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# Exploring the impact of digital professionalism awareness training on dental undergraduate students

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## Abstract

**Introduction:** Since the publication of GDC guidance, there have been small, but rising numbers of Fitness to Practise (FtP) cases made against qualified dentists, relating to the use of social media. Prior to graduation, dental students currently receive training in the appropriate use of social media, but more work is needed to determine the most effective methods do this. The aim of this study is to explore the impact of the digital professionalism awareness training provided at one UK-based institution.

**Materials and Methods:** In year 2, a "brown envelope" is compiled using an online publicly available Facebook profile search for every student. All year 2 to 5 dental undergraduate students at one UK dental school who had completed the "brown envelope" were invited to participate in focus groups to examine its impact on behaviour change. A qualitative framework analysis method was applied to the transcripts.

**Results:** Eleven dental undergraduate students participated in two focus groups. All students had experienced the "brown envelope" intervention. Four main themes emerged, including: a clear expression of dental student autonomy and rejection of regulation; that online activity in dentistry is different to medicine; that the intervention is useful and changed online behaviour; and constructive suggestions for improving training.

**Conclusion:** The interactive "brown envelope" intervention for digital professionalism awareness training was well received and appeared to result in actionable behavioural change on student profiles (eg alterations in privacy settings or restricting access to their own "friends lists").

## KEYWORDS

dental, digital, internet-based intervention, professionalism, social media, undergraduate

## 1 | INTRODUCTION

Professionalism can be difficult to define,<sup>1</sup> but dentists are expected to obtain a high level of professional competency in order to act ethically and effectively.<sup>2</sup> This expectation comes from dental trainers, patients and in the UK, the General Dental Council (GDC)

alike. Fricker, Kiley, Townsend & Trevitt<sup>3</sup> claim "professionalism refers to the conduct and/or behaviour of the individual in upholding the social contract between society and the profession." However, over the past 30 years perhaps as a result of the large-scale media focus on health care, traditional values such as vocation, integrity and altruism have been added to, with a call for more transparency,

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patient involvement and reflection. This means there is now a greater role for medical educators to teach and assess professionalism.<sup>4</sup> The “always-on, always-on-us” relationship people now have with technology and social media further complicates the professional construct.<sup>5,6</sup>

Social media is defined as “software that enables individuals and communities to gather, communicate, share and in some cases collaborate or play”.<sup>7</sup> The term social media is used to refer to a range of Internet-based applications including, but not limited to, blogs, wikis, online forums, content communities and social networking sites such as Facebook, Twitter, LinkedIn, WhatsApp, Skype, YouTube, Flickr, GDUK, Instagram, reddit, Pinterest and dating sites, designed for the purpose of sharing information and networking.<sup>8</sup> These can now be readily accessed across devices such as mobile telephones, tablets, laptops or stand-alone computers. Although the digital age brings with it numerous advantages such as knowledge sharing and instant communication for clinicians, there are increasing concerns over the number of significant professional pitfalls for students using these platforms. These include breaches in patient confidentiality, unethical comments, and unsuitable videos or images being posted on online platforms. The adverse effect of social media on dental professionalism has attracted much interest,<sup>9</sup> and current students will be the last to recall a time before the widespread use of the Internet and the first to start their practice in a fully digital health-care system.<sup>10</sup> Digital technologies now frame much of our day-to-day experiences, and, despite their ubiquity in both dental education and practice, there is often great anxiety over what our learners, staff and faculty might do with them. Lapses in professional judgement, mistakes and misdemeanours through sites like Facebook or YouTube have made the headlines, and there have probably been a great many more near misses.<sup>11</sup> Some mis-judged online actions have resulted in learners failing to secure or retain employment or obtain entry into further education or training programmes.<sup>12</sup> Reports are also emerging that, since the publication of GDC guidance on using social media,<sup>8</sup> there has been a small, but rising numbers of Fitness to Practise (FtP) cases made against dentists and dental care professionals, relating to its use.<sup>13</sup> Moreover, in a survey of medical boards in the USA, over 50% reported unprofessional online activity, some of which resulted in disciplinary action including restriction of practice, suspension and even erasure.<sup>14</sup> There are serious concerns that the false sense of anonymity offered online, may result in students feeling removed from real life, resulting in unprincipled or inappropriate behaviour.<sup>5,15</sup> In one study investigating online posting of unprofessional content by medical students, four major themes emerged. These were negative comments affiliated with the institution, sex-related material, intoxication or substance misuse, and threats to patient confidentiality.<sup>11</sup> Muñoz<sup>16</sup> also warns about the increasing use of unprofessional language by dentists online. In addition, unregulated sharing of patient information online, for example before and after photographs of clinical dental cases, could become a financial burden given that NHS Trusts face substantial penalties for breaches in confidentiality under General Data Protection

Regulation (GDPR).<sup>17</sup> Another group performed a cross-sectional study of medical students’ perception of social media use,<sup>18</sup> which demonstrated that nearly two-thirds thought it improved their academic performance. However, the perceived impact on interpersonal relations was inconclusive, with awareness evident for both the positive and negative influences of social media, suggesting further research is required.

Justifiably, Kenny & Johnson<sup>19</sup> have therefore advised that dental undergraduates receive training in online risk management and the appropriate use of social media but have stated that more work is needed to determine the most effective way do this. Dental students are unique in that the vast majority will eventually work in general practice, which is a self-employed enterprise. Furthermore, unlike medical professionals who are perhaps exposed to the world of business and private treatment later in their careers, dentists will often find themselves promoting their services online from the day they qualify. However, research within the field of digital professionalism training undertaken specifically with dentists in mind is limited<sup>15</sup> and even less focuses on educational strategy. Dental students themselves have requested guidance on use of social media which has generated interest from the regulatory body to provide training.<sup>20</sup>

In our Faculty, initial pedagogic efforts to address this issue included invited lectures from guest speakers on professionalism and ethics. However, these received poor student feedback, failing to incite a level of reflection about online activities which corresponded to little to no change in their online behaviours (eg posts and security settings). We must therefore ensure the dental undergraduate curriculum contains appropriate digital professionalism awareness training, yet there is a current gap in knowledge as to how best we can deliver this for our students. Interestingly, in a review focussed on assessing professionalism, Lynch et al recommend improving existing assessments rather than creating new methods.<sup>21</sup> This was the approach taken in this study which aims to explore the impact of digital professionalism awareness raising activities provided at one UK-based institution, using our “brown envelope” intervention. In particular, we asked:

- Does our “brown envelope” intervention result in online Facebook profile change in our dental student cohort?
- Is our current digital professionalism awareness training meeting the needs of dental students or if not, how could it be improved and developed?

## 2 | MATERIALS AND METHODS

### 2.1 | Study context

Approval was granted by the University of Bristol Health Sciences Student Research Ethics Committee prior to commencing the study (FREC No. 75041). All works were based in a single UK-based institution which delivers a professionalism programme as a compulsory

component during year 2 dental undergraduate teaching, held in January each year. There are currently 68 students enrolled in year 2, with on average around 70 students per dental year groups 3 to 5. Dental students receive a 2.5-hour seminar as an introduction to professionalism, during which time 30-minutes is spent specifically on digital professionalism. This includes a lecture delivered by a guest speaker, and at the end, each student receives a personal concealed "brown envelope" containing a one-page investigative summary of their publicly available online profile. A previous study of medical students demonstrated that incorporating student-submitted social media examples into professionalism training heightened interest and engagement, which led us to develop the "brown envelope" intervention.<sup>22</sup>

## 2.2 | Study design & framework thematic analysis

This study employed qualitative framework analysis,<sup>23</sup> a flexible tool used to generate themes, which is not aligned with any epistemological, philosophical or theoretical approach.<sup>24</sup> The Theory of Planned Behaviour (TPB)<sup>25</sup> acted as an interpretive framework from which we could make inference into focus group transcripts about future behaviour change or intention to change (Figure 1). Previous studies have successfully applied the TPB to professional education or activity.<sup>26,27</sup> Focus groups allowed us to observe differences and commonalities amongst the participants, including their perceptions and what they prioritise as important.<sup>28</sup>

## 2.3 | Creating the "brown envelope"

The "brown envelopes" were compiled by the lead researcher (MG) and the department Theme Lead of Personal and Professional Development (PN). They contained publicly available personal information for each student, including images or comments from a popular social media platform, Facebook.<sup>29</sup> Examples of inappropriate or unprofessional behaviour were analysed using an established social media framework<sup>30</sup> and the British Psychological Society guidance.<sup>31</sup> A sample of the student's Facebook pages were reviewed by MG and PN to test the consistency with which they interpreted and applied the rating scale developed by Ponce<sup>32</sup> (see Table 1). This scale was used previously to assess the professionalism of dental student Facebook profiles by Nason et al<sup>33</sup> Once calibration was achieved, the remainder of the Facebook pages were analysed for unprofessional content.

New Facebook accounts were created by MG and PN in order to view student profiles. This enabled true analysis of the information available to patients, the general public or potential future employers, avoiding biases which would come as a result of a "friend request" from a University or NHS trust account. Dental undergraduate student names were taken from the registry. Only data which were already in the public domain were captured in the "brown envelope,"

and therefore, we did not request special permission from students. Those students with multiple search results were narrowed down by dental school, affiliation to other students or their current location to identify the correct profile. If a student could not be found, then their "brown envelope" contained no information. As the social media output from this search was not published as part of this study and for students' personal benefit only, the search material did not need to be anonymised.<sup>34</sup>

## 2.4 | Sampling and recruitment

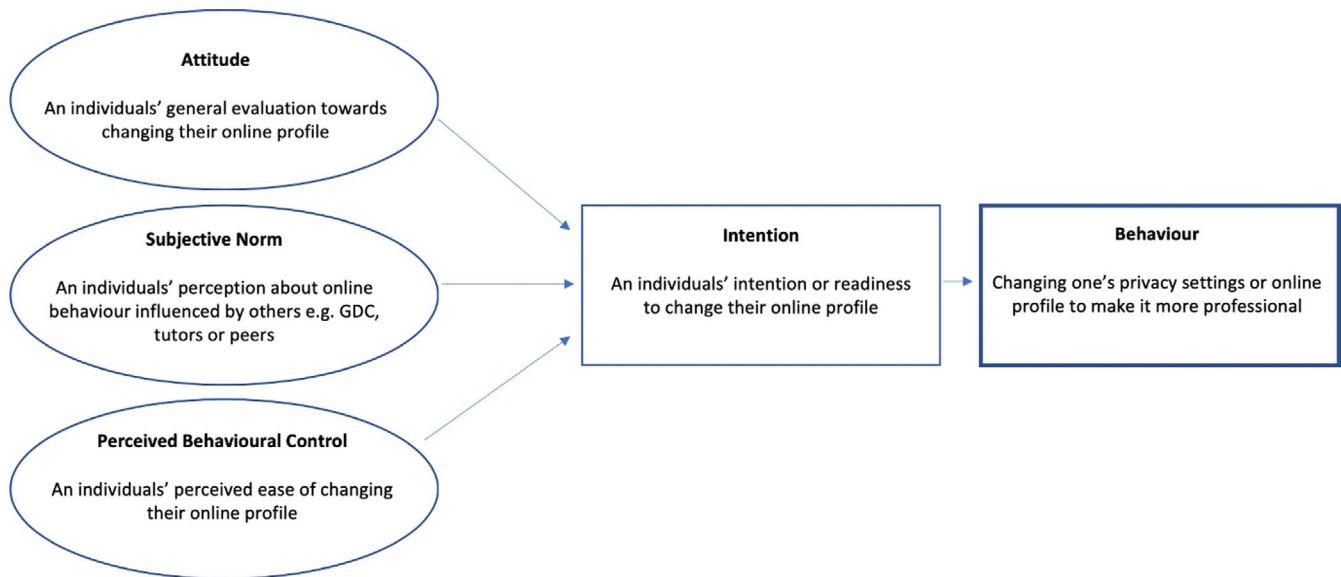
To obtain a wide, representative sample every student in year groups 2 to 5 was eligible for recruitment. Focus groups were advertised via posters and e-mail to these year groups, all of whom had previously received the "brown envelope" intervention. Those in year 2 had very recently experienced the intervention, compared to those in years 3 to 5 (who experienced when they were in year 2). Recruitment commenced in January 2019 and was held in March 2019.

## 2.5 | Data collection

Two focus groups were facilitated by MG, with PN acting as a note taker. Discussions were recorded on audiotape and transcribed verbatim by MG. All audio files were deleted once transcribed, and word files will be saved for a period of up to 10 years as per the University information security policy. Transcripts were screened for any traces of identifying information, and these were removed prior to analysis. Students did not have access to their personal brown envelopes during the focus group. To ensure our goals were achieved, a focus group topic guide (Table 2) containing questions and prompts/ follow-up questions was produced. This document was peer reviewed as part of the ethical approval process. Questions probed into students' understanding and interpretation of digital professionalism and encouraged them to discuss how being confronted with their "brown envelope" made them feel. What would they change with respect to their online profile? Could they give any examples of such change?

## 2.6 | Focus group analysis

A qualitative thematic framework analysis approach, as described by Braun & Clarke, was used.<sup>35</sup> Both MG and PN independently read the transcripts, coding their content inductively line by line. Relevant segments of text were underlined, and notes were written to describe passages with a label or code, alongside ideas to help explain patterns in the data. Finally, an agreed preliminary list of codes was drawn up. Thematic analysis minimally organises the data whilst maintaining a rich description which can be used to help



**FIGURE 1** Theory of Planned Behaviour (TPB) in the context of this study. The self-efficacy element of TPB was derived from social cognitive theory, and it suggests that our actions, learning and functioning are the result of an interaction between personal, environmental and behavioural factors. Human behaviour according to TPB is guided by the likely outcomes of one's behaviour (attitude), the expectations of others (subjective normative beliefs) and beliefs about factors that may facilitate or impede the behaviour (perceived behavioural control).<sup>25</sup> The immediate antecedent of behaviour is intention to behave. The action considered in this study was the participants' intention to change their online profile or activity as a result of digital professionalism awareness training, in addition to when and how they would do this, as well as any further support or training they would require<sup>21,22</sup>

**TABLE 1** Rating system for professionalism (Adapted from Nason et al<sup>28,33</sup>)

Score	Description
0	No professionalism issues raised, or profile could not be found
1	Questionable content (eg evidence of intoxication; inappropriate language or commentary)
2	Definite violation of professionalism/ evidence of criminal activity (eg nudity/ illegal substance misuse)

interpretation.<sup>36</sup> To best achieve this, data were grouped together using preliminary codes which were conceptually related to create the main primary and secondary codes, which formed the initial analytical framework. This framework was repeatedly applied and refined until no new codes were produced. The framework consisted of 29 secondary codes, clustered into eight primary codes or categories (Table 3) which created a new coding structure for the data. From this, four themes emerged (see Results) which became the final coding framework used to analyse the focus group transcript data. Analysis was carried out using NVivo (QSR International, Melbourne, Australia) software.

### 3 | RESULTS

Eleven dental undergraduate students participated in two focus groups, each lasting approximately 30 minutes. The first focus group

had six students, the second involved five students, and all students had experienced the "brown envelope" intervention. Three participants (27%) were male and 8 (73%) female which is representative of the increasing numbers of females in our institution and the wider UK dental workforce.<sup>37</sup> Five (46%) of the students were from year 3, three (27%) from year 2, two (18%) from year 4 and only one (9%) from year 5. Two students were training to be dually qualified, that is already held a medical degree. In group 1, the age range was from 19 to 36 with a mean average of 25 years. Group 2 was younger, with an age range between 19 and 22 and a mean average of 22 years.

By applying the final coding framework, analytical framework matrices were created for each of the four themes. With TPB in mind, we mapped comments made during the focus groups to these themes, ensuring the study was theoretically consistent throughout.<sup>25</sup> Examples of these are presented below using illustrative quotes:

#### 3.1 | Theme 1: Dental student autonomy with respect to digital professionalism

All students declared a right for autonomy and rejected or pushed back against the regulation of their online activity by bodies such as the University or the GDC.

I personally don't think that the GDC should be actively looking at people's [online] profiles...

[Respondent 2, year 3 focus group 1, p6]

**TABLE 2** Focus Group Topic Guide

Primary question	Follow-up questions and prompts
What does digital professionalism mean to you?	<p><b>What is your understanding of the term digital professionalism?</b> Can you each give me a brief definition of what it means to you?</p> <p><b>Do you think digital professionalism should be part of the BDS curriculum?</b> Follow up: Are you aware of the GDC guidance on social media use? Do you think the GDC should be concerned about dental students' online profiles? Do you think it should be of concern to the University?</p> <p><b>Do you think digital professionalism awareness training is necessary in your role as a future dentist?</b> Follow up: Have you ever previously received any other forms of training in the use of social media or in online behaviour?</p> <p><b>Did the digital professionalism awareness training (specifically opening the "brown envelope") you received during your scrubs ceremony make you change your online profile in any way?</b> Follow up: If so, what changes did you make to your online profile and why or why not? Did you change privacy settings/ content or both?</p> <p><b>Are there any other things that might have affected how you change your online profile?</b> Follow up: For example, current events/ stories in the media.</p>
What is your current online profile?	<p><b>How often would you say you currently use Internet-based or social media platforms?</b> Follow up: What social media platform do you use most? Has this changed following digital professionalism training in year 2?</p> <p><b>Do you know how to change your privacy settings if required?</b> Follow up: Have you ever changed your privacy settings and why? Has this changed following previous digital professionalism training?</p> <p><b>Do you think anything posted online is potentially retrievable and can be deleted?</b> Follow up: If so, how would this be performed and by whom?</p> <p><b>Is there anything on your online profile currently you wouldn't like a member of the public to see?</b> Follow up: Is it images, comments or a review you have left? Would you be happy for a member of the public to contact you through your online profile?</p> <p><b>What are the advantages, if any, to having an online profile as a dental student or future dentist?</b></p> <p><b>Do you think there are currently any advantages to having an online profile?</b> Follow up: Have you had positive experiences relative to your professional studies online?</p>
Summing up- about digital professionalism awareness training	If there was one thing you could recommend or change about the digital professionalism training in year 2, what would it be and why?

Generally, participants felt that what they do as dental students would be perceived as acceptable and similar to that expected from university students in general, by both the GDC and the public.

I think that there shouldn't be a disconnect between doing normal student stuff...and that getting you into trouble....Because if that's what everyone is doing and what's...accepted and expected as student life, you should be able to do those things without the GDC telling you off or reprimanding you, ideally.

[Respondent 6, year 2, focus group 1, p5]

Students felt they should have sole ownership over their online profile, deciding what information should and should not be publicly available, rather than a regulating body telling them.

...taking the responsibility to actually understand the platform you're using, how it actually works.

[Respondent 2, year 3 focus group 1, p2]

Even when educated, dental students may not always behave in the recommended way online and appear to still make autonomous decisions.

I think we're made to feel a bit more aware of it [digital professionalism] within the school, I think from day one, whereas other students don't really have that... But whether we always think about it before we do something on social media is a different matter.

[Respondent 1, year 2, focus group 2, p2]

Dental students believe that aliases or name changes will render them anonymous online.

...my name isn't actually... on Facebook... I was really surprised that you found anything.

[Respondent 2, year 3, focus group 1, p13]

Participants felt that they should not always have to privatise their profile.

**TABLE 3** Coding structure for focus group analysis

Primary code (category)	Secondary code (description)
Defining digital professionalism	Expectations to be professional online from the university and governing bodies Leaving a "digital footprint" Moderating one's online profile
Attitude towards digital professionalism regulation	Different expectations placed on dental students regarding social media compared to other undergraduates Different expectations placed on dental students regarding social media compared to medical students given that dentistry is a business Conflict/tension: between being visible online and being professional Negative about regulatory role of the GDC in online activity: prefer "light touch" regulation Feeling of "cyber-vetting" Perception that images of "traditional student social life" (eg drinking and socialising) are acceptable to public as they are students Students should use self-judgement on what should/shouldn't be posted Challenge of decontextualised images/posts Need to review profile regularly and remove posts if deemed unacceptable
Strategies used by dental students when online	Separating private and public accounts keen for patients not to have access Using a different name/ identity online The difficulty of having to delete photographs/content Questioning why this is required?
Advantages of social media	Allowing "professional activity" to be posted, for example advertising yourself to potential employers or promote your business Following dental groups on Facebook Discussing clinical cases online: useful for self-promotion, learning and revision purposes
Social media platforms used	Facebook and Instagram most used Positive and negative regarding the challenges and security using these platforms
Training in digital professionalism- general	No consistency across dental schools General agreement that training is required in this area
Training in digital professionalism- the "brown envelope" intervention	Positive response overall to the "brown envelope" Has an impact on online activity encouraged changing security settings/ reviewing online profiles/ limiting access to friends lists/ regular searching for themselves online Worth repeating throughout the programme- particularly important to time training before first clinical contact with patients Training should also focus on the positives of social media
Recommendations for improvement in digital professionalism awareness training	Timing of training: could be reinforced later in the course, that is repeat in year 4 or prior to graduation Suggesting students should "Google" themselves as part of training Reinforcing the need to reflect on all posts prior to posting

I privatised my Instagram, but then I un-privatised it like a week later...Realistically, they can look at those, I'm not doing anything bad.

[Respondent 2, year 2, focus group 2, p9]

promoting either their practice, or some products, or things like that, so yes.

[Respondent 5, year 2, focus group 1, p22]

Strategies to avoid identification, suggesting avoidance of regulation were mentioned, including having separate private and personal accounts.

You can make your account private... But a lot of the other dental ones are public, because they are

### 3.2 | Theme 2: Online activity in dentistry is different to medicine

There was discussion around the perceived benefits of social media in relation to dentistry, particularly with promoting dentists themselves, their business or services and to show examples of their previous clinical work.



I think social media can also be used in a good way to promote yourself professionally. So, I've got a LinkedIn profile... that's obviously advertising me.

[Respondent 5, year 2, focus group 1, p3]

Promoting your work.

[Respondent 5, year 2, focus group 1, p19]

Students felt they obtained helpful information and learned through using online dental forums, which provided excellent peer-to-peer connections from older year groups.

...there's been so much passed down, like via Facebook. Each year group has their own Facebook page, which is a closed group, and then the older years will just get added to that, and they'll post. It's been really helpful; it's been really very helpful.

[Respondent 1, year 2, focus group 2, p18]

However, issues surrounding consent when posting or accessing actual clinical cases on these forums remained vague, with only limited awareness demonstrated. It was also suggested that medical platforms were better developed than dental for sharing knowledge.

So, I think when I was at med school, there was...a teaching platform... I'm fairly sure they had all the consent for the clinical cases and things like that. So that was more, they'd built a platform for that specific purpose. So, I think that's useful.

[Respondent 5, year 2, focus group 1, p18]

### 3.3 | Theme 3: The "brown envelope" is useful for digital professionalism awareness training

There was a "shock factor" when students were presented with their "brown envelope," which appeared to impact on their online behaviour or at least stimulate intention to change, for example updating privacy settings.

We just, it was a bit of a shock to then be like, 'Oh, that's my Facebook' ...But that made it more impactful, I think. Because none of us realised it was happening, so no one had actually set their privacy settings... and it made you go back and think actually we need to think of these things, yes.

[Respondent 4, year 2, focus group 1, p9]

Despite some "brown envelopes" having minimal or no inappropriate content, it appeared to still be a beneficial intervention, raising awareness and stimulating online behaviour change.

...my brown envelope was pretty boring, but it still made me go and check on my privacy settings.

[Respondent 2, year 3, focus group 1, p8]

It was apparent that students do not regularly search for themselves online.

Because you can't actually look at your own profile. So, you might think you've got it on private, but then actually you don't really know until someone searches your name. Because it's your own profile.

[Respondent 4, year 3, focus group 2, p7]

The effect of the "brown envelope" intervention may be long term.

To be honest, that stuck with me to this very day. I thought that was a really impactful and really effective way of demonstrating how accessible your information is. I think I actually still have my brown envelope.

[Respondent 1, year 4, focus group 1, p7]

Most of the impact appears to come from the fact that students become aware that their tutors as well as the general public can also see and access their online profile.

I was just not that aware of, like, people having my information, and being able to access it as easily... as well as what was put in the envelope. So yes, I think that was really useful.

[Respondent 1, year 4, focus group 1, p7, 8]

Even over time, delivering the "brown envelope" intervention to dental students still appears to have a powerful impact, helping generate digital professional awareness discussion and thought.

Yes, well we all knew about it before. And it's interesting, because we all knew the session was coming up, and people were quite nervous about it. And it encouraged conversations about social media, and about how we are online.

[Respondent 2, year 3, focus group 1, p8]

Students gave personal examples as to how their online posts or profile picture could be misinterpreted by others.

Mine [Facebook profile picture] was when I was 12 or 13, doing cadets. And I had a gun, and I was shooting... Obviously, I knew that was up there, and in my head, I just thought, 'Well, that was me doing Cadets.' But then seeing it on a piece of paper, I thought, "Actually, I see how that could be taken in a totally different



way... Dentist goes on a mass killing... things can be taken out of context so easily

[Respondent 1, year 2, focus group 2, p8, 9]

### 3.4 | Theme 4: Constructive suggestions for improving digital professionalism awareness training

There were suggestions to augment digital professionalism awareness training with more practical activities. First, provide students with ambiguous images or content to review and debate from the standpoint of the general public or patients' opinion.

Like, 'What is the worst that someone could think of if they saw this thing?'

[Respondent 6 focus group 1, p10]

Second, encourage students to conduct an Internet search on themselves to learn about the need for privacy settings and appropriate content.

...maybe a session at [the computer] suite might be good as well, where you can just Google yourself and see actually what comes up.

[Respondent 5 focus group 1, p25]

A common request across both focus groups was a need for more digital professionalism awareness training throughout the programme, especially as students come closer to graduation.

I think maybe like a refresher...But actually, it was so impactful in second year to have that session, and obviously time goes by, and it's kind of easy to forget that actually, you know, you've been at uni, and you've had loads of people add photos of you. So, I think a refresher would be good... maybe end of fourth year, before you start seeing patients.

[Respondent 2, year 2, focus group 1, p26, 27]

Students criticised the current training for a lack of content on the positive uses of social media and the need for a more "balanced" view, with less scaremongering.

I think they [University] do need to focus on the positives a bit more. Because I think it was all, 'Don't show you ever socialise, don't show you ever go out, don't show this, don't show that.'

[Respondent 2, year 2, focus group 2, p20]

## 4 | DISCUSSION

In this study, the "brown envelope" was created as an interactive tool, to better engage dental students in digital professionalism

training, which is in keeping with curriculum recommendations by Spallek<sup>38</sup> for training in this field. The "brown envelope" highlights the ease of "Search ability" by the public, as well as reinforcing the "Permanence" of the digital footprint left by each dental student, which had a lasting impact on students across both focus groups. The core concepts of "Risk of misinterpretation and perception" and "Loss of context" arose during focus group discussions around how one student's profile picture shown in the "brown envelope" could be misconstrued depending on the audience, demonstrating an awareness of subjective norms in society in line with the TPB.<sup>25</sup> The impact of the "brown envelope" did appear to generate actionable change in students' online behaviour, reported as alterations in privacy settings or restricting access to their own "friends lists." Despite students being aware of the "brown envelope" from previous year groups, it appears to remain an impactful intervention.

This research found dental students expressed a declaration of autonomy with respect to their online activity. This autonomy was expressed as a rejection of professional regulation and an assertion that they are best positioned to appraise their online activities. Such idealistic convictions are common amongst medical and dental undergraduates where it is common for them to push back against regulation and assert the need for free speech.<sup>39,40</sup> The participants in this study felt the general public would empathise with dental students, seeing them very much as students, rather than clinical professionals. Many participants felt that name changes or aliases were the best way to ensure anonymity and avoid online regulation. Other research suggests students plan to change their profile name after graduation, with the idea that online professionalism begins at this point, again rejecting the idea of regulation.<sup>41</sup> As evidenced by the "brown envelope" intervention, it was still possible to identify students from their Facebook account through open friends lists or via affiliation with a named institution, for example dental school or university.<sup>19,42</sup> Such a viewpoint displays a naïve understanding of regulation and a disregard for the importance of public opinion regarding professionalism. Jain et al<sup>43</sup> remind us of this, suggesting that even images of sociable alcohol drinking, for example, may lead the general public to assume and falsely conclude that this could be drunken or unprofessional behaviour.

More work is required to enhance students' understanding of GDC published guidance and role,<sup>44</sup> as well as how we teach digital professionalism to dental undergraduates. With the vast majority of dentists remaining self-employed in general practice for their entire careers, dental students must be prepared for competitive business.<sup>45</sup> Social media is an obvious outlet to widely promote dentists and their practices. Most students in this study believed that using social media was beneficial for their career. However, Kaney warns that it must be used properly,<sup>46,47</sup> with ethical issues arising in areas such as cosmetic dentistry.<sup>46,48</sup> Research participants were less aware of the potential risks, including that of valid consent when posting, reading or discussing real clinical cases, something which many dentists may do to advertise their services. Even students with previous clinical experience (ie those who already held a medical degree) focussed more on the benefits of sharing such clinical information, than concern about breaching confidentiality. Educators

therefore have a duty to ensure students understand the need for ethical behaviour when engaging in online enterprise.

Some students did not feel that sharing their personal life with a tutor and vice versa was appropriate, as some believed trainers could use this evidence as leverage against them in future. This is a challenge when planning digital professionalism awareness support, which could perhaps be overcome by having an "open door" policy, free from the fear of negative consequences should they have queries or difficulties online.<sup>40</sup> Some UK dental schools have employed external consultants to act as mentors for students in difficulty over social media related professionalism issues, removing this conflict of interest entirely. In addition, they have set up interactive, self-directed learning modules in an attempt to raise digital professionalism awareness.<sup>48,49</sup>

There were multiple student suggestions to enhance digital professionalism awareness training which we will now consider. Incorporating a "Google" self-search into training could potentially offer the same effect as the "brown envelope" but require less tutor preparation time. Longer sessions have combined self-searches on medical students' online profiles in combination with lectures on regulation.<sup>42</sup> However, this may not create the surprise impact induced by the knowledge that others (ie university tutors and the public) have already accessed the information. A further interactive element could be built into the training, which involves students interpreting potentially inappropriate images or content from a patient's point of view, to further encourage TPB thought processes. Clyde et al<sup>48</sup> asked 250 people to rate a fictional doctor's Facebook profile based on its level of professionalism. Physicians who depicted "healthy behaviours" were deemed most professional and vice versa. Holding discussion groups based on real patient feedback from online reviews of dental practices could also help demonstrate how dentists should professionally respond to complaints. Having a member of the local NHS Patient Advice and Liaison Service to run this session could be very valuable. One criticism of the current training was a lack of content on the positive use of social media. This could potentially be merged into the programme to create a more well-rounded training. Inevitably, all the above activities would extend the length of time spent on digital professionalism awareness training, but students themselves requested more time on this, perhaps as a refresher or "top-up" later in their undergraduate course. Whilst the dental undergraduate curriculum is already overburdened, given the rapid uptake and evolution of digital technology a greater footprint on the curriculum may be justified.

#### 4.1 | Limitations of this study

This study has several limitations, primarily that it represents only a small sample of dental students from a single UK institution. Collecting online profile data is minimally resource intensive but still requires time and effort, in addition to minor administrative costs for paper, printing and envelopes, so faculty support is required. Recruitment was challenging due to regular examination diets and

many other ongoing studies requesting student participation. The focus groups helped support the "brown envelope" as a driver for online profile behaviour change; however, the 30minute digital professionalism guest lecture given as part of this training session could be a confounding factor as all students received both.

We acknowledge that both selection and recall bias may play a role; that is, those who retained their brown envelope may be more likely to take part in the study and may have checked it again prior to attending the focus group. Similarly, those further from the intervention, that is years 3 to 5, may recall the impact of the brown envelope differently, but we were interested in the long-term effect of the intervention and so including different year groups enabled us to do this.

Given the time and resources, only Facebook online profiles were reviewed, and as students informed us, the use of other platforms such as Instagram is becoming more popular. These newer platforms could be where most misuse is occurring, so going forward we need to capture data on a wider range of platforms, to ensure the "brown envelope" remains contemporary. We did not carry out a follow-up review of students' online profiles following the focus groups, which may have added weight to the actionable behaviour change they alluded to during the focus groups.

## 5 | CONCLUSION

There are rising concerns surrounding social media misuse amongst dental practitioners, including the potential for: breaches in confidentiality, breakdown in student-patient relationships and the loss of trust in the professional or profession as a whole which could lead to more FtP cases.<sup>13,42</sup> Therefore, there is a need for dental school professionalism curricula to include robust digital professionalism awareness training for students. Given its encouraging reception and apparent actionable impact on student profiles (eg alterations in privacy settings or restricting access to their own "friends lists"), we recommend the "brown envelope" intervention, which could form part of a larger, more interactive training programme be delivered at multiple time points throughout the course. Future studies could investigate whether the positive behavioural changes and intention to change expressed in this study are maintained following graduation.

#### DATA AVAILABILITY STATEMENT

Data are available on request due to privacy/ethical restrictions.

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