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Which has more influence on perception of pseudo-therapies: the media's information, friends or acquaintances opinion, or educational background?

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Abstract

This study analyses the discourses of Education and Journalism students in order to understand their perception of complementary and alternative therapies. Likewise, to know if educational background or friends or acquaintances opinion has a more considerable influence on their knowledge and use of these socially controversial techniques than the media. This study uses qualitative research methods based upon 12 discussion groups with 102 participants. Once transcriptions were completed, discourse analysis was conducted using linguistic corpus software (T-LAB. 9.1.). In the design of the research, these students were selected for their social involvement in their future careers, such as when they are going to address or analyse scientific controversies, both in classrooms and media, or evidence-based medicine. Also, to complement the results of the qualitative study, and thus obtain more robust conclusions, this work compares the data collected in discussion groups, with results of a survey (quantitative research) administered to 718 students of Education, Journalism, Medicine and Nursing. One hand, the focus groups revealed that the information channels through which students learned about these therapies were by word of mouth and through networks of family members, friends and acquaintances and their digital equivalents, social networks and blogs. In all the discussion groups, a lack of scientific knowledge was detected. Second hand, survey results showed that the Education and Nursing students presented a higher level of acceptance of alternative therapies compared with the Medicine and Journalism students, who were the most unaccepting.

Keywords

Conventional media, relative's environment, educational factors, social networks, friends and acquaintances, complementary therapies, pseudo therapies.

1. Introduction and literature review

Social debate regarding complementary, natural or alternative therapies arose several decades ago in Western countries, focusing on three clearly differentiated issues (Ballvé, 2003; De Miguel, 2017; Moreno-Castro & Cano-Orón, 2016; Tesser & Barros, 2008). The first involves a controversial political discourse, which is limited to the issue of governance and involves proposals for the regulation of these practices. Second, an intense social debate related to journalistic information focuses on how the use and knowledge of these therapies are socially incorporated, whether through dissemination by the media, through the teachings of educational groups, the oral transmission of friends and acquaintances, or intergenerational oral tradition (Cano-Orón, 2016; Cortinas-Rovira *et al.*, 2015; Moreno-Castro & Lopera-Parejo, 2016). Third, there is an epistemic debate regarding the lack of scientific evidence substantiating these therapies, which clinical trials have not shown to be effective. That is, compared to evidence-based medicine, these practices are not officially endorsed in many Western public health systems (Ballvé, 2003; Barry, 2006; Cámara *et al.*, 2017; Hess, 2004; Keshet, 2009). Nonetheless, in the majority of Latin American and Asian countries, popular (traditional) knowledge is incorporated in the health habits of many populations that resist official Western medicalization and choose to use traditional methods (Bautista-García *et al.*, 2014; Cruz, 2016; OMS, 2013; Perdomo Delgado, 2014, 2016; Tesser & Barros, 2008). One of the most interesting and paradigmatic examples may be that of Mapuche medicine practiced in Chile's public health system, providing coverage to the entire Mapuche community (Estomba *et al.*, 2006).

This study, however, centres on the Spanish context, although it takes into account the existing views in other countries regarding the use of and habits pertaining to natural therapies. To contextualize the current situation, some of the most relevant milestones that illustrate the parliamentary debate related to complementary or alternative therapies in the last decade will be highlighted. The Royal Decree 1277/2003 of October 10th, through which the general principles regarding the authorization of health centres, services and facilities were established (BOE, 2003, p. 37893), states that among the different care units that can be integrated into health or non-health centres is the U.101, referred to as "non-conventional therapies" defined as "a care unit in which the physician treats different pathologies using natural medicine or homeopathic medicine, or peripheral stimulation techniques that use needles or other methods shown to be safe and effective" (BOE, 2003, p. 37902). Both in Andalusia and in Catalonia these units have been integrated into public health. As concerns state legislation, Law 16/2003 of May 28th on the cohesiveness and quality of the National Health System established that "the basic minimum guarantees of safety and quality that should be required for Autonomous Communities' regulation and authorization of the opening and functioning of the health centres, services and establishments, will be determined. Among these are included non-conventional therapy units" (BOE, 2003, p. 20577).

A few years later, in December 2007, the Congress of Deputies' Ministry of Health and Consumer Affairs approved the "Proposal Not of Law" for the creation of a working group between the Ministry of Health and Consumer Affairs and the Autonomous Communities. The working groups' directives were to draft a report for the future governance of natural therapies in Spain. The "Proposal Not of Law" used the term "natural therapies" to designate the combination of techniques also known as "alternative therapies or medicine," "complementary therapies or medicines," "non-conventional therapies or medicines," "traditional medicine," "integrative medicine," etc. After intense debate, the term "natural therapies" obtained the most endorsement and was then used throughout the work sessions due to its adoption in the Proposal Not of Law (Congreso de los Diputados, 2007, p. 10). Throughout 2007, the Agency for Health Technology Assessment (*Agencia de Evaluación de Tecnologías Sanitarias* - AETS) of the Carlos III Health Institute (*Instituto de Salud Carlos III*)

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drafted a report reviewing scientific evidence of the effectiveness and safety of complementary and alternative medicines, citing the following techniques or procedures: "acupuncture," "homeopathy," "manual," and "physical therapies." The Andalusian Agency for Health Technology Assessment (*La Agencia de Evaluación de Tecnologías Sanitarias de Andalucía* -AETSA) also drafted a report on the situation with regard to alternative medicines in Andalusia. In 2008, three reports were published on the effectiveness of using "acupuncture" to treat different illnesses. Also in 2008, the Ministry of Health, Social Policy and Equality decided to review the available documentation regarding alternative therapies and requested that representatives from the Autonomous Communities form a working group to analyse the state of affairs with regard to these therapies. Besides, in 2008, The Observatory of Natural Therapies published the results of a quantitative study, indicating the frequency of use of some natural therapies. For this, 2,000 individuals were interviewed, aged between 16 and 65, with a sampling error of +/- 2.25%, and a confidence level of 95%. The frequency of use of the techniques were: yoga, 32.5%; acupuncture / TCM, 31.5%; massage, 28.4%; Homeopathy, 23.0%; Reflexology,16.1%; Tai-chi, 13.3%; Flower therapy, 12.0%; Lymphatic drainage, 9.1%; Naturopathy, 8.8%; Reiki, 8.4%; Osteopathy, 8.2%; Shiatsu, 3.9%; and Kinesiology, 2.1%. This survey is the only one so far in Spain about the use and consumption of complementary therapies (Observatorio de las Terapias Naturales, 2008).

However, it was in 2011 that the Ministry of Health, Social Policy and Equality made public a document titled *Natural therapies,* which concluded that a) "homeopathy," "acupuncture" and "chiropractic" were the therapies in highest demand by Spanish citizens; b) no Western country had effected a global regulation of natural therapies, even though some had regulated partial aspects; in some countries a tolerant attitude towards these practices was adopted, despite the fact that no specific legislation regulating them had been effected; and c) in France, Belgium, southern European countries, Canada and the United States, only physicians could provide health care. All other cases were considered unqualified practice. In Belgium, diagnosis, treatment, prescription, surgery and preventative medicine were considered the exclusive domain of physicians. In contrast, Nordic countries, Germany and the United Kingdom only reserved certain interventions for physicians alone. The report reveals that in almost all Western countries, training regarding natural therapies was provided, although its degree of officiants varied. Some countries offered specialized training for physicians, such as Germany at the university level. Others offered graduate programs, also in university, as in Italy. In other instances, training was provided in schools or private centres, as in Canada and Sweden (Ministerio de Sanidad, Política Social e Igualdad, 2011).

In the Spanish case, until the academic year 2015-2016, some universities had been awarding their own degrees (official degree studies) that offered graduate courses in non-conventional therapies, almost always within the health sciences area framework and with the admission requirement that applicants have undergraduate degrees in medicine (Farnós, 2017; Ródenas, 2001). In the majority of Spanish universities, these studies are imparted in university clinical hospitals or in medical colleges. Some centres where proper degrees in complementary therapies have been offered include, among others, the Complutense University of Madrid (*Universidad Complutense de Madrid*), which offers a *Master's degree in Acupuncture: Diagnosis and Treatment* and the title of *Expert in Mindfulness (Attention and Full Consciousness) in Health Contexts*; the University of Valencia (*Universitat de València*), with the *Master's degree in Natural Medicine, Acupuncture and Homeopathy;* or the Pompeu Fabra University (*Universitat Pompeu Fabra*), with the *Master's degree in Osteopathy* and *Master's degree in Art therapy*, endorsed by the Spanish Association of Art Therapists (*Asociación Española de Arteterapeutas* - ATE), BAAT (British Association of Art Therapists) and AATA (American Art Therapy Association). The aforementioned courses are a small sampling of the graduate degrees that have been offered by Spanish universities for approximately two decades (Farnós, 2017; Ródenas, 2001). However, beginning in the academic year 2016-2017,

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different professional groups and scientific associations rallied for these degrees to be deactivated in Spanish universities due to lack of scientific evidence. Three Spanish scientific pharmaceutical societies expressed their disapproval of the sale of homeopathic products in pharmacies: the Spanish Society of Family and Community Pharmacy (*Sociedad Española de Farmacia Familiar y Comunitaria* - SEFACT), the Spanish Society of Hospital Pharmacy (*Sociedad Española de Farmacia Hospitalaria* - SEFH) and the Spanish Society of Pharmacists and Primary Care (*Sociedad Española de Farmacéuticos de Atención Primaria* - SEFAP). Through the media, the following news headlines were recorded in 2016: "The University of Barcelona strikes down its master's degree in homeopathy" (Ansede, 2016); "Homeopathy will no longer be taught at the University of Barcelona" (López, 2016); "UV eliminates its master's degree in reiki due to lack of students and teachers" (Salinas, 2016); and "The University of Valencia's Master's in Homeopathy cancels its edition for the coming academic year" (Ortuño, 2016). This is thus the current situation regarding alternative therapies in Spain in terms of the regulatory framework and professional degrees –a controversial map of regulatory and educational non-legality.

Nevertheless, the use of these therapies is growing among the Spanish population. This is also the case in other Western countries, especially when individuals suffer from serious chronic illnesses or devastating adverse effects caused by therapeutic and drug treatments (Balneaves *et al.*, 2008; Evans *et al.*, 2006; Tautz *et al.*, 2012; Thomson *et al.*, 2014; Vapiwala *et al.*, 2006).

Public opinion polls reveal a very significant use of these therapies Muñoz van den Eynde and Lopera Pareja (2014). According to the Boiron (2013), 33% of Spaniards have used homeopathy once, and 27% use it on a regular or occasional basis. Eight out of ten people who had used homeopathic products stated that they were "very satisfied," and 87% would recommend it to their relatives. The report noted that in Spain approximately 10,000 health professionals (4,400 paediatricians, 700 gynaecologists and 4,300 general physicians) used homeopathy to treat patients, either on its own or in combination with other treatments (Boiron, 2013, 2016). These data have recently been updated.

Furthermore, the Spanish Foundation for Science and Technology (*Fundación Española para la Ciencia y la Tecnología* – FECYT) published the latest results of the VIII Survey on Social Perception of Science and Technology in Spain, including data gathered during 2016 that indicated that more than half of Spaniards trusted that homeopathy was effective in the treatment of certain illnesses and pathologies (FECYT, 2017). This signified that more than half of the individuals surveyed, specifically 52.7%, agreed ("a lot," "very much" or "somewhat") with the following statement: "Indicate whether you identify with this statement: homeopathic products work." Individuals with higher levels of formal education were those who most trusted the effectiveness of these products. Furthermore, among the most significant data was the finding that the groups who expressed above average trust in homeopathic preparations were women, individuals who self-identified as ideologically centre-left, and city dwellers. Executives and followers of "other religions" considered, largely, that homeopathic products were useful (De Miguel, 2017; Salas, 2017). Hence, according to the FECYT (2017) survey in which more than 6,300 Spaniards were interviewed, 59.8% of those surveyed trusted acupuncture "a lot," "very much" or "somewhat." There were also other interesting data related to anti-scientific practices. According to the survey, almost 28% of Spaniards believe in numerology and lucky amulets, and 22.9% trust folk healers to treat their illnesses. Furthermore, an additional 22.5% of citizens believe in paranormal phenomena or in the prognosis of horoscopes (14.7%) (De Miguel, 2017).

In view of the above, the main objective of this study is to understand the perception, habits and uses of two groups of students, which are strongly linked to the social implications of complementary and alternative therapies. One group consisted of students who held Master's degrees in Pre-school and Primary School Education, namely, future teachers, who

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can transmit their point of view or focus regarding these therapies (Doménech, De Pro Bueno & Solbes, 2016). The other consisted of students with journalism degrees, who are likely to become social communicators and, largely, disseminators of values and principles related to scientific knowledge (Brossard & Scheufele, 2013; Olvera-Lobo & López-Pérez, 2015; Stocking & Holstein, 2009). The students provided data and perceptions of great interest with regard to the aims of the study. We start from the hypothesis that the educational training of people could have a greater weight on the decision-making in health issues, more than the opinions heard through media.

The Spanish Centre for Sociological Research (CIS, 2018) has been carried out the most recent survey about alternative medicine. In his Barometer of February, it incorporated several questions about the use and knowledge of unconventional treatments in the Spanish population. The results have been of great interest to compare with this university students study. The 63.7% of the interviewed people affirmed that they had known the complementary and alternative therapies through the information provided by friends or acquaintances; 22.4% through the internet; and 22.1% through consultation with health professionals. Likewise, the results showed that the best-known technique by the respondents was yoga (90.3%), followed by acupuncture (89.1%), then meditation (74.9%), therapeutic massage (74.2%), and medicinal plants (71.1%), with response percentages higher than 70%.

The CIS barometers are carried out through interviews in the homes of 2500 people of Spanish nationality, over 18 years of age. Among the battery of questions included in each barometer are issues related to political attitudes, voting intentions, and lifestyles and, for the first time, the use and knowledge of these therapies have been included among the CIS barometers. So based on data obtained in the CIS survey, a paper has been published on the profile of the homeopathic consumer in Spain (Cano-Orón, Mendoza-Poudereux, & Moreno-Castro, 2018). This paper concluded that the standard consumer of homeopathy in Spain had higher education and was an informed person, usually a woman, about forties. Also there were debates in media and networks about the correlation between higher education level of interviewed and their use and consumption of alternative therapies. In the surveys carried out by FECYT every two years, as well as in the results of the latest CIS barometer, two of the most critical points on which the questions asked revolve are information and education. For this reason, journalism students have been chosen for this qualitative study, as future informers and communicators; and teacher training students as professionals who will teach children the main science developments and innovations based on scientific evidence. They seemed to be groups of great interest and relevance for their social projection on the shaping public opinion and awareness, shortly.

2. Material and method

This qualitative study, supported by quantitative survey, delves further into the study of journalism and education students' discursive arguments in order to understand how they perceive complementary and alternative therapies; and also determine whether their educational background or the media has a greater influence on their perception and use of these techniques that are controversial and unregulated. The election of these student are justified in base to the nature of journalism and education as an agent that shapes public opinions and values.

Hence, this study used qualitative research methods based upon a design of 12 discussion groups. The discussion groups consisted of journalism students (six groups) and Education students (six groups) from the University of Valencia and Florida Universitaria. The six groups were mixed in nature, built around the following indicators: a) age groups and b) academic year. The makeup of the education discussion groups was as follows: 18-19 years old (Group 1E), 1st year Education; 19-20 years old (Group 2E), 2nd year Education; 20-21 years old (Group 3E), 3rd year Education; 22-23 years old (Group 4E), 4th year Education; 21-37 years old (Group

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5E), 4th year Education; and 21-45 years old (Group 6E), 4th year Education. The six Education discussion groups were made up of a total of 48 participants (39 women and 9 men), maintaining the gender proportion of students who study at this level (73% women and 27% men) at Florida Universitaria where these discussion groups were formed and recorded during the academic year 2016-2017. The makeup of the Journalism discussion groups was as follows: 18-19 years old (Group 1J), 1st year Journalism; 19-20 years old (Group 2J), 2nd year Journalism; 20-21 years old (Group 3J), 3rd year Journalism; 22-23 years old (Group 4J), 4th year Journalism; 21-26 years old (Group 5J), 4th year Journalism; and 21-46 years old (Group 6J), 4th year Journalism. The six journalism discussion groups consisted of a total of 54 participants (27 women and 27 men), maintaining the gender proportion of students who study at this level (51% women, 49% men) at the University of Valencia where these discussion groups were formed and recorded during the academic year 2016-2017. Table 1 shows the questions formulated in the research groups.

Table 1: List of questions formulated in the discussion groups.

Q.1. The idea that the body has natural powers, which enable you to cure yourself if you want to. What do you think of this? Have you heard of complementary and natural medicines or therapies?
Q.2. Is physical and mental health maintained due to the strength or energy that we have as people? Do you think that it is an energy that keeps us healthy?
Q. 3. Have you heard of or have you used homeopathy? Has anyone here treated himself or herself with homeopathy?
Q.4. Have you heard of acupuncture?
Q.5. Have you ever-used medicinal herbs?
Q.6. Have you heard of yoga? Do you know what its practice consists of?
Q.7. Have you heard of bio dance?
Q.8. Have you heard of mindfulness, of meditation?
Q.9. Have you heard of any other type of therapy? For example, reiki?
Q.10. Do you know what osteopathy is?
Q.11. Of all of the therapies, which do you trust the most?
Q.12. Are you afraid to try complementary therapies?
Q.13. Do you think that complementary therapies have adverse effects?
Q.14. Do you think that complementary therapies are as recognized as conventional medicine?
Q.15. Do you think that complementary and alternative therapies deserve as much recognition as conventional medicine?
Q.16. Do you think that complementary therapies contain ideas and methods that could be used in conventional medicine?
Q. 17. Do you think that scientific medicine can learn something from complementary therapies? Do you think it would be good for patients to integrate both types of knowledge?

Once the sessions were recorded and the answers of each discussion group transcribed, discourse analysis was conducted using linguistic corpus software (T-LAB. 9.1.) that allowed word clusters to be distinguished, correlations, and frequency patterns between therapies and their use to be established. This software creates maps of individual discourses and then compares them. It is capable of performing disambiguation and eliminates words that have no value in the discourse, such as articles or prepositions. The results obtained by the software allowed the Journalism and Education discussion groups to be compared in order to determine whether there were significant differences or whether there were differences between those who had a favourable versus an unfavourable attitude towards these therapies.

To complete this qualitative study a survey was conducted with 718 students. The students interviewed in the discussion groups also, took this survey, six months before making the recordings. For this survey, students were selected from different degree

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programs (Education, Journalism, Medicine and Nursing) in order to evaluate whether educational background influences perception and use of complementary therapies (Table 2). The questionnaires were completed during the academic year 2016-2017 at the University of Valencia (UV), Florida Universitaria, and Jaume I University (Universitat Jaume I - UJI).

Table 2: Total number interviewed, according to degree program.

Interviewed	Frequency	Percentage	Valid percentage
Education	231	32.2	32.2
Journalism	233	32.4	32.4
Medicine	130	18.1	18.1
Nursing	124	17.3	17.3
Total	718	100.0	100.0

The survey was conducted using a Complementary and alternative medicine Health Belief Questionnaire (CHBQ), that was designed and validated by Lie and Boker in 2004 at the University of California for the study of respondents' perceptions, opinions and beliefs regarding complementary therapies. The CHBQ has also been used in multiple intercultural studies and can be used as an instrument to survey patient groups for the purpose of evaluating their attitude towards complementary therapies and improving communication with the physician and health personnel (Lie & Boker, 2006; Nicolais & Stern, 2014). This questionnaire contains a list of ten items with closed-ended answers using a Likert scale, each having seven possible responses: 1, "in complete disagreement"; 2, "disagree very much"; 3, "disagree"; 4, "neither agree nor disagree"; 5, "agree"; 6, "agree very much"; and 7, "in complete agreement." Therefore, the maximum score possible is 70, and the minimum is 10. To evaluate the questionnaires and obtain the results we add up item scores, such that the maximum score that it was possible to obtain for one person was 70, this being the pro complementary and alternative medicines score. A sum of 40 points would indicate a neutral position with regard to these therapies, whereas a score of 10 would indicate an anti-alternative medicine position (Nicolais & Stern, 2014). The CHBQ is supplemented by a series of questions aimed at gathering socio-demographic data on the respondents (sex, place of birth, age and the degree the individual is currently pursuing) and a table containing two columns with 23 complementary therapies (Ministerio de Sanidad, Política Social e Igualdad, 2011). In the left hand column, respondents are asked to indicate which complementary therapies they are familiar with. The right hand column contains the same list of therapies, and respondents are asked to place a mark next to those that they have used. This allows a distinction to be made between knowledge and use of complementary and alternative therapies. The results obtained from this survey allowed the Journalism and Education responses to be differentiated from one another and compared with the qualitative data. Version 24.0.0. of the SPSS program was used for the entire survey process.

3. Results and discussion

The results obtained with the T-LAB program revealed significant differences between Education and Journalism students. In the analysis of the discussion groups, the relations between occurrences and co-occurrences were studied with both specific association indices and multi-dimensional statistical techniques such as clustering, cluster analysis and correspondence analysis. The relationships between words proved very significant and provided interesting data for this study. There were 216 context units from the Education discussion groups and 140 from the Journalism groups. The reason that the results were so dispersed is because the Education students showed themselves to be largely open and favourable to alternative therapies compared with the Journalism students, who, although

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they had heard of these therapies, regarded them sceptically. The Journalism students barely responded to questions, or their responses were monosyllabic, and they did not tell personal stories as the Education students did. For example, a standard response in Group 6E (Subject 7-woman): "Now we have the debate regarding whether homeopathy is a placebo effect. I always say that I do not know. A child, in my case my son, who is one and a half –he does not realize that by taking some little pellets he will be cured. He isn't aware of the placebo effect, and yet, I've seen his fever go down." In the case of the Journalism groups, responses such as the following were found in Group 3J (Subject 4-man): "I am totally against them. I would keep them totally out of the health system." Journalism students defended the role that the conventional and digital media were playing in the social debate about pseudoscience. They advocated synthetically for quality health journalism. In the same line that Camacho, Aiestaran and Echegaray (2014) showed in their study on health issues in the Basque press that concluded on the need to improve the educational perspective in the health stories they had analysed. Considering the type of answers, the program automatically selected 82 key words from the Education groups and 47 from the Journalism groups. From these, words were selected that were used on at least eight occasions by the sum of all of the discussion groups.

Analysis of the thematic nuclei shows a very significant grouping, as shown in Figures 1 and 2. The therapies and different motives were grouped differentially in the Education and Journalism discussion groups. In Education, the grouping responded to the following groups:

1. Osteopathy, with relaxation, reiki and massage;
2. Acupuncture, with yoga and anxiety, in the same discourse as physical therapy;
3. Homeopathy, with placebo, pain, Ibuprofen, pills and medicine; and
4. Medication, psychologist and cancer.

In journalism, the grouping responded according to the following criteria:

1. Homeopathy, acupuncture, placebo;
2. Reiki, cure, therapy;
3. Health, faith, prayer, money, the media; and
4. Alternative, massage, medicine, talk.

Figure 1: Thematic nuclei of education.

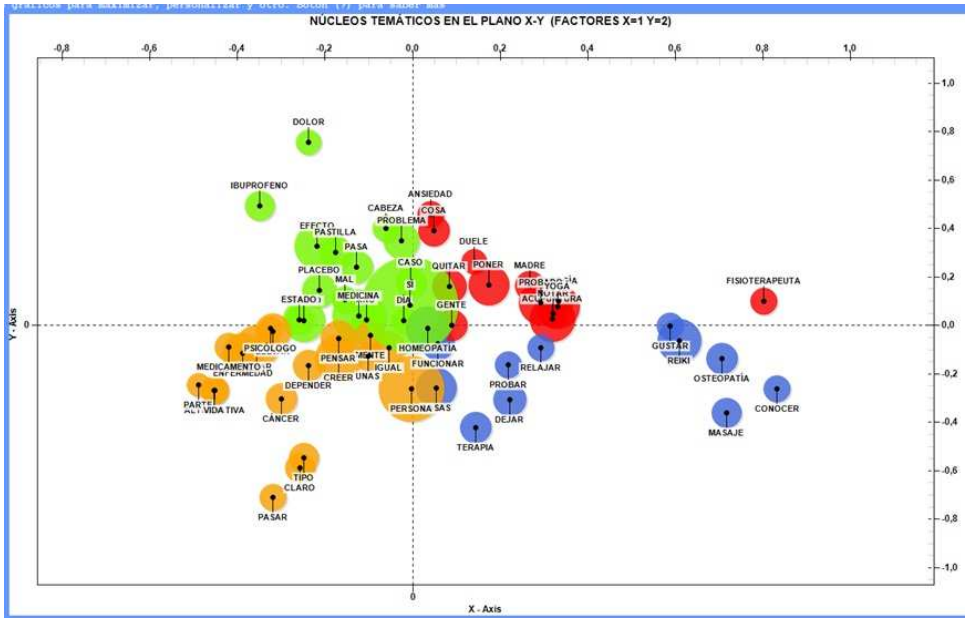

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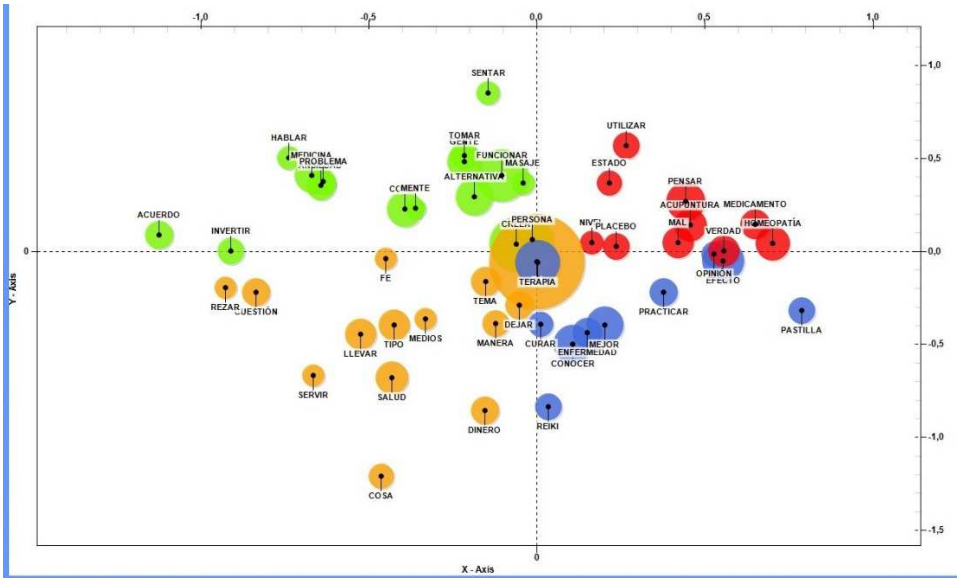
Figure 2: Thematic nuclei of journalism.



In cluster analysis, it was detected that the Education groups generated 10 clusters and the Journalism groups generated only six clusters. The results point to a much more fluid discourse among Education students, with a greater number of exemplifications and more balanced participation among all participants compared with the Journalism students. The latter barely correlated therapies with illnesses, nor did they share personal examples or examples of acquaintances. The Education students showed greater communication effectiveness, as suggested by Ferrés and Masanet (2017) in their study, and were more open to the communicative potentials of emotion. In both discussion groups, students indicated that they knew of these therapies through friends, family and acquaintances. Digital media were only one cited by Journalism students. They especially cited social media and blogs.

As concerns the survey results (N=718), one of the most significant items of global data was the difference between knowledge and use of complementary therapies, as shown in the following Table 3.

Table 3: Percentage surveyed who know of and use natural therapies N=718.

Knowledge of therapies		**Use of therapies**	
Acupuncture	97.1	Acupuncture	21.6
Aromatherapy	60.7	Aromatherapy	7.7
Biofeedback	8.1	Biofeedback	0.8
Bio dance	70.7	Bio dance	18.9
Digit puncture	19.4	Digit puncture	2.9
Hypnotherapy	63.5	Hypnotherapy	2.8
Homeopathy	81.3	Homeopathy	23.2
Magnetism	31.2	Magnetism	4.7
Massage	94.7	Massage	64.8
Meditation	86.4	Meditation	22.6
Music therapy	79.2	Music therapy	16.3
Naturopathy	18.1	Naturopathy	0.2

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Prayer/ Mental healing	53.4	Prayer/ Mental healing	8.1
Osteopathy	56.2	Osteopathy	12.6
Chiropractic	68.2	Chiropractic	10.8
Reiki	49.1	Reiki	9.4
Treatment with nutritional and vitamin supplements	18.3	Treatment with nutritional and vitamin supplements	6.1
Tai chi	80.2	Tai chi	7.3
Relaxation techniques	83.5	Relaxation techniques	34.8
Herbal therapy	47.5	Herbal therapy	14.3
Artistic therapy or art therapy	28.5	Artistic therapy or art therapy	2.9
Therapeutic touch	11.8	Therapeutic touch	1.2
Yoga	93.7	Yoga	26.5

Regarding knowledge, six techniques stood out from the rest: "acupuncture" (97.1%), "massage" (94.7%), "yoga" (93.7%), "meditation" (86.4%), "relaxation techniques" (83.5%) and "homeopathy" (81.3%). As regards use, the techniques that the respondents most used were "massage" (64.8%), "relaxation techniques" (34.8%), "yoga" (26.5%), "homeopathy" (23.2%), "meditation" (22.6%), and "acupuncture" (21.6%). This is interesting because these same results were replicated in the discussion groups.

In the case of the Journalism students, the mean of each of the responses of the ten CHBQ questionnaire items was 2.60, practically the same as that of the Medicine students, whose mean was 2.59. The Nursing students had a mean of 3.90. The most favourable were the Education students (4.70). These results were obtained by visualizing the means for the groups in homogenous subsets using a harmonic sample, given that the groups were different sizes. The responses of the Journalism students had a special characteristic, which was that none of them marked any of the ten questions a seven on the Likert scale. The highest score they marked was six. Therefore, none of them were "in complete agreement" with any of the responses (Table 4).

Table 4: Analysis of variance: university studies. N=718.

Degrees	N	Mean	Standard deviation	Minimum	Maximum
Education	231	4.70	1.617	1	7
Journalism	233	2.60	1.647	1	6
Medicine	124	2.59	1.520	1	7
Nursing	130	3.90	1.577	1	7

The results show that the Education students, along with the Nursing students, are those who presented the highest level of agreement concerning these therapies compared with the Medicine and Journalism students, who agreed the least. As concerns nursing, Fernández-Cervilla *et al.* (2013), considered complementary therapies' absence from nursing curriculums to be a mistake due to the positive repercussions that this training could have on the quality of patient care. Thus, this study corroborates that, as shown in Table 4, Education and Nursing are in alignment (favourable attitude towards complementary therapies), as are Medicine and Journalism (unfavourable attitude towards complementary therapies).

4. Conclusions

Based upon the study's premise regarding whether students' perception was more influenced by educational background or friends or acquaintances opinions, on the one hand; or by

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digital and conventional media, on the other side; the response is the educational and relative's environment could have more influence than the social media environment, according to the data obtained. Therefore, our baseline hypothesis has mainly been verified. During discussing of the focus groups, it considerable emphasis was placed on questions about interviewee opinions on the use and consumption of CAM and whether their point of view was related to their educational training or the media influence. Seventeen central questions were asked about knowledge and use of the CAM and then questions about the "use" of media. All students widely replied that they knew about the CAM treatments through family and friends.

So, the information channels by which students learned about therapies are by word of mouth, through networks of family, friends and acquaintances, and their digital equivalent, social media, and blogs (especially in the case of Journalism students). The discourse of the Journalism discussion groups was very sceptical and not at all narrative and biased (not objective). They argued about the importance of evidence-based medicine and that they did not understand how people went to charlatans and quacks, having doctors specialized in many disciplines and with a public health system that guarantees access to all Spanish citizens. Overall journalism students thought media should be rigorous and not promote, in any case, these kinds of CAM. Education students' discourse was very personal. They believed that maybe these therapies could be a complementary treatment to conventional medicine, which could help in different aspects to people; for example in emotional health or physical well-being. They explained enough positive experiences from themselves or from relatives who were very supportive of all CAM.

A lack of basic scientific knowledge essential for university students was detected in all groups, such as lack of knowledge regarding placebo and nocebo effects, reliability and reproducibility, and the boundaries and limits of science. Therefore, a lack of science understanding in future educators and journalists has been revealed. Following the study results, the proposed line of action is to improve the scientific literacy of these professional groups, both for the social implication this would have and the potential contribution to a more rigorous debate in all spheres, political, social, and educational and in the media, minimizing uncertainty and social controversy. These conclusions are in line with other studies carried out by Lopera-Pareja and Moreno-Castro (2018) in which they said that most cautious attitude among future journalists and practitioner might be due to their social role as the "gatekeepers" of evidence-based knowledge, especially in the case of journalists. As for the nursing attitude scores, since in Spain nurses are not allowed to prescribe conventional medications, they are likely to be more willing to consider and even recommend CAM therapies.

Limitations of this work lie in its analytic pretensions of the focus groups assertions. Since the aim here was to analyse student who came from determines degrees, such as journalism and training schoolteachers, it was only possible to focus on their beliefs or viewpoints and not on the rest of the student at the university. Besides, it was finally rejected, the possibility of performing more precise analysis on the remainder of the focus groups conversations, extending them to medical and nursing students.

In future researches, it would be interesting to discover what the journalists and schoolteachers think about CAM and whether it is connected with media or educational discourse; and also comparing these results, while they are students, with those obtained during their professional careers. This would enable us to gauge whether the level of influence of the educational or media is constant or variable throughout time; or also to study the power of ideology, in the same scenario as by Flatt (2013), identifying the influence of ideological discourses and hegemonic positions of the conventional medicine.

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