

KNOWLEDGE DISSEMINATION FOR SOCIAL CHANGE A Multimodal Discourse Analysis of an online health information service

ROSITA MAGLIE, CHIARA ABBATANTUONO
UNIVERSITÀ DI BARI “ALDO MORO”

Abstract – The study focuses on Kinsey Confidential™, a weekly newspaper column that adds an image to each answer it provides to the question received from a young reader. Based on corpus building criteria, the work collected all the web pages containing the image, the question, and the corresponding answer in the time span between February, 2015 to May, 2018. Tools of analysis found in Kress and van Leeuwen (2006), Machin and Mayr (2012), Ledin and Machin (2018), and in the pack of utilities of WordSmith 7.0 (Scott 2016) were used to identify a series of salient recurring discursive strategies through which the website depicts sexuality and promotes sexual health. These strategies help to represent a new multimedia mode of scientific knowledge dissemination and a multimodal channel of safe sex promotion for social change in the contemporary sociocultural context of adolescents’ sexual knowledge and behaviour. The data from previous studies, based exclusively on linguistic analysis of young people’s questions submitted online, showed the presence of misinformed socially-derived beliefs and understanding of sex, gender and reproduction (Harvey 2013; Maglie 2015, 2017). In addition, this study addresses the way knowledge dissemination on sexuality is communicated by the website, not just through popularised scientific language, but also through visual language. Thus, the combination of the linguistic and semiotic resources found in Kinsey Confidential™ helps to introduce different levels of signification of discourses, all aiming at fostering appropriate knowledge of sexual and reproductive health among the younger generation.

Keywords: Multimodal Discourse Analysis (MDA); sexual and reproductive health discourse; expert-based health platforms; quanti-/qualitative approach.

1. Introduction

Sexuality, as defined by the World Health Organization (WHO), is “a central aspect of being human throughout life” encompassing various determinants of health and wellbeing, namely “sex, gender, identities and roles, sexual orientation, eroticism, pleasure, intimacy and reproduction” (2002, p. 5). This multidimensional construct represents a crucial quality of life issue (Quinn,

Happell 2015) involving physical and socio-emotional needs and concerns, along with matters of clinical interest that require specialised support and targeted policies. Over the last two decades, preventive healthcare has become a major priority among younger generations, identified as “at risk” on account of their higher odds of getting or passing on sexually transmitted infections (STIs) that might lead to an increased risk of transmission of the human immunodeficiency virus (HIV) (Keastle *et al.* 2005; Newbern *et al.* 2013). Juvenile vulnerability to sexual risks may result from their sporadic adoption of primary prevention methods (e.g. condoms) and their lack of access to STI services (e.g. vaccination, testing, treatment and care). It is estimated that 357 million cases per year of curable STIs concern sexually active people below the age of 49, with a dramatically higher risk of young women developing complications (WHO, 2016). More in particular, half of STIs affect people aged between 15 and 24 and almost two thirds of people who contract chlamydia are young (Centers for Disease Control and Prevention [CDC], 2018). Despite the increasing social awareness of prevention and protection strategies, early diagnoses and the effective treatment of STIs, a broad range of sex-related issues are still frequently neglected in various healthcare settings as a result of social stigma and embarrassment (Ollivier, Aston, Price 2018).

Previous studies have shown that the guilt, embarrassment and shyness perceived by physicians while taking patients’ sexual histories might have negative repercussions on STI assessment and counselling (Merrill, Laux, Thornby 1990). On the other hand, young people feeling embarrassed about purchasing condoms are less likely to buy them, subsequently decreasing condom use (Dahl, Gorn, Weinberg 1998; Moore *et al.* 2006) However, this reticence to address topics of a certain delicacy applies especially to the ‘traditional’, face-to-face healthcare delivery system. While online, in fact, people are more likely to display disinhibited behaviour, revealing very personal details about themselves without worrying about how they look or sound (Suler 2004), and more generally, without experiencing self-presentation difficulties that characterise real-life interactions. Among all situational factors, anonymity may also impact positively on the individual’s perception and engagement, resulting in a potentially increased condom use (Young *et al.* 2017). Mixed modes of communication afforded by digital media and electronic devices are supposed to elicit these (dis)inhibiting processes, the effects of which can be qualified as positive, as in the case of counselling and provision of helpful information (Lepidot-Lefler, Barak 2015), or negative, as in the case of revenge porn and flaming (Voggeser, Singh, Göritz 2017). The current discourse of sexual and reproductive health is thus shaped by technology and multimodality, and comprises a combination of linguistic strategies and semiotic resources supplementing more traditional healthcare settings.

Given their exposure to high-risk sexual behaviour as well as their computer literacy and familiarity with digital media, adolescents and young adults usually rely on electronic healthcare (e-health) providers to explore sensitive, typically inhibiting subjects, as evidenced by linguistic analyses of US-based (Maglie 2015, 2017) and UK-based (Harvey 2013; Brookes, Harvey, Mullany 2018) question and answer (Q&A) expert services. Lay use of the Internet to overcome financial, societal, cultural and geographical barriers that would otherwise restrict access to health information is a challenge to professionals committed to the positive popularisation of sexuality. The often-ignored need to develop and share worldwide accurate, exhaustive and non-judgemental advice and information emerges as a primary issue for social change in a contemporary sex scenario lacking in quality education interventions. Empowering cultural domains and social practices in the interest of the key population means, first and foremost, calling into question the dominant paradigms of healthcare (e.g. medical paternalism, medicalisation, financial divides) and sexuality (e.g. sex-related misinformation, stereotypes and stigma).

Supported by a socially-driven approach, the present study combines Multimodal Discourse Analysis (MDA) (Kress, van Leeuwen 2006; Kress 2010; Machin, Mayr 2012; Plastina 2015; Tessuto 2015; Ledin, Machin 2018) with the methods of Corpus Linguistics (CL) (Baker *et al.* 2008; Baker 2018; Baker, Brookes, Evan 2019) to understand from a quanti-/qualitative and both linguistic and semiotic perspective, a multiplicity of modes of communication adopted by sexual health experts to counteract misinformation, stereotypes and stigma still revolving around human sexuality, with possible positive implications on lay health-seeking and disease-prevention behaviour as well. The final purpose of this study is to foster a new counter-discourse of sexual health which uses expertise to empower younger generations and convinces them of the need for a societal paradigm shift, since the lack of bottom-up educational and informational interventions and policies may facilitate and sustain unsafe sexual practices, homo(trans)phobic attitudes towards LGBTQI communities, devaluation of women, misunderstanding of specialised content, including research-based knowledge on the spread of STIs, bodily organs and functions, desire and consent, sexual orientation and identity in all their diversity and complexity.

2. Materials

The dataset for this study is made up of posts retrieved from the weekly newspaper column of Kinsey Confidential™, a sexuality information service designed by the Kinsey Institute for Research in Sex, Gender, and Reproduction at Indiana University, Bloomington. This US-based website

provides a variety of accurate, open-access multimedia resources to meet college-age adults' sexual health information needs.

Educational and medical content available on Kinsey Confidential™ comprises a growing number of Q&A posts, articles and interviews about matters of some delicacy that often require social awareness and specialised care. The dissemination of scientific knowledge to the general public benefits from the provision of multimedia texts, images and audio podcasts about 12 different sexual health topics, i.e. *Birth Control*, *Bodies*, *Common Problems*, *Gender, Health & Disease*, *Pleasure & Orgasm*, *Pregnancy*, *Relationships & Love*, *Sex Research*, *Sex Therapy*, *Sexual Assault* and *Sexual Orientation*.

The weekly newspaper column represents the densest web section in terms of contents and multimedia modes, which are managed by Dr Debby Herbenick, an AASECT-certified sexuality educator and research scientist. In this column, readers can consult the provider and access a considerable list of Q&As concerning sexual and reproductive health. Posts originate from questions or requests submitted by anonymous users via the Kinsey Confidential™ online form, and so depending on the specific message received, the sex advice columnist suggests a tailored answer on a weekly basis.

As pointed out by Harvey (2013), the Ask-the-Expert format can be considered a particularly effective tool to investigate users' real-life needs and communicative styles, since questions are proposed spontaneously by the advice-seekers themselves and not solicited by healthcare professionals' agendas. This participatory feature applies very well to Kinsey Confidential™, and it could also explain the uneven distribution of each post across sexual health topics. In this respect, the higher percentage of resources published on Kinsey Confidential™ relate to the *Bodies* category (18% of total texts, 74.67% of which are Q&As), which represents the most populated topic in the Q&A column—and hence the issue of major interest and concern for advice-seekers—followed by *Relationships & Love* (11%) and *Common Problems* (10%). *Sex Therapy*, conversely, verges on 1% of text materials.

Awareness and care of users' needs also relate to the openness and the multimodality of resources developed by the Institute. Indeed, a further distinctive feature of the weekly column is the combined provision of audio, textual, visual and graphic materials, so that the dissemination of expert advice and information meets new modes and affordances. Even the Kinsey Confidential™ homepage displays titles, podcast buttons and image thumbnails from the column, supplementing language with optical information (Ledin, Machin 2018). These post previews are sorted by date to introduce the most recent Q&A posts, keeping and maintaining up-to-date topics of interest to users. Yet, for ease of reading, the provider usually adds bold slogans to plain texts and small captions (e.g. summarising captions)

(Cavalieri 2015) to images, matching different grammars and canons of use in a visual “whole” (Kress, van Leeuwen 2006; Kress 2010; Machin, Mayr 2012; Ledin, Machin 2018). The co-occurrence of texts and images in every topic and web section thus reveals the frequent and widespread adoption of visual highlighting strategies to facilitate content navigation and search.

In accordance with the principles of knowledge-sharing, the web platform does not require any registration to access digital content, but rather affords HTML button links to social media (i.e. Facebook and Twitter), tags and subscription buttons, all contributing to popularise safe and responsible sex practices among younger generations.

3. Methods

Given the diversity of content and design characterising Q&A expert services, the investigation of the Kinsey Confidential™ discourse represents a great methodological challenge involving multiple perspectives and tools of analysis. Based on corpus-building criteria (Harvey 2013; Maglie 2015, 2017; Brookes *et al.* 2018), the present work collected all the Kinsey Confidential™ webpages (i.e. text posts and related images) from the weekly column over the timespan of February 2015 to May 2018 to run the corpus analysis. The total number of unique Q&A texts posted on the column was 1,006 (i.e. 503 questions–Q-posts and 503 matching answers–A-posts), amounting to 238,020 running words/text tokens. Questions and answers were examined separately since Q- and A-text posts are different sizes (Q-post tokens = 27,856; A-post tokens = 210,164; Q-/A-post token ratio = 1/7.54), and are also representative of two distinct statuses in the e-health sector (i.e. users and providers). The software package WordSmith Tools 7.0 (Scott 2016) allowed for the objective, quantitative analysis of lexical and discursive trends emerging from Q- and A-posts, and more specifically:

- *WordList* tools offered word frequencies in absolute, relative and percentage terms;
- *Concord* tools detected habitual and characteristic patterns, clusters and collocations on the basis of t-test and Mutual Information (MI) statistics.

In addition to corpus analysis, a qualitative, comprehensive approach to the Kinsey Confidential™ multimodal discourse was adopted to balance quantitative data emerging from the plain texts. As a matter of fact, the weekly column also comprises 352 Q&A-related images recurring in more topics in the form of smaller previews, for which the application of basic corpus techniques is not specifically intended. Table 1 lists the frequencies of texts and images across sexual health topics.

Topic	Texts		Images	Topic	Texts		Images
	Q-	A-			Q-	A-	
Birth Control	26	26	16	Pregnancy	30	30	7
Bodies	171	171	91	Relationships & Love	88	88	50
Common Problems	102	102	42	Sex Research	10	10	6
Gender	3	3	3	Sex Therapy	5	5	4
Health & Disease	70	70	40	Sexual Assault	4	4	2
Pleasure & Orgasm	131	131	72	Sexual Orientation	35	35	19

Table 1
Absolute frequencies of text and image per sexual health topic.

In reply to users' questions, each image appearing on the Q&A section is purposely combined with A-post texts by the sex advice columnist to draw attention to certain aspects and features of specialised discourse. The complete set of different pictures and photos downloaded from the Kinsey Confidential™ column constitutes the visual corpus of this study, for a total amount of 166 unique images. Tools of analysis found in Kress and van Leeuwen (2006), Machin and Mayr (2012), and Ledin and Machin (2018) were used to carry out the examination of a broad range of visual communication modes promoted by experts in an effort to spread research-based content among young people.

4. Research Questions

In view of these methodological premises, the present work aims to answer the following questions:

1. What kinds of multimodal specialised discourse have been adapted to a new form of knowledge dissemination?
2. How does this new form of knowledge dissemination popularise specialised discourse with a view to social change?

5. Results

5.1. Corpus-based findings

Quantitative evidence resulting from the computation of frequency lists and collocation statistics includes lexical trends as well as salient discursive patterns based on a total of 1,006 different Q- and A-text posts (of which 238,020 are text tokens) from the Kinsey Confidential™ weekly column. As shown in Table 2, the extremely high frequency of function words reveals a

direct correspondence of personal pronouns and possessive adjectives between Q-posts (“I” = 6.54%; “MY” = 2.30%) and A-posts (“YOU” = 2.37%; “YOUR” = 1.17%). This lexical correspondence is extended to content words, such as “SEX”, “PENIS”, “TIME”, “PARTNER”, “ORGASM”, “WOMAN”, “INTERCOURSE”, and “RELATIONSHIP”, all almost equally distributed.

n.	Q-post tokens	% freq.	A-post tokens	% freq.	Q-post content words	% freq.	A-post content words	% freq.
1	I	6.54	TO	3.38	SEX	1.48	SEX	1.30
2	AND	2.88	AND	2.59	TIME	0.37	WOMEN	0.67
3	TO	2.65	YOU	2.37	BOYFRIEND	0.36	MEN	0.61
4	A	2.50	THE	2.27	YEARS	0.30	PEOPLE	0.46
5	MY	2.30	A	2.13	PENIS	0.28	PARTNER	0.36
6	THE	1.83	OR	2.03	GIRLFRIEND	0.24	TIME	0.29
7	IT	1.79	OF	1.95	PARTNER	0.20	PENIS	0.26
8	IS	1.64	THAT	1.93	INTERCOURSE	0.19	EXPERIENCE	0.23
9	HAVE	1.57	IN	1.42	VAGINA	0.19	ORGASM	0.21
10	SEX	1.48	SEX	1.30	ORGASM	0.19	WAY	0.18
11	THAT	1.33	IT	1.28	WOMEN	0.18	WOMAN	0.18
12	WITH	1.16	IS	1.22	RELATIONSHIP	0.18	INTERCOURSE	0.17
13	BUT	1.09	YOUR	1.17	TIMES	0.15	PROVIDER	0.17
14	OF	1.02	WITH	1.07	WOMAN	0.13	MASTURBATION	0.16
15	FOR	0.90	FOR	0.98	CONDOM	0.12	HEALTH	0.15
16	ME	0.89	ARE	0.94	WIFE	0.12	VAGINA	0.15
17	IN	0.87	ABOUT	0.93	ERECTION	0.12	RISK	0.15
18	THIS	0.79	AS	0.89	MAN	0.12	BODY	0.15
19	WE	0.78	HAVE	0.89	PROBLEM	0.12	WAYS	0.14
20	CAN	0.76	CAN	0.80	SIZE	0.12	RELATIONSHIP	0.14

Table 2
Word percentage frequencies in Q&A posts.

Further matches relate to the most significant collocations for the keyword “SEX” in both Q- and A-posts, such as “SEX” + “DRIVE” and “SEX” + “TOY”*, as illustrated in Table 3.

However, looking at the concordance lines, Q- and A-posts seem to vary in terms of semantic preference and discourse prosody. If we consider recurrent lemmas and related inflections in their specific contexts of use, a semantic preference emerges for bodily issues (“PENIS”, “VAGINA”, “ORGASM”, “ERECTION” and “SIZE” often collocating or otherwise dealing with “PROBLEM”*) and sexual activity (“HAVE” often collocating with “SEX” and “INTERCOURSE”) in Q-posts, whereas A-posts seem more focused on relationship-based advice (“SEX” often collocating with

“COLUMNIST”, “THERAPIST”, “RESEARCHER”, “COUNSELOR”, “EDUCATOR”).

	Collocates (position)	MI score	T score	Examples of concordance lines
Q-posts	DRIVE (R)	5.91	2.78	I have found that my <i>sex drive</i> increases
	LIFE (R)	5.08	3.36	male and have had a very unfulfilling <i>sex life</i>
	TOYS (R)	4.82	2.16	Can you explain the risk of sharing <i>sex toys</i> ?
	WITHOUT (R)	4.54	3.17	How can I have <i>sex without</i> pain?
	HAVE (L)	4.27	10.6	likes it if I also <i>have sex</i> with other men
A-posts	COLUMNIST (R)	6.27	2.61	as a researcher, educator and <i>sex columnist</i>
	DRIVE (R)	6.07	2.61	a high <i>sex drive</i> and very frequent erections
	TOY (R)	6.01	9.44	If your friend is interested in trying a <i>sex toy</i>
	TOYS (R)	5.97	7.93	use <i>sex toys</i> and other enhancement products
	THERAPIST (R)	5.88	9.58	their <i>sex therapist</i> or doctor may advise them

Table 3

Examples of collocations from Q&A posts
(node = “SEX”; span = 5; MI threshold = 3; T threshold = 2).

Prominent themes emerging from texts tend to assume a negative connotation within users’ discourse of sexuality and sexual health, as in the case of Q-posts concerning *bleeding*, *pain*, *sex abuse*, *unfulfilling sex*, *standard sex* and *unprotected sex*, contrasting with the neutrality or even positivity of A-posts addressing *pleasurable sex*, *safe sex*, *sex play*, *study* and *your sex*.

5.2. Discourse-based findings

As already mentioned, words and images work hand in hand to emphasise the narrative approach to human sexuality originally fostered by the Kinsey Institute and pursued by Indiana University, Bloomington. Images retrieved from the weekly column vary in terms of themes and features, and also match with answers provided by experts such as Dr Debby Herbenick. According to Ledin and Machin (2018), web platforms may be considered as a set of multimedia sources affording various kinds of artefacts, each with their own materiality and design (e.g. photographs, link buttons, graphics or fonts). In line with Systemic Functional Linguistics (Halliday 1978), the authors critically look at these sets of artefacts since they deploy a wide range of semiotic resources constructed for a purpose and in someone’s interest.

In the case of Kinsey Confidential™, the main purpose underlying the sharing and publishing of sexuality-related content is the active promotion of sex-positivity in all its many facets, with particular regard to young adults. To this end, the column displays images depicting five kinds of artefacts with different materiality: drawings, paintings, sculptures (including dolls and bas-reliefs), movie stills and photographs. These artefacts, in turn, represent

miscellaneous subjects such as, respectively, human beings (e.g. young men and women, heterosexual and homosexual couples, doctors, crowds), objects (e.g. blister packs of contraceptive pills, condoms, lubricants, sex toys, bed sheets and blankets, flags, signboards), human body parts (e.g. hands, mouths, hair, feet), and even natural elements (e.g. leaves, flowers, soil, water). Various subjects tend to co-occur in images, playing different roles and actions depending on the specific participants and settings portrayed. For instance, 2.15% of posted images depict motionless human stick figures, while inanimate objects in motion do not reach 2%. Despite their low frequency, these kinds of images represent a novel, metaphorical way to recount human sexuality. Nevertheless, actions taken by participants are not limited to external, physical processes and features (e.g. motion and stasis), but also include social transactions (as in the case of the visual portrayal of communication exchanges) and psychological processes, both inferred from the presence of verbal or non-verbal indices, especially psychological gaze, that have the potential to evoke emotions, feelings and thoughts. Additionally, semiotic material afforded by images may affect text information structure by corresponding words and key themes, by adding new information to texts or even highlighting words.

In the first case (Figure 1), images provide a graphic representation of words or patterns inserted into titles or otherwise recurrent in the body text (e.g. blood stains matching with the lemma “BLOOD” and its inflections; curved objects matching with the lemma “CURVE” and its inflections; cracked, dry soil matching with “DRY” and “DRYNESS”), replicating the aboutness of texts.



Figure 1
Graphic representations of word/patterns.

In the second case (Figure 2), images supply new relevant information to texts (e.g. a TV monitor combined with the Q&A entitled *Have I been sensitized to sex?*).



Figure 2

Example of an image supplying new information to texts.

In the third and last case (Figure 3), images focus on a particular word, depicting a specific element of the discourse (e.g. a couple of dolls under the blankets combined with the Q&A entitled *Is fantasizing the same as cheating?*).



Figure 3

Example of an image depicting a specific element of the discourse.

Besides *what* is described by means of images, it is necessary to consider *how* these subjects and actions are portrayed for social and educational purposes, and therefore the occurrence of denotative and connotative elements as well as biological and cultural details. In this respect, Kress and van Leeuwen (2006) and Machin and Mayr (2012) claim that visual communication and design can be analysed by using several flexible categories and indices, in agreement with the versatility characterising qualitative techniques.

Based on the present dataset, approximately one fifth of image posts (21.69%) dates to 2012; more than a half of images (50.6%) refer to the *Bodies* topic, and they are mainly colour illustrations (87.35%) sharing a horizontal orientation and rectangular shape. The most recurrent kind of image is represented by photographs of people, individuals or couples in domestic or decontextualised settings (e.g. against a plain white background). It is interesting to note the lack of any demanding gaze in all these pictures; in fact, the actors portrayed do not look directly at or demand anything from the viewer. Indeed, the photographed participants are 'offered' to the viewer, who is the real, active subject of the gaze (Kress, van Leeuwen 2006). A relatively high occurrence of verbal processes (25.9%) inferred from tags and symbols, in addition to gestures and facial cues, reveals a strong preference of symbolic and metaphorical images of which the connotative elements are readily identifiable by the general public (e.g. street signs, banners, labels, flags, screaming expressions). Salient or foreground elements and connections among visual features contribute to highlighting the variability of the thematic issues addressed in each A-post. These features and themes conveyed by Dr Debby Herbenick as a visual whole are not predefined, since they match a unique question and acquire a specific meaning depending on their context of use. This implies that the same recurrent image has the potential and the power to evoke different thoughts or feelings according to its visual and linguistic frame.

Considering the broad range of discursive strategies observable in all the images and texts collected, the present study focuses on two peculiar communication styles adopted by Dr Herbenick to popularise specialist knowledge of human sexuality, i.e. directness and humour.

The first Q&A post, dated 2012 and entitled *I Might Have HPV, But Can't Get Tested*, addresses the availability of HPV (human papillomavirus) vaccines and the lack of approved HPV screening facilities for men. This Q&A belongs to the *Health & Disease* topic category and refers to the tag of the same name, as displayed in the upper section of the webpage. The scientific nature of the subject is stressed by the expert choice of posting a biological image (Figure 4) just beneath the bold heading.

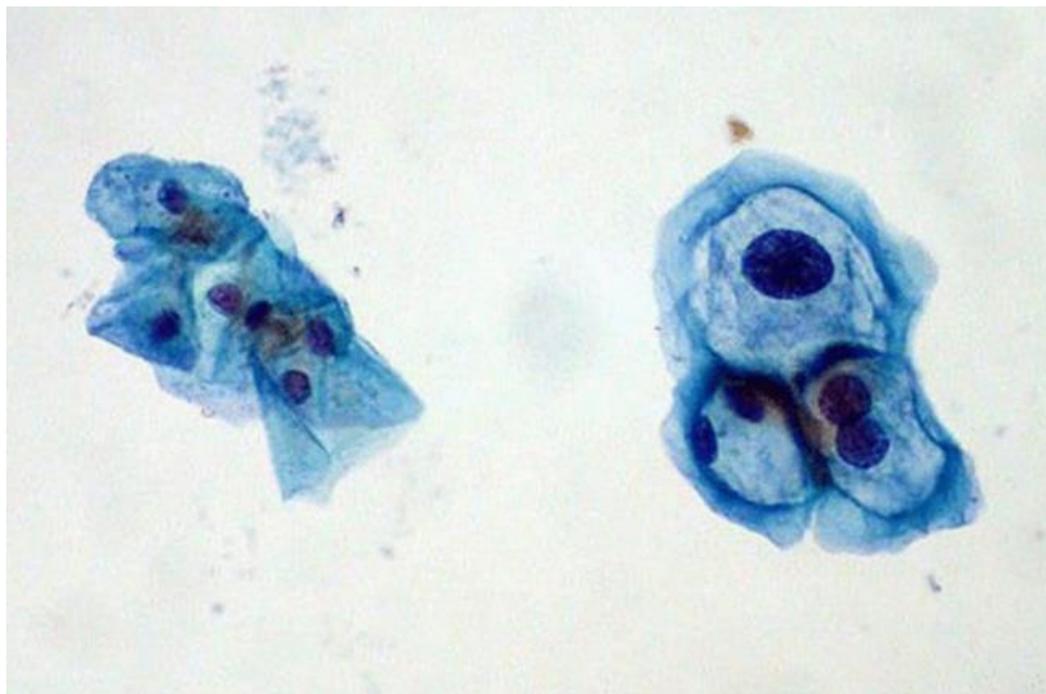


Figure 4
HPV abnormal cytology.

The image portrays a TrinPrep cytology in which structural details of pathology specimens are clearly visible. However, splitting the picture vertically into two halves, it becomes evident that indexical signs of HPV positivity are more prominent and sharper on the right, and hence it is possible to locate the image theme (i.e. *HPV*) on the left side, and the image focus (i.e. *positivity*) on the right. The whole photograph is polarised and captured from a frontal, eye-level angle, instilling feelings of involvement and equality in the viewer. The absence of filters and frames qualifies the image as objective, even though the close-up shot of specimens most likely required the support of a microscope. The application of an optical zoom to make human viral conditions visible may also communicate closeness with the viewer. Brightness emphasises the light grey gradient of the background, and simultaneously softens the highly-saturated blue tones of the cells in the foreground, so that the overall impression of the image is more natural and cleaner.

All these visual features meet discursive patterns emerging from A-post texts. Indeed, the first paragraph reads:

As more magazines and newspapers talk about HPV, which stands for the human papillomavirus, and the HPV vaccines, we get more and more questions about this very common sexually transmissible infection, or STI.

The provision of popular sources (i.e. *magazines and newspapers*), along with quantifiers (i.e. *more, very*) and the adjective *common*, is intended to

qualify HPV as a frequent STI, suggesting its high prevalence among all STIs, and the increasing concern about HPV vaccines as a result of increased awareness of HPV. Additionally, medical acronyms are pieced apart to offer clarification to lay readers. By framing and contextualising information, Dr Herbenick introduces HPV as a topic of concern in a prompt and friendly way. Emphasis on the spread of HPV is remarked on by the following slogan, written in bold, stating *Most People Will Get It*. This slogan introduces the second paragraph, defining HPV as *extremely common* and encompassing *100+ strains*. The following lines are also mentioned into the image caption:

Also, the HPV vaccine is now available to men in many places; you may want to ask your healthcare provider about it. Just because your girlfriend had at least one of the strains doesn't mean she had all four strains of HPV that Gardasil protects against.

The repetition of the whole paragraph in two distinct web sections contributes to highlighting the widespread availability to men of HPV vaccines, including *Gardasil*, for the administration of which Dr Herbenick recommends an in-person medical consultation. She also reassures the Q-post writer about his girlfriend, addressing him directly. The issue is discussed in more detail through examples of means and methods of HPV transmission, including *oral, vaginal and/or anal sex*. The second slogan claims that *Men Can't Be Tested*, anticipating the third paragraph. A particular form of repetition, namely dilogy, is used to stress the lack of routine HPV testing for men. Dr Herbenick also provides the higher odds of women getting a diagnosis, since *they're the ones being tested*. Men, by contrast, are basically unable to know if they are infected, but *It Might Not Cause Any Problems*, as reported in bold letters. The following paragraphs remark that young adults are particularly at risk, although complications constitute a quite exceptional occurrence. Relationship-focused advice to talk to a trusted doctor as well as to sexual partners about the common possibility of contracting HPV are accompanied by a very brief suggestion to use condoms as a potential means to counter the risk of contracting HPV. The gradual shift from "the issue" to the lay-professional relationship becomes evident in the final encouraging wordings, signed by *Debby Herbenick, PhD, MPH*:

I typically tell people that HPV is one of those infections that most sexually active adults will come into contact with. It doesn't make you strange, unusual or 'diseased' in any way. (...) You can continue to feel confident about having great and pleasurable sex.

Besides using directness and transparency to spread expertise about STIs and body issues, the provider usually adopts rhetorical tropes such as metaphor

and humour to promote sexual diversity, as in the case of the Q&A related to *Common Problems* and entitled *Is A 25-year-old Virgin Dude Something Weird?* (2017). The post combines four visual elements depicting virginity, i.e. title, image, caption, body text. In the image caption, the concept is alluded to, whereas in the remainder of the web page the keyword “VIRGIN” is explicitly mentioned. More in detail, the image (Figure 5) represents a human participant (young man or *dude*) wearing a hoodie, a pair of sunglasses and a printed T-shirt that says *I’M A VIRGIN (This is a very old T-Shirt)*.



Figure 5
Young man wearing a printed T-shirt.

The first slogan on the T-shirt (*I’M A VIRGIN*) is completed by the caption (*...but not at all shy.*). In this instance, irony is expressed not only by the verbal cues contained in both the image and caption, but also by visual cues attributable to the subject photographed (shades, casual wear, relaxed stance). The alleged look into the camera, hidden by the dark glasses worn by the actor, may suggest an invitation addressed to the viewer, and thus a demand, identifiable in the mouth grimace as well. Ongoing emotional processes can be detected by the medium-high intensity of the overall facial expression, and they seem to convey dismissal towards the label on the T-shirt, as if to say: “I’m a virgin, (this is a very old t-shirt) and I don’t really care about it.”

The presence of a single participant in the picture evokes the theme of individualisation. The whole image is centred, consisting of a medium shot from a frontal, eye-level perspective. These features are typically associated with social distance, involvement and equality, all creating a sense of interaction with the viewer and also expressing comradeship. The image is framed on either side, with foreground elements emphasised by the high colour saturation (red scale), revealing high-quality drama. Taking a closer look at the typefaces on the T-shirt, the proportional, condensed font used for the first slogan clashes with the smaller letters in brackets, playing on the double meaning of virginity in Western societies, i.e. a moral value or something to feel ashamed of.

All these discursive aspects are reflected by texts, in which the occurrence of slogans such as *It's Up to You* and *Now Let's Get Personal* underline the need to legitimise a variety of attitudes and sexual behaviours, as shown below:

And just as it does not make a person weird to have had intercourse, it also does not make a person weird to have not had intercourse at a certain age. (...) Some people wait to have intercourse or other kinds of sex until they find someone they are very attracted to, whereas others will have intercourse or other kinds of sex with a person even if they aren't very attracted to them. Similarly, some people wait to engage in partnered sexual activities until they are in love (...) or until they are married or otherwise in a committed relationship. Other times, people want to have sex but find it difficult to meet people or else they feel shy or just aren't sure how to go about flirting with people or advancing a sexual situation.

Also in this case, Dr Herbenick uses quantifiers and practical examples to question sexual “weirdness”, with a view to restoring feelings of acceptance in the readers. The categorisation of the topic as a “common problem” underlines the consistent frequency with which doubts and concerns about virginity are likely to affect advice-seekers. The following paragraphs address asexuality as a possible natural variant of human sexuality, encompassing definitions and explanations about sexual diversity that are scientifically substantiated by data and statistics from the National Survey of Sexual Health. Active suggestions to consult a specialist (sex counselor or therapist) in cases of need are accompanied by dedicated web links and requests for additional information. The last lines, signed by *Debby Herbenick, PhD, MPH*, expressly invite the Q-post writer to experience sexuality and intimacy through personal, free choices comprising many different ways and forms of behaviour.

6. Discussion

The combination of lexical, discursive and visual strategies adopted by the US-based website Kinsey Confidential™ represents a new form of scientific knowledge dissemination that mirrors the increasing impact of images and more generally of visual artefacts in Western cultures. Content availability to the general public provides the dual benefit of knowledge sharing and knowledge management, in full compliance with users' needs. Furthermore, multimedia communication channels allow professionals to co-deploy verbal and visual codes encompassing various linguistic and semantic features to overcome language barriers and also spread expertise among laypeople. In the present case, given the relevance and sensitivity of sexual issues, the choice of materials to be published is an even more demanding task for specialists.

User expertise in sexual and reproductive health could be inferred from both lexical accuracy and subject pertinence. Indeed, the adoption of the medico-technical register (e.g. epididymitis, premature ejaculation, hymen, Pap smear, contraceptive implant, contracting STIs) in posing questions reveals a degree of public awareness and digital health literacy, in line with the likely college age of advice-seekers. However, despite the specificity of their stories, questions and requests, in most cases, Q-post writers bring into focus misbeliefs, bias and concerns originating from misattribution (e.g. *He's 28 and that's too young to have erectile difficulties*), misinformation (e.g. *I've read about different pills, pumps, herbs, exercises, and surgeries that claim to increase penis size.*), and a lack of reliable information sources (e.g. *I like having sex with women but I want to know if having sex with a guy would be something I'd like, too. Is there a test to tell whether I am bisexual or not?*).

The occurrence of idiosyncratic collocations such as, for example, “STANDARD” + “SEX” comes with the discrepancy between social and environmental expectations and users' sexual and reproductive needs that require recognition and acceptance. It follows that several assertions and comments from Q-posts convey the negative convictions and attitudes of young adults towards “the problems” of sexuality and sexual health, embraced by repressive ideologies still present in our societies and also disseminated by new media.

In line with an efficient use of Q&A services, the shortness and concreteness of questions often seem to reflect users' impatience to “get to the point”, as in the case of emergency contraception and/or prevention of STIs, where contexts and circumstances of limited access to traditional healthcare services could expose users to unwanted risks.

On the other hand, A-posts appear longer and segmented into multiple discourse units (i.e. paragraphs) by blanks and slogans, which each comprises

research-based information and/or tailored advice. Expert answers are systematically complemented by visual elements such as images, frames and font styles, drawing attention to the various web sections. In the overall column, words and images are experienced by the public as wholes of observable qualities that not only facilitate reading but also settle the specialised discourse on human sexuality as a social practice. These images accompanying the texts are deliberately sorted by experts to avoid possible semantic gaps and provide additional or even different keys for understanding the sociocultural background of contemporary sexual knowledge and behaviour. While some of them are intended to clarify the aboutness of texts (e.g. blood stains for “BLOOD”, curved objects for “CURVE” and dry soil for “DRY”/“DRYNESS”) others provide new information (e.g. TV monitor combined with *Have I been sensitized to sex?*) as well as new meanings and focusses, (e.g. a couple of dolls combined with *Is fantasizing the same as cheating?*), making it possible to frame and reframe discourses through visual design. At the same time, texts are often used to comment on images, as in the case of captions. The mutual enrichment resulting from the multimodal promotion of sexual health is also confirmed by the occurrence of various rhetorical devices (e.g. humour, metaphor, repetition and amplification) throughout the visual material, the peculiarity of which is the transferral of established knowledge in the field of sexuality into easily visible, clearly legible and publicly available texts and images.

With specific regard to the strategies investigated by the present study, directness and humour used by Dr Herbenick in reply to lay requests take account of the respective features and different nature of Q-posts. In examining the risks of contracting HPV, the columnist features data from periodical literature to emphasise the high prevalence of this specific STI among the sexually active population, as well as the availability of vaccines and medical screening. Linguistic adjustments adopted by the expert include exemplifications and active suggestions, whereas the objective depiction of micro-details of HPV positivity provides a further form of safe-sex promotion for social change. Besides directness as a lexical and visual choice to popularise the discourse about STIs, humorous expressions found in texts and images are treated by Dr Herbenick as a rhetorical device to positively connote virginity and sexual diversity, in an attempt to counteract the monolithic mainstream view of intimate relationships. In both cases, the expert answer entails informative and normative aspects of sexual education by means of digital media to empower the most vulnerable part of the population searching for quality sexual health services.

7. Conclusion

This multimodal analysis of Kinsey Confidential™ was supported by quantitative methods and explanatory models leading to relevant choices and exchanges involved in lay-professional communication in sexual and reproductive health Q&As. Precisely, with reference to the two research questions pointed out in section 4 to this chapter, this study has sought to show how the multimodal specialised discourse on sexual and reproductive health was adapted to a new form of knowledge dissemination and social change.

Firstly, the linguistic-semiotic interplay provided by Kinsey Confidential™ appears to be perceived by web users as a whole made up of blanks, slogans, captions, paragraphs, images, frames, and font styles, in addition to Q&A posts. These multimodal forms of specialised discourse are supplied by the experts in order to simplify and advance knowledge sharing. These strategies and modes aided by new media exploit different functions of discourse, all connecting real (denotative) and assumptive (connotative) dimensions of human sexuality in the interests of the youth population.

Secondly, through multimedia Q&As, specialised services might promptly respond to genuine social needs, affording a participatory space for scientific and cultural popularisation in direct contrast with misinformation online and preconceptions fostering negative attitudes and unsafe behaviour. Indeed, the development and dissemination of informative and educational material require a previous demand analysis and professional shift from predetermined, technical and/or paternalistic communicative styles to personalised linguistic and multi-semiotic adaptations to lay requirements.

All in all, quantitative and qualitative evidence from the combined analysis of linguistic and semiotic resources highlight lay and professional power in (counter)acting popular values and beliefs and (re)shaping the frontiers of specialised knowledge and care delivery for social change, stemming from media attention to multifaced, naturally occurring approaches to safe and consensual practices among adolescents and young adults, and the legitimization of stigmatised minorities, e.g. STI-positive population, and sex and gender diverse community.

Bionote: Rosita Maglie is a Researcher in English Language and Translation at the University of Bari. Her research focuses on CADS, LSP, CMC, and Multimodality. Her publications include the book *The New Discourse of Healthcare. A Corpus and Discourse Analysis Approach to a Q&A Website* (2015, Aracne); the chapters ‘Can you read this leaflet?’: User-friendliness of Patient Information Leaflets in the UK and in Italy (2015, Peter Lang) and *Engaging with Online Communication-Based Medicine, Reframing Healthcare Delivery to Adolescents* (2017, LedizioniLediPublishing); and the articles,

Multimodal product promotion in the pharmaceutical industry across languages and cultures (2018, ESP across Culture), and Vague language in the MMR vaccine controversy. A corpus-assisted Discourse Analysis of its Functional Use (with A.F. Plastina, 2019, *Lingue e Linguaggi*).

Chiara Abbatantuono is a PhD student in Neuroscience at the University of Bari, Italy. She earned a master's degree in Psychology and two bachelor's degrees (in Psychology and Philosophy, respectively), and attended MOOCs and workshops in Linguistics and Multimodality. Supervised by Professor Maglie, she took part in an academic study aimed at investigating multimedia health campaigns from an integrated perspective, presenting original findings at the University of Bari (SIPP Conference, 2018; Socially-oriented English Studies, 2018), at the University of Poznań (YLMP 2018), at the University of Salento (Specialised Discourse and Multimedia, 2019), and at the University of Rome (A-Mode, 2019).

Authors' addresses: rosita.maglie@uniba.it; c.abbatantuono@studenti.uniba.it

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