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Vietnamese religiosity, premarital sexual permissiveness, and abortion attitudes: the mediating role of filial piety

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Abstract
This study focuses on filial piety, a fundamental psychological factor in Vietnam and its relationship with religiosity and attitudes toward abortion. Drawing on data from 656 participants, the research employed the Partial Least Squares-Structural Equation Modeling (PLS-SEM) method and identified significant differences in intrinsic religiosity (IR) based on various forms of cohabitation with parents. Furthermore, the findings revealed a positive association between age and religiosity. Higher levels of IR were linked to more conservative attitudes toward abortion (AAS), whereas greater premarital sexual permissiveness (PSP) was associated with more pro-choice views. Filial piety played a mediating role in the relationship between IR and AAS. These insights offer a deeper understanding of how religiosity and filial piety influence abortion attitudes among individuals in Vietnam.

Keywords Religiosity · Filial piety · Abortion attitudes · Premarital sexual permissiveness · Vietnamese

1 Introduction

Abortion stands as a pivotal and contentious topic within public discourse across numerous nations, significantly impacting women's health (mental health, illness rates, and death rates), the fabric of families, political landscapes, and the overarching ethical perspectives [1], primarily in low and middle-income nations [2]. In Vietnam, despite the increased availability of contraception and reproductive health care, the country continues to have one of the highest abortion rates in both Asia and the world [3, 4]. Over the past two decades, abortion rates in Vietnam have risen significantly, with over 1.3 million cases recorded in 1995, accounting for more than one-third of pregnancies. While most abortions involve women over 30, reports suggest a recent increase in abortions among adolescents in urban areas, primarily through private services [3, 5, 6]. This could be primarily attributed to the strong social stigma surrounding abortion, which led many individuals to resort to unsafe procedures [7, 8]. As a result, they face undesirable mental health consequences. Specifically, research has indicated that women who have had an abortion face an 81% higher likelihood of developing mental health issues, and nearly 10% of the incidence of mental health problems was shown to be attributable to abortion [9].

On the other hand, in the cultural context of Asian nations, Confucianism has long been regarded as a central psychological influence, expressed through various religious practices. It has deeply shaped many aspects of life in these

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societies, particularly in family dynamics [8, 10]. Filial piety, a key family value influenced by Confucianism, can play a crucial role in shaping views and attitudes toward abortion. Confucian principles, which emphasize respect and loyalty to family and ancestors, may affect how individuals perceive life and make decisions related to abortion [9]. In conclusion, attitudes towards abortion in Southeast Asia, may be influenced by numerous factors such as Confucianism-based beliefs (The teachings of Confucianism emphasize the importance of virtues such as loyalty, respect, and filial piety), Buddhist thoughts, Christian thought, indigenous religious beliefs, or perspectives on premarital sex in Asia, among others [10–15].

1.1 Religiosity

Religiosity pertained to the extent of religious dedication and involvement individuals exhibit in their everyday lives [16, 17], encompassing cognitive aspects (beliefs), affective aspects (emotional connection), and behavioral aspects (religious activities) [18]. Our study will primarily examine three key aspects of religious engagement: organizational involvement, non-organizational involvement, and intrinsic religiosity. Organizational religious activity (ORA) involves the public practice of religious/spiritual rituals or indigenous religious/ spiritual rituals. Non-organizational religious activity (NORA) includes the practice of religious rites or indigenous religious/ spiritual rites privately, such as prayer, meditation, religious texts study, or burn incense for grandparents alone. Intrinsic religiosity (IR) has to do with pursuing religion or activities that involve indigenous religious/ spiritual beliefs as an ultimate end in themselves, intrinsic religiosity extended beyond mere adherence to religious beliefs and encompasses a sense of trust and reliance on a divine authority [19, 20]

Individual's religiosity was influenced by their parents, since they observed and mimicked their parents' religious activities and attitudes [21, 22]. Nevertheless, the religiosity of young adults diminished when they attain autonomy from their parents, rendering their beliefs more prone to alteration [23]. In addition to that, age played a crucial role in influencing religiosity, since studies have shown a direct relationship between age and social behaviors, such as religious involvement and participation in volunteer work [24]. Religious dedication and intensity of convictions generally have risen during late adolescence and throughout adulthood [25–27]. The rise in inherent religiosity could be ascribed to the impact of age [28]. Based on these discussions, Hypotheses 1 and 2 are proposed for this study.

Hypothesis 1 There was a significant difference in intrinsic religiosity among forms for cohabitation with parents.

Hypothesis 2 Age is positively associated with religiosity (including ORA, NORA, and IR).

1.2 Attitudes towards abortion

Attitudes towards abortion could be categorized into two main groups: those who supported a woman's right to choose (pro-choice) and those who prioritized the protection of unborn lives (pro-life) [29]. In the study of Mirande, Hammer [30], age has been one of the typical demographic variables in abortion studies. A study by Strickler, Danigelis [31] further demonstrated the impact of age on abortion attitudes, showing that older people were less likely to accept the right to abortion than younger people [32]. In addition, when discussing the issue of how age affected abortion attitudes, specifically two major concepts: pro-choice and pro-life, research by Misra [33] found that younger people had the greatest support for pro-choice. Based on these discussions, Hypothesis 3 is proposed for this study.

Hypothesis 3 Age is negatively associated with attitudes towards abortion.

Besides the influence of age on attitudes toward abortion, researchers have found that religiosity is one of the most significant factors in explaining the formation of attitudes and viewpoints regarding abortion-related issues and laws [34, 35]. Religion provides a moral framework emphasizing the sanctity of life and the consequences of abortion, reinforced by religious teachings and communities [36]. The teachings of Buddhism, Catholicism, and Protestant groups all oppose abortion [37–40]. Furthermore, religiosity plays a crucial role in opposing legal abortion [38, 41]. Intrinsic religiosity and organizational religious activity strongly influence attitudes toward abortion, with Catholics, conservative Protestants, and regular religious service attendees more likely to oppose legal abortion [34, 41]. Research shows that regular Pentecostal attendees express the strongest opposition to abortion [38]. Based on these discussions, Hypothesis 4 is proposed for this study.

Hypothesis 4 Intrinsic religiosity (IR) is negatively associated with attitudes toward abortion (AAS).

1.3 Premarital sexual permissiveness

Studies have revealed that premarital sexual permissiveness significantly impacts attitudes toward abortion [42, 43]. Premarital sexual permissiveness can be understood as how much freedom men and women have in reaching similar sexual boundaries [44], or as 'the free verbal or nonverbal communication of willingness to engage in sexual activity' [45, p. 259]. It can also be seen as a form of sexual communication, where consent includes various aspects such as form and the assumption of consensus among the relevant parties [46]. In a cross-national study by Mosley et al. [42], the researchers found that abortion acceptability was higher among South Africans who were more accepting of premarital sex [42]. These results also align with the previous findings of Maxwell [43], which indicated that allowing premarital sex positively influences liberal attitudes toward abortion.

Hypothesis 5 Premarital sexual permissiveness would be positively associated with attitudes towards abortion.

1.4 Filial piety

The notion of filial piety involved showing reverence towards one's family, including caring for elderly parents and honoring their wishes and aspirations, even after their demise [47]. Early definitions of filial piety depicted it as an authoritative bond requiring children to fully obey their parents' desires, along with their obligations to reciprocate parents' sacrifices, uphold family honor, and continue the ancestral lineage [48]. The emotional components of attachment, harmony, and respect were later added and emphasized by Yang et al. [49] and Sung [50].

Many studies around the world have shown that religiosity was related to morality because both religiosity and morality dealed with issues like right and wrong, things that maked sense and other fundamental aspects of being human [51, 52]. In which most religions favor strong family relationships [53] and religiosity commitment had an effect on filial piety to one's parents [54]. Filial piety has long shaped family structures and intergenerational relationships between parents and children through a complex value system that defined the bonds and obligations between them [55]. Family bonding activities were encouraged and often formalized in a religiosity context [56]. Parents and children who have attended religious services together often spend more time engaging in other religious as well as non-religious activities [57]. As for private religiosity activities, the organization of anniversaries or religiosity ceremonies have also created a bond between family members and emphasizes the importance of family as well as make individuals more aware of their role in the generational structure of the family [58].

Even though filial piety is no longer a novel concept, there are almost no studies that have shown a connection between it and attitudes toward abortion, particularly in Asian nations where Confucianism has had a strong influence, and the culture emphasizes collectivism, familyism, and a hierarchical society [59]. Furthermore, filial piety could shape attitudes toward abortion by influencing family dynamics. Children may feel compelled to align with their parents' traditional ideals [60], particularly if they are conservative. Under the pressure of intersecting gender roles, daughters are often expected to prioritize family harmony, potentially influencing their stance on reproductive choices [61]. Women choose to abort female babies as a pragmatic response to economic gender discrimination and their social duty to uphold patriarchal family structures [62]. After extensive discussions in the Introduction, the final hypothesis for this study is formulated—hypothesis 6.

Hypothesis 6 Filial piety would mediate the negative association between intrinsic religiosity and attitudes towards abortion.

2 Materials and methods

2.1 Data collection

Data for this study were collected directly from cities in the Northern, Central, Southern, and Central Highlands regions of Vietnam over a 5-month period, from December 2022 to April 2023. The participants, aged 17 to 34, were selected based on this revised age eligibility criterion. All participants agreed to take part in the study after providing informed consent. The consent process included clear explanations of the study's purpose, potential risks and benefits, research objectives, and terms of anonymity and confidentiality. Participants were informed of their right

to withdraw from the study at any time. The questionnaire gathered demographic and other relevant information, requiring approximately 15 to 20 min to complete. Participation was entirely voluntary, with no compensation offered, and participants could opt out at any stage if they wished to discontinue.

In our study, eight young people aged 17 provided their consent to participate in the research, and no legal or ethical principle requires the provision of parental consent on their behalf [63]. Furthermore, these participants have attained the Vietnam-determined age to consent to study-related procedures, and their participation in this study does not pose more than a minor increase in minimal risk of harm [64–66].

Our study determined sample size based on recommendations that utilized from 100 to 200 observations, which is a good starting point for path estimate analysis research [67]. As a result, this study involved 1039 individuals which was the first sample size. After that, data was screened and cleaned followed by guidelines suggested [68]. Outliers and questionable response patterns that do not satisfy the set criteria must be identified and removed and the detection of questionable response patterns depends on if the offered responses may be classed as alignment marks, order markings, or inconsistencies when compared to the reversed item. The last data after this process that we have 656 valid samples have been obtained in total. Regarding religious affiliation, the majority reported practicing indigenous religious or spiritual beliefs (66.5%), followed by Buddhists (14.8%), Catholics (10.2%), Caodaists (6.9%), Protestants (1.5%), and other religions (0.1%). Detailed demographic characteristics of the participants are shown in Table 1.

Before the final validation research, the original English language DUREL, CFPS, AAS, and PSP were translated into Vietnamese according to the validation methods specified by the World Health Organization (WHO) [69]. The language translation procedure was carried out in the following fundamental phases [70]. Two accredited bilingual native Vietnamese speakers translated the English questionnaire literally (forward translation) and adjusted it to the Vietnamese lifestyle and cultural context. One of them has worked as a psychologist in Vietnam. The authors compared Vietnamese translations once they had received them. There were also discussions with other psychologists, clinical practitioners, researchers, and participants to ensure that the questionnaire assessed what it was supposed to measure and that clinically significant parts were not missing. The Vietnamese version of the questionnaires was rewritten based on their feedback and collected into a single Vietnamese-language version. Back-translation from Vietnamese to English was completed by a single licensed translator who is also a bilingual native speaker. The authors of this study then assessed the back translation. The final Vietnamese language DUREL, CFPS, AAS, and PSP were created following changes and re-translation of required components to balance disparities discovered throughout the translation process. This final translation was used for a validation study. During the literal translation, the translators were given the chance to provide us with choices if there were other methods to translate any of the items and/or if there were any challenges in the translation process.

2.2 Measurement of variables

2.2.1 The Duke University Religious Index (DUREL)

The Duke University Religion Index (DUREL) is a comprehensive and concise measure of religiosity developed by Koenig, Büssing [19]. The DUREL consists of five items that assess the following religious dimensions: Organizational religious activity (ORA) involves the public practice of religious/spiritual rituals or indigenous religious/ spiritual rituals, rating on a Likert scale from zero to five (0 = "Never," 1 = "Once a year of less", 2 = "A few times a year", 3 = "A few times a month", 4 = "Once a week", 5 = "More than once/week"). Non-organizational religious activity (NORA) includes the practice of religious rites or indigenous religious/spiritual rites privately, rating on a Likert scale from zero to five (0 = "Rarely or never", 1 = "A few times a month", 2 = "Once a week", 3 = "Two or more times/week", 4 = "Daily", 5 = "More than once a day"). Intrinsic religiosity (IR) has to do with pursuing religion or activities that involve indigenous religious/spiritual beliefs as an ultimate end in themselves, rating on a Likert scale from zero to four (0 = "Definitely not true", 1 = "Tends not to be true", 2 = "Unsure", 3 = "Tends to be true", 4 = "Definitely true of me"). In the original study, the internal consistency reliability of the DUREL scale was high (Cronbach's alpha = 0.78 to 0.91), the high convergent validity with other measure of religiosity (r's = 0.71–0.86) and the factor structure of the DUREL has now been demonstrated and confirmed in separate samples by other independent investigative teams [19]. The Vietnamese version of the IR scale demonstrated good reliability (Cronbach's alpha = 0.728; Composite Reliability = 0.843) in a previous study by our team [71]. However, as this study targets participants practicing indigenous religious or spiritual beliefs

Table 1 Demographic characteristics

	Total (n = 656)	ORA		NORA		IR		*PSP*		*AAS*		*CFPS-10*	
	Frequency	Mean ± SD	p	Mean ± SD	p	Mean ± SD	p	Mean ± SD	p	Mean ± SD	p	Mean ± SD	p
Gender[a]			< 0.001		< 0.001		< 0.01		< 0.001		< 0.05		> 0.05
Male	124 (18.9)	2.44 ± 1.89		1.58 ± 1.74		3.37 ± 1.27		3.37 ± 1.35		2.78 ± 0.84		4.18 ± 0.77	
Female	532 (81.1)	1.27 ± 1.51		0.60 ± 1.30		3.02 ± 1.07		2.83 ± 1.32		2.93 ± 0.71		4.19 ± 0.73	
Form for cohabitation with parents[b]			< 0.05		< 0.05		< 0.05		> 0.05		> 0.05		> 0.05
Live in the same house with parents	398 (60.7)	1.36 ± 1.62		0.66 ± 1.33		2.98 ± 1.13		2.92 ± 1.38		2.93 ± 0.73		4.18 ± 0.77	
Live in the same city/town but in a different house than parents	41 (6.2)	1.49 ± 1.61		0.78 ± 1.51		3.15 ± 1.01		3.01 ± 1.14		2.97 ± 0.60		4.32 ± 0.58	
Live in a different city/town than parents	217 (33.1)	1.75 ± 1.71		1.02 ± 1.60		3.28 ± 1.10		2.94 ± 1.32		2.85 ± 0.76		4.18 ± 0.69	

a. Mann–Whitney U Test; b. Kruskal–Wallis Test

ORA Organizational religious activity, *NORA* non-organizational religious activity, *IR* intrinsic religiosity, *PSP* premarital sexual permissiveness scale, *AAS* Abortion Attitude Scale, *CFPS-10* Contemporary Filial Piety Scale-10

as well as those adhering to other formal religions, we have developed a new translation of the IR scale to better suit the characteristics of the target group in this study.

Cronbach's α for the Vietnamese version of IR was 0.871 in this study. The confirmatory factor analysis (CFA) indicated that the measurement was a good fit, CMIN/df = 3.831; Goodness-of-fit index (GFI) = 0.993; Comparative fit index (CFI) = 0.996; Root mean square error of approximation (RMSEA) = 0.066 and Probability Close to Zero (PCLOSE) = 0.211 [72].

2.2.2 Contemporary Filial Piety Scale-10 (CFPS-10)

The 10-Item Contemporary Filial Piety Scale (CFPS-10) was developed by Lum et al. [55] based on Contemporary Filial Piety Scale (CFPS) was used to measure filial piety of contemporary society [55]. The CFPS-10 scale consisted of 10 items, measuring two factors (Pragmatic obligations and Compassionate reverence). Pragmatic obligations include six filial behavior items related to practical and pragmatic caregiving (e.g. Arrange appropriate treatment for parents when they fall ill). Compassionate reverence consists of four filial attitude items related to emotional caregiving (e.g. Try my best to complete parents' unachieved goals). Each item is rated on a 5-point Likert scale ranging from one to five (1 = "Very important," 2 = "Important," 3 = "Neutral," 4 = "Unimportant," 5 = "Very unimportant"). In the original study, the scale was well developed with acceptable good internal consistency (0.84), excellent in factor loadings 1 (α = 0.86) and factor loadings 2 (α = 0.79), and moderate reliability (α = 0.88).

Cronbach's α for the Vietnamese version of CFPS-10 was 0.965 in this study. The confirmatory factor analysis (CFA) indicated that the measurement was a good fit, CMIN/df = 3.824; Goodness-of-fit index (GFI) = 0.973; Comparative fit index (CFI) = 0.992; Root mean square error of approximation (RMSEA) = 0.066 and Probability Close to Zero (PCLOSE) = 0.036 [72].

2.2.3 Abortion Attitude Scale (AAS)

Linda Sloan [73] developed and validated the Abortion Attitude Scale (AAS) to measure attitudes toward abortion [73]. The scale includes 14 questions adjusted to the Likert scale with six levels of words (1 = "Strongly disagree", 2 = "Disagree", 3 = "Slightly disagree", 4 = "Slightly agree", 5 = "Moderately agree", 6 = "Strongly agree"). The AAS scale focuses on two aspects, including Pro-Choice (e.g., The decision to have an abortion should be the pregnant mother's) and Pro-Life (e.g., Abortion is wrong no matter what the circumstances are). The higher the total score of the responses for all items, the higher the level of abortion support; Items 1, 3, 4, 7, 9, 12, 14 are reversed scores. In the original article, AAS has a high estimated reliability (α = 0.92) and suitable construct validity.

Cronbach's α for the Vietnamese version of AAS was 0.778 in this study. The confirmatory factor analysis (CFA) indicated that the measurement was an adequate fit, CMIN/df = 4.417; Goodness-of-fit index (GFI) = 0.928; Comparative fit index (CFI) = 0.885; Root mean square error of approximation (RMSEA) = 0.072 and Probability Close to Zero (PCLOSE) = 0.000 [72].

2.2.4 The Scaling of Premarital Sexual Permissiveness (PSP)

The Permissiveness Scale in Premarital Sex (PSP), designed by Ira Leonard Reiss [74], measures permissiveness based on different premarital sex standards among partners [74]. In 1989, Reiss introduced an abridged version of 4 items [75]. The four items in the male and female scales that measure attitudes toward coitus are most relevant to young people in today's world. The scale was analyzed according to the Guttman scale, with responses ranging from Strongly disagree to Agree (1 = "Strongly disagree", 2 = "Moderately disagree", 3 = "Slightly disagree", 4 = "Slightly agree", 5 = "Moderately agree", 6 = "Strongly agree"). The PSP scale in the original paper meets Guttman's scalability criteria across all measures: CR is 0.99, CS is 0.93, and MMR is 0.79.

Cronbach's α for the Vietnamese version of PSP was 0.883. Confirmatory factor analysis (CFA) indicated the measurement was an adequate fit, CMIN/df = 7.575; Goodness-of-fit index (GFI) = 0.994; Comparative fit index (CFI) = 0.997; Root mean square error of approximation (RMSEA) = 0.100; and Probability Close to Zero (PCLOSE) = 0.070 [68]. Although the CMIN/df exceeded 5, Marsh et al. [76] suggest values slightly above 5 can still be acceptable, depending on model complexity and other fit indices. Given the strong GFI, CFI, and PCLOSE values, the model is still considered a reasonable fit.

2.3 Data analysis

To begin, erroneous variables were cleaned, and removed using Excel software. In addition, we utilize the SPSS version 26.0 program to investigate the normal distribution and differences across variables. Because the data did not have a normal distribution, the Mann–Whitney U test and the Kruskal–Wallis test were employed to assess whether there was any significant difference between DUREL, CFPS, AAS, and PSP.

Smart partial least squares (SmartPLS)-SEM analysis was used to analyze the data collected for this investigation, which is a variance-based statistical modeling technique that allows for the exploration of both the measurement adequacy of latent variables and the subsequent evaluation of those variables' structural relationships [77] in the most recent version of SmartPLS 4 (4.0). PLS-SEM utilizes a two-stage analysis to examine the measurement adequacy of the suggested latent variables, followed by an evaluation of the variables' structural relationships. In step 1, the measurement model is evaluated by examining the items' composite reliability (CR), Cronbach's alpha (CA) as well as indicator reliability through an examination of the strength of each item's loading on its related component (outer loading). To examine the convergent validity of each variable, the average variance extracted scores (AVE) for each component were calculated. Additionally, we also use discriminant validity heterotrait–monotrait (HTMT criterion). In step 2, Variance inflation factor (VIF) values of variables are evaluated to measure the severity of the collinearity problem in the structural model. Additionally, coefficient determination (R^2), effect size (f^2), significance and relevance of path coefficients was used to evaluate the structural model. The hypotheses of the current study were validated using the PLS-SEM performed on 5000 bootstrap samples, which was also utilized to examine the mediation hypothesis and analyze the effects of the independent variables on the dependent variables.

3 Results

3.1 Descriptive study

The demographics of the participants are shown in Table 1.

Firstly, our study addressed the distribution to understand the nature of data. We decided to use Kolmogorov–Smirnov to test the normality of the collected data as our sample size was larger than 50 observations. Table 2 showed that all ORA, NORA, IR, PSP, AAS, and CFPS-10 were non-normally distributed because the p-value is less than 0.001.

The results revealed that there was a significant difference between forms of cohabitation with parents in the level of intrinsic religiosity ($\chi^2(2) = 7.22$, $p = 0.027$). Therefore, hypothesis 1 is supported. Post-hoc pairwise comparisons using Dunn test indicated that the level of IR was statistically significantly greater in "live in a different city/town than parents" than "live in the same house with parents" ($p < 0.05$, $Z = -2.674$). In contrast, there was no significant difference between "live in the same house with parents" and "live in the same city/town but in a different house than parents" ($p = 1.00$, $Z = -0.747$). This study also found no significant difference between "live in the same city/town but in a different house than parents" and "live in a different city/town than parents" ($p = 1.00$, $Z = -0.605$).

Table 2 Test of normality

Variables	Kolmogorov–Smirnov[a]		Shapiro–Wilk	
	Statistic	Sig	Statistic	Sig
ORA	0.223	0.000	0.818	0.000
NORA	0.393	0.000	0.605	0.000
IR	0.148	0.000	0.951	0.000
PSP	0.085	0.000	0.955	0.000
AAS	0.046	0.002	0.990	0.000
CFPS-10	0.136	0.000	0.833	0.000

[a]Lilliefors Significance Correction

ORA Organizational religious activity, *NORA* non-organizational religious activity, *IR* intrinsic religiosity, *PSP* Premarital Sexual Permissiveness scale, *AAS* Abortion Attitude Scale, *CFPS-10* Contemporary Filial Piety Scale-10

3.2 Model specification

The completed PLS model was depicted in Fig. 1. This study's proposed research model contains six distinct latent constructs: AAS (consisting of items from the Attitude Abortion Scale); CFPS (consisting of items from the Contemporary Filial Piety Scale); PSP (consisting of items from The Scaling of Premarital Sexual Permissiveness); and ORA, NORA, IR (consisting of items from the Duke University Religious Index). In addition, AGE is a continuous variable that has been integrated into the model.

3.3 Measurement model

To assess indicator reliability, outer loadings must be calculated. They give a necessary and sufficient measure of the measurement model, describing explicitly the relationship between the latent variables and their measurements (Table 3). We remain to accept indicators with outer loadings less than 0.7, subject to certain constraints affecting the preservation or decrease of AVE and CR values if the items are eliminated [78]. Indicators with outer loadings less than 0.3 should be deleted immediately [79].

With IR, all the outer loadings varied from 0.866 to 0.911 and were all significant ($p < 0.001$). In addition, with the measurement items of AAS, "AAS1" and "AAS10" were removed out of the analysis to ensure the value of outer loadings are acceptable. After the deletion, the outer loadings ranged from 0.329 to 0.693 and were all significant ($p < 0.001$). With CFPS-10, all the outer loadings varied from 0.664 to 0.925 and were all significant ($p < 0.001$). With PSP, all the outer loadings varied from 0.761 to 0.948 and were all significant ($p < 0.001$). Furthermore, the Cronbach's α of the four constructs ranged from 0.778 to 0.965 and the CR (rho_a) of the four constructs ranged from 0.797 to 0.967, showing a satisfactory internal consistency.

The AVE of IR, CFPS-10, PSP constructs were above 0.50, but AAS has AVE value less than 0.50. Convergent validity is demonstrated when the Average Variance Extracted (AVE) is greater than 0.50, however we still accept AVE value less than 0.50 because the CR value is above 0.6. In addition, the heterotrait–monotrait ratios (HTMT) (Table 4) were all below 0.85, thus, the discriminant validity of the model was established as well [80].

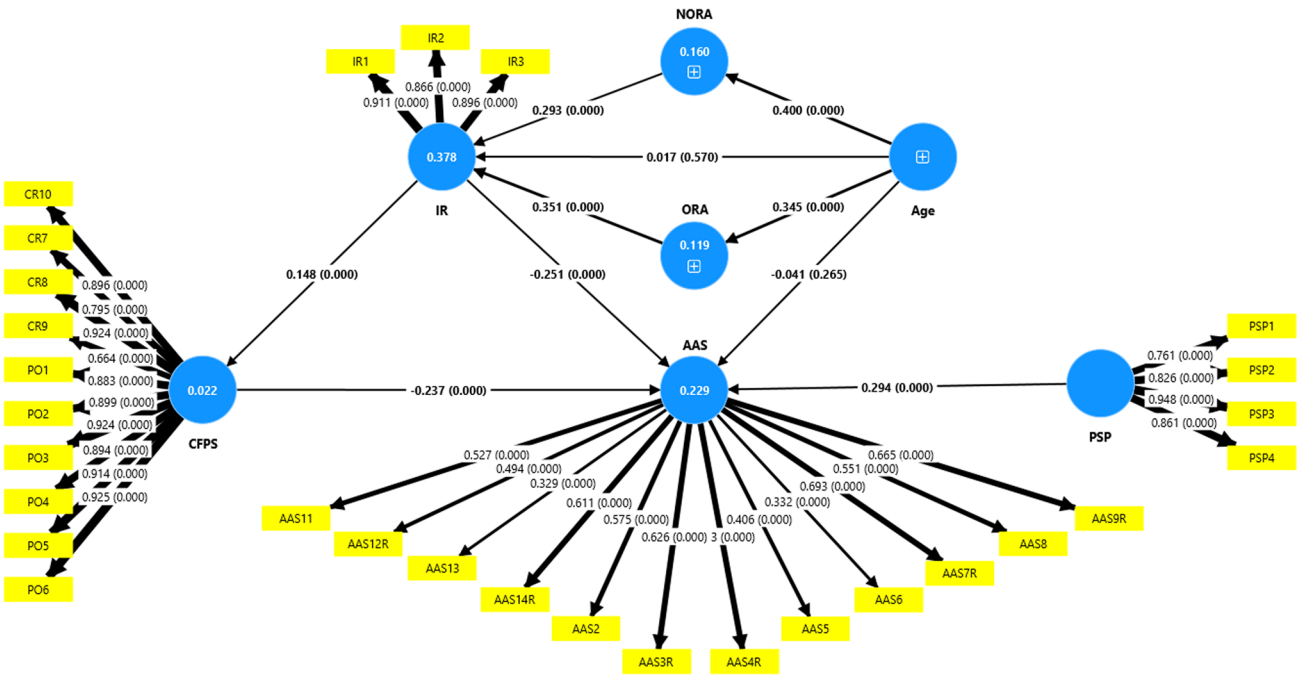

Fig. 1 Partial Least Squares Structural Equation Modeling (PLS-SEM) Results. *NORA* Non-Organizational Religious Activity, *ORA* Organizational Religious Activity, *IR* Intrinsic Religiosity, *PSP* Premarital Sexual Permissiveness scale, *AAS* Abortion Attitude Scale, *CFPS* Contemporary Filial Piety-10 Scale

Table 3 Summary of outer loading, Cronbach's α, composite reliability and average variance extracted of constructs and indicators

Constructs and items	Outer loadings	AVE	Cronbach's α	CR (rho_a)
IR (Intrinsic Religiosity)	–	0.794	0.871	0.882
IR1	0.911	–	–	–
IR2	0.866	–	–	–
IR3	0.896	–	–	–
AAS (Abortion Attitude Scale)	–	0.300	0.778	0.797
AAS2	0.575	–	–	–
AAS3R	0.626	–	–	–
AAS4R	0.613	–	–	–
AAS5	0.406	–	–	–
AAS6	0.332	–	–	–
AAS7R	0.693	–	–	–
AAS8	0.551	–	–	–
AAS9R	0.665	–	–	–
AAS11	0.527	–	–	–
AAS12R	0.494	–	–	–
AAS13	0.329	–	–	–
AAS14R	0.611	–	–	–
CFPS-10 (Contemporary Filial Piety Scale-10)	–	0.766	0.965	0.967
PO1	0.883	–	–	–
PO2	0.899	–	–	–
PO3	0.924	–	–	–
PO4	0.894	–	–	–
PO5	0.914	–	–	–
PO6	0.925	–	–	–
CR7	0.795	–	–	–
CR8	0.924	–	–	–
CR9	0.664	–	–	–
CR10	0.896	–	–	–
PSP (Premarital Sexual Permissiveness scale)	–	0.726	0.883	0.951
PSP1	0.761	–	–	–
PSP2	0.826	–	–	–
PSP3	0.948	–	–	–
PSP4	0.861	–	–	–

AVE Average variance extracted, *CR* composite reliability

3.4 Structural model

The model's VIF values varied from 1.000 to 2.719. If VIF is less than 5.0, multicollinearity is not an issue in the structural model [81]. Table 5 and Fig. 1 depicted the path coefficients, which illustrated the relationships between variables.

The results supported the second hypothesis, as they indicated that age positively influences religiosity. Specifically, the direct effect of AGE on ORA was significant [$\beta = 0.345$, 95% CI (0.262, 0.419), $p < 0.001$]; similarly, AGE had a direct effect on NORA [$\beta = 0.400$, 95% CI 0.313, 0.484), $p < 0.001$]; and there was a total indirect effect of AGE on IR [$\beta = 0.238$, 95% CI 0.186, 0.290), $p < 0.001$]. In contrast, the third hypothesis was not supported, as the effect of AGE on AAS was non-significant [$\beta = -0.041$, 95% CI (-0.112, 0.034), $p = 0.265$]. Furthermore, the fourth hypothesis was supported by the direct effect of IR on AAS [$\beta = -0.251$, 95% CI (-0.324, -0.176), $p < 0.001$]. Finally, the fifth hypothesis was confirmed, as PSP positively impacted AAS [$\beta = 0.294$, 95% CI (0.216, 0.376), $p < 0.001$].

By calculating the effect size (f^2), the researcher can see how each outer construct affects the internal construct. In this study, the f^2 values are within Cohen's [82] suggested range. The effect size was greatest for the path from

Table 4 Heterotrait–monotrait ratios (HTMT) and 95% Confidence intervals

	AAS	CFPS-10	IR	NORA	ORA
CFPS-10	0.311 [0.239, 0.369]				
IR	0.341 [0.260, 0.420]	0.161 [0.087, 0.243]			
NORA	0.259 [0.182, 0.335]	0.070 [0.033, 0.122]	0.612 [0.567, 0.654]		
ORA	0.269 [0.195, 0.345]	0.106 [0.052, 0.160]	0.622 [0.573, 0.668]	0.783 [0.741, 0.817]	
PSP	0.354 [0.278, 0.426]	0.079 [0.046, 0.100]	0.055 [0.029, 0.068]	0.057 [0.016, 0.126]	0.039 [0.009, 0.065]

ORA Organizational religious activity, *NORA* non-organizational religious activity, *IR* Intrinsic Religiosity, *PSP* Premarital Sexual Permissiveness scale, *AAS* Abortion Attitude Scale, *CFPS-10* Contemporary Filial Piety Scale-10

Table 5 Path coefficients

	β	95% Confidence intervals	95% Confidence intervals bias corrected	p
Direct effects				
AGE → AAS	− 0.041	[− 0.112, 0.034]	[− 0.111, 0.036]	0.265
AGE → IR	0.017	[− 0.041, 0.073]	[− 0.043, 0.072]	0.570
AGE → NORA	0.400	[0.313, 0.484]	[0.314, 0.484]	< 0.001
AGE → ORA	0.345	[0.262, 0.419]	[0.265, 0.420]	< 0.001
NORA → IR	0.239	[0.195, 0.387]	[0.195, 0.386]	< 0.001
ORA → IR	0.351	[0.256, 0.448]	[0.255, 0.448]	< 0.001
IR → AAS	− 0.251	[− 0.324, − 0.176]	[− 0.322, − 0.174]	< 0.001
IR → CFPS-10	0.148	[0.074, 0.225]	[0.072, 0.221]	< 0.001
CFPS-10 → AAS	− 0.237	[− 0.319, − 0.168]	[− 0.309, − 0.159]	< 0.001
PSP → AAS	0.294	[0.216, 0.376]	[0.207, 0.368]	< 0.001
Total indirect effects				
AGE → IR	0.238	[0.186, 0.290]	[0.186, 0.290]	< 0.001
Specific indirect effects				
IR → CFPS-10 → AAS	− 0.035	[− 0.062, − 0.016]	[− 0.061, − 0.015]	0.003
AGE → ORA → IR	0.121	[0.121, 0.080]	[0.082, 0.170]	< 0.001
AGE → NORA → IR	0.117	[0.073, 0.166]	[0.074, 0.168]	< 0.001

ORA Organizational religious activity, *NORA* non-organizational religious activity, *IR* Intrinsic Religiosity, *PSP* Premarital Sexual Permissiveness scale, *AAS* Abortion Attitude Scale, *CFPS-10* Contemporary Filial Piety Scale-10

AGE to NORA ($f^2 = 0.190$, $p < 0.001$), showing an average effect. Whereas the effect size was lowest for the path from NORA to CFPS ($f^2 = 0.024$, $p = 0.005$), revealing a small-level effect.

R^2 is a measure of model prediction accuracy. The coefficients of determination represent the fraction of variation explained by the structural model in the endogenous constructs. The value of R^2 should be higher than 0.1 which is considerable [83]. This study found that 22.9% variance occurred in AAS explained by exogenous constructs. The model constructs also demonstrated high predictive power, as indicated by the Q^2 predict values being above zero [84].

3.5 Mediation and moderation analysis

The results showed that there was a significant indirect effect of IR on AAS, mediated by filial piety [β = − 0.035, 95% CI (− 0.062; − 0.016), p = 0.003]. Therefore, the sixth hypothesis was confirmed.

4 Discussion

4.1 The difference in intrinsic religiosity among forms for cohabitation with parents

Our study results indicated a significant difference in intrinsic religiosity among cohabitation with parents (hypothesis 1). This study found that young adults living apart from their parents reported higher intrinsic religiosity compared to those living in the same house. Geographical distance might allow them to explore faith independently, fostering a more personal connection [85]. Interestingly, no intrinsic religiosity difference was found between those living in the same city but separate houses and those living with parents. This suggests that geographical proximity alone may not be the determining factor. The quality of the parent–child relationship and parental control over religious practices might be more influential when living close together [21]. Moreover, social and cultural factors specific to different geographical locations could also play a role in shaping individuals' religiosity [86]. For instance, regions with a strong religious community or tradition may foster higher levels of intrinsic religiosity among residents, regardless of their proximity to family [87].

4.2 The positive influence of age on religiosity

Our findings suggested that age has positively influenced religiosity which means that when individuals get older, there was a greater likelihood of them becoming more religious, including showing a stronger inclination towards intrinsic religiosity and engaging in religious activities (hypothesis 2). Previous studies have also found evidence supporting this positive relationship between age and religiosity [24]. Individuals progress through various life stages, the need for existential meaning and guidance increased [88]. As people grew older and encounter more life challenges, they may turn towards religion as a source of solace, guidance, and moral values [89]. Furthermore, research has shown that as individuals age, they experienced higher levels of religiosity due to the increased likelihood of engaging in religious practices, such as attending religious services or participating in faith-based activities [25].

4.3 The negative influence of intrinsic religiosity, and positive influence of premarital sexual permissiveness on attitudes towards abortion

Individuals with higher intrinsic religiosity may hold more conservative and negative views [90, 91]. The findings of our study aligned consistently the relationship between intrinsic religiosity and negative attitudes towards abortion (hypothesis 4). The observed association could be attributed to the salience of religious teachings that emphasized the sanctity of life and the inherent value of human existence [36, 37, 39]. As stated in the Introduction, spiritual convictions and religiosity hold significant sway over Vietnamese life, thoughts, and attitudes, including their stance on abortion. Many Vietnamese people believed that abortion results in the death of a living being, which in turn generates evil kamas (or bad karma) or condemns the soul to hell with divine punishments. Consequently, even the infant's consciousness might also impose punishment [15, 92]. Furthermore, the promotion of traditional gender roles and family values by religious communities strengthened the conservative stance on reproductive rights [93]. Additionally, the influence of religion on societal views further reinforced the perceived consequences of abortion, thereby shaping and influencing individual attitudes towards this issue. It means individuals with higher levels of intrinsic religiosity tended to perceive abortion as morally wrong and were less supportive of the practice due to their intrinsic religiosity and values [94].

In addition, results from the model showed that premarital sexual permissiveness has a positive influence on abortion attitudes (hypothesis 5). That result could be explained by the fact that the higher the level of premarital sexual permissiveness, the more supportive the attitude toward abortion. This was consistent with the result in Mosley et al. [95] study that attitudes toward premarital sex had a direct impact on abortion attitudes. Additionally, sexual liberalism has played a significant role in shaping abortion attitudes [96], and a study by Wright, Tokunaga [97] found that higher levels of sexual liberalism correlated with more accepting attitudes toward abortion.

4.4 Filial piety served as a mediator in the negative relationship between intrinsic religiosity and abortion attitudes

The study revealed a negative correlation between filial piety and attitudes toward abortion. More specifically, those who had a high level of filial piety are unlikely to be pro-choice. Although Confucianism expresses harmonious perspectives on legal abortion [98], the imperative of maintaining a family lineage still significantly influences individuals' thoughts and behaviors [99]. Thus, they still firmly oppose and have a harsh attitude towards abortion. Moreover, because Confucianism promotes traditional family values, the collective well-being of the family is often prioritized over individual choices, which can result in a more conservative stance on abortion [100]. Additionally, many studies have connected filial piety with prosocial behavior [101, 102] and building on this, it can be argued that individuals with strong filial piety may exhibit greater prosocial tendencies, leading them to view abortion as conflicting with the values of care and responsibility toward family and future generations, thereby adopting more pro-life attitudes.

To summarize, religiosity has a strong influence on shaping attitudes toward sexual morality across countries. Most major religions, to varying degrees, oppose abortion. Accordingly, it has long been assumed that personal religiosity has a profound influence on attitudes toward abortion, and this relationship may be influenced by different cultural contexts [103]. In the context of Vietnam, country deeply influenced by traditional ideas about filial piety, which could make filial piety a prominent factor in the relationship between religiosity and abortion attitudes in these countries. These findings provided significant support for our PLS-SEM model results, confirming the sixth hypothesis (hypothesis 6) that filial piety acted as a mediator between intrinsic religiosity and abortion attitudes. This mediating effect implied that increased intrinsic religious religiosity led to increased filial piety, which strengthens pro-life attitudes.

4.5 Theoretical implications

This study validates the clear link between IR, CFPS, PSP and AAS while providing evidence of the mediating role of CFPS in this relationship. The findings demonstrate that CFPS serves as a positive mediator between IR and AAS, highlighting the importance of familial and societal expectations in shaping individual moral perspectives. First, IR influences AAS more significantly when mediated by CFPS, underscoring the dual impact of religious and cultural values. Secondly, this study identifies the contrasting roles of traditional values, such as CFPS, and modern influences, such as PSP, in shaping AAS. These findings contribute to a deeper theoretical understanding of how sociocultural constructs interplay to influence personal decision-making, offering a nuanced perspective on the interaction between traditional norms and contemporary societal changes.

4.6 Clinical practical implications

This study provides key insights for mental health practitioners addressing the psychological conflicts faced by clients navigating the intersection of traditional values, such as religiosity and filial piety, and modern societal influences like premarital sexual permissiveness. The mediating role of filial piety highlights the importance of understanding how deeply ingrained familial obligations shape clients' attitudes and decision-making processes, particularly regarding sensitive issues like abortion. By acknowledging these cultural dynamics, practitioners can design interventions that respect clients' sociocultural contexts while fostering emotional resilience and well-being.

The findings also underline the tension between religiosity, filial piety and premarital sexual permissiveness, which can lead to emotional and cognitive dissonance. Mental health practitioners should address these conflicts through techniques such as values clarification, which helps clients identify and prioritize their core beliefs, and narrative therapy, which supports the integration of conflicting values into a coherent personal narrative. These approaches empower clients to navigate moral dilemmas with greater confidence and alignment to their personal and cultural identities. Practitioners are encouraged to modify therapeutic content and processes to align with the cultural beliefs and values of their clients, drawing from culturally adapted cognitive-behavioral therapy (CBT) interventions [104]. For instance, exploring how filial piety influences client decisions can guide therapeutic discussions about managing family expectations while fostering personal autonomy. Culturally relevant metaphors, narratives, and values should be incorporated to deepen emotional connections and help clients reconcile conflicts between traditional and modern values.

Additionally, psychoeducation programs should raise awareness of how traditional and modern values interact in shaping attitudes and behaviors. Practitioners can support clients in reflecting on these influences and developing

strategies to manage the pressures stemming from cultural and societal expectations. Training mental health professionals in cultural competence is crucial to enable them to navigate the interplay of these values, ensuring interventions are both culturally sensitive and practically effective.

4.7 Limitations and future directions

Firstly, it is essential to note that this study utilized a cross-sectional research design, which is exploratory in nature and helps to elucidate relationships among the variables under investigation but cannot definitively establish causality. Future studies could adopt a longitudinal research design to gain a deeper understanding of these associations. Secondly, the study relied on a convenience sample, which limits the generalizability of the findings to the Vietnamese populations. Lastly, future studies should aim to clarify the nature and direction of these relationships.

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Author contributions P-TN and T-BN contributed to conception and design of the study. VHAN, T-KT and KL organized the database. V-LT-C, T-BN, T-KT and VTL performed the statistical analysis. T-BN, T-KT, KL, N-HN-T, LNT and Y-TC-N wrote the first draft of the manuscript. All authors contributed to manuscript revision, read, and approved the submitted version.

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Data availability The data presented in the study are included in the article, further inquiries can be directed to the corresponding author.

Declarations

Ethics approval and consent to participate The study was approved by the Ethics Committee of the Department of Science and Technology—Ho Chi Minh City University of Education. Additionally, the present study followed the ethical guidelines outlined in the Declaration of Helsinki [105] and adhered to the principles set forth by the American Psychological Association [106] regarding research involving human participants. These ethical guidelines were strictly followed to ensure that the research was conducted in accordance with established ethical standards, prioritizing the well-being, rights, and privacy of the individuals involved. All participants in this study agreed to participate after being provided with informed consent, which included clear explanations of the study's purpose, potential risks, and benefits. The informed consent statement also outlined the research objectives, the terms of anonymity and confidentiality, the responsibilities of the participants, and their right to withdraw from the study. In our study, eight young people aged 17 provided their consent to participate in the research, and no legal or ethical principle requires the provision of parental consent on their behalf [63]. Furthermore, these participants have attained the Vietnam-determined age to consent to study-related procedures, and their participation in this study does not pose more than a minor increase in minimal risk of harm [64–66].

Competing interests The authors declare no competing interests.

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