
Sex education: analysis of teachers' and future teachers' conceptions from 12 countries of Europe, Africa and Middle East

L'Éducation à la Sexualité : conceptions d'enseignants et futurs enseignants de douze pays.

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Abstract

School Sex Education is nowadays an important public health issue as it concerns not only youth AIDS prevention (and other sexually transmitted infections – STI) and adolescent pregnancy prevention but also interpersonal relationships and psychosocial issues. Therefore school sex education contributes to promote better citizenship. The European FP6 Biohead-Citizen research project aims to understand how biology, health and environmental education can contribute to improving citizenship. It analyses the social representations and practices of teachers in several countries, focusing on their differences and associating them to controlled parameters (e.g. social context, religion, gender). In this communication we analyse data concerning teachers' and future teachers' conceptions on the topic of sex education derived from a questionnaire that was constructed and tested during the first year of the project. The questionnaire was completed by 5189 teachers and future teachers from 12 countries. We used statistical multivariate analyses, a method that has become standard for investigating complex data derived from many individuals that needs to be analysed according to many variables (here we have used the responses to the questions as variables). The results show that the factors that correlate most closely with the teachers' and future teachers' conceptions are religion, the level of belief in God and the level of religious practices. It was also found that the level of teaching (primary versus secondary school) is also correlated with different conceptions on sex education. Detailed results will be presented and discussed.

Acknowledgements

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1. Introduction and scientific background

This study was carried out within the Biohead-Citizen research project «Biology, Health and Environmental Education for better Citizenship» (FP6, CIT2-CT2004-506015, Carvalho et al. 2004). One of its two axes aims to analyse in service teachers or pre-service teachers' conceptions. We will present here the first results coming from 12 countries on reproduction, health education and sex education [RHE/SE].

Our main objective is to identify differences in teachers' conceptions, in each country and among countries. Are these conceptions associated to knowledge, beliefs, philosophical and/or political issues? What is the role of local and social practices in each country? How are the interactions between “knowledge”, “values” and “social practices” (Clément, 2004)? Finally, what are the in-service teachers or pre-service teachers' conceptions on RHE/SE and on the impact of RHE/SE to promote better citizenship.

Sex education is the process of acquiring information and acquiring attitudes and beliefs about sex, sexual identity, sex relationships and intimacy. It is also about developing young people's skills so that they make informed choices about their behaviour, and feel confident and competent about acting on their choices. It is widely accepted that young people have the right to sex education, partly because it is a means by which they are helped to protect themselves against abuse, exploitation, unintended pregnancies and sexually transmitted diseases and HIV/AIDS.

Human sexuality is not enclosing in the “life transmission” and includes four important dimensions (Pelège & Picod, 2007):

- Biological dimension – with sex physiology, procreation and survival mankind;
- Social dimension – with cultural influence, social norms or rules and their political, juridical and religious influences;
- Psychological dimension – with gender issue, the personality's construction and self esteem;
- Affective and relational dimension – with feelings (love, desire), points of view and emotions.

Sexuality presents a multidimensional aspect and concerns deeply humans in the interweaving between sexuality, social influences, cognitive and affective development. So sexuality cannot be reduce to just a dichotomy biology/psychology as it also involves psycho-affective maturation and social learning.

Sex education seeks not only to reduce the risks of potentially negative outcomes from sexual behaviour like unintended pregnancies and sexually transmitted infections but also to enhance the quality of inter-personal relationships. It also aims to promote young people's abilities for informed decision making along their entire lifetime. The effective Sex education is the one that contributes to this overall aim.

Although most interventions on Sex education concern teenagers (reviewed in Kirby, 2002) or young adults (Ergene et al., 2005), the WHO texts insist on the necessity for implementing early sex education, particularly in primary schools (WHO, 1999; 2004a). Many authors underline the importance of this educational dimension for this early ages:

“...the action must be integrated into a global life-education strategy; the way it is spoken of must be adapted to the situation, the parents' involvement, as they are the first resource for the children, must be as great as possible, and the educators must come from different fields” (AFLS, 1993).

In order to go beyond a prescriptive approach and adopt a decidedly educational perspective, it is necessary to implement a learner-centred approach (Develay, 1993), taking into account the children's conceptions, expectations and needs (Fischer, 2001). Teachers must take into account pupils' conceptions in the teaching and learning process in order to achieve an effective conceptual change (Carvalho et al 2004). The importance of taking children's conceptions into account in an HIV/AIDS or sex education programme for children under 12 years old has already been underlined (Fassler and al., 1989; Ferron and al., 1989; Thomas, 1991; Sly and al., 1992; Schaalma, Kok and Peters, 1993; Shonfeld and al., 1993; Kelly, 1995; WHO, 1999 ; 2004a ; 2004b). Moreover, it must be highlighted that children's conceptions are not only constructed from what they learn at school but also what they learn from their own life experiences (Downie, Tannahill and Tannahill, 1996).

Representations are to be taken as coherent models used by learners and teachers to reason when faced with a problematic situation (Jodelet, 1991; Farr, 1997). The building of these is rather complex and depends on values and beliefs shared by a social group and which give rise to a common outlook manifest during social interactions. As these representations are linked to the subject's emotional responses, the cultural and social group he belongs to, and constitute a decisive element in his relationship with the world, they are resistant to change. Representations are closely linked to behaviour (Abric, 1997)

and they could be considered as being a good target, as it is well known that knowledge is easy to change, but behaviours are much more challenging. Thus if a study aiming at impacting these representations is to be relevant, it has not only to target the transmission of knowledge, but also to take into account the social and cultural aspects of the children's and teacher's daily environment (Doise and Mugny, 1997).

2. Methodology

Out of the 19 countries involved in the Biohead-Citizen project, 12 contributed with data on RHE/SE. Four are outside Europe and widely (Tunisia, Morocco, Senegal) or in large part (Lebanon) muslim. Height countries are Europeans members (Portugal, France, Italy, Finland, Cyprus, Estonia, Hungry and Romania) and resent different characteristics: north and south, east and west Europe, catholic, protestant or orthodox culture.

In each country, we have data coming from pre (PRE) and in (IN) service teachers in primary school (P) and in secondary schools in biology (B) and national language (L) in 6 balanced data groups.

The corpus include responses from 5189 questionnaires: Cyprus (CY, 322), Estonia (ES, 183), Finland (FI, 306), France (FR, 732), Hungry (HU, 334), Italy (IT, 559), Lebanon (LB, 722), Morocco (MA, 330), Portugal (PT, 351), Romania (RO, 273), Senegal (SN, 324), Tunisia (TN, 753).

2.0. Questionnaire and coding

The questionnaire was elaborated in the Biohead-Citizen Project in a common work with all the research teams and translated in national language (validate by retro-translation). It was pre-tested before implementation in each country.

Our work concerns only Sex education (cf. annex) and 35 questions (A2, A9, A21, A 30, A31, A36, A41, A 46, A57 to A60, A65, A85 to A90, B3, B5, B11, B13, B17 to B19, B24, B30 to B32, and B37 to B41).

Responses are coding with a number scale. Questions A2, A9, A21, A 30, A31, A36, A41, B1 to B3, B5, B6, B9, B12, B13, B15 to B19, B21 to B27 are coding from 1 to 4 from "I agree" to "I totally disagree".

Few questions are on values (e.g. A41: "Homosexual couples should have the same rights as heterosexual couples"), on biological knowledge (e.g. « B17: After ovulation, the

follicle changes into corpus luteum which produces high levels of progesterone and estrogens)". The majority are on teaching practices and values (e.g. B19: Psychological and social aspects of sex education should be taught primarily by biology teachers). Questions A57 to A59 and A65 are about abortion. Responses are coding from 1 "In this case, abortion is morally acceptable" to 4 "In this case, abortion is morally unacceptable" and in A 65 "Abortion is acceptable" , from 1 "never" to 5 " at any moment".

Question A 60: "There are several behaviours that can help to decrease the spreading of AIDS world-wide. In your view, what is the behaviour you find most relevant to be considered in school sexual education? ", is coded from 1 "To have sex only within a stable relationship (not have several sexual partners)" to 4 "To have safer sex, for instance by using a condom in sexual intercourse".

The questions A85 to A90 and B37 to B41 are on the age teachers think the following topics should be first introduced at school by teachers and/or external specialists. Responses are coded from 1 "less than 6 years old" to 5 "never in school".

2.1. Responses' Analysis

Our hypothesis is that teachers' personal values influence their conceptions on HRE/SE. These conceptions may be linked to the school disciplinary (biology or national language), to the teaching level (primary or secondary level), to the training (in service or pre service) as well as to country context, religion or gender. What may most differentiate the conceptions of individuals with varying religions, specialities or any other feature? In fact, how to highlight the link between conceptions related to scientific knowledge or educative system in one hand and the teacher's personal, social and cultural background, namely their values on the other hand?

Multivariate analysis allows representing the more structuring components of individuals. These components state better individuals' variance. Statistical multivariate analysis has become a standard to investigate complex data featuring the behaviour of many individuals, according to many variables (Lebart et al., 1995). Here variables are questions in a questionnaire for which we gathered answers. To analyse the HRE/ SE and teaching practices data, we use principal component analysis (PCA, Lebart et al., 1995). Variables are coding as numbers. We have done a discriminating analysis (Between group analysis, Dolédec & Chessel, 1987) in complement of PCA to show differences between groups' conceptions (country context, religion, faith and gender). We use instrumental

variables in responses' structures as disciplinary (P, B, L), training (In or Pre service) and countries.

3. Results and analysis

In this work we intended to present an overview of the first results obtained from the Biohead-Citizen questionnaire, rather than to do an exhaustive study. Therefore we show herein the most relevant results, by using only some of the variables. .

3.0. Global approach

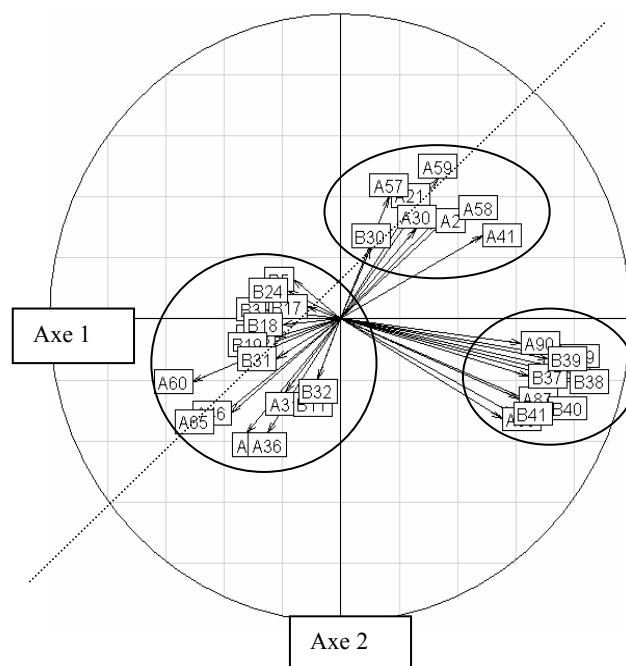


Figure 1: Principal component analysis (PCA), global correlation circle

The schema shows us three distinct groups of variables. The group of questions (A) contributes strongly to axe 1 and indicates that teachers think it is not possible to teach the social components of sexuality education to young pupils. Moreover they do not agree to teach in school before 15 years old contents as homosexuality, paedophilia, pleasure organs, abortion, incest and sex violence, orgasm and pleasure, eroticism and pornography (A85 to A90 and B37 to B41). Nevertheless, pupils found all these topics in their daily life with their peers, in the streets or in the media (press, radio, TV...).

(A)

Another interesting correlation was found in group (B) composed of questions about possibility of abortion (A57 to 59): the respondents who do not agree with abortion also think that women have not the same rights then men (A2), that it is not important to have the same number of women and men as deputies (A30), that women, biologically, have not the same intelligence as men have (A21), that homosexual couples must not have the same rights as the other couples, and that it is the hazard who determines the sex of a baby (B30).

The group (C) of questions is defining the same oblique axis as the group (B), with just opposite positions: it is possible to try to choose the baby sex by specific diet or medically assisted techniques (B31, B32), agree with the idea that abortion would be acceptable at any time (A65), men can be as sensitive and emotional as women (A46), there is no biological reason which would justify inequality between men and women (A6, A36, A46) and agree with safer sex (as a behaviour most relevant to be considered in school sexuality education).

Using the Varimax processes, the 3 groups of questions are clearly correlated the first orthogonal first axes (Figure 2). There are two groups of variables which contribute to the first axe and are determining teachers' conceptions. In one hand we found a group (A85 to A90 and B37 to B41) who concern the contents of sexuality education. Clearly, to the teachers, these contents should not be taught in primary school, never in the first years of secondary school. In other hand, on the same axe, they think that teachers avoid to teach SE because it is private matter.

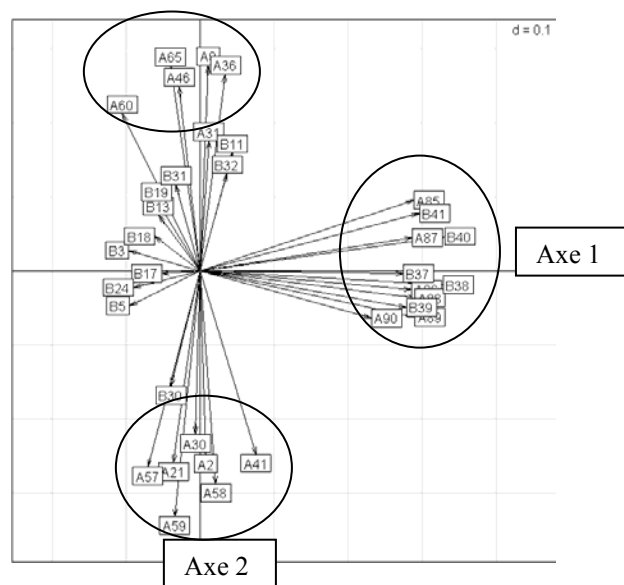


Figure 2: global approach, Varimax technique

The varimax technique is interesting because it increases the differences between the variables and allows a better chart interpretation. In the second axe (men/women equality and abortion) we found 2 groups who contribute. The first group include those who are opposed to abortion (A57, A58, and A59). It is interesting to observe that this group also agree with the thesis of inequality between men and women (A 21, A2, A30) and are opposed to homosexual rights. In the diametrically opposite area we found people who clearly agree with safer sex, homosexual rights, abortion at any time and to the equality between men and women (they do not agree with A9, A36 and A46).

In a subsequent study we intend to identify the controlled parameters linked to each group of values.

3.1. Training issue

The analysis of figure 3 shows differences between training. A PCA has been done to differentiate the six "groups of teaching" controlled in our sampling design: pre-service or in-service, primary or secondary level, biology or letters. In fact Biology teachers (in-service or pre-service) have conceptions based mainly on knowledge and on the conviction that they can teach the whole dimensions of sexuality education (Q A31, B5, B18 B17, B22, B3 B24, B30). They think that they have to teach biological aspects of sexuality (human reproduction and STI) and say that they are able o speak with their pupils about emotion, feelings, pleasure but they have the same difficulties as the others with safer sex (A60) and homosexual rights (A41).

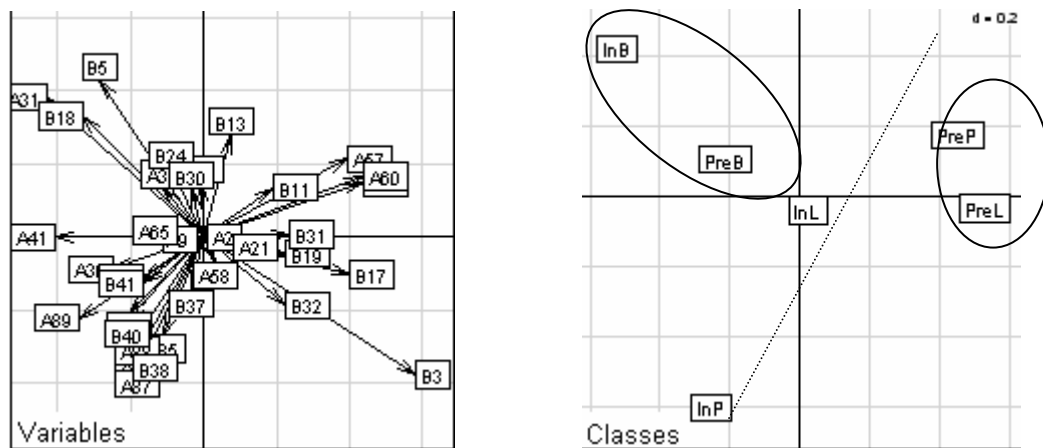


Figure 3 : teachers' statute variable

In relation with the others groups, we found a clear difference between in-service and pre-service teachers, in particular in primary school teachers. The in-service primary

teachers have difficulties to cope with content of sexuality education especially with social and affective issues like homosexuality, abortion, contraception, pleasure organs, paedophilia, safer sex (Questions : A 85 to A90, A 60) for example their conception is based on a false knowledge about the homosexuality origin (Question: B11).

In contrast to the in-service primary school teachers, the pre-service primary teachers agree with safer sex, abortion, homosexual rights... and prefer to teach these contents early in the curriculum.

There is an effect of age in the teachers' conceptions. Inside the three thematic groups (primary, secondary biology and secondary letters), older teachers (in-service; mean age = 40 years old) are always on the upper part of the axis 2 and the younger teachers (pre-service; mean age = 23 years old) are in the lower position (figure 3).

3.2. Country variable

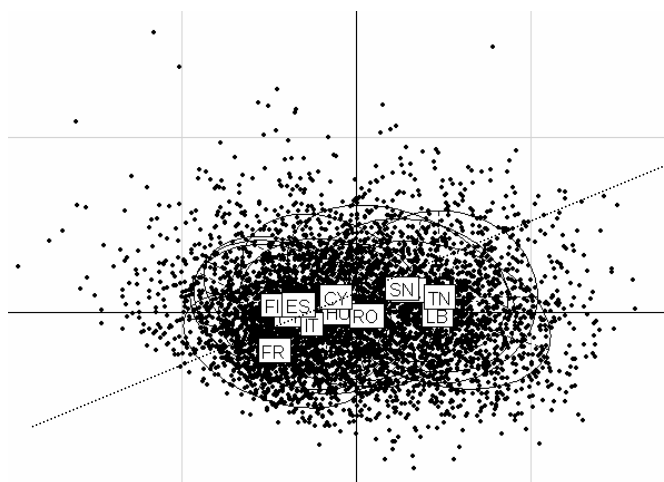


Figure 4: (PCA) Between analysis to differentiate countries

When we link the data of figure 1 with countries variables, the schema indicate clearly the incidence of a cultural effect. We have on the first axe the distribution of the countries between two poles. At one end we have Lebanon, Tunisia, Morocco and Senegal at the other end France, Finland, Portugal, Estonia and Italy. In the middle there is Hungary, Romania and Cyprus. Crossing this graphic with the figure 1, we can see that there is a correlation between countries and conceptions.

The charts are linked by axes superposition. It seems that European countries have different point of view and conceptions than south countries. Eastern European countries occupy the middle position. According to figure 1, we can see that south countries have conceptions founded on inequality between men and women and about their rights and

same thing about homosexual rights. They have conservative conceptions about abortion, safer sex and sexuality education. They do not agree to teach sexuality topics in primary school or in first years in secondary school before 15 years. In opposition, around France (Fr), we can see the correlation with open view about abortion, equality between men and women and homosexual rights.

But we have a nuance in this analysis: the opposition is also in teaching practices about topics like homosexuality, paedophilia, pleasure organs, contraception, abortion, sexual diseases (A85 to A90). France, Finland, Estonia, Portugal and Italy agree more to teach these contents than Lebanon, Tunisia and Senegal.

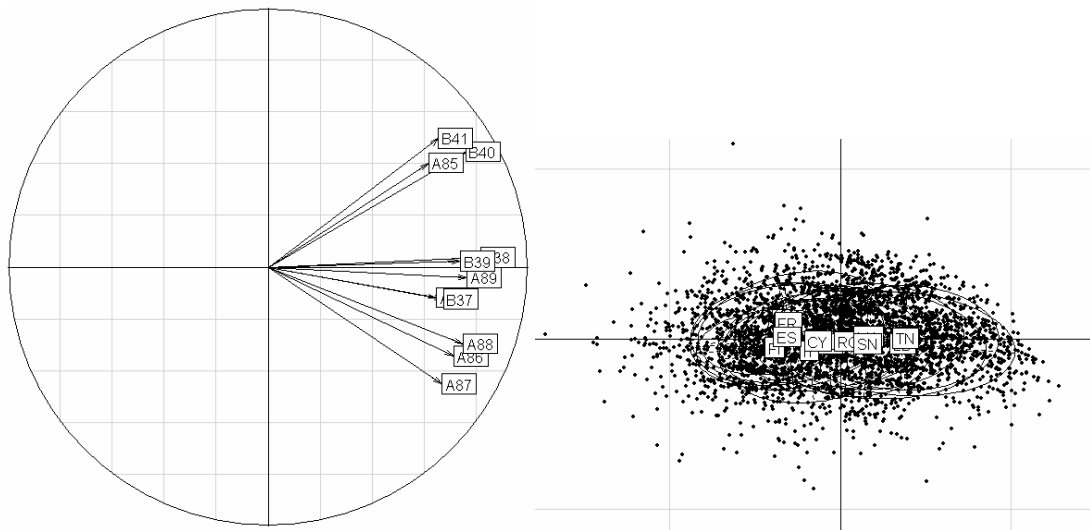


Figure 5: Principal component analysis (PCA) questions A85 to A90 and B37 to B41

On the left chart of figure 5 there is the distribution of the above questions, on the correlation circle. Their scores are superior to 3 or 4. It seems that teachers think that the following topics should be first introduced at school by teachers not before 15 years old. The vectors show where these conceptions are strongly implanted. The right chart indicates the countries concerned.

The questions about social aspect of sexuality (B37 to B41; pregnancy and birth, sexual intercourses, incest and sexual violence, orgasm and sexual pleasure, eroticism and pornography) have scores near 5. It means the teachers clearly think that it is not their job to teach these contents. The scores are powered by the non-European countries.

On the right charts we can see two poles. One is constituted by the non-European countries (Tunisia, Lebanon, Morocco and Senegal) and the other one by Western European countries (France, Estonia, Finland, Portugal, Italy and Cyprus). Eastern European countries are in the middle (Romania, Hungary). In the right chart we can see also the large distribution of the answers reveal the conceptions' diversities.

3.3. *The religious impact*

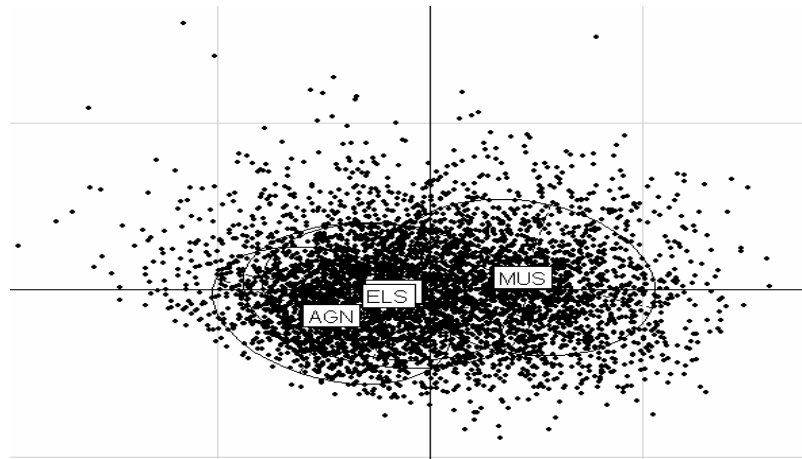


Figure 6: religion distribution (MCA)

The four categories (AGN, agnostic, atheist, without religion; MUS, moslem [Sunnite, chiite, druze, alevi]; ELS, other religions or beliefs [jewish, hinduist, animist...]; CHR, [catholic, protestant, orthodox]). There are two poles on one axe: Muslims at one side and Agnostic at the other side. In the middle part, we found others religions and Christians. With a similar process; we have crossed religion and teachers' conceptions (cf. fig1).

There is a strong correlation between religion and teachers' conceptions. Agnostics and atheists agree with the idea that abortion would be acceptable at any time (A65). They think also that men can be as sensitive and emotional as women (A46) and there is no biological reason for inequality between men and women (A6, A36, A46). For them, safer sex is the behaviour they find most relevant to be considered in school sexuality education. They agree with rights equality between men and women and with homosexual couples. At the opposite we find Muslims. This statement needs to be qualified. So, we crossed this data with the levels of beliefs in God.

3.4. *Crossing the data with God's believe levels.*

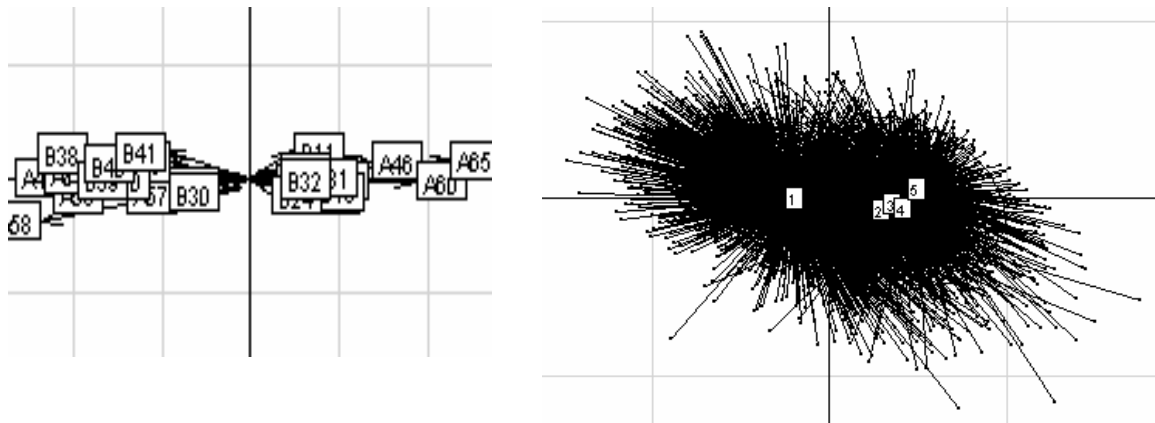


Figure7: Between groups analysis, faith's distribution

In question P12, The responses are coded from 1 “most important” to 5 “I don’t believe in God”. To do that, we use a PCA which illustrate that the level of faith is a more important variable rather than being a member of a religion.

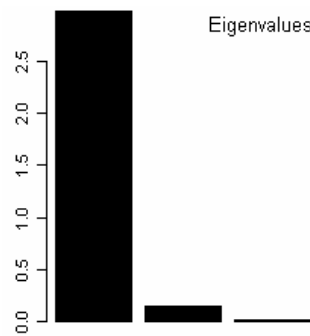


Figure 8: relative contribution of main factors (faith's level)

The variable “faith” contributes heavily to axe 1 as shown by figure 8. There is a great difference between those who have a high level in faith (1) and all the other ones (2, 3, 4 and 5). We note a small scale progression between 2 to 5 along axe 1.

All data are clearly oriented in two blocks. Those who believe deeply in God are positioned on conservative point of view about men and women equality about women rights and homosexual rights. They do not agree with abortion and they think that it is not to school to teach social content in sexuality education.

In contrast, the more teachers do not believe in god the more they agree with social contents of SE, with men and women being equal, with women rights and homosexual

rights. They also think it is possible to teach social contents as paedophilia, homosexuality, incest and violence, sexual intercourses, pregnancy and birth and they agree with abortion at any moment.

It is also interesting to cross these data (faith level) with religion. In fact the results show us that faith level is the most important factor with impact on teachers' conceptions. Christians with high faith level have same kind of responses to the questionnaires as the Muslims with same faith level.

3.5. Crossing the data with religious practices

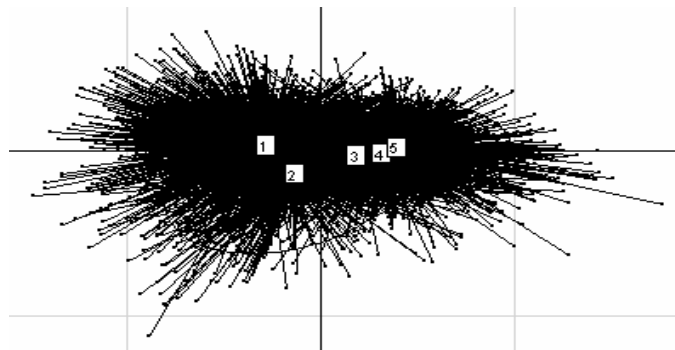


Figure 9: Between groups analysis, religious practices

This schema shows us the evaluation of religious practices' level. The responses are coded from 1 "I practice a religion" to 5 "I don't practice a religion". The distribution near axe 1 indicate that the religious practices factor is also relevant

In coherence with the faith level we can observe two groups. The first one composed of those who declare practising a religion (1 and 2) and the other ones characterised by low practices or no practice. These groups are also linked with teachers' conceptions. We found the same orientations about teaching practices in social components of sexuality education abortion and men and women equality and rights.

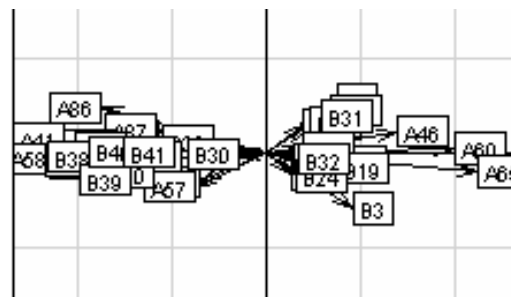


Figure 10: between group analyse, variables' distribution

This chart linked with the previous one, indicates that issues about abortion (A65) and safer sex (A60) and homosexual couple's rights (A41) and about the biological aspect of sensitivity and emotion (A46) are the most relevant ones.

Teachers who have a religious practice do not agree with abortion, with homosexual couples' rights, with safer sex and with the social contents of sexuality education (A 85-90 and B37-41). In addition they think that psychological and social aspects of sexuality education should be taught by health professionals.

4. Conclusion

These first results must be considered with prudence. Deep analysis must be done to highlight precisely the variances between groups and their links with social representations and individuals' conceptions. The great challenge we have done with this study, is to identify better not only the nature of the teaching practices but also the teachers' conceptions, especially in sexuality education and their links with the practices. When teacher's have a high level in believes in God, they do not agree with men and women equality, with homosexual rights, with abortion and safer sex, with teaching social component of sexuality education before 15 years old. However, the early access to information is the best way not only to prevent sexual violence and sexual transmitted infections but also to promote sexual health and more largely health education.

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6. Appendix

Questions about HRSE

- A2. In a modern society, men and women should have equal rights.
- A9. Women are less intelligent than men are because their brains are smaller than men's brains are.
- A21. Biologically, women can be as intelligent as men.
- A30. It is important that there are as many women as men in parliaments.
- A31. When a couple has already had two girls, the chances that their third child be a boy are higher.
- A36. Men might be more able to think logically than women, because men might have different brain bilateral symmetry.
- A37. Religion and politics should be separated.
- A41. Homosexual couples should have the same rights as heterosexual couples.
- A46. Biologically, men cannot be as sensitive and emotional as women.

Here are stories of couples, or women, who are considering the necessity of having an abortion. If you were in these situations, would you too consider the possibility of abortion? (Tick only ONE of the four boxes for EACH situation):

A57. A couple already has one child, and the mother is at risk of dying from a complication during her pregnancy.

In this case, abortion is morally acceptable In this case, abortion is morally unacceptable

A58. A young couple in severe economic difficulty.

In this case, abortion is morally acceptable In this case, abortion is morally unacceptable

A59. A woman who has been informed of the high probability of giving birth to a severely handicapped child.

In this case, abortion is morally acceptable In this case, abortion is morally unacceptable

A60. There are several behaviours that can help to decrease the spreading of AIDS world-wide. In your view, what is the behaviour you find most relevant to be considered in school sexual education? (Tick only ONE of the four boxes)

To have sex only within a stable relationship (not have several sexual partners) To have safer sex, for instance by using a condom in sexual intercourse

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A57. A couple already has one child, and the mother is at risk of dying from a complication during her pregnancy.

A58. A young couple in severe economic difficulty.

A59. A woman who has been informed of the high probability of giving birth to a severely handicapped child.

A60. **There are several behaviours that can help to decrease the spreading of AIDS world-wide. In your view, what is the behaviour you find most relevant to be considered in school sexual education?** (Tick only **ONE** of the four boxes)

To have sex only within a stable relationship (not have several sexual partners)	<table border="1" style="border-collapse: collapse; width: 100%; height: 100%;"> <tr> <td style="width: 25%; height: 20px;"></td> <td style="width: 25%; height: 20px;"></td> <td style="width: 25%; height: 20px;"></td> <td style="width: 25%; height: 20px;"></td> </tr> </table>					To have safer sex, for instance by using a condom in sexual intercourse

A65. **Abortion is acceptable** (tick only **ONE** answer):

- Never
- Up to 2 weeks after conception (*i.e.* before implantation in uterus)
- Up to 12 weeks after conception (the legal period in countries where abortion is authorized).
- Up to 6 months (before the foetus can survive outside the uterus)
- At any moment

At what age do you think the following topics should be first introduced at school by teachers and/or external specialists? (Tick only one box in **EACH** line):

Topic		Less than 6 years old	Between 6 and 11 years old	Between 12 and 15 years old	More than 15 years old	Never in school
A85.	Organs of pleasure: clitoris, penis...					
A86.	Contraception and birth control					
A87.	Sexually transmitted diseases					
A88.	Abortion					
A89.	Homosexuality					
A90.	Paedophilia					

- B3. Sexually transmitted diseases should be taught primarily by biology teachers.
- B5. Sexually transmitted diseases should be taught primarily by health professionals (doctor, nurse).
- B11. There are genetic factors in parents that predispose their children to become homosexual.
- B13. When women stop taking the contraceptive pill, menstruation occurs, due to the absence of progesterone and estrogens hormones.
- B17. After ovulation, the follicle changes into corpus luteum which produces high levels of progesterone and estrogens.
- B18. Teachers avoid teaching sex education because these topics are private.
- B19. Psychological and social aspects of sex education should be taught primarily by biology teachers.
- B24. Psychological and social aspects of sex education should be taught primarily by health professionals (doctor, nurse).

Admitting that you don't have any children and that you wish to have only one child, would you do the following?

- B30. Let chance determine the sex (as usual)
- B31. Try to choose the sex of your child by a specific diet

B32. Try to choose your child's sex by spermatozoa selection (or by other medically assisted techniques)

When do you think the following topics should be first introduced at school by teachers and/or external specialists? (tick only ONE box per line):

Topic		Less than 6 years old	Between 6 and 11 years old	Between 12 and 15 years old	More than 15 years old	Never inschool
B37.	Pregnancy and birth					
B38.	Sexual intercourse					
B39.	Incest and sexual abuse					
B40.	Orgasm and sexual pleasure					
B41.	Eroticism and pornography					