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# **The Role of Negative and Positive Memories in Fear of Dental Treatment**

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## Summary

**Objectives:** most young adults transition from childhood dental care to adult dental care without problems. However, a substantial minority leaves childhood dental care with considerable fear of dental treatment. In the present study, we hypothesized that fear of dental treatment in the young adult is influenced by memories of positive and negative childhood experiences with dental care. More specifically, we predicted that the emotional impact, sense of reliving, rehearsal, and belief in the accuracy of a negative treatment memory would be associated with increased dental fear, while positive treatment memories would show the opposite relation. **Methods:** 136 young adults leaving childhood dental care responded to online measures of dental fear, the most negative and most positive memory of dental treatment, and symptoms of posttraumatic stress disorder. **Results:** negative memories of events that involved pain and dentist behaviors such as impatience or scolding were frequently described and significantly associated with dental fear and symptoms of posttraumatic stress. Positive memories were more frequent, but did not show a consistent relationship with dental fear. **Conclusions:** The importance of negative memories suggests an avenue for intervention against dental fear that focuses on restructuring those memories to emphasize positive aspects.

## Introduction

Many people in Western countries experience some fear of dental treatment ranging from mild distress to intense fear and avoidance [1-5]. The onset of dental fear has often been attributed to negative treatment experiences in childhood and adolescence [6-8]. Negative treatment experiences in this period could hold important ramifications for future treatment behavior given that, in Denmark, the transition from childhood to adult treatment occurs around the age of 18; since attendance is now at the discretion of the young adult rather than his/her parents or the school, this could be a critical moment for establishing expectations of future treatment.

Studies have found that anxious patients remembered painful dental procedures as being worse after an interval of weeks compared with their report immediately after treatment [9-13], while the opposite has been found in non-anxious patients: They remembered less pain than they experienced [14]. Dental fear is not just fear of pain but also concerns emotional responses (e.g., fear, crying), and dentist behavior (e.g., roughness, incompetence) [15, 16]. While earlier studies of treatment experiences focused on the content and emotional intensity of past events, they did not evaluate the characteristics of the memories, such as sense of reliving, emotional impact or belief in the memory's accuracy. Such memory characteristics have been found to correlate with symptoms of posttraumatic stress disorder (PTSD) [17, 18]. While dental fear and PTSD might not be identical psychological reactions to stressful events, they could share some psychological mechanisms, such as intrusive remembering.

One prior study investigated the relationship between memory characteristics, dental fear, and indicators of PTSD [19]. This study found that patients with dental phobia had negative memories of dental treatment that were more vivid, emotionally disturbing, and accompanied by a sense of reliving, compared with memories from healthy controls [19]. However, the mean age of the participants in this study was 45 to 51 years, while the negative memories they reported occurred on average around 25 years in the past [19]. This indicates that the events reported originated in adulthood rather than childhood and early adolescence, thereby leaving the ramifications of memory characteristics in childhood and adolescence largely unexplored. In addition, the earlier study [19] compared a phobic group to healthy controls and it is unclear if the findings generalize to a community sample.

The purpose of the present study was to investigate whether characteristics of highly emotional memories of dental treatment in childhood and early adolescence would be related

to dental fear and symptoms of PTSD in a community sample of young adults. We expected the characteristics of highly negative memories to be related to increased dental fear and symptoms of PTSD. Knowledge about the effect of positive memories of treatment on dental fear is extremely limited. One study did find that college students with low dental fear reported more positive events than high fear students [15]. Therefore, we tentatively expected characteristics of positive memories to be inversely related to dental fear.

### **Materials and Methods**

Adolescents (17 – 18 years) from two separate public schools in the municipality of Odder in Denmark received a letter inviting them to a final check-up and to be advised about future dental care. An invitation to participate in the present study accompanied this letter. The invitation made it clear that participation was anonymous, confidential, and 100 % voluntary, with no impact on current or future treatment. The invitation provided a link that participants could enter in a browser to access the survey. Participants who had problems accessing the link or understanding the questionnaires were offered assistance at their respective school. From February 1<sup>st</sup> 2013 to June 30<sup>th</sup> 2014, a total of 171 adolescents and young adults entered the study from an eligible population of approximately 280 patients. Participants received a gift certificate worth 100 DKK (\$ 14.50) as compensation for their time.

Validated questionnaires that had been translated to Danish were presented online via SurveyXact (Rambøll Management Consulting, Aarhus, Denmark). Questionnaires were presented in the order below for all participants.

The first page explained the rationale for the study and emphasized that participation was voluntary, anonymous and confidential. It was explained that the study addressed feelings and thoughts related to dental treatment as well as specific, personal experiences with dental treatment. Participants actively gave their consent to participate by clicking a checkbox for “yes, I have read and understood the instructions and would like to participate” or “no thank you”. This procedure was in full compliance with guidelines from the Committee on Health Research Ethics in the Central Denmark Region. It was emphasized that when the questionnaires referred to a dentist, this could also mean a dental assistant.

The first page of the questionnaire related to sociodemographic characteristics (age, gender, occupational status) and history of dental treatment [i.e., “Have you ever a) worn braces, b) had a tooth extracted, c) been sedated during dental treatment, d) had a cavity”].

Symptoms of PTSD were measured with the Posttraumatic Check List-Civilian Version (PCL-C) [20]. This 17-item scale measures different reactions to traumatic experiences based on the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) [21] criteria, and answers are given on 5-point Likert scales, giving a possible summary score between 17 and 85. Participants were asked to complete the scale in reference to a specific traumatic event of their choosing. It was made clear in the instructions to the questionnaire that the traumatic event in question did not have to be related to dental treatment, but participants should indicate if their traumatic event indeed involved dental treatment. Cronbach's alpha was .93 in the present sample, indicating that the internal consistency of the questionnaire was high.

Participants were then asked to write a description of their most negative personal memory of dental treatment. This was followed by the Autobiographical Memory Questionnaire (AMQ, [22], see Table 1). The AMQ measures different characteristics of remembering events [23]: Reliving, which involves vividly re-experiencing the event including memory for the sights, sounds, smells or tastes; rehearsal, which refers to remembering the event either voluntarily or spontaneously, and thinking or talking about it; impact, which deals with how the memory influences one's current mood or provokes a physical response; belief, which is the extent to which the memory appears accurate and verbatim to the participant; whether the memory comes to you in bits and pieces with parts missing; the visual perspective from which the memory comes to mind; the emotional valence of the memory; and, finally, the participant's age during the event. Answers were given on 7-point Likert-scales except for item 21, where participants simply wrote their age at the time of the remembered event. Mean scores for each of the 21 AMQ-items were calculated across participants. Describing a memory was optional since some participants might not have negative memories, or might not want to disclose them.

Participants were subsequently asked to describe the most positive memory of dental treatment and to fill out the AMQ again while keeping this positive memory in mind. Completing the study did not require that a description of the most positive memory was provided.

Finally the participants were asked to complete a 20-item Dental Fear Survey (DFS, [24]), which measures the severity of dental fear related to specific procedures (e.g., sitting in the dental chair or hearing the drill) or bodily sensations (e.g., feeling tense or sweating). In our study, Cronbach's  $\alpha$  was .94. Summary scores on the DFS range from 20-100, where a score of 60 or above is considered a cut-off for clinical levels of dental fear.

An appendix provided participants with an e-mail address in order to claim the gift card. This approach ensured that responders remained anonymous.

### **Data preparation**

For all questionnaires except the AMQ, participants could only continue with the survey if they responded to all items. Missing data therefore resulted from either the AMQ or ending the survey prematurely. Participants were only included in an analysis, if they had complete data for that analysis.

Five coders assigned keywords to each written memory description independently of each other. The coders had a range of relevant backgrounds: a pediatric dentist (the second author), a dentist specializing in anxious patients (the third author), a dentist specializing in health anthropology, a psychologist, and a social scientist. Coders were free to choose their own keywords to make the procedure as unbiased as possible. Apart from the second and third author, the coders had no knowledge of the study design or hypotheses. Keywords were descriptors of each memory's central theme or content, e.g., 'anxiety', 'pain', 'praise', 'gift'. The first author collated all the memories into categories following the principle that a memory was placed in a category when a majority of coders (at least three) had assigned identical keywords to it. Memories were placed in an "unspecified" category if either the majority of the coders assigned "unspecified" as a keyword, or if fewer than three coders agreed on a category. Finally, memories where the description was left blank, but the AMQ was filled out, were placed in a separate "blank" category. All categories can be found in Table 2.

## **Results**

### **Descriptive and preliminary statistics**

Out of 171 participants who accessed the survey, 136 (54 males, mean age 17.3, range 17-18) gave enough answers to be part of at least one statistical analysis. Seventy came from Skovbakkeskolen and 66 came from Parkvejens Skole. The mean score of the DFS was 29.2 ( $SD = 13.0$ ) in 103 participants, while the mean score of the PCL-C was 29.3 ( $SD = 13.0$ ) in 129 participants. Eleven participants (8.5 %) indicated that the traumatic event they reported on the PCL-C was related to dental treatment. Among the complete sample of 136 participants, 79 (58 %) had tried sedation, 55 (40 %) had one or more cavities, 45 (33 %) reported having worn braces, and 57 (42 %) reported extraction of primary teeth. The

occurrence of these events did not show a statistically significant relationship with either the DFS (Spearman's  $\rho = .015$  to  $.077$ ) or the PCL-C (Spearman's  $\rho = -.050$  to  $.108$ ). Lastly, the correlation between the DFS and the PCL-C was statistically significant,  $r(103) = .331$ ,  $p = .001$ , indicating that dental fear is indeed associated with symptoms of PTSD.

### **Associations between characteristics of positive and negative memories, dental fear, and symptoms of PTSD**

Participants recorded a total of 86 negative memories and 99 positive memories on the AMQ. Excluding memories that had no description or were not negative, the resulting numbers were 62 negative memories and 87 positive memories. This difference was statistically significant in an exact McNemar's test,  $p = .021$ . The participant's mean age at the time of the most negative memory was 12.1 years ( $SD = 3.4$ ), while the mean age at the time of the most positive memory was 13.1 years ( $SD = 4.1$ ). To investigate the relationship between characteristics of the most negative and positive memory of dental treatment, dental fear, and symptoms of PTSD, we ran Pearson correlations between individual AMQ items, the DFS, and the PCL-C (Table 1). Several characteristics of the most negative memory of dental treatment were significantly related to dental fear, in particular items concerning re-experiencing different aspects of the negative event (i.e. sights, smells and sounds) and its emotional impact (see Table 1; note that Valence (item 19) shows a negative relationship with dental fear due to higher valence describing more positive emotion). There were also some statistically significant associations between characteristics of the most negative memory and symptoms of PTSD, for example experiencing a physical reaction in response to the memory (item 1), fragmented remembering (item 11) and spontaneous remembering (item 13).

Characteristics of the most positive memory of dental treatment showed only a few statistically significant associations with dental fear (i.e. sights, sounds and re-experiencing), and no statistically significant associations with symptoms of PTSD (see Table 1). The associations we did find between characteristics of positive memories and dental fear were positive rather than negative. Importantly, then, we did not find the predicted inverse relationship between characteristics of positive memories, dental fear, and symptoms of PTSD.

## Memory content

The categories that memories were assigned to and the frequency of exemplars in each category can be seen in Table 2. For negative memories, the most frequent central themes involved dentist behaviors, pain and physical discomfort. For positive memories, the most frequent central theme was dentist behaviors. The difference between negative and positive memories coded as referring to dentist behaviors was statistically significant in an exact McNemar's test,  $p = .007$ .

## Discussion

We investigated the relationship between memories of the most positive and negative treatment events, fear of dental treatment, and symptoms of PTSD in young adults leaving childhood dental care. The main finding was that several characteristics of negative memories of dental treatment were significantly associated with dental fear and symptoms of PTSD, which replicated previous findings in middle-aged dental phobic patients [19]. Characteristics of positive memories did not show the predicted inverse relationship with either dental fear or symptoms of PTSD.

Two aspects of our study distinguish it from prior research on the relationship between memory characteristics, dental fear, and symptoms of PTSD [19]. First, given that our sample consisted of 17- and 18-year olds, the memories in question consisted exclusively of memories of dental treatment in childhood and adolescence. Negative and positive treatment experiences in this period could be particularly important in their effect on treatment behavior as an adult. Second, whereas the representativeness of the samples employed in prior research was unclear, we consider our sample to be broadly representative of young adults, insofar as the participants' mean score on the dental fear survey corresponded to a recent study of Swedish adolescents slightly younger than the present sample [25], and their mean score on symptoms of PTSD also corresponded to recent results in a study of American university students slightly older than the present sample [26].

The self-reported history of dental treatment did not show any relationship with either dental fear or symptoms of PTSD, which could be taken to suggest that dental fear and PTSD symptoms are unrelated to an individual's objective treatment history. However, such a conclusion would be premature for at least three reasons: First, as treatment history did not involve an evaluation of the intensity or severity of treatment, there may still be a link between treatment history and either dental fear or PTSD symptoms. Second, the present group would not yet have experienced more invasive treatment such as extraction of wisdom-

teeth. Third, 11 participants indicated that the traumatic event reported in the PCL-C was related to dental treatment. A more thorough investigation of treatment history in an older group of patients would be required to make firm conclusion regarding the relationship with dental fear and PTSD symptoms.

Characteristics related to reliving and emotional impact of the most negative memories were associated with increased dental fear. More specifically, participants who reported vivid and intense negative memories accompanied by physical reactions and negative changes in mood also had higher self-reported dental fear. While it's tempting to interpret this finding to indicate that vivid negative memories cause young adults to be more fearful, the present findings suggest instead that dental fear facilitates the vivid reliving of negative episodes. This interpretation is additionally supported by the moderate correlation between dental fear and the spontaneous recall of a negative treatment event. This correlation suggests that negative treatment events are highly accessible in the fearful patient's mind, spontaneously – and maybe also intrusively – appearing in response to cues such as receiving a notice for an appointment [19, 27].

Negative memories were also associated with characteristics that are consistent with PTSD, including the experience of physical reactions, a feeling of travelling back in time, fragmented remembering (item 11 in Table 1), and spontaneous remembering [28]. We also found that reduced belief in the accuracy of the memory (item 20 in Table 1) and younger age during the most negative event (item 21 in Table 1) were associated with increased symptoms of PTSD. The relationship between negative memories from further back in time and increased symptoms of PTSD is interesting, since previous research found that earlier negative experiences with dental treatment were rated as more upsetting than later experiences [16]. Indeed, age during the most negative treatment event also correlated with the emotional valence of the event ( $r(70) = .312, p = .009$ ), indicating that older memories were more emotionally negative. This suggests that experiences earlier in childhood are remembered as more traumatizing by the young adult.

We expected to find a relationship between positive memories and reduced dental fear, but this was not the case. Surprisingly, there appeared to be a relationship between some aspects of reliving of positive memories and *increased* dental fear. This could indicate a general tendency for sensitive individuals to have vivid memories regardless of their valence. Indeed, studies of emotional memory have found that negative as well as positive memories tend to have increased ratings of reliving in vulnerable populations [17, 18]. Positive

memories significantly outnumbered negative memories, when excluding the “blank” category. This suggests that young adults have more positive memories of dental treatment or that positive events are more accessible to them. When prompted to think about dental treatment, the average young adult may by default think of something positive yet unremarkable, where negative events could become the exception to the norm. The findings thus seem to follow the principle that “bad is stronger than good” [29], meaning that although the majority of human experiences are positive in nature, the few that are negative tend to impact us to a greater extent.

Turning to the content of the memories, the most frequent categories of negative memories involved dentist behaviors, pain, physical discomfort, and anxiety. These findings replicate earlier research where pain and dentist behaviors were also the most frequently nominated categories [15], though another study found that pain was by far the most frequent category of negative events, with dentist behaviors being mentioned in only 5 % of memories [16]. Still, in this study [16] the memories concerning dentist behaviors were classified as more unpleasant than the other categories of negative events. A third study in 285 University students (mean age = 19.1 years) found that fears involving pain, mutilation, and being closed in were significant predictors of dental fear, while social anxiety was not [30]. These findings suggest a discrepancy between what young adults fear the most (invasive treatment) and what they actually remember (social interaction).

The content of positive memories was overwhelmingly related to dentist behaviors. Some categories, such as praise and guidance, could also be considered under the theme of dentist behaviors. These results emphasize the importance of the perception of the dentist during dental treatment. Memories of positive dentist behaviors seem to be readily available to young adults. On the other hand, some patients might perceive the treatment as highly stressful despite the dentist's best intentions, maybe due to a general vulnerability or stress reactivity. For example, a child may come to remember a dentist as harsh or impatient due to anxiety during the situation, when in fact the dentist was being very careful.

It might be helpful to focus on how prior events are represented in the child's or adolescent's memory during future visits. The effects of restructuring memories of dental treatment on children's dental fear were recently investigated [31]. The restructuring relied on a number of memory cues involving different modalities such as pictures from the child's last visit, concrete examples of procedures and behaviors, and an emphasis on how well the child had behaved in order to instill a sense of accomplishment. Two weeks after treatment,

the intervention group remembered less anxiety and pain than they had actually reported immediately following an injection administered in the first session. In contrast, a control group that simply recalled the last visit without any restructuring and cuing remembered the anxiety and pain as worse compared with their report following their initial visit. This provides some experimental evidence that memory representation affects expectations of dental treatment and also indicates a promising intervention for fearful children that could be administered by the dentist in a brief pre-treatment interview.

Some limitations should be taken into account when considering the present findings. Although participants were recruited from two different schools with separate dental staff, the fact that they all came from the same municipality could limit the generalizability of the results. Another potential limitation is the lack of counterbalancing for most negative and most positive memory, which could result in priming effects that might partly explain the lack of an inverse correlation between positive memories and dental fear. To test this alternative explanation, we ran the correlations between characteristics of positive memories, dental fear and PTSD symptoms for those participants, who did not report a negative memory ( $N = 43$ ). None of these correlations showed a significant inverse relationship (all  $ps < .145$ ).

In conclusion, we found that characteristics of the most negative memories of dental treatment were associated with increased dental fear in young adults, while positive memories did not show the expected inverse relationship with fear. Negative memories focused on dentist behaviors, pain, and physical discomfort as well as anxiety. Positive memories overwhelmingly focused on dentist behaviors. Taken together, the findings emphasize the central role of the dentist in young adults' representations of dental treatment. It is possible that negative expectations of dental treatment can be affected by restructuring the patients' memories of previous treatment sessions. This could be accomplished through cuing of previous situations to facilitate concrete remembering and focusing on positive behaviors to build a sense of accomplishment. Whether this can also ease the transition to adult treatment for some young adults is an important avenue for future research.

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Table 1. Correlations between characteristics of negative and positive memories of dental treatment (AMQ items), fear of dental treatment (DFS), and symptoms of posttraumatic stress (PCL-C). Statistically significant ( $p < .05$ ) correlations are marked in bold. The lower and upper limits of the 95% confidence interval for the correlations appear in brackets.

<i>AMQ item</i>	<i>DFS</i>		<i>PCL-C</i>	
	<i>Neg</i>	<i>Pos</i>	<i>Neg</i>	<i>Pos</i>
1. Physical reaction (e.g. beating heart, tension, tears, laughter) <sup>3</sup>	<b>.48 [.29, .62]</b>	.10 [-.12, .31]	<b>.29 [.08, .48]</b>	.14 [-.07, .34]
2. Change in mood <sup>3</sup>	<b>.48 [.29, .62]</b>	.07 [-.15, .28]	.18 [-.04, .38]	-.05 [-.26, .16]
3. Feels like travelling back in time <sup>1</sup>	<b>.35 [.14, .53]</b>	.22 [-.01, .42]	<b>.28 [.07, .47]</b>	-.02 [-.23, .19]
4. Vivid and clear <sup>1</sup>	<b>.37 [.17, .54]</b>	.13 [-.09, .34]	.16 [-.06, .36]	.11 [-.10, .31]
5. See what happened <sup>1</sup>	<b>.42 [.22, .58]</b>	<b>.23 [.01, .42]</b>	.03 [-.19, .24]	.16 [-.05, .36]
6. Hear the sounds <sup>1</sup>	<b>.34 [.13, .52]</b>	<b>.24 [.03, .43]</b>	.12 [-.10, .33]	.06 [-.15, .27]
7. Smell and taste sensations <sup>1</sup>	<b>.36 [.15, .53]</b>	.15 [-.07, .35]	<b>.22 [.01, .42]</b>	.07 [-.14, .28]
8. Remember the physical surroundings <sup>4</sup>	<b>.33 [.12, .51]</b>	.05 [-.17, .26]	.12 [-.10, .33]	.08 [-.13, .29]
9. Re-experience it all again <sup>1</sup>	<b>.27 [.06, .46]</b>	<b>.25 [.04, .44]</b>	.10 [-.12, .31]	.03 [-.18, .24]
10. Emotional intensity <sup>3</sup>	<b>.34 [.13, .52]</b>	.17 [-.05, .37]	.21 [-.01, .41]	.04 [-.17, .25]
11. Appears as bits and pieces	.20 [-.02, .40]	.04 [-.18, .25]	<b>.46 [.27, .62]</b>	.10 [-.11, .31]
12. Comes to me in words <sup>2</sup>	.05 [-.17, .26]	.11 [-.11, .32]	<b>.30 [.09, .49]</b>	.14 [-.07, .34]
13. Appeared spontaneously <sup>2</sup>	<b>.30 [.09, .49]</b>	.07 [-.15, .28]	<b>.26 [.05, .45]</b>	.06 [-.15, .27]
14. Consequences for my life <sup>3</sup>	.17 [-.05, .37]	.14 [-.08, .35]	.11 [-.11, .32]	.11 [-.10, .31]
15. Forms a coherent story <sup>4</sup>	.19 [-.03, .39]	.21 [-.01, .41]	.09 [-.13, .30]	.08 [-.13, .29]
16. I've spoken about it <sup>2</sup>	.09 [-.13, .30]	-.01 [-.21, .23]	-.11 [-.32, .11]	.09 [-.12, .30]
17. I've thought about it on purpose (e.g. voluntarily) <sup>2</sup>	.11 [-.11, .32]	.10 [-.13, .32]	.10 [-.12, .31]	-.01 [-.23, .21]
18. Visual perspective	-.03 [-.25, .19]	-.09 [-.30, .13]	.13 [-.09, .34]	.05 [-.17, .26]
19. Emotional valence	<b>-.35 [-.53, -.14]</b>	-.02 [-.23, .20]	-.01 [-.23, .21]	-.02 [-.23, .19]
20. I believe it really happened this way <sup>4</sup>	-.02 [-.24, .20]	-.18 [-.04, .38]	<b>-.23 [-.43, -.01]</b>	-.09 [-.30, .13]
21. Age during event	.03 [-.21, .26]	-.01 [-.26, .24]	<b>-.36 [-.55, -.14]</b>	.08 [-.17, .32]

AMQ = Autobiographical Memory Questionnaire, DFS = Dental Fear Survey, PCL-C =

Posttraumatic Check List, Neg = Most negative memory of dental treatment, Pos = Most

positive memory of dental treatment. <sup>1</sup>Reliving item. <sup>2</sup>Rehearsal item. <sup>3</sup>Impact item. <sup>4</sup>Belief

item.

Table 2. Categories of negative and positive memories of dental treatment. <sup>1</sup>Excerpt from longer memory.

<i>Categories (N, %)</i>	<i>Example</i>
<i>Negative memories</i>	
Dentist behaviors (14, 16.3 %)	“The dentist was very rough and did not show consideration for the fact that I was afraid. Instead she seemed mad that I wasn’t comfortable with her treatment. Eventually, she had to stop.”
Pain or physical discomfort (17, 19.8 %)	“Once when I was having a tooth extracted, I got a pill with sedative followed by an injection. It wasn’t the extraction of the tooth that hurt - it was the injection in the gums that was insanely painful, because the pill had no effect.”
Anxiety (5, 5.8 %)	“The first time I was being sedated and operated at the dentist. I don’t remember it very well, but it was unpleasant and I remember the terror, ignorance, hopelessness and despair from lying under a cover with noisy machines in my mouth not knowing what was happening or going to happen.”
Cosmetic (1, 1.2 %)	“I was treated at [the dentist] and for a while I was unhappy with how they looked, but I have come to realize that that’s what they could do and is now relatively happy with my teeth.” <sup>1</sup>
Waiting (2, 2.3 %)	“Once I had to sit in the waiting room for more than 30 minutes.”
Unspecified (23, 26.7 %)	“Extraction of a milk tooth.”
Not negative (5, 5.8 %)	“I have never had an unpleasant experience at the dentist.”
Blank (19, 22.1 %)	
<i>Positive memories</i>	
Dentist behaviors (36, 40.0 %)	“It was a beautiful summer’s day, where the dentist and I had a nice conversation both before and after the checkup. While the dentist was examining me, she explained what she was doing, when, and explained several things to me, e.g. regarding brushing and choice of toothbrush. The dentist gave me a lot of good examples to make me understand what it takes to clean my teeth properly.”
Praise (14, 12.2 %)	“The last time I was at the dentist (18-year checkup), I got an incredible amount of praise for having such nice, pretty and clean teeth as I do.”
Gifts (9, 10.0 %)	“Last visit at the dentist, got an 18-year present in the shape of toothbrush and chewing gum etc. for having had clean teeth for 18 years.”
Quality of treatment (3, 3.3 %)	“When they were able to save my permanent front tooth when it broke just months after I got it.”
Guidance (3, 3.3 %)	“The most positive memory is probably when I was little standing in front of the small mirrors at the clinic, learning how to brush my teeth well.”
Safety (2, 2.2 %)	“There are so many positive memories. I believe that dentists try their best. They are nice and friendly and you also feel really safe when you are lying in the chair.”
Unspecified (20, 22.2 %)	“It’s not like I have negative or positive memories from dental care. It’s just something I’ve attended unconcerned. I reckon it’s a positive memory walking out of there with good teeth.”
Blank (12, 13.3 %)	