‘Exploring the Influence of Social Media Influencers on Intention to Attend Cervical Screening in the UK: Utilising the Theory of Planned Behaviour’

Naomi Fielden, BSc and Patricia Holch, PhD, BSc

Abstract

Objectives: Cervical cancer is 99.8% preventable when detected early; however, uptake of screening in the United Kingdom is at a 20-year low. Recently, a number of social media influencers have video logged about their experiences of cervical screening through narrative communication with their audience. Here we aimed to explore if accessing cervical screening information from a social media influencer can impact the theory of planned behaviour variables and predict intention to attend cervical screening appointments.

Design: Utilising a cross-sectional design a volunteer sample of 102 UK women (mean age = 28; SD = 3.10; range = 25–35) took part in an online questionnaire study.

Results: Hierarchical regression modelling revealed attitude as a significant predictor of intention to attend a cervical screening appointment and that social media influencers affect attitudes of their audience, indirectly influencing intention to attend.

Conclusion: Health messages communicated by social media influencers are effective in promoting positive attitudes but not directly influence intention to attend towards cervical screening. Further research should explore influencer impact on attitudes towards this health behaviour with the ultimate aim of increasing attendance and consequently saving lives.

Keywords
cervical screening, influencer, health promotion, health protective behaviour, social media, theory of planned behaviour, Jade Goody effect

Introduction

Cervical cancer is the second most prevalent cancer among women worldwide and is 99.8% preventable. In the xx, 3,200 reported incidences per year result in 850 deaths. Incidence increases after age 25 with the highest in those aged 30–34 and 25–29. Cervical screening is vital to detection and saving lives. Women in the xx over 24 are invited every 3 years, and in 2019–2020, 4.63 million were eligible. However, the xxxxxx (xxx) in the x has seen differing patterns of screening attendance. Half a million additional cervical screening appointments occurred between 2008 and 2009 during the media reporting of the xx celebrity, Jade Goody, who died from the disease aged 27 (‘The Jade Goody effect’). However, current attendance is at a 20-year low, particularly in the most at risk 25 to 35 age group; equating to almost a quarter of a million young women. With the Jade Goody effect no longer current and the low uptake of screening, it is important to explore how health promotion can be targeted to reach them.

1Department of Psychology, Leeds Beckett University, Leeds, West Yorkshire, UK

Corresponding Author:
Patricia Holch, PhD, BSc, Department of Psychology, Leeds Beckett University, Room CL 815, Calverley Building, City Campus, Leeds, West Yorkshire LS6 3QW, UK.
Email: p.holch@leedsbeckett.ac.uk

Creative Commons CC BY: This article is distributed under the terms of the Creative Commons Attribution 4.0 License (https://creativecommons.org/licenses/by/4.0/) which permits any use, reproduction and distribution of the work without further permission provided the original work is attributed as specified on the SAGE and Open Access pages (https://us.sagepub.com/en-us/nam/open-access-at-sage).
Cervical screening was traditionally promoted via leaflets and TV campaigns, with the general practitioner (GP) pivotal. Now, patients are actively encouraged to manage their own health and seek information online. Indeed, there is some evidence that targeted social media interventions can improve cancer awareness, screening intentions and uptake.

This change has coincided with a rise in celebrity internet ‘influencers’ promoting products and lifestyle change. Influencers, however, can have a prominent effect on health promotion and behaviour. Marlow et al. argue that influencers offer a style of ‘narrative communication’ enabling a memorable social connection. (previously seen with the ‘Jade Goody effect’). Previously, Kreuter et al. found narrative communications (testimonials and storytelling) were important tools for cancer prevention and control. This type of communication was evident when fashion blogger Sarah Ashcroft, and YouTube star Zoë Sugg, video logged (a blog with mostly video content) preparing for, attending and sharing feelings and fears whilst having their cervical screening appointments. This type of content creates an intimate relationship with influencer and audience and is pivotal to influencer success in changing audience behaviours.

However, not all influencer health advice is credible, and they may be sponsored to produce content (SponCon); indeed, influencers were paid to advocate Allergan breast implants when they had been withdrawn from circulation by the Federal Drugs Agency (FDA). The potential access to untrustworthy information is a cause for concern, particularly as young adults are often not health literate. However, being able to predict individual’s intention to perform healthy behaviours is key.

The theory of planned behaviour (TPB) is the most widely used model for predicting intention and as a precursor of behaviour. The TPB has wide applicability. In the TPB attitudes, subjective norms and perceived behavioural control (PBC) are key. In terms of screening behaviours, women are more likely to intend to attend screening if they have a positive attitude to it and if they believe that significant others will approve (subjective norms). If they feel that they have good access to screening (perceived behavioural control), they are more likely to attend. Anticipated regret (regret they may feel in the future) has been recently added and has strengthened the predictive power for intentions and the intention-behaviour relationship.

Social media influencers have the capacity to influence the TPB constructs to shape audiences intentions as they are now viewed as part of individual’s social networks, influencing both social and health related norms. Influencers also impact PBC by demonstrating the ease of attending a cervical screening appointment breaking down perceived barriers. As more individuals turn to the internet for health advice, we explore the impact social media influencers have on the subjective norms, attitude, PBC, anticipated regret and intention to attend a cervical screening appointment in xx women over 25.

### Method

#### Design

A cross-sectional design was employed utilising linear regression modelling. The outcome variables were the intention to attend cervical screening and the 4 predictor variables were as follows: subjective norms, attitude, PBC, anticipated regret (continuous) and previous exposure to ‘social influencers’ on social media speaking about the subject of cervical screening (SMIE) (a dichotomous variable). Participants were dichotomised into groups depending on whether they answered ‘yes’ or ‘no’ to the question ‘have you viewed a social media influencer talking about cervical screening’ (SMIE) and labelled the ‘exposure to an influencer group’ (n = 62) and the ‘no exposure to an influencer group’ (n = 40). For the remaining analysis, the participants were analysed as a whole group.

#### Recruitment and Sample Size

Participants were recruited as a volunteer sample where they responded to the study details (summary about the project and a screenshot of the recruitment poster) through extensive sharing via social media (Facebook, Twitter and Instagram), further an email and recruitment poster was shared though the organisation Mercy xx and around the Leeds Beckett University (LBU) campus.

To ensure sufficient statistical power, the following sample size calculation was undertaken outlined by Cohen for multiple regression with power set at .80 and an α = .05. Thus, to gain a medium effect size with 5 predictors, a total sample size of 91 was required.

#### Measures

Participants completed a demographics questionnaire and the TPB questionnaire based on cervical screening behaviours by Walsh et al. (see supplementary information) adapted to include questions about social media influencers. This questionnaire was validated by a sample of women in Ireland (N = 3000) with Cronbach’s α values above .5, 42. The TPB/TRA was originally developed by Fishbein and Ajzen and has been used widely in health-related research including research into cervical screening.

Questions assessing attitudes, subjective norms, PBC and anticipated regret were measured on 5-point scales. Attitude was measured by responses to the question: ‘For me, going for a cervical screening appointment within the next 3 months would be...’ using 8 adjective scales (reassuring, unpleasant, embarrassing, unwise, important, worrying, worthwhile and healthy). Subjective norms by the responses to ‘most people who are important to me would think that I should go for a cervical screening appointment within the next 3 months’ and ‘most people who are important to me would approve of me attending for a cervical screen in the next 3 months if I am given the
chance’. PBC the responses to: ‘How easy or difficult would it
be for you to go for a cervical screening appointment within the
next 3 months?’ The second question being ‘How confident are
you that you will be able to go for a cervical screening appoin-
tment within the next 3 months’. Finally, intention was
measured by the responses to: ‘I intend to go for a cervical
screening appointment within the next 3 months’ and ‘I will try to
go for a screening appointment within the next 3 months’.
Anticipated regret was measured using 5 items using the
question: ‘How would you feel if you did not attend for a smear
test in the next 3 months when given a chance?’ on 5 items
(anxious, tense, guilty, worried and regretful).

The questions were scored from 1 to 5, and reverse scored if
they were a positive statement. Therefore, the higher the
participant’s score, the more favourable the social norms,
PBC, attitude and intention to attend for a cervical screening
appointment. The grouping of participants and then dichoto-
mosous variable of whether the participant had viewed an
influencer talk about cervical screening was coded as 0 = no
and 1 = yes.

Procedure
The study was conducted online, and the questionnaires (de-

mographics and TPB questionnaire) were administered via the
online via the online questionnaire builder Qualtrics™. Prior to
the TPB questionnaire, participants were asked about whether
they had viewed an influencer talk about cervical screening.
Post questionnaire completion, participants were debriefed
and thanked for their time. The anonymised data were downloaded
from Qualtrics™ directly into IBM SPSS version 26.

Ethical Considerations
Ethical approval from Leeds Beckett University (LBU) was ob-
tained on 16.01.2020 (67 875). The study conformed to the As-
sociation of Internet Researcher’s and British Psychological
Society’s ethical guidelines on Internet Mediated Research (IMR).61

Missing Data
Outliers were removed and 55 participants were excluded due
to ≥40% incomplete responses. The remaining missing values
accounted for 1.7% of the final data set, and these were not
imputed due to the potential impact on reliability and validity.62

Statistical Analysis
The data were exported from Qualtrics into SPSS (V. 26) and
relevant assumption checks performed. A one-way ANOVA
was conducted with exposure to an influencer and no exposure
to an influencer as factors. Following correlation analyses on
predictor (attitudes, subjective norms, perceived behavioural
control and anticipated regret and previous exposure to ‘social
influencers’ on social media speaking about the subject of
cervical screening) and outcome variable (intention to attend
cervical screening), a hierarchical multiple regression was
performed. We anticipated the TPB variables to covary.

Results
Participants
One hundred and two female xx residents aged between 25
and 35 (mean age = 28 years; SD = 3.10) (see Table 1) were
recruited were recruited as these are the target population with
low screening uptake.4,10

Equal variances were identified across the sample for inten-
tion, PBC, anticipated regret and subjective norms (P ≥
.54); however, unequal variances were identified in attitude
(P = .046). Therefore, for attitude, a Spearman’s Rho correlation
coefficient was utilised. Internal consistency scores for sub-
jective norms were acceptable (α = .61), for attitude and PBC
good, (α = .76; α = .70) and for intention moderately low (α =
.56). ANOVA is relatively robust to violation of this assumption
when sample sizes are relatively equal and no group exceeds a
ratio of 4:1 for largest to smallest63 as in this current study. The
Skewness and Kurtosis values showed that for all variables,
skewness (≥−1.28) and kurtosis (≥−1.84) values are between
+2 and −2 demonstrating a normal distribution.64

An analysis of variance (ANOVA) was performed and there was no significant effects at P < .05 for intention
(F (1,97) = .65, P = .423), PBC, (F (1, 100) = 1.15, P = .287),
subjective norms (F (1,100) = 2.2, P = .141) or anticipated
regret (F (1, 69) = 1.49, P = .226). However, a significant effect
was demonstrated for exposure to influencers for attitude
(F (1, 95) = 4.42, P = .038), with the mean score for the
exposure group (M = 25.6, SD = 1.83) being significantly higher
than the no exposure group (M = 24.6, SD = 2.37), (See Table 2).

Table 3 presents the Pearson and Spearman correlation co-
efficients for the TPB variables. Social media influencer exposure
was included as a dichotomous variable and performed as a point-

biserial correlation. Intention was significantly correlated with
attitude, perceived behavioural control and anticipated regret (P <
.001) however not to social norms nor exposure to a social media
influencer. Social norms and perceived behavioural control were
significantly correlated (P < .001) but not to any other variable.
Table 4 presents the percentage of the total participant sample who
had gained information about cervical screening from each of the
sources below, and participants could select more than 1 choice. It
was clear that primary care was the most popular source for
cervical screening information with 60.8% of the sample sourcing
information for GPs and 45.1% from practice nurses; however,
42.2% said they gained information from the internet, family
and friends were (28.4 and 24.5%, respectively) and news-
papers only 6.9%. A chi-square test of independence with
Fisher’s exact test a significant association between viewing a
social media influencer and gaining information from a doctor χ2
(1, n = 102) = .3.8, P = .04 and from friends χ2 (1, n = 102) = .5.8,
P = .013. For the other categories, no significant associations were found $\chi^2(1, n = 102) \leq 2.51, P \leq .272$.

All assumptions prior to proceeding to regression modelling were met including Cook’s distance, lack of multicollinearity, independence of errors, lack of homoscedasticity, normally distributed error and non-zero variances.

**Hierarchical regression**

**Regression.** Table 5 shows the hierarchical regression scores for each predictor: attitude, social norms, PBC and anticipated regret. Attitude was initially entered and this model was statistically significant $F(1, 68) = 6.25; P = .015$ explaining 8.4% of the variance of intention, followed by subjective norms and PBC and this model was not statistically significant $F(3, 66) = 2.03; P = .118$ and did not contribute to the variance of intention. Anticipated regret was added and was not statistically significant $F(4, 65) = 2.39; P = .060$ but contributed to 4.3% of the variance.

**Discussion**

Here we predicted there would be a significant difference in the attitude, PBC, subjective norms and anticipated regret of the participants who had been exposed to a social media...
Table 3. Spearman’s correlations of the major study variables (N = 102).

| Variable | 1 | 2 | 3 | 4 | 5 | 6 |
|----------|---|---|---|---|---|---|
| 1. Intention | - | .33** | .27** | .07 | -.08 | .33** |
| 2. Attitude | .33** | - | .35** | 0 | -.18 | .36** |
| 3. PBC | .27** | .35** | - | .45** | -.11 | .31** |
| 4. SN | .07 | 0 | .45** | - | -.15 | .1 |
| 5. SMIE | -.08 | -.18 | -.11 | -.15 | - | -.15 |
| 6. AR | .33** | .36** | .31** | .1 | - | .15 |

**Correlation is significant at the .01 level (2-tailed).**

PBC = perceived behavioural control; SN = subjective norms; SMIE = social media influencer exposure; AR = anticipated regret.

Table 4. Participants sources of information regarding cervical screening (N = 102).

| Source of information about cervical screening | Percentage of participants, % |
|-----------------------------------------------|--------------------------------|
| Doctor                                        | 60.8                           |
| Practice nurse                                | 45.1                           |
| Internet                                      | 42.2                           |
| Family                                        | 28.4                           |
| Friend                                        | 24.5                           |
| Newspaper                                     | 6.9                            |
| Television                                    | 0                              |
| Radio                                         | 0                              |

Fielden and Holch

influencer talking about cervical screening information than those who had not. We also predicted that the TPB variables and being exposed to a social media influencer talking about cervical screening information would each have a significant predictive effect on the intention to attend a cervical screening appointment. There was partial support for this, in that attitude was found to be the sole significant predictor of intention to attend cervical screening but explaining only 8.4% of the variance. Social norms, PBC, anticipated regret and being exposed to an influencer were not significant predictors of intention. Similarly, only attitudes were found to be significantly higher (more positive) in the exposure group compared to the no exposure group.

However, viewing an influencer talk about cervical screening was not a significant predictor of intention to attend an appointment, at odds with previous literature regarding social media influencers’ effect on intentions. Although, this research often surrounded ‘purchase’ intention as opposed to the intention to participate in health behaviours. Similarly, research within the health behaviour domain which demonstrated efforts of social media exposure on intentions largely focused on diet and exercise rather than behaviours involving medical contact. This may imply that influencers can only affect intentions for medical self-care and purchasing a product rather than attending a cervical screening appointment where barriers to attendance include fear of the findings and fear of pain. To support this assertion, most women in this study would still access their doctor for cervical screening information (60.4% of participants), followed by a practice nurse (45.1%), then the internet (42.2%). Indeed our findings also show that those who had viewed a social media influencer also were significantly more likely to speak to a GP. Thus, traditional sources are still valued for young women and they have not migrated away as previous research has claimed. This is supported by a recent survey that 9 out of 10 individuals still have ‘confidence and trust’ their GPs.

However, attitude scores towards cervical screening were found to be significantly higher (and thus more positive) in the exposure to an influencer group and attitudes were also a significant predictor of intention. This supports previous research that influencers have the ability to shape the attitudes of their audience. Thus, viewing an influencer video log or talk about screening information may have an indirect rather than a direct influence on cervical screening. This is an interesting finding as it does reveal a link with a potential influence on health protective behaviours.

In terms of the TPB, these findings support previous research from Marteau et al. and Godin and Kok who found attitude to be a strong predictor of cervical screening intention and health protective behaviours and that attitudes had a greater influence over intentions than the other TPB constructs conforming they are fundamental to behaviour. Thus, changing attitudes may be the most effective way to increase attendance for this particular age group.

In contrast, PBC and subjective norm scores were not found to be significantly different in between the 2 groups. This was surprising as previous research found that both variables could be impacted by influencers. This implies that the content provided about cervical screening by influencers is not affecting these constructs. Considering PBC with reference to the TPB, this current study did not find this to be a

Table 5. Hierarchical regression scores (N = 102).

| Predictor | β   | B   | t    | SE  | R   | R²  | R² change |
|-----------|-----|-----|------|-----|-----|-----|-----------|
| Step 1    |     |     |      |     |     |     |           |
| Attitude  | .29*| .31 | 2.5  | .12 | .29 | .09 | .00       |
| SN        | .28*| .3  | 2.16 | .14 | .29 | .09 | .00       |
| PBC       | .01 | .01 | .05  | .18 | .29 | .09 | .00       |
| AR        | .23 | .08 | 1.8  | .04 | .29 | .09 | .00       |

Note. Statistical significance: *P < .05; SMIE = social media influencer exposure; PBC = perceived behavioural control; SN = subjective norm; AR = anticipated regret; dependent variable = intention.
significant predictor of cervical screening attendance. A finding partially supported by the previous meta-analysis from Cooke and French, however, Godin and Kok found intentions were strongly associated with PBC when applied to screening attendance; however, it must be noted the review is not current. Thus, the previously identified barriers preventing cervical screening attendance such as ease if information access and costs (due to time away from work or travel) may not be relevant now. In the xx, cervical screening is free and accessible via internet booking and offered by doctors, nurses and within specialist clinics. For subjective norms, the current findings are contrary to previous research highlighting that this was strongest predictor of intention and behaviour in cervical screening uptake. Targeting social norms has been the focus of xxx campaigns to increase cervical screening attendance, but as demonstrated here, this would not be an effective intervention for this age group.

Furthermore, anticipated regret was also not found to be significantly different between the exposure to an influencer group and the no exposure group. No previous research had explored the direct relationship between influencers and anticipated regret, and this was inferred from previous research into exemplar regret and observers being more likely to partake in the behaviour they observed the individual not doing. Alternatively, the material being presented by influencers may not highlight anticipated regret, talking mainly about their experience of attending rather than the consequences of not attending. Additionally, we also found that anticipated regret was not a significant predictor of the intention to attend cervical screening. This opposes the results of previous studies including Walsh et al. where ‘anticipated regret’ significantly added to the model and that intention to seek medical help for cancer is associated with higher levels of anticipated regret.

Thus, the TPB model is not completely supported by the current study as this model suggests all 3 factors: subjective norms, PBC and attitude to be all significant predictors of intentions. Additionally, the variables only accounted for 14% of the variance in intention to attend a cervical screening appointment, much smaller than the 41% found in the Walsh et al.’s study. This suggests for the current study’s demographic, and it highlights there may be other factors that are also significant predictors (not yet identified) of intention for this age group to perform this particular health behaviour. Future studies should explore whether screening behaviour has actually been enacted and explore the motivation for attending to enable further exploration of a potential behaviour-intention gap.

A limitation of this study is that it did not explore whether the behaviour was actually performed, focussing only on intention. Intentions do not always lead directly to performing a behaviour; the behaviour-intention gap defined by Sheeran and Webb suggested approximately only one half of intentions translate into behaviour. It is possible that social desirability could have affected the results; however, we aimed to minimise this by using an online survey with validated instruments and reassuring participants that the data was anonymised and using validated instruments. Further, the study only focussed on a small demographic of predominantly white xx women, this does not reflect the social norms of the diverse xx population. A further limitation is the cross-sectional design, which provides only a snapshot of behaviours and intentions future research should employ longitudinal designs to explore behaviours and actual intentions over time.

However, the current study does explore an area which has not yet been clearly investigated and provides insight into the potential impact social media influencers can have on serious health decisions such as cervical screening. These findings suggest impact differs dependent on the level of importance. For example, influencers may successfully impact health protective behaviours such as dieting and exercise; indeed, there is a great deal of non-professional health updates accessed on social media particularly around the healthy diet discourse but their views may not be as trusted when it comes to medical checks such as cervical screening. However, they may indirectly influence intentions through shaping the attitudes of their audience. It would be pertinent to explore the mechanisms of how ‘influencers’ influence in relation to cervical screening intentions and if the ‘similarity-attraction effect’ is a factor, where individuals are more likely to take the advice of someone who was culturally similar to them.

Knowledge of the extent to which influencers can impact different types of health behaviours would help inform effective health promotion campaigns. However, whilst there could be a role for influencers with regard to health messaging, it is important that any campaign involving them in the future should be robustly linked to the xxx and be free from sponsorship. It is also important to identify which platforms women target users are currently more likely to engage with when designing social media interventions. This is particularly true for harder to reach ethnic minorities or disabled women a currently priority for Jo’s Trust in the xx.

**Conclusion**

Women aged 25 to 35 in the xx currently have the highest cervical cancer incidence rate and the lowest levels of screening attendance. The finding that attitude is a significant predictor of intention to attend a cervical screening appointment and that influencers were able to indirectly impact intentions (by influencing attitude) suggest future health messaging should target attitudes about cervical screening with this age group. This could be communicated by social media influencers within xxx campaigns as an indirect but effective way of forming more positive attitudes to cervical screening, with the ultimate aim of increasing attendance and saving lives.

**Declaration of Conflicting Interests**

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.
Funding
The author(s) received no financial support for the research, authorship, and/or publication of this article.

Ethical Approval
Ethical approval from was obtained from Leeds Beckett University, Psychology Research Ethics committee on 16.01.2020 (number 67875). The study conformed to the Association of Internet Researcher’s and British Psychological Society’s ethical guidelines on Internet Mediated Research (IMR) (BPS, 2017).

ORCID iD
Patricia Holch https://orcid.org/0000-0002-4255-8315

Supplementary Material
Supplementary material for this article is available online.

References
1. Greenlee RT, Murray T, Bolden S, Wingo PA. Cancer statistics, 2000. CA A Cancer J Clin. 2000;50(1):7-33.
2. Cancer Research UK. Cervical Cancer Statistics; 2017a. https://www.cancerresearchuk.org/health-professional/cancer-statistics/statistics-by-cancer-type/cervical-cancer.
3. Cancer Research UK. Cervical cancer incidence by age. 2017b. https://www.cancerresearchuk.org/health-professional/cancer-statistics/statistics-by-cancer-type/cervical-cancer-incidence.
4. Cancer Research UK. Cervical Cancer Mortality Statistics; 2017c. https://www.cancerresearchuk.org/health-professional/cancer-statistics/statistics-by-cancer-type/cervical-cancer/mortality
5. Castanon A, Sasieni P. Is the recent increase in cervical cancer in women aged 20–24 years in England a cause for concern? Prev Med. 2018;107:21-28.
6. NHS Digital, Cervical Screening Programme, England - 2019-20 (NS). https://digital.nhs.uk/data-and-information/publications/statistical/cervical-screening-annual/england—2019-20
7. Reynolds LA, Tansey EM. History of Cervical Cancer and the Role of the Human Papillomavirus, 1960–2000. Welcome Trust Centre for the History of Medicine at UCL; 2009-38.
8. Lancucki L, Sasieni P, Patnick J, Day TJ, Vessey MP. The impact of Jade Goody’s diagnosis and death on the NHS cervical screening programme. J Med Screen. 2012;19(2):89-93.
9. Jo’s Trust. Increasing Cervical Screening Attendance; 2018. https://www.jostrust.org.uk/sites/default/files/cervical_screening_in_the Spotlight_2018_final.pdf.
10. NHS UK. (2018, January 23). One in Three Women Don’t Attend Cervical Screening. https://www.sandbachgps.nhs.uk/one-three-women-uk-dont-attend-cervical-screening/.
11. Bowring J, Walker P. The" Jade Goody effect": what now for cervical cancer prevention? BMJ Sexual & Reproductive Health. 2010;36(2):51.
12. Public Health England. (2019, September 13). Cervical screening saves lives – highlights from the national campaign. https://phscreening.blog.gov.uk/2019/09/13/cervicalscreening-saves-lives-highlights-from-the-national-campaign/
13. Ong LM, De Haes JC, Hoos AM, Lammes FB. Doctor-patient communication: a review of the literature. Soc Sci Med. 1995; 40(7):903-918.
14. Rokade A, Kapoor PKD, Rao S, Rokade V, Reddy KTV, Kumar BN. Has the internet overtaken other traditional sources of health information? Questionnaire survey of patients attending ENT outpatient clinics. Clin Otolaryngol Allied Sci. 2002;27(6):526-528.
15. Scullard P, Peacock C, Davies P. Googling children’s health: reliability of medical advice on the internet. Arch Dis Child. 2010;95(8):580-582.
16. Fox S. Health Topics: 80% of Internet Users Look for Health Information Online. Pew Internet & American Life Project; 2011.
17. Lynn T, Rosati P, Leoni Santos G, Endo PT. Sorting the healthy diet signal from the social media expert noise: preliminary evidence from the healthy diet discourse on Twitter. Int J Environ Res Publ Health. 2020;17(22):8557. DOI: 10.3390/ijerph17228557.
18. Plackett R, Kaushal A, Kassianos AP, et al. Use of social media to promote cancer screening and early diagnosis: Scoping review. J Med Internet Res. 2020;22(11):e21582.
19. Freberg K, Graham K, McGaughey K, Freberg LA. Who are the social media influencers? A study of public perceptions of personality. Publ Relat Rev. 2011;37(1):90-92.
20. Kadekova Z, Holienčinová M. Influencer marketing as a modern phenomenon creating a new frontier of virtual opportunities. Commun Today. 2018;9(2).
21. Webb T, Joseph J, Yardley L, Michie S. Using the internet to promote health behavior change: a systematic review and meta-analysis of the impact of theoretical basis, use of behavior change techniques, and mode of delivery on efficacy. J Med Internet Res. 2010;12(1):e4.
22. Pilgrim K, Bohnet-Joschkó S. Selling health and happiness how influencers communicate on Instagram about dieting and exercise: mixed methods research. BMC Public Health. 2019; 19(1):1054.
23. Marlow LA, Sangha A, Patnick J, Waller J. The Jade Goody effect: whose cervical screening decisions were influenced by her story? J Med Screen. 2012;19(4):184-188.
24. Kreuter MW, Green MC, Cappella JN, et al. Narrative communication in cancer prevention and control: a framework to guide research and application. Ann Behav Med. 2007;33(3):221-235.
25. Ashcroft S. (2019 March 17) My First Cervical Screening Vlog | Q & A With Doctor. [Video file]. Retrieved from https://www.youtube.com/watch?v=7G5A1kW4wM
26. Sugg Z. (2019, August 30). Live Smear Test, Q&A With The Nurse & Office Group Discussion.[Video file]. Retrieved from. https://www.youtube.com/watch?v=2ucfX3jd6Y
27. Khamis S, Ang L, Welling R. Self-branding, ‘micro-celebrity’ and the rise of Social Media Influencers. Celebr Stud. 2017; 8(2):191-208.
28. Vollenbroek W, De Vries S, Constantinides E, Kommers P. Identification of key influencers in social media communities. *Int J Web Based Communities*. 2014;40(3):280-297.

29. Lown Institute. 2019. [https://lowninstitute.org/how-some-instagram-influencers-are-a-bad-influence-on-health/](https://lowninstitute.org/how-some-instagram-influencers-are-a-bad-influence-on-health/).

30. Ratzan SC, Parker RM. Introduction. In: CR Seldon, M Zorn, SC Ratzan, RM Parker, eds. *National Library of Medicine Current Bibliographies in Medicine: Health Literacy*. NLM Pub. No. CBM 2000-I ed. National Institutes of Health, US Department of Health and Human Services; 2000.

31. Bish A, Sutton S, Golombok S. Predicting uptake of a routine cervical smear test: a comparison of the health belief model and the theory of planned behaviour. *Psychol Health*. 2000;15(1):35-50.

32. Ajzen I, Fishbein M. *Understanding Attitudes and Predicting Social Behavior*. Prentice-Hall; 1980.

33. Conner M, Armitage CJ. Extending the theory of planned behaviour: a review and avenues for further research. *J Appl Soc Psychol*. 1998;28(15):1429-1464.

34. Ajzen I. The theory of planned behavior. *Organ Behav Hum Decis Process*. 1991;50(2):179-211.

35. Fishbein M, Ajzen I. *Belief, Attitude, Intention and Behavior: an Introduction to Theory and Research*. Addison-Wesley Pub. Co; 1975.

36. Kiриакидис S. Theory of planned behaviour: the intention-behaviour relationship and the perceived behavioural control (PBC) relationship with intention and behaviour. *Int J Serv Ind Manag*. 2015;2(3):40-51.

37. Armitage CJ, Conner M. Efficacy of the theory of planned behaviour: a meta-analytic review. *Br J Soc Psychol*. 2001; 40(4):471-499.

38. Godin G, Gagné C, Maziede J, Moreault L, Beaulieu M, Morel S. Breast cancer: the intention to have a mammography and a clinical breast examination application of the theory of planned behavior. *Psychol Health*. 2001;16(4):423-441.

39. Forbes CC, Blanchard CM, Mummery WK, Courneya KS. A comparison of physical activity correlates across breast, prostate, colorectal cancer survivors in Nova Scotia, Canada. *Support Care Cancer*. 2014;22(4):891-903.

40. Steadman L, Rutter DR. Belief importance and the theory of planned behaviour: comparing modal and ranked modal beliefs in predicting attendance at breast screening. *Br J Health Psychol*. 2004;9(4):447-463.

41. O’Connor M, Murphy J, Martin C, O’Leary J, Sharp L. Motivators for women to attend cervical screening: the influential role of GPs. *Fam Pract*. 2014;31(4):475-482.

42. Walsh J, O’Reilly M, Treacy F. *Factors Affecting Attendance for a Cervical Smear Test: A Prospective Study*. 2003.

43. Kim J, Eys M, Robertson-Wilson J, Dunn E, Rellinger K. Subjective norms matter for physical activity intentions more than previously thought: reconsidering measurement and analytical approaches. *Psychol Sport Exerc*. 2019;43:359-367.

44. Caso D, Carfora V, Starace C, Conner M. Key factors influencing Italian mothers’ intention to vaccinate sons against HPV: the influence of trust in health authorities, anticipated regret and past behaviour. *Sustainability*. 2019;11(23):6879.

45. Hamilton K, Kirkpatrick A, Rebar A, White KM, Hagger MS. Protecting young children against skin cancer: parental beliefs, roles, and regret. *Psychooncol*. 2017;26(12):2135-2141.

46. Sandberg T, Conner M. Anticipated regret as an additional predictor in the theory of planned behaviour: a meta-analysis. *Br J Soc Psychol*. 2008;47(4):589-606.

47. Abraham C, Sheeran P. Acting on intentions: the role of anticipated regret. *Br J Soc Psychol*. 2003;42(4):495-511.

48. Brewer NT, DeFrank JT, Gilkey MB. Anticipated regret and health behavior: a meta-analysis. *Health Psychol*. 2016;35(11):1264.

49. Sheeran P, Orbell S. Implementation intentions and repeated behaviour: augmenting the predictive validity of the theory of planned behaviour. *Eur J Soc Psychol*. 1999;29(2-3):349-369.

50. Lim XJ, Radzol AM, Cheah JH, Wong. The impact of social media influencers on purchase intention and the mediation effect of customer attitude. *Asian J Bus Res*. 2017;7(2):19-36.

51. Melo M. *Traditional and influencers’ Instagram advertising: An application of the theory of planned behaviour*. (Doctoral dissertation). 2019. [https://run.unl.pt/handle/10362/68346](https://run.unl.pt/handle/10362/68346).

52. Contractor NS, DeChurch LA. Integrating social networks and human social motives to achieve social influence at scale. *Proc Natl Acad Sci Unit States Am*. 2014;111(suppl 4):13650-13657.

53. Moran MB, Murphy ST, Frank LB, Baezconde-Garbanati L. The ability of narrative communication to address health-related social norms. *Int Rev Soc Res*. 2013;3(2):131-149.

54. Cohen J. *Statistical Power Analysis for the Behavioural Sciences*. Academic; 1998.

55. Green SB. How many subjects does it take to do a regression analysis. *Multivariate Behav Res*. 1991;26(3):499-510. doi:10.1207/s15327906mbr2603_7

56. Fishbein M, Ajzen I. *Understanding Attitudes and Predicting Social Behavior*. Prentice-Hall; 1980.

57. Roncancio AM, Ward KK, Sanchez IA, et al. Using the theory of planned behavior to understand cervical cancer screening among Latinas. *Health Educ Behav*. 2015;42(5):621-626.

58. Barling NR, Moore SM. Prediction of cervical cancer screening using the theory of reasoned action. *Psychol Rep*. 1996;79(1):77-78.

59. Armstrong LL. *Predicting Cervical Screening in College Women: A Test of the Theory of Reasoned Action*. University of Montana; 2001.

60. Kim YI, Kim CY, Shin YS, Lee KS. Application of the theory of planned behavior and the theory of reasoned action to predicting cervix cancer screening behavior. *J Prevent Med Publ Health*. 2001;34(4):379-388.

61. British Psychological Society. *Ethics Guidelines for Internet-Mediated Research*; 2017. INF206/04.2017. Leicester: Author [https://www.bps.org.uk/sites/www.bps.org.uk/files/Policy/Policy%20-%20Files/Ethics%20Guidelines%20for%20Internet-mediated%20Research%20%282017%29.pdf](https://www.bps.org.uk/sites/www.bps.org.uk/files/Policy/Policy%20-%20Files/Ethics%20Guidelines%20for%20Internet-mediated%20Research%20%282017%29.pdf).

62. Cokluık O, Kayrı M. The effects of methods of imputation for missing values on the validity and reliability of scales. *Educ Sci Theor Pract*. 2011;11(1):303-309.

63. Tabachnick BG, Fidell LS. *Experimental Designs Using ANOVA*. : Thomson/Brooks/Cole; 2007:724.
64. Gravetter FJ, Wallnau LB. Introduction to the t statistic. *Essential Stat Behav Sci*. 2014;8:252.
65. Rebelo MF. How Influencers’ Credibility on Instagram is Perceived by Consumers and its Impact on Purchase Intention (Doctoral Dissertation); 2017.
66. Jiménez-Castillo D, Sánchez-Fernández R. The role of digital influencers in brand recommendation: Examining their impact on engagement, expected value and purchase intention. *Int J Inf Manag*. 2019;49:366-376.
67. Lisichkova N, Othman Z. The Impact of Influencers on Online Purchase Intent. (Doctoral Dissertation); 2017. http://www.diva-portal.org/smash/record.jsf?dswid=4559&pid=diva2%3A1109584.
68. Byrne E, Kearney J, MacEvilly C. The role of influencer marketing and social influencers in public health. *Proc Nutr Soc*. 2017;76(OCE3).
69. Waller J, Bartoszek M, Marlow L, Wardle J. Barriers to cervical cancer screening attendance in England: a population-based survey. *J Med Screen*. 2009;16(4):199-204.
70. NHS UK. *NHS GP Patient Survey*; 2019. https://www.england.nhs.uk/statistics/2019/07/11/gp-patient-survey-2019/.
71. Graafström J, Jakobsson L, Wiede P. The Impact of Influencer Marketing on Consumers’ Attitudes; 2018.
72. Marteau TM, Hankins M, Collins B. Perceptions of risk of cervical cancer and attitudes towards cervical screening: a comparison of smokers and non-smokers. *Fam Pract*. 2002;19(1):18-22.
73. Godin G, Kok G. The theory of planned behavior: a review of its applications to health-related behaviors. *Am J Health Promot*. 1996;11(2):87-98.
74. Ng TW, Cowling BJ, So HC, Ip DK, Liao Q. Testing an integrative theory of health behavioural change for predicting seasonal influenza vaccination uptake among healthcare workers. *Vaccine*. 2020;38(3):690-698.
75. Cooke R, French DP. How well do the theory of reasoned action and theory of planned behaviour predict intentions and attendance at screening programmes? A meta-analysis. *Psychol Health*. 2008;23(7):745-765.
76. Trafimow D, Fishbein M. The moderating effect of behavior type on the subjective norm-behavior relationship. *J Soc Psychol*. 1994;134(6):755-763.
77. Finlay KA, Trafimow D, Jones D. Predicting health behaviors from attitudes and subjective norms: between-subjects and within-subjects analyses. *J Appl Soc Psychol*. 1997;27(22):2015-2031.
78. Van der Schalk J, Kuppens T, Bruder M, Manstead AS. The social power of regret: the effect of social appraisal and anticipated emotions on fair and unfair allocations in resource dilemmas. *J Exp Psychol Gen*. 2015;144(1):151.
79. Sandberg T, Hutter R, Richetin J, Conner M. Testing the role of action and inaction anticipated regret on intentions and behaviour. *Br J Soc Psychol*. 2016;55(3):407-425.
80. De Nooijer J, Lechner L, De Vries H. Social psychological correlates of paying attention to cancer symptoms and seeking medical help. *Soc Sci Med*. 2003;56(5):915-920.
81. Sheeran P, Webb TL. The intention–behavior gap. *Sco Personal Psychol Compass*. 2016;10(9):503-518.
82. Mc Breen J, Di Tosto G, Dignum F, Hofstede GJ. 2011 Second International Conference on Culture and Computing. IEEE; 2011:9-14.October). Linking norms and culture
83. Reis HT. Similarity-attraction effect. *Encyclopedia Soc Psychol*. 2007:875-876.
84. Jo’s Trust. *Physical Disability Report*; 2019. https://www.jostrust.org.uk/sites/default/files/jos_physical_disability_report_0.pdf.