019.46	14,636.12	14,492.42	0.76	0.76
5	0.83	-6957.56	14,283.12	15,161.37	14,577.03	14,381.93	0.81	0.81
6	0.83	-6913.56	14,269.11	15,323.96	14,622.12	14,419.61	0.79	0.79
7	0.84	-6880.12	14,276.24	15,507.69	14,688.35	14,493.55	0.77	0.77

BIC Bayesian information criterion, *SSA-BIC* sample-size adjusted BIC, *AIC* Akaike information criterion, *AICc* finite sample corrected AIC, *VLMR LRT* Vuong-Lo-Mendell-Rubin likelihood ratio test, *LMR* Lo-Mendell-Rubin adjusted likelihood ratio test, *p* p value

Table 3 The proportion and conditional probabilities of responses for the three latent classes (religiosity)

	Class 1	Class 2	Class 3
	Weakly institutionalized	Moderately institutionalized	Strongly institutionalized
	0.32	0.38	0.28
Do you consider yourself as a person who is			
Deeply believing	0.01	0.01	0.30
Believing	0.63	0.93	0.70
Undecided but attached to the religious tradition	0.26	0.05	0.00
Religion is irrelevant to me	0.06	0.00	0.00
Non-believer	0.03	0.00	0.00
Difficult to say	0.01	0.00	0.00
No answer	0.00	0.01	0.00
To what extent do you follow religious faith and beliefs in your life?			
Definitely yes	0.03	0.16	0.92
Rather yes	0.14	0.72	0.08
Difficult to say	0.23	0.07	0.00
Rather no	0.36	0.05	0.00
Definitely no	0.24	0.00	0.00
No answer	0.00	0.00	0.00
What, in your opinion, is the role of God in your life?			
God decides about everything and people should obey His will	0.02	0.09	0.41
God created man and gave him free will	0.29	0.67	0.54
People decide about everything by themselves independent of whether they believe in God or not	0.60	0.22	0.04
I don't believe in God; I think only man can decide about his life	0.03	0.00	0.00
Difficult to say	0.06	0.01	0.01
No answer	0.00	0.01	0.00
Christians believe in salvation. Do you believe that all people will be saved or only some of them?			
Only members of my faith will be saved	0.00	0.03	0.02
Religious people of all denominations will be saved	0.17	0.20	0.16
Everybody will be saved	0.42	0.66	0.74
I don't believe in salvation	0.25	0.03	0.01
Difficult to say	0.16	0.08	0.07
No answer	0.00	0.00	0
Do you take part in religious practices, such as a Sunday service or religious meetings?			
Yes, usually several times a week	0.01	0.03	0.22
Yes, once a week	0.09	0.54	0.64
Yes, once or two times a month	0.17	0.23	0.07
Yes, several times a year	0.54	0.20	0.05
No, I don't participate in religious services	0.19	0.00	0.02
Difficult to say	0.00	0.00	0.00
No answer	0.0	0.00	0.00
To what extent do you follow the teaching and authority of the Catholic Church in your life?			
Definitely yes	0.01	0.05	0.72
Rather yes	0.07	0.63	0.23
Difficult to say	0.20	0.24	0.01
Rather no	0.36	0.08	0.00
Definitely no	0.36	0.00	0.04
People in Poland have different opinions about the Catholic Church as an institution. Please respond to each statement below. The Catholic Church in Poland:			
Represents God, taking care of sacred values	0.05	0.18	0.39

Table 3 (continued)

	Class 1	Class 2	Class 3	
	Weakly institutionalized	Moderately institutionalized	Strongly institutionalized	
	0.32	0.38	0.28	
Protects the faith and morality	0.04	0.21	0.27	
Brings believers together to form a community	0.15	0.32	0.26	
Mostly takes care of its own, including financial, interests	0.33	0.13	0.01	
Is engaged in politics and wants to have an impact on everything	0.29	0.12	0.04	
Controls people's life, tells them what to do	0.11	0.03	0.03	
Other	0.03	0.01	0.00	

Grey shading indicates probabilities greater than 0.10

individual comparison test suggests that these two correlation coefficients are not different from each other (95% edge weight difference $CI = [-0.21; -0.01]$).[4] Lower than the correlation of religiosity with sin and illness were found to be those between religiosity and fulfillment ($rho_p = -0.08$[5]), religiosity and deviation ($rho_p = 0.04$[6]), and religiosity and orientation ($rho_p = -0.01$[7]). All significant differences of nonzero edges are presented in Fig. 6. Note that the edge stability coefficient was 0.751, which can be interpreted as very high (significantly exceeding the threshold value of 0.5).

In general, these results indicate that religiosity is primarily linked to two negative meanings of homosexuality. The more religiosity congruent with the institutionalized expectations of the CRC, the more frequent the labeling of homosexuality as a sin and an illness.

The strength of the centrality index (see Fig. 7) indicated that deviation (z scores = 1.5) and sin (z scores = 0.85) were the most central nodes and therefore were the most closely related to each other. These two negative meanings of homosexuality are not different in terms of their meaning (strength centrality) in the network (see Fig. 8). In addition, deviance is characterized by a more important effect than the other four meanings of homosexuality and religiosity. Sin, on the other hand, does not differ in strength centrality from love.

However, religiosity has the lowest strength value (z scores = − 1.5). The bootstrapped strength difference tests revealed that the strength centrality of religiosity was significantly different (lower) from all other elements of the network. This means that religiosity has relatively little influence on the rest of the nodes in the network. Its effect is realized primarily by increasing the likelihood of accepting negative labels, especially sin and illness.

Note that the correlation stability coefficient (CS [cor = 0.7] = 0.751) for the strength centrality metric exceeded the recommended cutoff of 0.5. In other words, the ranking of network components as indexed by strength centrality must be considered as strongly robust and trustworthy.

Discussion

In our analyses, we examined the links (networks) between the acceptance of the (positive and negative) meanings attributed to homosexuality by Polish Roman Catholics and how religiosity is related to it.

Based on previous research, we assumed in the first part of our research hypothesis that religiosity, especially high religiosity and highly institutionalized religiosity, would be associated with higher acceptance of negative meanings of homosexuality. Unsurprisingly, the network analysis showed, as mentioned in the Introduction, that religiosity has the strongest relationship with the notion of "sin".

At the same time, our analyses only partially confirmed the second part of the hypothesis, i.e., the assumption that there is a negative relationship between religiosity and positive meanings of homosexuality. Our analyses indicate that religiosity is negatively related to fulfillment and orientation but is not related (either negatively or positively) to love.

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[4] This test (see "Methods" section) computes the bootstrapped difference test for edge-weights. A confidence interval is construed on the difference between the two values, and the test is deemed significant if zero is not in this confidence interval.

[5] The 95% confidence interval for the difference in the magnitude of the correlation coefficient of religiosity with fulfilment and religiosity with sin was −0.38 to −0.20. The analogous confidence interval for the differences between the correlations religiosity-fulfilment and religiosity-illness was −0.28 to −0.09. In both cases, the intervals do not contain the value 0, which means that the differences are statistically significant.

[6] The 95% confidence intervals for the difference were, respectively: −0.27 to −0.06 and −0.16 to −0.04. Since the 95% confidence intervals does not contain the value 0, the differences can be considered statistically significant.

[7] The 95% confidence intervals for the difference were, respectively: −0.31 to −0.15 and −0.20 to −0.05. Since the 95% confidence intervals does not contain the value 0, the differences can be considered statistically significant.
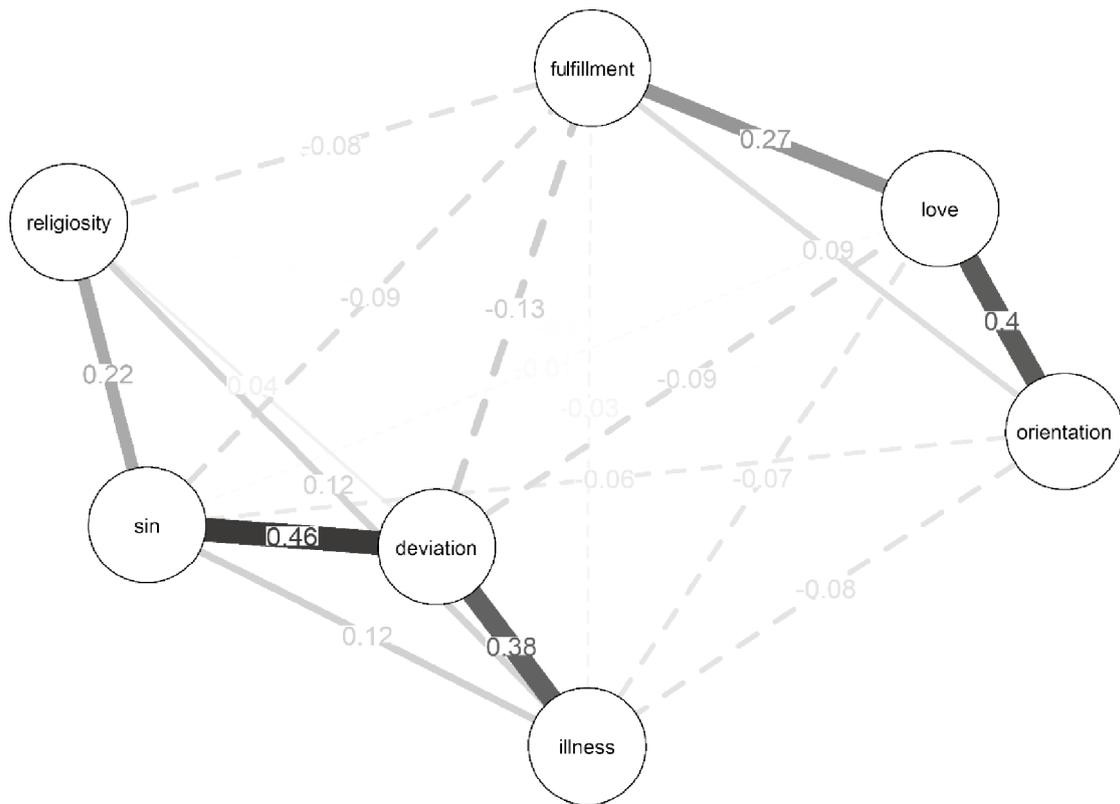
Note. Solid lines (edges) indicate positive relations, and dashed lines indicate negative relationships. The thicker the edge (line), the stronger the relationship between two nodes. Partial correlation coefficients are indicated at their respective edge.

Fig. 4 EBIC gLasso network of the descriptions of homosexuality and religiosity

However, whereas the intrinsic links between fulfillment, love and orientation are strong, religiosity itself does not relate to them, or the relationship is noticeably weaker than is the case with negative terms.

What are the possible reasons for this and what do these data tell us about how Catholics in Poland understand homosexuality?

The confirmed strong link between religiosity and the representation of homosexuality as a sin is in all likelihood due to the fact that homosexuality is defined as sin not only within the RCC itself (although paragraphs 2357, 2358, and 2359 of the Catechism dedicated to it distinguish between the homosexual inclination and the act itself, calling for chastity, prayer, and sacrifice so as not to succumb to it) (Catholic Church & Libreria editrice vaticana, 2000, p. 566), but also in the press, parliamentary discourse, or school textbooks (Zwierżdżynski, 2014, pp. 283–288). Interpreting homosexuality in terms of sin within religious discourse has also been highlighted by researchers, both in Poland (Hall, 2017) and internationally (Moon, 2004), and the relationship

has been seen as an indicator of the significant influence of the RCC on views prevailing in the society in which the nuanced distinction between inclination and the act itself is lost on individuals.

Although in 1990 homosexuality was removed from the list of diseases by the WHO, and in 2016 the European Parliament recommended abandoning conversion therapy, it is still attributed as such to many people. In Poland, there are still centers for "treating homosexuality," and the stereotype of homosexuality as deviation and disease is very much alive in Polish society (Grabski et al., 2019, 2022). Such views are sustained by the RCC itself, which in "The Position of the Polish Bishops' Conference regarding LGBT +," published on 28 August 2020, refers to the concept of homosexuality in terms of sin ("sin," "sinner," "sinful") 18 times, and the reference to the disease is clearly made in the suggestion that such persons should try "to regain their sexual health" and in the proposal to create therapeutic centers for homosexual persons with the
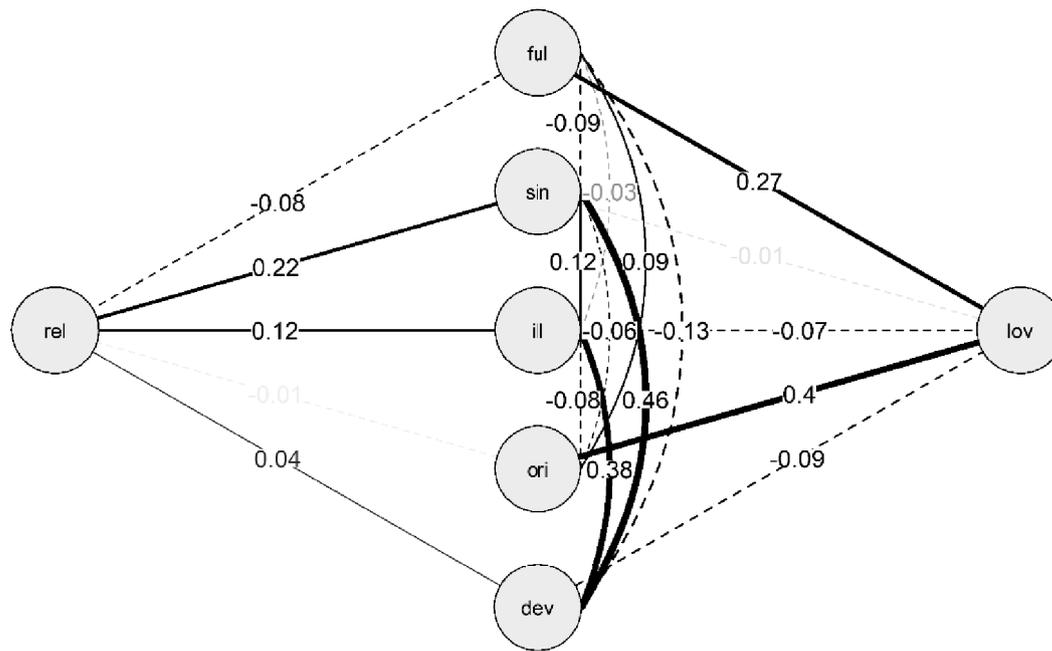
Note. The solid lines indicate positive relations, and the dashed lines indicate negative relationships. The thickness of the edges indicates the degree to which items are related.

Fig. 5 Flow network of religiosity and descriptions of homosexuality

participation of the RCC (KEP, 2020).[8] Meanwhile, positive terms for homosexuality are absent from the quoted document or from other statements of RCC representatives. Terms such as "love" or "fulfillment" with regard to sexual relations appear only in the context of marriage as the union between a man and a woman and as an attribute of God, and the term "orientation" turns up in the context of the suggested need for "recovery," i.e., reaching the "correct" heterosexual orientation.

Intensive discourse on homosexuality is present in the Catholic media, which, like Catholics themselves, are divided. The lack of links or very weak links between religiosity and positive meanings of homosexuality could be explained by the fact that the positive meanings of homosexuality and criticism oriented toward homonegativity, as represented in the official RCC teaching and sermons of some bishops, appear exclusively in media representing the so-called open type of Catholicism (Sekerdej & Pasieka, 2013), like the *Tygodnik Powszechny* weekly or the *Więź* monthly. But, as the circulation of these publications is low, Catholics may be exposed to such positive meanings only rarely. At the same time, in the high-circulation Catholic

publication *Gość Niedzielny*,[9] distributed through the parish network, negative views of homosexuality in a full accordance with RCC teaching appear repeatedly while positive ones not at all. To summarize, we assume that the lack of links (or their weakness) between religiosity and positive meanings of homosexuality (neither with a "plus" nor a "minus" sign) stems from the fact that Catholics in Poland will rarely encounter positive meanings being attributed to homosexuality, whether expressed in positive (e.g., "homosexuality is love") or negative (e.g., "homosexuality is not love") terms.

In any case, the reach of these publications, and therefore the impact of elite Catholicism on broad swathes of Catholics, seems negligible. It can therefore be assumed that positive terms for homosexuality have simply no place in the cognitive framework of Catholics, particularly those who are firmly bound to the institutional framework of religiosity and influenced by ecclesiastical rhetoric. This is why the relations of religiosity with negative conceptions of homosexuality are strong while there are almost no links to positive ones.

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[8] This document has been analyzed (Kosmowski, 2021) and often critically commented on (cf., e.g., New Ways Ministry, 2020).

[9] *Gość Niedzielny* (The Sunday Guest) is the Catholic weekly with the highest circulation in Poland. In the first quarter of 2022, sales of this title amounted to 82,474 copies, while sales of *Tygodnik Powszechny* were almost four times lower (23,314 copies) (Wirtualne Media, 2022).
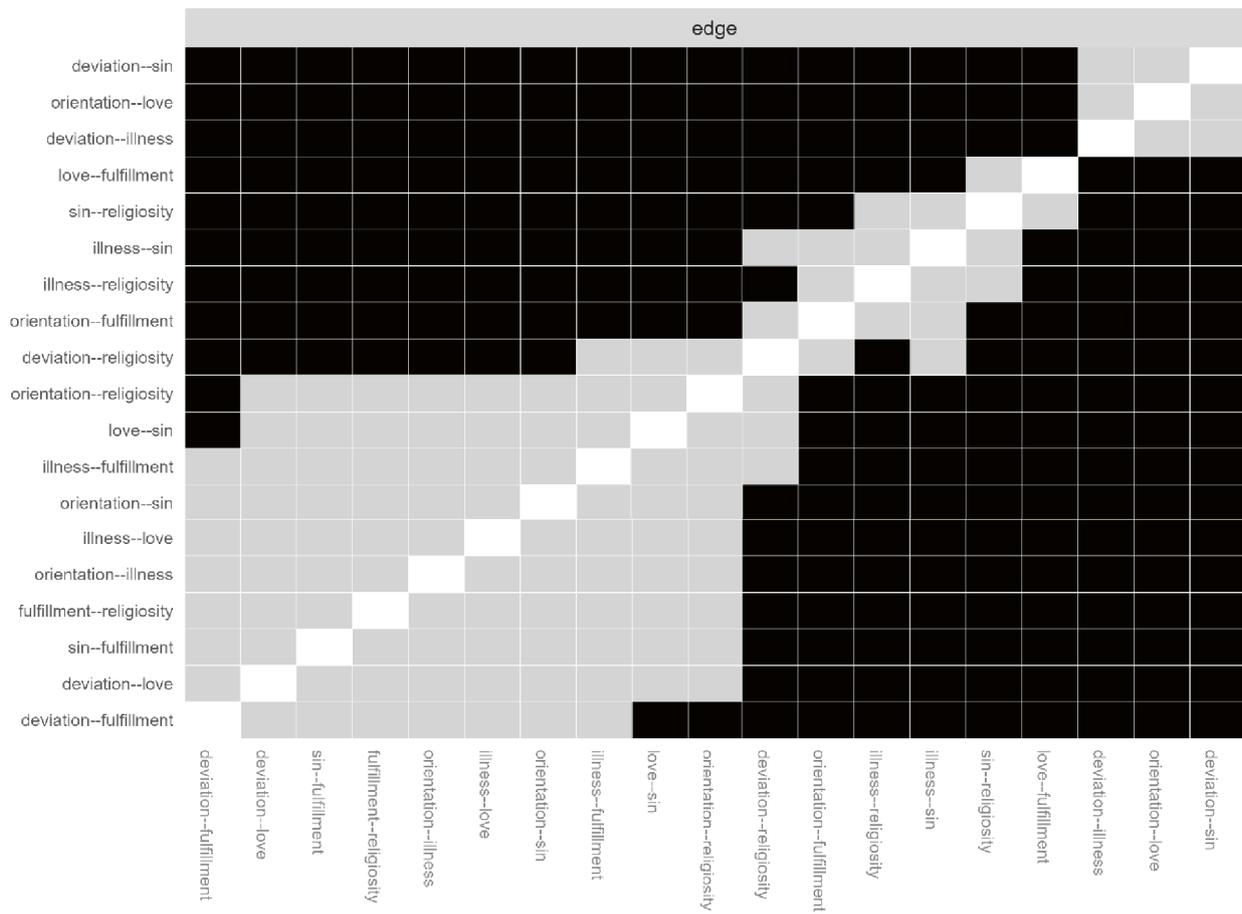
Note. Gray colored boxes represent nonsignificant differences, while black boxes represent significant differences

Fig. 6 Plot of the bootstrapped difference tests ($\alpha = .05$) for edge-weights

In the perspective of previous research, the occurrence of this phenomenon can be explained by the *positive–negative asymmetry effect* (Baumeister et al., 2001), according to which so-called bad emotions have more impact than the "good" ones and negative information is processed more thoroughly than positive. It is worth emphasizing that the principle of negativity bias is a phenomenon that occurs not only in the case of emotions, but also of moral judgments (Rozin & Royzman, 2001), and may apply to the relationship between religiosity and expressions of homosexuality.

This finding is also in line with the concept of emotional complexity (Ready et al., 2008). From this perspective, little or no correlation between positive and negative emotions is explained by the concept that they do not constitute a single continuum from "high positive" at one end of the spectrum to "high negative" at the other. Rather, in this framework, negatively and positively valued emotions are understood as two distinct dimensions residing on separate measurement continua (Ong et al., 2017). In the bivariate perspective, the activation of only positive or only negative evaluations is described as uncoupled activation (Cacioppo et al., 1999). Thus, from the data presented, we can conclude that the relationship between religiosity and meanings attributed to homosexuality is asymmetrical, unbalanced, and designated by negativity bias, leading to uncoupled activation.
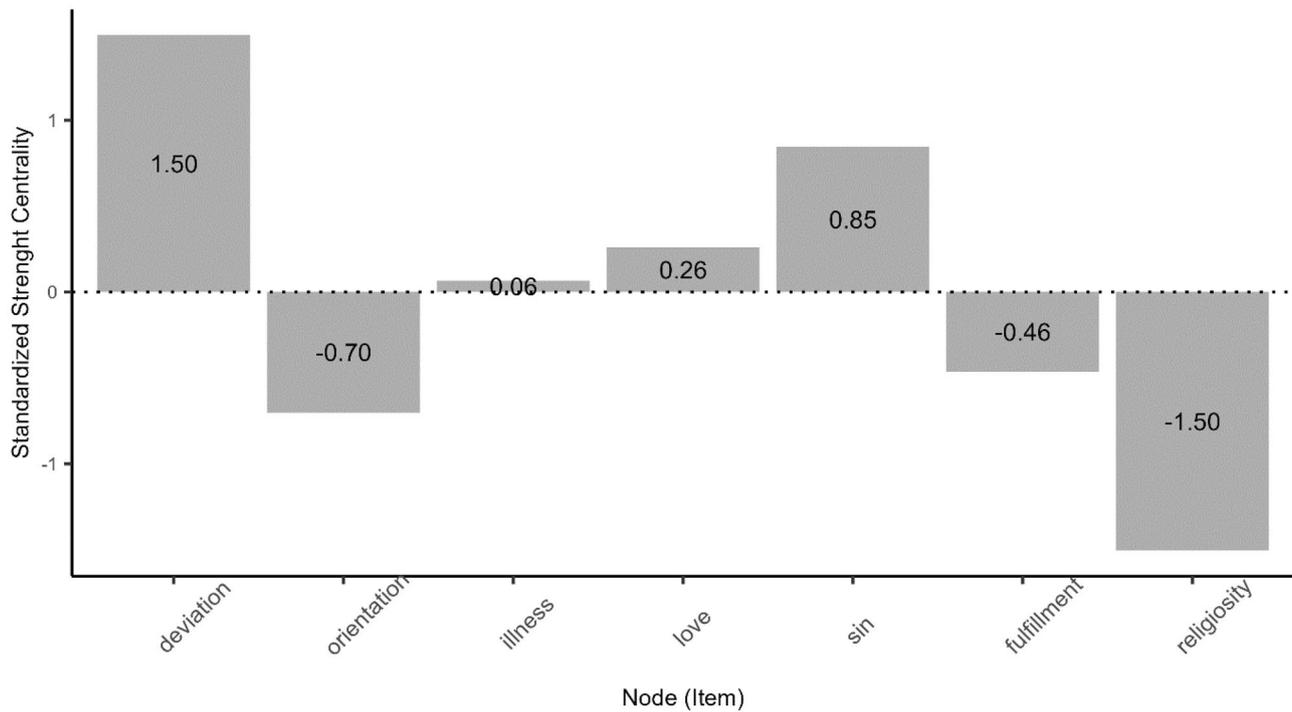
Fig. 7 Standardized strength centrality scores for all nodes in the network

On the basis of our research, we cannot confirm analytically the hypothesis of social responsiveness (Brooks & Manza, 2006); nevertheless, there are significant features of Polish political life suggestive of its possible positive verification. Since 2015 and in the coming to power of a coalition government composed of right-of-center parties, a very close relationship between the ruling parties and the RCC has been evident. Their acting hand-in-hand in public announcements and the legislative practice of the government are especially visible in the field of biopolitics, i.e., issues related to abortion, in vitro, gender, the introduction of sex education in schools, and homosexuality. In the case of homosexuality, the stimulation of homophobia was used as a tool for activating voters of the right parties in parliamentary and presidential elections in 2019, and these actions were supported by the hierarchs of the RCC (Graff & Korolczuk, 2022; Yatsyk, 2020)). As the analysis of election results shows, voters favoring right wing parties are drawn from the older, less educated, and poorer habitants of rural areas, where views concerning homosexuality are more conservative and rates of homophobia higher and

where at the same time traditional forms of institutionalized religiosity are higher and the authority of the Church respected (Grabowski, 2019). Thus, it can be assumed that a cultural war on homosexuality and the frightening of Poles with the threat of "homosexual propaganda" and "homosexual ideology" as real dangers to the Polish "natural family," children and even the nation, was useful for mobilizing the supporters of the right-wing, ruling party.

There are some suggestions concerning expanding the range of issues to be taken into account in the verification of the concept of social responsiveness (Burstein, 2003; Fenger et al., 2014). Public views on homosexuality, and, in broader terms, biopolitics as topics evoking sometimes strong social reactions, such as protests and counterprotests in many countries, including those dominated by Catholicism (Béraud & Portier, 2015; Chitando, 2016; Vilaça & Oliveira, 2015)) suggest that they should be included in the list of options for analysis. This would require confirmation in research and analysis strictly oriented toward the verifying of the social responsiveness thesis in relation to public views on homosexuality.
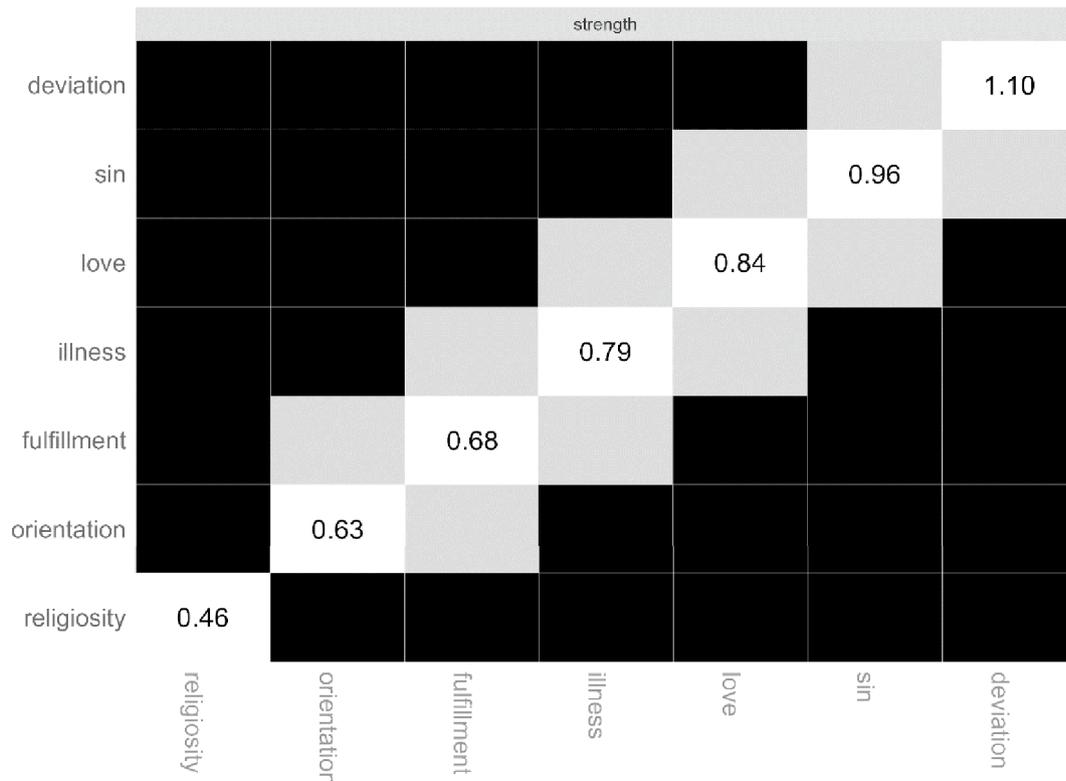
Note. Gray boxes indicate that there is no difference between nodes, whereas black boxes indicate significant difference (α = 0.05). The values reported on the diagonal represent the (unstandarized) strength values of each node.

Fig. 8 Nonparametric bootstraped difference test (α = .05) for strength

Conclusions

Given the social significance of the negative perception of homosexuality, it is worth considering what could reduce the extent of its impact on the views of Catholics, who constitute the vast majority in Polish society. As the meanings of certain concepts or behaviors are socially constructed, it would be important to change the language that refers to them.

Since homosexuality understood as deviation holds—as our research shows—a key position in the network of meanings, reducing the appearance of this concept in the LGBT discourse could contribute to weakening the central position of negative meanings in the network and thus changing attitudes toward homosexuality. Also, the weakening of the position of "sin" in the network of meanings could play an important role in this process. The category of sin arguably maintains such a strong position in the network because of its historical origins in defining homosexuality. First there was sin, as Michel Foucault argues, and only later crime and disease (Foucault, 1978). These two concepts have been neutralized by the scientific knowledge, especially legal and

medical, and the change in thinking of homosexuality in terms of its being a crime or disease has already taken place in a number of countries or, as in Poland, is still taking place.

Our network analysis of meanings shows that if there were an "absolution" of homosexuality, the likelihood of assigning exclusionary meanings, such as deviance or illness, to the concept would decrease. Given that they play a central role in the analyzed network of meanings, and as such exert more influence on the rest of the network (Daenekindt et al., 2017), this could lead to a reduction in exclusionary perceptions of homosexuality.

This could happen in several ways; one is related to a potential change in the way the RCC itself treats homosexuality, which, for example, in mainstream Protestant churches has been happening for a long time. This translates into the relationship of Protestant congregations to the inclusion of active homosexual couples in the life of the churches and even giving them leadership roles (Whitehead, 2013).

The declarations of the Catholic Church regarding homosexuality vary depending on the country; while the RCC in Poland declares the "infallibility" of its teaching in the document

quoted above, the RCC in Germany, for example, takes a different stance. One of its cardinals, Reinhard Marx, explicitly calls for change in a public statement: "Homosexuality is not a sin. It corresponds to a Christian attitude when two people, regardless of gender, stand up for each other, in joy and sorrow (….)". The value of love was also shown in "not making the other person an object, not using him or her or humiliating him or her" (National Catholic Reporter, 2022). In turn, on 10 May 2022, priests in Germany invited Catholics to participate in an action under the hashtag #Liebegewinnt—"love wins."

The change in the understanding of homosexuality may also take place as a result of the socio-cultural transformation initiated after the fall of communism in 1989, which has intensified in recent years. The greatest role in this process is played by younger generations, who are increasingly open toward sexual minorities and at the same time more critical of RCC influences (Mandes & Rogaczewska, 2013).

If our findings on the relationship between religiosity and the negative meanings given to homosexuality are accurate, then the decline in religiosity observed among young people (Mariański, 2020) may at least mean a weakening of the position of sin in the network of meanings, and consequently a shift of positive meanings to more central positions. The example of developed countries with stable democracies shows that changes in the way homosexuality is viewed have been taking place in them since the 1960s, in parallel with the activity of communities lobbying for the recognition of LGBT rights. As cultural trends have an impact not only on individuals and their views, but also on the way institutions, including religious institutions, operate, it can be expected that they will exert pressure to change the exclusionary terminology currently used by the RCC in Poland to more inclusive language.

Limitations

Our analysis is not free of limitations. First, despite the fact that the choice of meanings attributed to homosexuality in our research was not random but taken from pieces in weekly opinion-forming magazines, it would be worth extending the list of both positive and negative expressions of homosexuality, particularly to expand the list of meanings that have religious connotations.

Second, Poland is a country with a very high level of institutional religiosity. It would be worthwhile to explore whether in another country and cultural context, e.g., in a highly secular society (e.g., the Czech Republic), the relationship between religiosity and the meaning of "sin" given to homosexuality would be as strong and as strongly linked to other negative meanings as it is in Poland.

Third, from a methodological perspective, our research was cross-sectional in nature, which precludes any definite inferences about the direction of the relationships between variables. In our conclusions, we only assumed that the relationship between network elements reflects causal influences among them over time, for example that religiosity influences the understanding of homosexuality as a sin and not the other way around. While these conclusions seem plausible as support for the existence of causal relationships, it is important to establish a timeline, i.e., that some network elements temporally precede others. This would be possible using only longitudinal data.

Notwithstanding these limitations, we believe that the research presented, by showing that the relationships between religiosity and meanings of homosexuality are asymmetric, unbalanced, and characterized by negativity bias, enable a better understanding of the mechanism behind religiosity being so often linked to averseness toward homosexuality. Our study also exemplifies the usefulness of network analyses in social science in general and sexuality research in particular, allowing as it does for certain suggestions to be made regarding the weakening of homonegativity.

Data Availability The data are available upon request to the authors.

Code Availability R and Mplus code are available upon request to the authors.

Declarations

Ethics Approval This study was examined and approved by the Executive Board and Scientific Council of the Public Opinion Research Center in Warsaw (01.17.2020).

Informed Consent Informed consent was obtained from all individual participants included in the study.

Conflict of Interest The authors declare no conflict of interest.

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