

**Using internet predicts attitudes towards sexual behaviour in Italian psychology
students**

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Abstract

The aim of the present study was to investigate whether the use of different sources of information about sexuality predicts attitudes towards own and towards others' sexual behaviours, as measured through the Trueblood Sexual Attitude Questionnaire (TSAQ) Self and Other scales, in 193 Italian psychology students. The self-reported sources of information considered in the study were books, newspapers, magazines, television, internet, friends, family, and sex education courses, and age, gender, sexual orientation, and religious beliefs were tested as possible confounders. Results from hierarchical regression analyses showed that students' self-reported use of the internet predict liberal attitudes towards their own sexual behaviour, including autoeroticism, commercial sex, heterosexuality, homosexuality, and variation in sex, after controlling for age, gender, sexual orientation, and religious beliefs. On the other hand, we did not find any significant relations between self-reported information sources about sexuality and students' attitudes towards others' sexual behaviour. These results highlight the need for higher education institutions, educators and practitioners in the field of human sexuality to review sexual education programmes targeting university students, taking into account the role of the internet.

Keywords: Sexuality; Attitudes; Behaviour; Internet; University students

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The representation of sexual images, content, and role models is pervasive in television, newspapers, magazines, and the internet (Bleakley et al., 2009), and previous research showed that the media can shape students' beliefs and attitudes towards sexual behaviour (Boies et al., 2004, Lofgren-Mårtenson and Månsson, 2010, Peter and Valkenburg, 2008, Shaughnessy et al., 2011), as well as integrate or surrogate traditional information sources as family, friends, and sex education courses (Pettijohn and Dunlap, 2010). In this vein, a recent study by Benni et al. (2016) showed that the most utilised sources of information on sexual behaviour in Italian students are friends, internet, family, and television.

Amongst those media, the relatively recent, global affirmation of the internet has determined an increase in attention to the possible implications of accessing and using online information on sexual behaviour in the youth (Lofgren-Mårtenson and Månsson, 2010, Shaughnessy et al., 2011). Particularly, several studies highlighted their impact in terms of prevention of sexually transmitted infections (McFarlane et al., 2002), sexual compulsivity (Delmonico and Miller, 2003) and violent sexual conduct (Mitchell, Finkelhor, & Wolak, 2007). Moreover, research showed that attitudes towards sexual behaviour have an important role in determining sexual well-being, as well as tolerance towards others' sexual behaviour (Atli Özbaş et al., 2016; Duyan and Duyan, 2005, Fino et al., 2017, Montesi et al., 2013, Rausch et al., 2017).

Sexual attitudes vary according to personal factors as well as to the socio-cultural environments in which individuals live (Duyan and Duyan, 2005), whereas age, gender, sexual orientation, and religious beliefs represent known confounders, discriminating at different levels those with more liberal attitudes towards their own and towards others' sexual

behaviour from those with more conservative attitudes (Baiocco et al., 2013, Besen and Zicklin, 2007, Duyan and Duyan, 2005, Wills and Crawford, 2000). A study by Ross et al. (2012) on sexuality and the use of the internet in Sweden showed that amongst respondents who reported using the internet to retrieve information on sexuality, younger participants displayed higher use of the medium compared to older participants, as well as bisexual men compared to heterosexual men, and males compared to females, respectively. Daneback and Löfberg (2011) suggested that using internet facilitates the expression as well as the engagement of individuals in new experiences, to a degree that would normally be not tolerated. Daneback et al. (2012) observed in a recent study that the use the internet to look for information about sexual issues does not decrease even when age-appropriate and accurate sex education are available.

Trueblood et al. (1998) investigated college students' attitudes towards sexual behaviour by dividing them into attitudes towards one's own sexual behaviour and attitudes towards others' sexual behaviour. They analysed the content of sexuality course textbooks used in American colleges and came to identify five sub-dimensions representing attitudes towards a set of specific behaviours, namely: autoeroticism, heterosexuality, homosexuality, variation in sex, and commercial sex. The analysis led the authors to design, develop, and test the psychometric properties of a self-report scale named Trueblood Sexual Attitude Questionnaire (TSAQ), aimed to measure students' attitudes towards a range of sexual practices and behaviours. The questionnaire was later translated and validated in different cultural contexts, showing good psychometric properties (see Duyan and Duyan, 2005, Fino et al., 2017, Rodríguez et al., 2012).

In particular, the dimension labelled as Commercial Sex represents students' degree of acceptance of their own and others' use of pornography. The items loading onto this dimension measure students' degree of acceptance of engaging in sexual behaviour after

watching pornography (item 14), of using pornography with their partners both as a learning material (item 4) and as a tool to enhance sexual relationships (item 23), and their perceived freedom in enjoying sexual material (item 9) (see Pettijohn and Dunlap, 2010).

There is no ultimate consensus on the impact of pornography on individuals' sexual and mental health.

On the one hand, several studies in the last decade have showed the detrimental impact of the consumption of pornography on the sexual health of young adults (Bulot et al., 2015, Gouvernet et al., 2017, Muusses et al., 2015, Sánchez-Fuentes et al., 2014). On the other hand, other studies showed that exposure to a wider range of information on psychological, social, behavioural, and cognitive aspects of human sexuality, including – but not limiting to – erotica and pornography, predicts greater tolerance toward sexual practices, more liberal sexual attitudes, and enhanced sexual self-image (Pettijohn and Dunlap, 2010). In this vein, a recent study by Gouvernet et al. (2017, p. e27) conducted on a sample of French young adults identified dimensions of internal working models of attachment as key in the development and maintenance of representations of individuals' own and others' sexuality, in line with literature on the Attachment Theory (Bowlby, 1969, Mikulincer and Shaver, 2010, Niazof et al., 2019, Rosenberg and Kraus, 2014). According to the authors, different representations of the self explain variations in the degree of tolerance and practice of individuals' own sexuality, including using pornography.

Low acceptance of one's own sexual behaviour represents a major determinant of psychological distress amongst young adults and student populations (Gegenfurtner and Gebhardt, 2017). In particular, the co-occurrence of urban residence, education, and tolerance towards sexual behaviour seems to predict greater tolerance towards and acceptance of a variety of sexual behaviours. For example, Nguyen and Blum (2014) found that college education and using internet predict tolerance towards homosexuality in a sample of

Vietnamese youth, suggesting that internet provides young individuals with a comprehensive set of information and views over human sexuality that ultimately contribute to shape their attitudes. These findings are in line with a previous study on internet and sexuality in the youth showing that young individuals tend to use the internet to research information on sexuality that are usually not accessible in the context of family or school and to manifest their sexual identities and unexpressed desires online (Ngo et al., 2008).

However, to the best of our knowledge, there is no sufficient evidence on whether using specific information sources is associated to more liberal attitudes of university students towards their own and towards others' sexual behaviour. University students represent a population that is known to be at higher risk for a number of dysfunctional sex-related behaviours, including sexually transmitted infections, sexual assault, and undesired pregnancies (Haberland and Rogow, 2015). A better understanding of the pattern of relations between using specific information sources about sexuality and attitudes towards sexual behaviour will allow researchers and practitioners in the field of education and human sexuality to design, implement, and evaluate source-specific, evidence-based research and educational interventions, supporting the development and maintenance of functional and tolerant attitudes towards sexual behaviour in university students.

The aim of the present study was to investigate whether the use of major sources of information such as books, newspapers, magazines, television, internet, friends, family, and sex education courses predicts more liberal attitudes towards own and towards others' sexual behaviours in a sample of Italian psychology students, after controlling for age, gender, sexual orientation, and religious beliefs as possible confounders.

Methods

Participants and procedure

We contacted 253 undergraduate psychology students in their second year of study at the Faculty of Medicine and Psychology of Sapienza University of Rome, Italy, and we invited them to participate in the study. Students were told that the purpose of the study was to explore their attitudes towards sexual behaviour, and that their responses would be treated as anonymous, aggregated data. Participation was on a voluntary basis, neither inducement nor penalty was offered to participate. Students were further explained that the study procedure consisted of completing a questionnaire in classroom settings, at the end of regular class meetings. Finally, 193 students accepted to participate and completed the questionnaire (76.28% response rate).

Measures

Participants were invited to report their age (years), gender, orientation, and religious beliefs. Moreover, they were asked to report if they had recently used each of the following sources of information with the purpose to retrieve information on sexual behaviour: books, newspapers, magazines, television, internet, family, friends, and sex education courses.

The Italian version of the TSAQ (TSAQ-I; Trueblood et al., 1998) was utilised to measure students' attitudes towards a specific set of sexual behaviours. The questionnaire was originally developed in a US university population with the purpose of measuring students' attitudes regarding some common sexual behaviours, namely autoeroticism, commercial sex, heterosexuality, homosexuality, and variation in sex. A later study investigated its psychometric properties and factor structure in a sample of college students from northern California in the United States, showing high internal consistency (Hannon et al., 2011). The questionnaire includes two scales, each defined by 40 items: (1) attitudes towards sexual behaviours that are considered acceptable to oneself (Self); (2) attitudes towards sexual behaviours that are considered acceptable of others (Other).

Items are rated on a 9-point Likert scale (1 = “I completely disagree” and 9 = “I completely agree”). Higher, overall scores indicate more liberal attitudes. Total scale scores are obtained by adding up scores of items loading onto the Self and Other scales, respectively. The TSAQ was translated from English into Italian (TSAQ-I) by one of the authors, and the adequacy of the translation to the English version was assessed independently through a back-translation by a native speaker professional translator. Furthermore, we asked two Italian–English bilingual colleagues to provide critical suggestions about the translation, checking for consistency of grammar and understanding, resolving any differences between the two versions.

Statistical analyses

The χ^2 test with Yates' continuity correction was used for categorical binary variables, while two-tailed t-tests and Pearson's product-moment correlation coefficient were used for continuous variables where appropriate. Cronbach's alpha was used to investigate the internal consistency of the scales. Two hierarchical multiple linear regression models were performed to investigate the relations between the use of information resources and attitudes towards own and towards others' sexual behaviour, after controlling for age, gender, orientation, and religious beliefs.

All analyses were carried out using IBM SPSS Statistics 24.0.

Results

Participants were aged from 19 to 33 years old ($M = 23.32$, $SD = 2.96$). They identified themselves as female (67.88%) and male (32.12%), heterosexual (89.12%) and LGBT (10.88%). Regarding religious beliefs, they identified themselves as Christian Catholic (55.96%) and non-religious (43.52%). Table 1 displays the detailed socio-demographic characteristics of participants and the self-reported information sources used recently by the students to retrieve information about sexuality.

Both TSAQ-I Self and TSAQ-I Other total scores showed values of skewness and kurtosis comprised between -1 and $+1$, suggesting that the data are normally distributed. Satisfactory values of Cronbach's alpha were found for TSAQ-I Self (0.883), TSAQ-I Other (0.879), and TSAQ-I total scores (0.920), indicating that the scales are internally consistent. The two scales moderately correlate ($r = 0.560$, $P < 0.001$).

Two hierarchical regression analyses were conducted to test if books, newspapers, magazines, television, internet, family, friends, and sex education courses predict attitudes towards own and towards others' sexual behaviour, respectively, after controlling for age, gender, orientation, and religious beliefs. The first step in both analysis included age, gender, orientation, and religious beliefs as predictors. Sources of information were added separately in the second step of the analysis. In the first step, age, gender, orientation, and religious beliefs significantly predicted TSAQ-I Self ($F = 19.01$, $P < 0.001$; $R^2 = 0.35$) and TSAQ-I Other ($F = 17.12$, $P < 0.001$; $R^2 = 0.18$) ($P < 0.001$) respectively. In the second step of the analysis, using internet significantly predicted TSAQ-I Self (F change = 18.62 , $P < 0.01$) ($\beta = 0.17$, $t = 2.98$, $P < 0.005$). No other sources of information showed significant effects in the model including TSAQ-I Self. No sources of information showed significant effects in the model including TSAQ-I Other.

Discussion

The aim of the present study was to investigate whether the use of different sources of information about sexuality predicts attitudes towards own and towards others' sexual behaviours as measured through the TSAQ-I Self and Other scales, in a sample of Italian psychology students. The sources of information considered were books, newspapers, magazines, television, internet, friends, family, and sex education courses, after controlling for age, gender, sexual orientation, and religious beliefs as possible confounders. Results from the hierarchical regression analyses showed that using internet significantly predicts

TSAQ-I Self after controlling for age, gender, sexual orientation, and religious beliefs. The other sources of information considered did not show significant effects in the model regarding TSAQ-I Self. No sources of information showed significant results with regards to TSAQ-I Other.

These results are in line with recent literature highlighting the central role of the internet as a source of information on sexual behaviour in university students (Buhi et al., 2009, Buhi et al., 2010, Boies et al., 2004, Daneback et al., 2012, Lofgren-Mårtenson and Månsson, 2010, Peter and Valkenburg, 2008, Shaughnessy et al., 2011). Consistent with the available evidence that the majority of information on sexuality collected through the internet by young people regard explicit messages including and facilitating sexual practices like autoerotism and masturbation (Bulot et al., 2015), results from the present study show that students have more liberal attitudes towards their own sexual behaviour in association with a higher use of the internet. Specifically, the attitudes measured through the TSAQ-I refer to a greater degree of acceptance towards engaging in sex more often if one watched pornography, using pornography with partners both as a learning material and as a tool to enhance sexual relationships, perceived freedom in enjoying sexual material, and acceptance of offline and online commercial sexual behaviour.

It is interesting to notice that Gouvernet et al. (2017, p. e27) had found in a sample of French young adults that the main medium used to retrieve pornographic material is websites, independently from socio-demographic variables, and that individual differences in internal working models of adult attachments can determine differences in the use of the internet and pornography. In particular, on the one hand, in the latter study secure individuals resulted less concerned about their sexual behaviours, being more explorative and open to a multitude of sexual drives and practices. On the other hand, for avoidant and anxious individuals, pornography seemed to act as a threat, generating fear and anxiety of not meeting others'

expectations. These dimensions defining adult attachment may play a crucial role in the development and maintenance of attitudes and representations towards themselves and towards the others, in line with recent literature on adult attachment (see Mikulincer and Shaver, 2010). Consistently, consumption of pornography and its impact on the attitudes of young adults may vary according to the representations they hold of themselves and of the others, making pornography “not be pathogenic per se”, rather a potential vector of either affect health or suffering, depending on individual differences (Gouvernet et al., 2017, p. e27). Overall, although the results from the present study do not allow to make inference on the role of self and other representations in the use of online sexual material – and pornography, in particular –, they show a significant relation between students' use of the internet and liberal attitudes towards their own sexuality, suggesting that future research may benefit from exploring the role of individual differences in attachment in shaping the acceptance of own and of others' sexual behaviour.

The results from the present study also show that using the internet is likely to predict students' greater acceptance of their own sexuality with regards to, specifically, autoeroticism, different heterosexual practices, homosexuality, sexual variations, and commercial sex. In our results, no other sources of information about sexuality significantly predicted students' attitudes towards their own behaviour. Moreover, these results show that using internet to retrieve information on sexuality significantly predicts students' liberal attitudes after controlling for some known confounders, namely age, gender, sexual orientation, and religious beliefs. Interestingly, the same was not observed with respect to any other sources of information considered, highlighting the major role that the internet has in shaping students' attitudes after controlling for such important factors, and in functioning as a fundamental medium for students to access and share information on sexual behaviour. It is interesting to notice that Daneback and Löfberg (2011) had previously highlighted the major

the role of the internet in addressing students' sexual attitudes towards sexuality. The authors commented that the internet may represent a suitable way for students to express ideas, share experiences and questions about their own sexuality and behaviours that are not culturally tolerated or considered as acceptable. Therefore, students may identify the internet as a source of types of information that are unavailable locally or offline, as well as feel free to discuss their own sexuality in anonymity. The internet may therefore facilitate the removal of barriers, integrating the role of peers and enhancing the development of liberal attitudes towards one's own sexual behaviour. Similarly, Bleakley et al. (2009) highlighted the association between the internet and "beliefs that engaging in sex would lead to positive outcomes pertaining to self" (p. 5).

The results from the current study confirmed that the TSAQ-I Self and TSAQ-I Other are internally consistent scales. In fact, in the present study, both the TSAQ-I Self and TSAQ-I Other presented satisfactory values of Cronbach's alpha, indicating internal consistency, and the two scales were correlated. This confirms previous reports on the use of these scales in other cultural contexts (Duyan and Duyan, 2005, Fino et al., 2017, Pettijohn and Dunlap, 2010), supporting the suitability of the Italian version of the questionnaire in assessing university students' attitudes towards sexual behaviour. Interestingly, Pettijohn and Dunlap (2010) utilised the TSAQ in a study investigating US undergraduates' attitudes on sexuality, and the authors observed students' greater tolerance towards sexual practices, discussing results in the light of the technological progress and cultural shift imputable to the diffusion of the internet.

Another important outcome from the present study is that internet significantly predicts acceptance of students' own sexual behaviour but not their acceptance of others' sexual behaviour. In this regard, previous research had already showed that acceptance of sexual practices is associated with different levels of self-perception (Luster et al., 2013,

Poulsen et al., 2012). However, it is our opinion that the validity of the TSAQ-I to measure acceptance of own vs. others' sexual behaviour will deserve further investigation and analysis, in particular with regards to the construct and convergent validity of the TSAQ-I in university students.

We believe that the results from the present study will have significant implications for policy makers, sex educators, academic tutors and staff, health professionals, and the media industry. Particularly, they shall invite all interested actors to reflect on and review currently available communication models targeting university students, especially with regards to the development of awareness and responsibility in the use of the internet. Moreover, the successful implementation of effective education models will support students in the process of retrieving, selecting, and interpreting information gathered from the internet, especially for those who are at higher risk to develop conservative or poorly tolerant attitudes towards their own sexuality. These results shall also call educators and media content managers to raise awareness and responsibility in producing and sharing content through the internet, favouring content aimed at increasing tolerance towards and acceptance of own sexual behaviour in student populations.

Finally, we believe these results assume a distinct meaning in the light of the cultural context in which they were observed. In fact, in the Italian context, the concomitance of a rooted religious culture and a 'tolerant' Mediterranean culture (Tripodi et al., 2015, p. 85e) has strengthened the popularity of a "don't ask, don't tell" attitude, as reported in the literature (Ioverno et al., 2018, Lingiardi et al., 2005). This is characterised by conservatism and ideological closure to many sexual behaviours, as evidenced in recent research (Tripodi et al., 2015), and therefore we hope our results will support local educators and institutions in empowering available sexual education programmes, adapting to the specific characteristics of the cultural environment and the local university student population.

This study has limitations. First, the sample size is small. Second, the sample is not representative of the local student population, particularly with regards to sexual orientation and religious beliefs, suggesting the importance to test the observed relations in representative samples. Third, although the TSAQ-I Self and the TSAQ-I Other showed good internal consistency, little is known about the convergent and predictive validity of the questionnaire, particularly in the local context. Fourth, the study required participants to release sensitive information, and this might have limited the authenticity of their responses in favour of culturally acceptable and socially desirable answers.

It is our opinion that future research will benefit from investigating more in-depth the relations between sources of information and development of university students' attitudes towards their own and towards others' sexual behaviour, aiming at employing more complex study designs and testing for possible mediators.

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Ethical approval

This article does not contain any studies with animals performed by any of the authors. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent

Informed consent was obtained from all individual participants included in the study.

Disclosure of interest

The authors declare that they have no competing interest.

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Table 1. Socio-demographic characteristics of participants (n = 193).

	Gender		Statistics	Sig.
	Males	Females		
Age	23.54 ± 2.87 ^a	22.84 ± 3.11 ^a	$t = -0.54_{(191)}$	0.12
Orientation (%)				
LGBT	22.60	5.30	$\chi^2 = 11.18_{(1)}$	0.00
Heterosexual	77.40	94.70		
Religious beliefs (%)				
Non-religious	53.20	39.20	$\chi^2 = 2.80_{(1)}$	0.09
Christian Catholic	46.80	6.80		
Books (%)				
No	5.00	48.90	$\chi^2 = 0.02_{(1)}$	0.88
Yes	5.00	51.10		
Newspapers (%)				
No	83.90	88.50	$\chi^2 = 0.46_{(1)}$	0.50
Yes	16.10	11.50		
Magazines (%)				
No	74.20	71.00	$\chi^2 = 0.09_{(1)}$	0.77
Yes	25.80	29.00		
Television (%)				
No	72.60	7.20	$\chi^2 = 0.11_{(1)}$	0.74
Yes	27.40	29.80		
Internet (%)				
No	33.90	39.70	$\chi^2 = 0.39_{(1)}$	0.54
Yes	66.10	6.30		
Family (%)				
No	82.30	72.50	$\chi^2 = 1.67_{(1)}$	0.20
Yes	17.70	27.50		
Friends (%)				
No	22.60	22.10	$\chi^2 = 0.01_{(1)}$	0.95
Yes	77.40	77.90		
Sex education courses (%)				
No	83.90	76.30	$\chi^2 = 1.01_{(1)}$	0.31
Yes	16.10	23.70		

^a Values as mean ± SD.