

Knowledge and attitudes about abortion among undergraduate students

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Abstract

Background: This study examined attitudes towards and knowledge about abortion among undergraduate students doing eleven different subjects. The differences in attitudes and knowledge about abortion according to gender, religious and political affiliation, religiosity, sexual orientation, number of sex partners and previous sexual experience were also considered. **Method:** 1,025 undergraduate students (58.34% women and 41.66% men; mean age 20.18) completed the following instruments: an adaptation of the Abortion Attitudes Scale by Hill, and an adaptation of Abortion Knowledge Test by Esposito and Basow. **Results:** With attitudes ranging from 0 to 100, medicine, psychology and nursing students were in the anti-abortion range (55.93, 54.19 and 53.62, respectively) while history, philology and physics students were in the pro-abortion rights range (48.44, 48.49 and 50.12, respectively). Law, medicine and nursing students showed greater theoretical knowledge about abortion, while physics, engineering and philology students proved to be the least knowledgeable. **Conclusions:** Differences were found in students' attitudes towards abortion and in knowledge about abortion depending on their degree subject. As in previous reports, differences were found in students' attitudes towards abortion which reflected differences in religious affiliation, religiosity, political affiliation, and previous sexual experience.

Keywords: attitudes, abortion, university students, knowledge.

Resumen

Conocimientos y actitudes de los estudiantes universitarios hacia el aborto. Antecedentes: se estudian las actitudes hacia el aborto provocado y el conocimiento sobre el aborto de alumnos pertenecientes a once carreras universitarias teniendo, además, en cuenta el género, la afiliación política y religiosa, la orientación sexual y la experiencia sexual previa. **Método:** 1.025 estudiantes (58,34% mujeres, 41,66% hombres; edad media 20,18 años) de once carreras de la Universidad de Oviedo cumplieron dos instrumentos: una adaptación de la Abortion Attitudes Scale de Hill y una adaptación del Abortion Knowledge Test de Esposito y Basow. **Resultados:** en una escala de actitudes del 0 al 100, los estudiantes de medicina, psicología y enfermería se situaron en posiciones más antiabortistas (55,93, 54,19 y 53,62, respectivamente), mientras que los estudiantes de historia, filología y físicas se mostraron más favorables al aborto (48,44, 48,49 y 50,12, respectivamente). Los estudiantes de derecho, medicina y enfermería mostraron tener más conocimientos acerca del aborto; los de física, ingeniería y filología resultaron ser los más ignorantes. **Conclusiones:** se encontraron diferencias en las actitudes hacia el aborto y en el conocimiento sobre el aborto dependiendo del itinerario académico. Se encontraron diferencias en las actitudes frente al aborto según la afiliación religiosa, la religiosidad, la orientación política y la experiencia sexual previa.

Palabras clave: actitudes, aborto, estudiantes de Universidad, conocimientos.

Although the issue of abortion generates a great deal of public interest, and university students represent a large and well-informed segment of public opinion, remarkably little work has been done to examine the attitudes towards abortion among undergraduate students. In fact, the data available only covers nursing and medicine (Barret, 1980; Buga, 2002; Carlton, Nelson, & Coleman, 2000; Finlay, 1981; Gleeson, Forde, Bates, Powell, Eadon-Jones, & Draper, 2008; Jones, 2006; Shortorbani, Zimmenman, & Bell, 2004; Rosenblatt, 1999; Ruiz, Pascual, Colomer, Sánchez, & Álvarez-Durdet, 1991; Steele, 2009). The survey conducted by Rodríguez-Calvo, Martínez-Silva, Soto, Concheiro, & Muñoz-Barús (2012) provides some data in regard

to law students; nonetheless, there is a complete dearth of studies on attitudes of undergraduates studying other subjects such as psychology, physics, biology, engineering, childhood education, philology, philosophy and history. This lack of research is even more striking since the professional practice of certain studies (such as law and psychology) may even come into close contact with the issue of abortion.

On the other hand, the absence of literature examining university students' knowledge about abortion is similarly remarkable (Espósito & Basow, 1995; Pace, Sandahl, Backus, Silveira, & Steinauer, 2008).

This research pursues two objectives. The first objective is to determine the differences of attitudes and knowledge about abortion between undergraduate students following different academic paths. Secondly, it seeks to study the differences of attitudes towards abortion and knowledge about abortion according to gender, religious and political affiliation, religiosity, sexual orientation, number of sex partners and previous sexual experience.

Method

Participants

In the 2014-2015 academic year at the University of Oviedo, 18,013 students (9,768 women and 8,245 men) were enrolled in all the subjects covered in this survey. The final sample used in this survey comprised 1,025 students (5.7%), 598 women (6.12%) and 427 men (5.18%), proportionally distributed among the various areas of study ($E = \pm 2.97$, $p = q = 0.5$, with a confidence level of 95%).

Table 1 summarizes participant characteristics based on gender, current studies, religion, religiosity, church attendance, political affiliation, sexual orientation and practice, and prior direct and indirect experience of abortion.

Instruments

The questionnaire was designed to ensure complete respondent anonymity, which was found to be relevant given the extreme sensitivity of the topic under research.

The questionnaire on attitudes was an adaptation of the Abortion Attitudes Scale of Hill (2004) including different medical and social circumstances surrounding abortion. Other previous studies have been revised in order to confirm and complete Hill's Attitudes Scale (Abel-Aziz, Arch, & Al-Taher, 2004; Barret, 1980; Benin, 1985; Buga, 2002; Combs & Welch, 1982; Dans, 1992; Ebaugh & Haney, 1980; Espósito & Basow, 1995; Finlay, 1981; Fuente-Fonnest, Sondegaard, Fonnest, & Vedsted-Jacobsen, 2000; Gleesson et al., 2008; Hall & Freeze, 1986; Harris & Mills, 1985; Hess & Rued, 2005; Jones & Westoff, 1978; Marshall, Gould, & Roberts, 1994; McIntosh, Alston, & Alston, 1979; Pace et al., 2008; Rodríguez-Calvo et al., 2012; Ruiz et al., 1991; Steele 2009;). The reliability (Cronbach's alpha) for the questionnaire on attitudes was 0.93.

The questionnaire on knowledge was an adaptation of Abortion Knowledge Test by Espósito and Basow (1995); I selected ten items relating to the legal (three items), sociological (two items) and medical (five items) aspects of abortion. Legal aspects of the original questionnaire were adapted to Spanish legislation.

Prior to definitively handing out the questionnaire, it was tested on a pilot sample of 77 students: feedback was received regarding the questions' clarity and the survey's layout. The pilot group's comprehension of the survey questions was found to be good, so only minor changes were made.

Procedure

Data was collected in September and October 2015 from students in 11 different majors. Questionnaires were distributed at the beginning of lectures and were voluntarily and anonymously completed immediately thereafter. Participants were informed of the researcher's objectives. Absolute anonymity was promised and maintained. Participation was voluntary and neither course credit nor compensation was provided. Delivering the questionnaire to be filled out on-site on request yielded a very high response rate of nearly 100%.

Demographic data on gender, current studies, religious and political affiliation, previous sexual experience, sexual orientation and (direct and indirect) abortion experience was obtained from the survey.

Attitudes towards abortion were extrapolated from a 20-item Abortion Attitudes Scale: each item could be assessed on a 5-point

Table 1
Characteristics of participants

Current studies				
	Men	Women	Total	
Medicine	29	66	95	
Nursing	15	97	112	
Psychology	16	79	95	
Biology	37	39	76	
Physics	55	19	74	
Law	48	56	104	
Child. & Edu.	23	88	111	
Philosophy	30	24	54	
Philology	20	81	101	
History	54	37	91	
Engineering	100	12	112	
Religion and religiosity				
Catholic		Other	None	
389		26	556	
Degree of religious belief				
Strong		Middle	Poor	
71		200	456	
Frequency of religious attendance				
Seldom		From time to time	Regularly	
535		157	44	
Political affiliation				
Left 1	2	3	4	5 Right
200	333	282	116	20
Sexual orientation and practice				
Sexual orientation				
Heterosexual		Homosexual	Bisexual	
947		28	46	
Sexual experience				
Coitally-experienced		Coitally-unexperienced		
734		213		
Number of sex partners				
None	One	Two	Three	Four or more
152	230	176	114	211
Practical knowledge about abortion				
Have you (or your partner) any direct abortion experience?			Yes	No
			29	985
Do you know someone who has had an abortion?			392	627

Lickert scale (strongly agree; agree; undecided; disagree; strongly disagree). The sum of the scores of each questionnaire yields an overall score of the participant's attitude towards abortion (from 0 to 100, the lower score meaning more pro-abortion rights). Following the procedure of Hill's Abortion Attitude Scale, the attitude pro and anti-abortion has been stated relatively: There was not an *a priori* established mark.

Knowledge about abortion was measured through a 10-item multiple-choice questionnaire with only one correct answer. The sum of the correct answers in each questionnaire yields an overall score of the participant's knowledge about abortion (from 0 to 10, the lower result meaning poorer knowledge).

Data analysis

The data was analyzed with R, version 3.2.3 (R Core Team, 2015). Univariate analysis and frequency distributions were used to study the pattern of responses and bivariate descriptive analysis to report attitudes and knowledge by participant characteristics. The association between participant characteristics and overall score of attitude towards abortion was evaluated using Welch's t-test (or unequal variance t-test), Bartlett's test (to check homoscedasticity), the Kruskal-Wallis H test, the Shapiro-Wilk test, the Ansari-Bradley distribution-free test, the Fligner-Killeen test, the Student's tests, and the Wilconson's test. The same procedure was followed to assess the relationship between demographic data and knowledge score. In such cases, a p-value of 5% or lower was considered significant.

Results

Current major studies and attitudes towards abortion

Table 2 summarizes participants' attitudes and knowledge about abortion based on their current studies. The scale used to determine the general attitude towards abortion ranged from 0 (pro-abortion rights) to 100 (anti-abortion). The main values of the various groups fell in a range between 46.22 (the mean score obtained by philosophy students) and 56.33 (the mean score obtained by most childhood education). Medicine, psychology and nursing students fell in the anti-abortion range (55.93, 54.19 and 53.62, respectively) while history, philology and physics students tended to support abortion rights (48.44, 48.49 and 50.12, respectively). Law, engineering and biology students exhibited an intermediate and less clearly defined attitude towards abortion. (Shapiro-Wilk's test $p < 0.001$ for all alternatives; Fligner-Killeen's test $p = 0.24$; Kruskal-Wallis' test $p < 0.001$).

Current major studies and theoretical knowledge about abortion

The scale of the adapted Abortion Knowledge Test used to state theoretical knowledge about abortion ranged from 0 to 10, from less to more knowledge. Students of law, medicine and nursing were the most knowledgeable, while physics, engineering and philology students proved to be the most ignorant regarding the theoretical aspects of abortion (Shapiro-Wilk's test $p < 0.001$ for all alternatives; Fligner-Killeen's test $p = 0.12$; Kruskal-Wallis' test $p < 0.001$).

Abortion attitudes and other variables

The scores of attitudes towards abortion, religious beliefs and religiosity, political affiliation, sexual orientation, number of sex

partners, previous sexual experience and prior abortion experience (direct or indirect) are summarized in Table 3. I did not found gender-based differences. I found differences in attitudes by religion: non-religious students average nearly 11 points more in favor of abortion rights than Catholic students. (Shapiro-Wilk's test p , catholic = 0.35, none < 0.001 and other = 0.68; Fligner-Killeen's and Kruskal-Wallis' tests $p < 0.001$). The difference is even greater (average of nearly 20 points) when based on the degree of religiosity and church attendance (Shapiro-Wilk's test p , weak = 0.12, medium = 0.71 and strong = 0.95; Bartlett's test $p = 0.17$).

Self-perceived political affiliation is associated with a substantial difference in attitudes: the difference between the extreme left and the extreme right exceeds 20 points, and the difference between position 2 (left) and 4 (right) on the 5-point Lickert scale is 11 points, with students on the left leaning more in favor of abortion rights. (Shapiro-Wilk's test p , 1(left) = 0, 2 = 0.13, 3 = 0.52, 4 = 0.6, 5 (right) = 0.38; Fligner-Killeen's test $p = 0.42$; Kruskal-Wallis' test $p < 0.001$).

Heterosexual and homosexual students hold a broadly similar attitude towards abortion (average of 52.39 and 54.07, respectively), while bisexual students score lower (46.61), meaning they are more

Table 2
Attitudes and knowledge about abortion given current studies

<i>Attitudes towards abortion given current studies (from more (0) to less (100) pro-abortion)</i>				
	n	mean	med.	SD
Philosophy	54	46.22	44.00	13.45
History	91	48.44	47.00	13.74
Philology	101	48.49	47.00	12.56
Physics	74	50.12	49.50	15.32
Law	105	51.59	50.00	15.41
Engineering	112	52.07	53.50	13.73
Biology	76	52.78	53.50	12.52
Nursing	113	53.62	52.00	14.95
Psychology	95	54.19	54.00	13.07
Medicine	95	55.93	56.00	13.93
Child. & Edu.	111	56.33	55.00	13.21
(Kruskal-Wallis $p < 0.001$; Fligner-Killeen $p = 0.24$; Shapiro-Wilk $p < 0.001$ for all alternatives)				
<i>Knowledge about abortion given current studies (from less (0) to more (10) knowledge)</i>				
	n	mean	med.	SD
Physics	74	1.14	1.00	1.26
Engineering	112	1.46	1.00	1.24
Philology	101	1.52	1.00	1.43
Philosophy	54	1.87	2.00	1.41
History	91	1.98	2.00	1.47
Biology	76	2.03	2.00	1.41
Child. & Edu.	11	2.12	2.00	1.52
Psychology	95	2.17	2.00	1.44
Nursing	113	2.35	2.00	1.50
Medicine	95	2.37	2.00	1.39
Law	105	2.60	2.00	1.67
(Kruskal-Wallis $p < 0.001$; Fligner-Killeen $p = 0.12$; Shapiro-Wilk $p < 0.001$ for all alternatives)				

Table 3

Attitudes towards abortion given other variables (from more (0) to less (100) pro-abortion)

Religion					
	n	mean	med.	SD	
Catholic	389	58.76	58.00	13.47	
Other	26	58.77	57.00	16.24	
None	556	47.13	46.00	12.22	
Religiosity					
	n	mean	med	SD	S-W p
Strong	71	69.7	70.0	13.9	0.95
Medium	200	58.1	58.0	12.7	0.71
Weak	456	50.6	50.0	11.9	0.12
Frequency of religious attendance					
Seldom	535	51.6	51.0	12.4	0.05
Medium	157	59.7	59.0	13.9	0.58
Regular	44	71.0	71.0	13.4	0.33
(Fligner-Killeen p = 0.14; Kruskal-Wallis p < 0.001)					
Political affiliation					
	n	mean	med	SD	S-W p
1 (left)	200	42.9	42.0	12.7	0
2	333	49.2	48.0	10.7	0.12
3	282	56.6	57.0	13.4	0.52
4	116	61.6	59.0	13.8	0.60
5 (right)	20	65.2	62.5	15.1	0.38
Sexual orientation					
	n	mean	med.	SD	
Heterosexual	947	52.39	52.00	13.93	
Homosexual	28	54.07	54.50	13.54	
Bisexual	46	46.61	43.50	16.46	
Number of sex partners					
None	152	56.49	55.00	14.94	
One	230	52.02	51.00	13.48	
Two	176	50.43	49.00	13.56	
Three	114	41.71	50.50	14.06	
Four or more	211	50.19	49.00	14.14	
(Shapiro-Wilk p < 0.001 for all alternatives; Fligner-Killeen p = 0.04; Kruskal-Wallis p < 0.001)					
Previous sex experience					
Coitally-experienced	734	50.70	50.00	13.78	
Coitally-unexperienced	213	56.18	55.00	14.91	
(Shapiro-Wilk p < 0.001 for all alternatives; Ansary-Bradley p < 0.001; Welch p < 0.001)					
Practical knowledge about abortion					
Direct experience	29	46.28	48.00	12.03	
No direct experience	985	52.29	52.00	14.14	
Indirect experience	392	49.90	49.00	13.93	
No indirect experience	627	53.51	53.00	14.06	
(Ansary-Bradley p = 0.44; Student p < 0.001; Wilconson p = 0.02)					

in favor of abortion rights. Pro-abortion rights attitudes increase with the number of sex partners (from zero to three: 56.49, 52.02, 50.43 and 41.71, respectively) but they recede with four or more partners (50.19). (Shapiro-Wilk's test p < 0.001 for all alternatives; Fligner-Killeen's test p = 0.04; Kruskal-Wallis' test p < 0.001). Previous sexual experience correlates with a pro-abortion rights score of nearly six points higher than unexperienced counterparts.

The difference between those students who have either direct or indirect abortion experience and those lacking such experience is considerable and reaches nearly six points on the attitudes scale, with the former being more supportive of abortion rights. (Shapiro-Wilk's test p, no < 0.001, and yes = 0.65; Ansari-Bradley's test p = 0.44; Student's t test p < 0.001; the Wilconson's tests p = 0.02).

The influence of other variables on abortion theoretical knowledge

Table 4 summarizes participants' theoretical knowledge of abortion based on other variables. Religious beliefs, religiosity,

Table 4

Theoretical knowledge about abortion given other variables (from less (0) to more (10) knowledge)

	n	mean	med	S D	
Gender					
Men	429	1.62	2.00	1.38	
Women	599	2.25	2.00	1.53	
(Shapiro-Wilk p < 0.001 for both alternatives; Ansary-Bradley p = 0.15; Student p < 0.001)					
Political affiliation					
1 (left)	200	2.27	2.00	2.63	
2	333	2.03	3.00	1.44	
3	282	1.87	2.00	1.51	
4	116	1.84	2.00	1.29	
5 (right)	20	2.25	2.00	1.25	
Number of sexual partners					
None	152	1.65	2.00	1.43	
One	230	1.99	2.00	1.40	
Two	176	2.08	2.00	1.57	
Three	114	1.95	2.00	1.53	
Four or more	211	2.33	2.00	1.53	
Previous sex experience					
Coitally-experienced	734	2.13	2.00	1.53	
Coitally-unexperienced	213	1.62	1.00	1.40	
(Shapiro-Wilk p < 0.001 for all alternatives; Ansary-Bradley p < 0.001; Welch p < 0.001)					
Practical knowledge about abortion					
Direct abortion experience	29	3.0	3.0	1.4	
No direct abortion experience	985	1.97	2.0	1.5	
(Shapiro-Wilk No p < 0.001, Yes p = 0.02; Welch p < 0.001; Wilconson p < 0.001)					
Indirect experience	392	2.42	2.00	1.54	
No indirect experience	627	1.74	2.00	1.40	
I did not find significant differences in theoretical knowledge about abortion due to sexual orientation, religious beliefs and religiosity					

and sexual orientation bear no influence on theoretical knowledge about abortion. Women prove to be more theoretically knowledgeable about abortion than men, scoring 0.63 points higher on a 10-point scale (Shapiro-Wilk's test $p < 0.001$ for both alternatives; Ansary-Bradley's test $p = 0.15$; Student's t test $p < 0.001$). Political affiliation presents the following pattern: extreme left and extreme right positions (one and five) score higher than the middle positions (two, three and four), although the largest difference scarcely reaches 0.43 points. The higher the number of sexual partners, the greater the knowledge about abortion, with a range of difference of 0.98 between the lowest and the highest score. Coitally-experienced students prove to be more theoretical knowledgeable than unexperienced counterpart (Shapiro-Wilk, Ansary-Bradley and Welch's test $p < 0.001$). Students with direct abortion experience score more than one point higher than unexperienced students, and students who know someone who has had an abortion scored 0.68 points higher than those who do not know anybody (Shapiro-Wilk's test p , $no < 0.001$, $yes = 0.02$; Ansari-Bradley's test, Welch's test and the Wilcoxon's tests $p < 0.001$).

Discussion

Attitudes towards abortion and theoretical knowledge about abortion and different student's academic paths (Table 2)

I found differences of participant's attitudes about abortion based on major studies: Medicine, psychology and nursing students showed relatively anti-abortion scores (55.93, 54.19 and 53.62, respectively) while history, philology and physics students were relatively more prone to support abortion rights (48.44, 48.49 and 50.12, respectively). Law, engineering and biology students exhibited an intermediate and less clearly defined attitude towards abortion. There are not previous studies to contrast these results.

With regard to theoretical knowledge about abortion, I found that students of law, medicine and nursing were the most knowledgeable, while physics, engineering and philology students proved to be the most ignorant. The low mean score of all participants gives pause for thought, since no group scored higher than 2.6 of 10. There are not previous studies to contrast these results.

The influence of other variables on abortion attitudes (Table 3)

Gender has proven to be an inconsistent predictor of attitudes towards abortion, since the conclusions of different analyses seem contradictory. Several studies have found no correlation between attitudes towards abortion and gender (Betzig & Lombardo, 1992; Buga, 2002; Corenblum, 1973; Espósito & Basow, 1995; Marshall et al., 1994; Rodríguez-Calvo et al., 2012; Ruiz et al., 1991; Steele, 2009; Szafran & Clagett, 1988). In the present study, no gender-based differences were found.

Differences in attitudes by religion are considerable, since non-religious students average nearly 11 points more in approval of abortion than Catholics. The difference is even greater (average of nearly 20 points) when based on the degree of religiosity and church attendance. Many surveys have found that Catholics were less approving of abortion than people of other religions and even less approving than agnostic or atheists (Abel-Aziz et al., 2004; Adebayo, 1990; Barret, 1980; Buga, 2002; Ebaugh & Haney,

1980; Espósito & Basow, 1995; Hess & Rueb, 2005; Krishnan, 1991; Marshall et al., 1994; McIntosh et al., 1979; Szafran et al., 1988; Walzer, 1994; Wright & Rogers, 1987). Gleesson et al. and Steele also found that religious affiliation is a reliable predictor of attitudes towards abortion (Gleesson et al., 2008; Steele, 2009). In the present study, Catholics are clearly more anti-abortion than non-religious people, and they are as anti-abortion as students of "other religions". Nevertheless, this result should be carefully contextualized: our sample of students belonging to a non-Catholic religion is exiguous (and the "other" religion is indeterminate) since non-Catholic religions are infrequent in Spain.

In previous studies, religious service attendance has proven to be a reliable predictor of abortion attitudes, especially on the attitudes concerning the soft circumstances surrounding abortion (Benin, 1985; Ebaugh & Haney, 1980; Hess & Rueb, 2005; Szafran et al., 1988; Walzer, 1994). Espósito and Basow found that religiosity was the strongest predictor of abortion attitudes, followed by religion and age (Espósito & Basow, 1995, 2009). The results obtained are compatible with those previous studies.

The difference in attitude towards abortion between the extreme left and the extreme right exceeds 20 points, and the difference between position 2 (left) and 4 (right) on the 5-point Likert scale is 11 points, with students on the left leaning more in favor of abortion rights. In their study of medicine students in two Spanish universities, Ruiz et al. reported that students supporting left-wing parties tend to be more pro-choice than their conservative counterparts (1991). Hess and Rueb have found that Democrat and liberal students at the University of Wisconsin are likely to report pro-choice opinions while Republican and conservative students harbor pro-life attitudes (2005). The results obtained here are compatible with this relationship between left-wing political affiliation and pro-abortion attitudes.

Heterosexual and homosexual students hold a broadly similar attitude towards abortion, while bisexual students are more in favor of abortion rights. Unfortunately, there are not previous studies to contrast these results.

Students with previous sexual experience are more prone to approval of abortion and score of nearly six points higher in the attitudes scale than unexperienced counterparts. Several authors report that coitally-experienced students were found to be more approving of abortion than their inexperienced counterparts (Barret, 1980; Dans, 1992; Klamen et al., 1996). The results of the present survey are compatible with those findings. Surprisingly, Buga did not find this pattern among medical students in South Africa (Buga, 2000, 261).

I have found that students with direct or indirect abortion experience are more supportive of abortion rights than those lacking such experience (the difference reaches nearly six points on the attitudes scale). According to several surveys, students with prior first- or second-hand abortion experience show the most liberal attitudes towards abortion (Carlton et al., 2000; Hess & Rueb, 2005; Holis & Morris, 1992; Klamen et al., 1996). The present results are compatible with this conjecture.

The influence of other variables on theoretical knowledge about abortion (Table 4)

I did not find any differences on theoretical knowledge of abortion between the groups holding different religious beliefs, religiosity and sexual orientation. This result contrasts with

Esposito and Basow's findings since, according to their study, less religious students scored higher on the Abortion Knowledge Test (Espósito & Basow, 1995).

Women prove to be more theoretically knowledgeable about abortion than men, against Esposito and Basow results who did not report significant gender differences (Espósito & Basow, 1995). The pattern of theoretical knowledge presented by political affiliation shows that extreme left and extreme right positions (one and five) score higher than the middle positions (two, three and four), but the largest difference scarcely reaches 0.43 points. Students with higher number of sexual partners showed greater theoretical knowledge about abortion: in this case, the range of difference between the lowest and the highest score is of 0.98 points. Theoretical knowledge about abortion consistently rises among coitally-experienced vis-à-vis the unexperienced counterpart. Students who have directly experienced an abortion (either personally or through their partner), and students who know other people who have had an abortion exhibit a higher level of theoretical knowledge about abortion. There are not previous studies to contrast these results concerning political affiliation, number of sex partners, previous sexual experience, and practical knowledge of abortion.

To conclude: Undergraduate university students following different academic paths show differences in their attitudes towards abortion. Groups showing differences in religious affiliation, religiosity, religious attendance, political affiliation and previous sexual experience show statistically significant differences in their attitudes toward abortion. No differences in attitudes were found based on gender but sexual orientation did prove to be relevant, though.

People with different religious beliefs and religiosity, political affiliation and sexual orientation show a similar theoretical

knowledge about abortion. Nevertheless, students with different gender, academic path, number of sex partners and previous sexual experience show different degree of knowledge about abortion. Students who have directly experienced an abortion (either personally or through their partner), and students who know other people who have had an abortion exhibit a higher level of theoretical knowledge about abortion and show a slightly higher score in their approval of abortion.

This study has certain limitations. Firstly, limitations concerning the statistical analysis since the nature of the bivariate analysis presented in this study is merely descriptive. Secondly, limitations concerning the sample: The University of Oviedo is a medium-sized public university in an outlying region of Spain where students are predominantly middle-class white Caucasian who are either Catholic or of no religious affiliation. Consequently, the student body at the University of Oviedo is not representative of other universities around the world and might even not be representative of other Spanish private universities.

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References

- Abel-Aziz, E., Arch, B.N., & Al-Taher, H. (2004). The influence of religious beliefs on general practitioners' attitudes towards termination of pregnancy. A pilot study. *Journal of Obstetrics and Gynecology*, 24, 557-61. doi:10.1080/01443610410001722644
- Adebayo, A. (1990). Male attitudes toward abortion: And analysis of urban survey data. *Social Indicators Research*, 22, 213-228.
- Barret, F.M. (1980). Changes in attitudes toward abortion in a large population of Canadian university students between 1968 and 1978. *Canadian Journal of Public Health*, 71(3), 195-200.
- Benin, M.H. (1985). Determinants of opposition to abortion: An analysis of the hard and soft scales. *Sociological Perspectives*, 28, 199-216.
- Betzig, L., & Lombardo L.H. (1992). Who's pro-choice and why? *Ethology and Sociobiology*, 13, 49-71.
- Buga, G. (2002). Attitudes of medical students to induced abortion. *East African Medical Journal*, 79, 259-262.
- Carlton, C.L., Nelson, E.S., & Coleman, P.K. (2000). College students' attitudes toward abortion and commitment to the issue. *Social Science Journal*, 37, 619-25.
- Combs, M.W., & Welch, S. (1982). Blacks, whites and attitudes toward abortion. *Public Opinion Quarterly*, 46, 510-520.
- Corenblum, B. (1973). Locus of control, latitude of acceptance and attitudes toward abortion. *Psychological Reports*, 32, 753-754.
- Dans, P.E. (1992). Medical students and abortion: Reconciling personal beliefs and professional roles at one medical school. *Academic Medicine*, 67, 207-11.
- Ebaugh, H.R.F., & Haney, C. (1980). Shifts in abortion attitudes: 1972-1928. *Journal of Marriage and the Family*, 42, 491-499.
- Espósito, Chr. L., & Basow, S.A. (1995). College student's attitudes toward abortion: The role of knowledge and demographic variables. *Journal of Applied Social Psychology*, 25(2), 1996-2017.
- Finlay, B.A. (1981). Sex differences in correlates of abortion attitudes among college students. *Journal of Marriage and Family*, 43(3), 571-582.
- Fuente-Fonnest, I., Sondegaard, F., Fonnest, G., & Vedsted-Jacobsen, A. (2000). Attitudes among health care professionals on the ethics of assisted reproductive technologies and legal abortion. *Acta Obstetrica et Gynecologica Scandinavica*, 79, 49-53.
- Gleeson, R., Forde, E., Bates, E., Powell, S., Eadon-Jones, E., & Draper, H. (2008). Medical students' attitudes towards abortion: A UK study. *Journal of Medical Ethics*, 34, 783-787. doi:10.1136/jme.2007.023416
- Hall, E.J., & Fezzee, M.M. (1986). Race differences in abortion attitudes. *Public Opinion Quarterly*, 50, 193-207.
- Harris, R.J., & Mills E.W. (1985). Religion, values and attitudes toward abortion. *Journal of the Scientific Study of Religion*, 24(2), 137-154.
- Hess, J.A., & Rueb, J.D. (2005). Attitudes toward abortion, religion and party affiliation among college students. *Current Psychology*, 24(1), 24-42.
- Hill, A. (2004). The relationship between attitudes about abortion and cognitive complexity. *UW-L Journal of Undergraduate Research*, vii, 1-6.
- Holis, H.M., & Morris, T.A. (1992). Attitudes toward abortion in female undergraduates. *College Student Journal*, 26, 70-74.
- Jones, R.K. (2006). Male involvement in abortion decision and college students' attitudes on the subject. *The Social Science Journal*, 43, 689-694. doi:10.1016/j.soscij.2006.08.020

- Jones, E.F., & Westoff, Ch.F. (1978). How attitudes toward abortion are changing. *Journal of Population*, 1(1), 5-21.
- Klaman, D.L., Grossman, L.S., & Kopacz, D.R. (1996). Attitudes toward abortion among second year medical students. *Medical Teacher*, 18, 345-346.
- Krishnan, K. (1991). Abortion in Canada: Religious and ideological dimensions of women's attitudes. *Social Biology*, 31, 249-257.
- Marshall, S., Gould, D., & Roberts, J. (1994). Nurses' attitudes towards termination of pregnancy. *Journal of Advanced Nursing*, 20, 567-576.
- McIntosh, W.A., Alston, L.T., & Alston, J.P. (1979). The differential impact of religious preference and church attendance on attitudes toward abortion. *Review of Religious Research*, 20(2), 195-213.
- Pace, L., Sandahl, Y., Backus, I., Silveira, M., & Steinauer, J. (2008). Medical students for choice's reproductive health externships: Impact on medical students' knowledge, attitudes and intention to provide abortions. *Contraception*, 78, 31-35. doi:10.1016/j.contraception.2008.02.008
- RCoreTeam(2015). R: A language and environment for statistical computing. Viena, Austria: R Foundation for Statistical Computing. Retrieved from <https://www.R-project.org>
- Rodríguez-Calvo, M.S., Martínez-Silva, I.M., Soto, J.L., Concheiro L., & Muñoz-Barús, J.L. (2012). University students' attitudes towards voluntary interruption of pregnancy. *Legal Medicine*, 14, 209-213. doi:10.1016/j.legalmed.2012.02.002
- Rosenblatt, R., Robinson, K.B., Larson, E.H., & Dobie, S.A. (1999). Medical students' attitudes toward abortion and other reproductive health services. *Family Medicine*, 67, 207-211.
- Ruiz, M.T., Pascual, E., Colomer, J., Sánchez, S., & Álvarez-Durdet, C. (1991). Opinión de los estudiantes de medicina sobre la interrupción, el consejo y la práctica de interrupciones voluntarias del embarazo [Medical students' opinion on disruption, counseling and practice of voluntary interruptions of pregnancy]. *Medicina Clínica*, 96, 281-284.
- Shortorban, S., Zimman, F.J., & Bell, J.F. (2004). Attitudes and intentions of future health care providers toward abortion provision. *Perspectives on Sexual and Reproductive Health*, 36, 58-63.
- Steele, R. (2009). Medical students' attitudes to abortion: A comparison between Queens University Belfast and the University of Oslo. *Journal of Medical Ethics*, 35, 390-394. doi:10.1136/jme.2008.026344
- Szafran, R.F., & Clagett, A.F. (1988). Variable predictors of attitudes toward the legalization of abortion. *Social Indicators Research*, 20, 271-290.
- Walzer, S. (1994). The role of gender in determining abortion attitudes. *Social Science Quarterly*, 73(3), 687-693.
- Wright, L.S., & Rogers, R.R. (1987). Variables related to pro-choice attitudes among undergraduates. *Adolescence*, 87, 517-524.