

Do psychological attachment styles influence dental anxiety and dental attendance?

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Key points

Highlights how psychological attachment style has been shown in medicine to influence engagement with healthcare services, psychological wellbeing and types of health behaviours performed by different individuals.

Explores whether psychological attachment style can influence self-reported dental anxiety and attendance and has found that there may be an association between these phenomena. In particular, anxious and avoidant attachment traits were associated with worse dental attendance. A fearful attachment style was associated with higher levels of dental anxiety and poorer dental attendance.

Proposes further research could be conducted in this field of study to improve communication skills training, service planning and the patient experience.

Abstract

Objectives Attachment style has been shown to influence patient engagement in medical settings but has been little explored in dentistry. The aim of our study was to identify whether there was a link between patients with insecure attachment styles and dental attendance and anxiety.

Methods A survey was circulated and completed by 317 participants on social media. Respondents completed the revised Adult Attachment Scale and questions about the timing of their last dental visit, anxiety levels and the perceived reasons for these.

Results Participants classed as having a secure attachment were most likely to have attended a dental appointment in the last two years (87%) and least likely to report dental anxiety (25%). Participants in the fearful attachment group had the highest levels of dental anxiety (75%) and lowest rates of attendance (63%). Both anxious attachment traits (M2.68, 2.09, $z = 4.09$; $p < 0.001$) and avoidant attachment traits (M2.81, 2.51, $z = -2.94$; $p < 0.01$) were associated with reduced dental attendance in the past two years. Common themes surrounding visiting the dentist included: unpleasant emotional experiences, previous psychological trauma and inaccurate beliefs about dentistry, resulting in mistrust.

Conclusion Attachment styles are related to dental anxiety and attendance. Understanding the role of attachment in service planning and education of dentists could improve the care of patients.

Introduction

Dental anxiety is a common problem, affecting approximately one-third of British adults.¹ In the past, there has been a tendency to assume that dental anxiety is caused by exposure to distressing and painful dental procedures.² However, some research has suggested it may also be related to a lack of trust in the dentist.^{1,3,4} One factor that has not previously

been explored in relation to dental anxiety is psychological attachment style.

Attachment styles refer to a person's habitual ways of relating to others which are thought to relate to the working models that a person holds about relationships based on their earliest experiences. Attachment theory was first developed to describe how infants responded to their mothers.⁵ Later, studies have demonstrated the role of attachment styles not only in infancy, but forming the basis of many social relationships. Attachment styles were originally classed as secure, anxious or avoidant.⁵ An alternative classification was devised by Bartholomew and Horowitz.⁶ They categorise attachment in terms of positive or negative view of the self or others, resulting in four attachment styles: secure, preoccupied, dismissive or fearful.⁶

In healthcare, individuals with an insecure attachment style (eg avoidant or anxious) typically are at risk of both physical and psychological problems. These can include: engagement with negative health behaviours such as smoking; reduced trust and cooperation with healthcare providers; less adherence to treatment; poorer outcomes of health conditions; and higher impact of symptoms.^{7,8,9,10} Insecure attachment has been reported as correlating with higher levels of systemic inflammation, potentially arising from hyperactivated stress mechanisms and unfavourable health behaviours.^{11,12} Self-management skills for patients with chronic disease are affected in individuals with insecure attachment.¹³ For oral health, attachment style may impact on inflammatory diseases such as periodontitis, particularly if it is related to

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self-care behaviours, such as toothbrushing and appropriate seeking of dental attention.^{8,11}

Modern approaches to patient care are patient-focused and involve seeking to work collaboratively, developing a relationship within which the practitioner can understand the needs and values of the patient.¹⁰ In the context of attachment theory, this relationship involves the healthcare provider acting as the 'secure base' for the patient with an important emphasis on the development of trust between patient and practitioner.¹⁰ In dental settings, lack of trust can be an important barrier to attendance.^{3,14} Insecure attachment styles in medical settings have been shown to be associated with reduced trust and avoidant attachment styles may present challenges to cooperation.¹²

To our knowledge, at the time of writing, no studies have explored the influence of attachment style on dental anxiety or attendance in a primary dental care setting. The aim of this study is to carry out an early exploration of whether psychological attachment style has an impact on dental anxiety and attendance in members of the general population.

Methods

Procedure

Ethical approval for the study was obtained from Newcastle University (Ref. 1663/2020). An online survey was construed using Qualtrics XM (2020) software. The survey collected data on age and sex. Respondents completed the questionnaires described below.

Measures

Revised Adult Attachment Scale

The revised Adult Attachment Scale¹⁵ (RAAS) is an 18-item test which includes three subscales: close, depend and anxiety. A copy of the questionnaire and scoring recommendations are included in the online Supplementary Information. We chose to use the alternative scoring schedule, combining the close and depend subscales into a dimension of attachment avoidance and using the anxiety subscale as a measure of attachment anxiety. We chose this classification due to the explicit separation of dimensions relating to self and other in this model, which we felt matched well to potential concerns about attending dental appointments. Each question is scored on a scale from 1 (not at all characteristic of me)

Table 1 Age and sex distribution of survey respondents (n = 317)

Distribution		N	%
Sex	Female	261	82.3
	Male	56	17.7
Age (years)	18–25	11	3.47
	26–30	26	8.20
	31–39	67	21.13
	40–49	96	30.28
	50–60	76	24.00
	60+	41	13.00

to 5 (very characteristic of me). Cronbach's alpha has been reported as ranging from 0.768 and to 0.855 between the different scales.¹⁶ The scores on each scale were additionally combined to classify each individual into one of four proposed attachment 'styles' (secure, preoccupied, dismissive and fearful) as suggested by Bartholomew and Horowitz.⁵

Dental anxiety

A single question was selected to ask respondents to rate how anxious they would feel if they were about to visit the dentist for a check-up, on a scale of 1 (not at all anxious) to 5 (extremely anxious).

Dental attendance

A single question asked when respondents had last visited a dentist. Responses were: within the past two years; 2–5 years; or over five years. For this study, responses were collapsed into two categories: attended within the last two years, or not attended within the last two years. For those who had not attended recently, a further free-text optional question asked about the reason for this.

Sampling procedure

The link to the online survey was widely distributed within the general population, primarily through a variety of local interest Facebook groups. Local interest groups were selected and included a group for parents, small business owners and a local recycling group. Reasons for selecting Facebook as the primary method of distribution and these groups were that they were based in the UK, had the potential to reach a large number of group members and were accessible to the research team through existing personal interests. A single post was added to each of

the three groups and was regularly boosted by comments (a member of the research team would answer to thank each commenter who had completed the survey). The survey was open for one month. No paid advertising was used. Inclusion criteria were: age 18 or over; residing in the UK; and able to provide consent and complete the study. No incentive was offered for completion of the survey.

Data from the completed surveys were downloaded to Microsoft Excel and then imported into STATA (StataCorp, 2019, version 16, StataCorp LLC). Analyses of the quantitative data were carried out by Stata. Qualitative responses were grouped and are reported descriptively.

Results

Demographics of the sample are shown in Table 1. Of 317 participants who completed the survey, the majority were women (82.3%) and between the ages of 31–60 (75.4%). Additional demographic data were not collected.

Non-parametric tests were selected due to the ordinal nature of the scales and deviation from normal distribution. Dental anxiety was coded as low (reporting none or mild), or high (moderate or severe). This was because higher dental anxiety which may exist as dental phobia is more likely to impact both access to and provision of oral healthcare.^{17,18} Dental attendance was coded as having attended in the last two years or not.

Attachment traits

Attachment traits were measured on two separate dimensions: attachment avoidance and anxious attachment. Mann-Whitney U tests were used to determine whether there was a difference in attachment traits between

Table 2 Mann-Whitney U tests indicating differences in dental attendance and dental anxiety according to attachment characteristics and reported dental anxiety

Avoidant attachment traits (measured by RAAS depend scale)		Anxious attachment traits (measured by RAAS anxiety scale)		Anxious attachment traits (measured by RAAS anxiety scale)	
Attended	Not attend	Attended	Not attend	High dental anxiety	Low dental anxiety
M (SD): 2.51 (0.68)	M (SD): 2.81 (0.64)	M (SD): 2.09 (0.94)	M (SD): 2.68 (0.97)	M (SD): 2.56 (1.01)	M (SD): 1.99 (0.89)
Z: -2.94		Z: -4.09		Z: 4.92	
p <0.01		p <0.01		p <0.01	

respondents who had, or had not, attended a dental appointment in the last two years. Findings are shown in Table 2. Analyses indicated that respondents who had not attended a dental appointment in the last two years scored higher on average in anxious attachment traits than those who had attended (M2.68, 2.09, $z = 4.09$; $p < 0.001$). Respondents who had not attended a dental appointment within two years also had higher average scores on avoidant attachment traits (M2.81, 2.51, $z = -2.94$; $p < 0.01$).

Attachment classification

Following guidelines by Collins,¹⁹ respondents were classified according to the four attachment styles described by Bartholomew and Horowitz:⁶ secure, preoccupied, dismissing or fearful. Of the 317 respondents, 293 could be classified into one of the groups and 24 were unclear (scoring at the midpoint of a dimension and unable to be classified). Table 3 shows the number and percentage of people within each attachment style in terms of dental attendance and dental anxiety. Of respondents classified as having secure attachment, 25% reported dental anxiety, compared to 32–75% in the other groups. Chi-squared analyses indicated that the groups differed significantly on this dimension ($\text{Chi} = 38.87$; $p < 0.001$). In total, 87% of respondents who were classified with a secure attachment style had attended a dental appointment within the past year, compared to 82, 83 and 64% in other groups. Chi-squared analyses indicated that this represented a significant difference between the groups ($\text{Chi} = 12.40$; $p = 0.006$).

Reasons for non-attendance

Free-text answers regarding reasons for not attending dental appointments were given by 30 participants and are shown in Table 4. Of these, five responses (16.7%) were classified as referring to emotional issues linked to trust or attachment. Other reasons for not attending

Table 3 Number (and percentage) of respondents in each attachment category who reported having attended a dental appointment within the past two years and who reported experiencing dental anxiety

Attachment style	Dental attendance N (%) within last two years		Dental anxiety N (%) classed as low or high	
	Over 2 years	Within 2 years	Low	High
Secure	25 (12.56%)	174 (87.44%)	149 (74.87%)	50 (25.13%)
Preoccupied	4 (18.81%)	18 (81.82%)	15 (68.18%)	7 (31.82%)
Dismissive	6 (16.67%)	30 (83.33%)	17 (47.22%)	19 (52.78%)
Fearful	13 (36.11%)	23 (63.89%)	9 (25%)	27 (75%)
Difference between groups (Chi²)	12.4 (p = 0.006)		38.87 (p <0.001)	

were classified as referring to perceived difficulties with access to care, beliefs about available treatment options, past unpleasant experiences with dental treatment, uncertainty and lack of priority of dental appointments.

Discussion

The aim of this study was to establish whether individual attachment styles or traits were related to differences in dental anxiety and attendance and to explore psychological themes surrounding these. The results indicated that individuals who scored highly on avoidant or anxious attachment traits were more likely to report anxiety about attending dental appointments and less likely to have attended a dental appointment within the past two years.

These conclusions were further strengthened when participants were categorised into groups based on their attachment style. For example, the majority of securely attached individuals had attended the dentist within the last two years and had low levels of dental anxiety. Other attachment styles were associated with reduced likelihood that a person had attended

an appointment within the last two years and increased likelihood that they would report dental anxiety. This fits with previous literature findings in primary care, where dismissive and fearful attachment was associated with lower attendance of diabetic patients.²⁰

For dental anxiety in particular, there appeared to be a strong link with attachment style. Only one-quarter of people classed in the secure attachment group reported dental anxiety, compared with one-third in the preoccupied attachment group, half in the dismissive attachment group and three-quarters in the fearful attachment group. It therefore appears that attachment theory might add an important perspective to theories of dental anxiety. The free-text comments which relate to three of the themes identified (unpleasant physical emotional or psychological experience or trauma; uncertainty; and emotional response linking to trust/attachment) also support the potential importance of psychological attachment to the experience of dental appointments.

These results are consistent with the findings of Graetz *et al.*^{8,11} who evaluated attachment style in patients receiving both

Table 4 Patients' written responses to questionnaire

Subject	Responses
Perceived difficulties with access to care	<ul style="list-style-type: none"> • 'It's too expensive to just go to get a check-up. I didn't have any spare money, so I stopped. I know two of the teeth that were filled probably need more attention, but I can't afford it, so I'll wait till its urgent' [Participant 101] • 'Too much of a pain to find an NHS dentist' [Participant 117] • 'Not able to register with NHS dentist within a 45 min driving radius' [Participant 223] • 'I don't like using the telephone and so this puts me off getting an appointment' [Participant 43] • 'Plus my other health issues make it harder for me to plan appointments' [Participant 84]
Beliefs about treatment options, NHS and private care	<ul style="list-style-type: none"> • 'I refuse to go private as have no aesthetic desires re teeth – that lot on TOWIE look bloody awful and refuse to pay through the nose for an annual check-up that says everything is still fine (no dental work required ever so far in 35 years of having teeth)' [Participant 117] • 'Got all my teeth fixed up with an inheritance' [Participant 101] • 'I needed a tooth repaired but they would only remove it so I stopped going' [Participant 205] • 'Only go when I have a problem' [Participant 270] • 'They always want to push extras on you – hygienist appointments...expensive electric toothbrushes' [Participant 151]
Unpleasant physical, emotional or psychological experience or trauma	<ul style="list-style-type: none"> • 'I had bad experiences in my childhood. I was held down by all assistants and hygienists while the dentist worked on me without trying to calm me down. the next office I saw my brother get dragged back to the dentist chair and worked on him' [Participant 304] • 'General apprehension' [Participant 314] • 'I find the whole thing very triggering' [Participant 202] • 'Pain' [Participant 133, 92] • 'Anxiety/fear and my whole life dentist has been = pain!' [Participant 109] • 'I always go routinely to the dentist but just 'hate' going there' [Participant 236] • 'Being able to feel them working on my mouth, not pain as it's numb but shaking/pulling' [Participant 238] • 'Feel anxiety which makes me feel unwell' [Participant 250] • 'Possible pain, discomfort, serious issues revealed' [Participant 301] • 'I get tired of being in pain all the time' [Participant 277]
Uncertainty	<ul style="list-style-type: none"> • 'What will they find? Will I need treatment' [Participant 254]
Priority	<ul style="list-style-type: none"> • 'I just forget to make appointments' [Participant 176] • 'Laziness' [Participant 84] • 'I'll just wait till its urgent' [Participant 101]
Emotional response linking to trust/attachment	<ul style="list-style-type: none"> • 'Feeling out of control and vulnerable' [Participant 316] • 'They always want to push extras on you – hygienist appointments which never used to be a thing, expensive electric toothbrushes etc even if there is no problem' [Participant 151] • 'Being told that "I think this is in your head" by a dentist my last dentist. Being told I need 8 fillings by one dentist (of which I had 4 done) only to be told by another dentist that I didn't need any more, that was over a decade ago and I've still had no more. How do I trust anyone?' [Participant 119] • 'Having to have a procedure I wasn't expecting/lack of trust in dentist' [Participant 53] • 'Every time work is done I get another problem elsewhere' [Participant 277]
Unclear/miscellaneous	<ul style="list-style-type: none"> • 'None of the above' [Participant 112] • 'State of my gums' [Participant 77] • 'I go for a check-up twice a year' [Participant 99] • 'Sneaked a check-up at work but never any bitewings' [Participant 143]

active and supportive periodontal treatment at a university dental hospital. They found that attachment anxiety is possibly linked to greater dental fear and that this was linked to worse scores of periodontal health. The authors used a more detailed measure of dental anxiety than we did; they also reported an association between dental fear and greater attachment anxiety.

This study is the first to indicate that attachment styles can have an important impact

on dental anxiety and attendance in primary care. Despite some limitations, we believe that this finding has important implications for dental practice and further research.

The results of this study suggest that attachment theory is worthy of further research in dental settings. They add weight to the theory that, as in medical settings,¹⁰ the relationship between provider and patient is key to patient outcomes and engagement. It supports emerging evidence that trust is a

key factor that may affect dental anxiety and attendance.^{1,3,14} While a dentist may assume that their patients' anxiety is directly related to fear of pain or undergoing a procedure, this is not always the case. Other factors, such as psychological intrusion, difficulty trusting the dentist or dental team and a history of trauma or abuse (either related or unrelated to dental experiences) may be important contributors to dental anxiety.^{21,22} Subsequently, these factors may influence dental attendance. Furthermore, a patient may experience dental anxiety regardless of there being an objective threat of treatment. Some patients may have difficulty in trusting the dental team even when this is no reflection on the people in the team or their actions. This may also be influenced by factors such as dental uncertainty, which is often inevitable but can be partly managed by effective communication skills.²³ It raises the possibility that it may be an important part of assessment and treatment planning to assess any difficulties a patient may have in relating to the dental team. Communication strategies could be planned to reduce their discomfort. It is unclear whether these differing needs can be equally well-addressed within current dental models of care which allow little time for relationship-building or space for psychological interventions for dental anxiety. However, time invested in these relationships may improve attendance rates and the scope of treatment available to patients as they become more comfortable and better able to cope in a dental setting.

Strengths of this study include the sample size of 317 and the fact that participants represented a community sample. Therefore, they were broadly representative of a range of people who do and do not regularly attend dental appointments. The concurrence of findings using two different methods of data analysis (treating attachment dimensions as traits on a continuum and classifying respondents into pre-determined attachment categories) also increases our confidence in the findings.

It is also necessary to acknowledge several limitations of the study design. The limited demographic data collected means that it is not possible to make generalisations across the entire population as some groups may not be well represented. This is especially likely given that recruitment took place using social media. This method of recruitment is unlikely to provide a representative sample of the UK population and it was not possible to

determine a response rate or to use strategies to maximise response rates. The predominantly middle-aged age-range and female sex of most respondents reflect the limitations of this method of recruitment. Further research should aim to replicate the findings of this study within more representative or targeted subgroups of the population. While it is likely that most responses referred to experiences in primary care, the questionnaire did not specify this and findings may differ for patients attending a community or hospital setting.

There are also limitations associated with the choice of outcome measures. While we collected self-report responses on whether respondents had attended a dental appointment in the past two years, we did not collect detail about whether this was a planned or emergency appointment or whether it was precipitated by a clear need for treatment. We also were not able to discriminate between people who attended more regularly, which limited our analysis. The choice to use such a broad outcome measure was based on the concern that it would be difficult for people to accurately remember when they had last attended a dental appointment. Similarly, we used only a single question to assess dental anxiety. Although it has been reported that a single question may have promise as a reliable and valid measure of dental anxiety,²⁴ reducing this construct to one question risks failing to reflect the complex nature of dental fear. The decision to use a single question was made to avoid redundancy as the planned analysis was based on a dichotomy. However, an implication of this decision was that some detail and variation of the construct were lost. More detailed information on these dimensions would have allowed for a more precise exploration of the impact of attachment traits on dental attendance and anxiety. Nevertheless, the use of such broad outcome measures did not render the results insignificant and they reflect similar findings found in the medical literature.^{7,8,9,10,11} Therefore, they could be seen as an appropriate first step in researching a topic that has not previously been studied in dentistry that could improve the dentist-patient relationship. Further research could

collect more detailed information about attendance patterns in order to gain a fuller understanding of how these might vary according to attachment style. The role of trust in dental attendance and patient education as to the nature of dentistry are areas to explore in greater depth.

Conclusion

In keeping with findings in medical settings, psychological attachment styles play an important part in dental anxiety and dental attendance. This highlights the importance of the dentist-patient relationship and the possibility that tailored communication strategies may be needed according to individual patient characteristics. Further research would be helpful, including into how the study findings can be accommodated into initiatives to improve dental attendance and anxiety.

Ethics declaration

All authors have given their consent for this study to be published. There are no conflicts of interests. This study had ethical approval from Newcastle University. Details of all participants were anonymised during the process of data collection.

Author contributions

Anna Beaven: data analysis, interpretation, writing the paper and revising the paper. Pam Boullin: concept and design of the study and data acquisition. Chris Penlington: conception and design of the study, performing statistical analysis and revising the paper.

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