

Attitude toward Death: Does It Influence Dental Fear?

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ABSTRACT: The possible influence of fear of death and attitude toward death were studied related to dental anxiety in Hungarian elementary and secondary school subjects ($n = 277$; 114 males, 163 females; age between 8 and 18 years). Dental fear and anxiety scores were DAS: 10.8 ± 3.6 ; DFS: 40.6 ± 15.6 ; STAI-S: 38.0 ± 11.0 ; STAI-T: 40.3 ± 10.0 . Lester's Attitude Toward Death Scale scores were 6.3 ± 1.3 . Girls scored higher on DAS, STAI-S, and STAI-T scales ($P \leq 0.05$). Age influenced STAI-S, STAI-T, and Lester's Scale scores ($P \leq 0.05$). Lester's Scale scores influenced the expectations of the subjects about the dental fear of their surrounding people (parents, brother, sister, friends) ($P \leq 0.05$). A percentage of 7.22 of the subjects indicated a rather strong connection between dental fear and fear of death. These subjects had significantly higher dental fear and anxiety scores as compared to others ($P \leq 0.01$). Death-related content was found in 4.3% of drawings and in 10.5% of free associations (couplings) related to teeth (in 12.6% either in drawings or in couplings). The appearance of death-related content was higher with higher age, and higher expected dental fear of surrounding people ($P \leq 0.01$). Our data indicate a detectable influence of fear of death on dental fear, especially in subjects with higher dental fear scores.

KEYWORDS: dental fear; attitude toward death; fear of death

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INTRODUCTION

One of the supposedly basic conflict of existential psychotherapy is transitoriness¹ (mortal nature, death). The conflict of transitoriness seems to be highly important in dentistry as well. An important coupling of mouth and teeth to the conflict of transitoriness is rooted in the early phase of psychological development.^{2,3} The early experience of the infant related to losing somebody (the baby must be taken off the breast following tooth eruption) and destroying something (intake of food with the use of the teeth) is strongly coupled to the oral region during the so-called oral-sadistic stage⁴ of psychological development. Another important coupling is that teeth have a strong symbolic meaning related to strength and aggressiveness, whereas tooth loss, especially edentulousness, symbolizes the loss of vigor and vitality and evokes a symbolic meaning of growing old, evanescence, and death.^{5,6} Consequently, the conflict of transitoriness may play an important role in most of the psychological events coupled to mouth and teeth, including fear of dental treatment.

Only two publications were found to investigate a representative number of subjects related to this topic.^{7,8} One of them investigated the relationship between the different types of fear (Fear Survey Schedule II; FSS-II⁹) and dental fear in adult phobic patients.⁷ Seeing a fight ($r = 0.33$; $P \leq 0.01$) or blood ($r = 0.32$, $P \leq 0.01$)—and in the case of men the cemeteries ($r = 0.5$; $P \leq 0.01$) and dead bodies ($r = 0.41$; $P \leq 0.01$)—were found among the individual fear items having the highest and most significant Pearson correlation with Dental Anxiety Scale (DAS) total scores.⁷ In the other paper,⁸ FSS-II and some additional items were used, and a factor model of fear was developed. The Pearson correlation of factor “illness and death” with DAS total scores was $r = 0.28$ ($P \leq 0.05$). The Pearson correlation of the same factor with Dental Fear Survey (DFS) total scores was $r = 0.25$ ($P \leq 0.05$).⁸ The highest correlation was found in the case of factor “physical injuries” with both DAS ($r = 0.38$, $P \leq 0.05$) and DFS ($r = 0.46$, $P \leq 0.05$) total scores in this study.⁸

The above data indicate that the conflict of transitoriness may play an important role in the appearance of dental fear, although the relationship seems to be more complex rather than a direct one. In the present article, the authors would like to confirm this hypothesis.

METHODS

Hungarian primary and grammar school subjects from Budapest participated in this study ($n = 277$, 114 males, 163 females; age between 8 and 18 years, mean: 13.97 ± 2.77 years). The subjects participated voluntarily, after the appropriate information about the study had been given. Agreements of the students' parents were also obtained.¹⁰

To measure anxiety level the Hungarian version¹¹ of Spielberger's State and Trait Anxiety Inventory¹² (STAI-S, STAI-T) was used. Dental fear was measured by the Hungarian versions^{13,14} of the Dental Anxiety Scale (DAS)¹⁵ and Dental Fear Survey (DFS).^{16,17} To measure the subjects' expectations in terms of dental fear of their surrounding people (parents, brother, sister, friends), the Expectation Scale¹⁸ was used. This Scale¹⁸ contains the last four items of the early version (first, nonreduced version) of the DFS scale.¹⁶ To score this scale, the mean value is calculated from the items, which were answered¹⁸ (i.e., subjects having no brothers or sisters do not answer that particular item). Chronbach alpha values of the scales in this study were STAI-S: 0.89; STAI-T: 0.87; DAS: 0.86; DFS: 0.92; Expectation Scale (in case all items were scored): 0.81.

Following administration of the scales, subjects were asked to make drawings¹⁹ and write free associations (couplings)^{20,21} as to the teeth. For drawing, a 15 × 15-cm square on a sheet of paper was used, and the participant was asked to draw a tooth (or teeth) in it.¹⁹ For writing free associations (couplings), another sheet of paper was given and the participant was asked to write any thoughts that came into his or her mind about teeth.^{20,21}

As the next step, the Hungarian version²² of the Lester's Attitude Toward Death Scale²³ was administered. This scale contains 21 individual statements (items) about death, and the participant indicated which ones he or she believed to be true. The nominated items could be analyzed individually or the median value of the item scores can be used as a measure of fear of death as well.²³ Although there are some other, more complex scales²⁴⁻²⁶ in the literature to measure fear of death, the items of the Lester's Scale are much less "drastic" and more convenient for children.

Finally participants were asked to indicate if they believed any of the following two statements to be true: (a) "Dental treatment may induce fear of death." (b) "Dental treatment never induces fear of death."

Following the collection of data, scales (or survey and inventories) were evaluated as usual, and the indications related to the above two statements were also registered. The drawings and written free associations were evaluated against the death-related contents. For this purpose, the content criteria of Gottschalk-Gleser²⁷ were used, but content related directly to a description of an actual dental treatment was not regarded as positive. For example, a description (or drawing) of a real drilling of a tooth was not taken into account, but a description of a dentist who is "eating his patients during the dental treatment" was taken as positive. The drawings and written free associations (couplings) were evaluated by three investigators, and only those were regarded as positive in which a minimum of one content (meeting the above criteria) was found by at least two of the investigators.

For statistical analysis, the SPSS/PC 10.0 software (SPSS, Inc., Chicago, IL) was used, the level of significance was $P \leq 0.05$.

TABLE 1. Mean score and standard deviation of the scales related to gender and age

	DAS	DFS	EXPECT	STAI-S	STAI-T	Lester
Gender						
m (<i>n</i> = 114)	10.2 ± 3.5	39.2 ± 14.3	2.3 ± 0.9	36.4 ± 10.4	38.6 ± 9.6	6.4 ± 1.3
fm (<i>n</i> = 163)	11.1 ± 3.7	41.6 ± 16.3	2.5 ± 0.8	39.2 ± 11.4	41.4 ± 10.2	6.2 ± 1.3
Age (year)						
8 (<i>n</i> = 10)	9.3 ± 6.0	40.8 ± 14.8	1.9 ± 0.9	38.5 ± 8.0	37.3 ± 8.7	6.8 ± 0.7
9 (<i>n</i> = 18)	10.7 ± 3.7	40.2 ± 17.3	2.4 ± 1.0	34.3 ± 7.7	39.7 ± 1.5	6.6 ± 0.1
10 (<i>n</i> = 16)	10.8 ± 2.5	39.4 ± 14.9	1.8 ± 0.5	34.4 ± 12.8	39.9 ± 9.9	7.2 ± 0.9
11 (<i>n</i> = 16)	11.1 ± 4.6	42.0 ± 15.3	2.1 ± 0.9	34.0 ± 12.2	37.9 ± 11.4	6.5 ± 1.2
12 (<i>n</i> = 17)	9.6 ± 3.9	36.2 ± 13.6	2.2 ± 0.8	30.6 ± 7.5	33.6 ± 7.6	6.7 ± 1.4
13 (<i>n</i> = 19)	10.9 ± 3.1	38.7 ± 13.4	2.3 ± 1.0	35.8 ± 10.9	36.5 ± 9.2	6.8 ± 1.5
14 (<i>n</i> = 39)	10.9 ± 3.7	40.9 ± 16.6	2.4 ± 0.8	40.3 ± 11.2	40.5 ± 11.3	6.1 ± 1.3
15 (<i>n</i> = 47)	10.8 ± 4.0	39.9 ± 14.6	2.5 ± 0.8	38.1 ± 10.7	41.1 ± 10.3	6.0 ± 1.0
16 (<i>n</i> = 38)	11.4 ± 3.1	42.3 ± 17.3	2.5 ± 0.8	38.1 ± 10.9	41.9 ± 10.6	6.2 ± 1.1
17 (<i>n</i> = 42)	10.8 ± 3.6	41.9 ± 17.4	2.7 ± 0.9	43.0 ± 11.4	41.0 ± 9.3	6.0 ± 1.7
18 (<i>n</i> = 15)	10.3 ± 2.4	41.3 ± 12.9	2.4 ± 0.8	41.4 ± 9.5	45.9 ± 9.5	6.5 ± 1.7
∑ (<i>n</i> = 277)	10.8 ± 3.6	40.6 ± 15.6	2.4 ± 0.9	38.0 ± 11.0	40.3 ± 10.0	6.3 ± 1.3

DAS = Dental Anxiety Scale; DFS = Dental Fear Survey; EXPECT = Expectation Scale; STAI-S and STAI-T = State and Trait Anxiety Inventory; Lester = Median Value of Lester’s Attitude Toward Death Scale; m = male; fm = female; ∑ = total sample.

RESULTS

The gender and age of the subjects influenced the values obtained on most of the scales (TABLE 1). Female participants scored lower on Lester’s Scale and higher on all other scales than male participants. The difference was significant in the case of DAS, Expectation Scale, STAI-S, and STAI-T scores (*t*-probe, *P* ≤ 0.05). There was a general increasing tendency of most of the scales with age, with the exception of the Lester’s scale, which decreased with age. The influence of age was significant in the case of STAI-S, STAI-T, and Lester’s Scale (one-way analysis of variance [ANOVA], *P* ≤ 0.05).

Higher Pearson correlation values (TABLE 2) were between dental fear scores (DAS and DFS) and between anxiety scores (STAI-S and STAI-T). Although Pearson correlation values were around zero between Lester’s scale and all other scales (TABLE 2), one-way ANOVA indicated that the median value of the Lester’s Scale score significantly influenced (*P* ≤ 0.05) the Expectation Scale, and was influenced by the STAI-S and STAI-T scores (one-way ANOVA, *P* ≤ 0.05). Age also influenced the median value of Lester’s Scale score (one-way ANOVA; *P* ≤ 0.05), whereas gender did not.

In many cases, value differences of several measured parameters were found between participants marking and participants not marking an individual item of Lester’s Scale (TABLE 3). These differences may indicate relations between the individual items and the measured parameter. Such relations were found between gender and six individual items (nominator \bar{U} nonnominator; Fisher’s

TABLE 2. Pearson correlation of the scales

	DAS	DFS	EXPECT	STAI-S	STAI-T	Lester
DAS	1.00					
DFS	0.77**	1.00				
EXPECT	0.36**	0.37**	1.00			
STAI-S	0.34**	0.35**	0.26**	1.00		
STAI-T	0.36**	0.39**	0.20**	0.66**	1.00	
Lester	0.08 ^{ns}	0.07 ^{ns}	-0.01 ^{ns}	-0.07 ^{ns}	-0.03 ^{ns}	1.00

DAS = Dental Anxiety Scale; DFS = Dental Fear Survey; EXPECT = Expectation Scale; STAI-S and STAI-T = State and Trait Anxiety Inventory; Lester = Median Value of Lester’s Attitude Toward Death Scale; * = $P \leq 0.01$; ** = $P \leq 0.01$; ns = not significant.

TABLE 3. Relations between several measured parameters and marking an item of Lester’s Attitude Toward Death Scale

No. of item	Gender	Age	DAS	DFS	EXPECT	STAI-S	STAI-T
1 (110)	-	-	-	-	-	-	-
2 (64)	-	++	-	-	-	-	-
3 (116)	+	++	-	-	-	-	-
4 (38)	+	-	-	-	-	-	-
5 (164)	-	++	-	-	-	-	-
6 (47)	-	-	-	-	-	-	-
7 (104)	-	+	-	-	-	-	-
8 (129)	-	++	-	-	+	-	-
9 (152)	-	++	-	-	-	-	-
10 (190)	-	-	-	-	+	-	-
11 (126)	-	++	-	-	-	-	-
12 (145)	+	++	-	-	-	-	-
13 (129)	+	++	-	-	-	-	-
14 (124)	-	++	-	-	+	-	-
15 (131)	-	++	-	-	-	-	-
16 (162)	-	++	-	-	-	+	-
17 (36)	-	+	-	-	-	+	+
18 (161)	-	++	-	-	-	-	-
19 (80)	-	++	-	-	-	-	-
20 (100)	++	++	-	-	+	-	-
21 (99)	+	++	+	+	-	-	-

DAS = Dental Anxiety Scale; DFS = Dental Fear Survey; EXPECT = Expectation Scale; STAI-S and STAI-T = State and Trait Anxiety Inventory; () = number of subjects marked an item; + = $P \leq 0.05$; ++ = $P \leq 0.01$; - = not significant.

exact; $P \leq 0.05$); age and most of the items (nominator \Leftrightarrow nonnominator; *t*-probe; $P \leq 0.05$); dental fear scores (DAS and DFS), and one certain item with the most refusing attitude toward death (nominator \Leftrightarrow nonnominator; *t*-probe; $P \leq 0.05$); Expectation Scale and four individual items (nominator \Leftrightarrow nonnominator; *t*-probe; $P \leq 0.05$); anxiety (STAI-S and STAI-T), and a few individual items (nominator \Leftrightarrow nonnominator; *t*-probe; $P \leq 0.05$). It should

also be mentioned that nominators of the only item being in relation with dental fear (with the most refusing attitude toward death) scored significantly higher (*t*-probe; $P \leq 0.05$) on dental fear scales (DAS and DFS) as compared to nonnominators.

Twenty participants (7.22%) asserted that “dental treatment may induce fear of death.” (TABLE 4). Participants asserting this scored significantly higher (*t*-probe; $P \leq 0.01$) on dental fear scales (DAS and DFS) and anxiety inventories (STAI-S and STAI-T).

Similarly, 49 participants (17.69%) did not assert that “dental treatment never induces fear of death.” (TABLE 5). Participants not asserting this statement scored significantly higher (*t*-probe; $P \leq 0.01$) on dental fear scales (DAS and DFS) and anxiety inventories (STAI-S and STAI-T).

There were 257 participants making drawings, of which 12 drawings (4.3% of all 277 participants) had death-related content (TABLE 6). Written free associations (couplings) were prepared in 181 cases, of which 29 couplings (10.5% of all 277 participants) contained death-related content (TABLE 6). In 35 cases (12.6% of all 277 participants), there was a death-related content in at least one of the works (either in the drawing or in the written free association, or in both) of participants. In the case of males, death-related contents were expressed more frequently in drawings (Fisher's exact; $P \leq 0.05$). Age, state-anxiety (STAI-S), and Expectation Scale scores were higher in the case of participants expressing death-related contents in written free associations (*t*-probe; $P \leq 0.01$, $P \leq 0.05$). Similarly, age and Expectation Scale scores were higher (*t*-probe; $P \leq 0.01$, $P \leq 0.05$) in the case of participants expressing death-related content either in drawings or in written associations, or in both.

DISCUSSION

In general, it is accepted that fear of death scores are somewhat higher in females than males,²⁸ although there are some studies that do not confirm this difference.^{24,29,30} Age seems to have no significant influence on fear of death levels in adults and older-aged population.^{28,31} However, younger-aged participants scored somewhat higher,³² and there was a slightly rising tendency from 13- to 26-year-old adolescent and young adult populations.²⁹ Our data (TABLE 1) concerning the level of fear of death (median value of Lester's Scale) indicated no significant difference related to gender; however, they showed slightly downward tendency from 8 to 18 years.

Data in the literature indicate that there is a slightly positive Pearson correlation between anxiety,²⁸ dental fear,^{7,8} and fear of death. Our results did not indicate such correlation (TABLE 2), although some nonlinear relations (ANOVA) were detected. Fear of death level was significantly influenced by anxiety scores. An interesting finding was that fear of death level significantly influenced the expectations of the participants about the dental fear of their

TABLE 4. Influence of gender, age, and several scale scores on the subjects' assertion of relationship between dental fear and fear of death

	Gender distrib	Mean age	DAS	DFS	EXP	STAI-S	STAI-T	Lest
Relationship asserted (<i>n</i> = 20)	m 12 fm 8	14.4 ± 3.1	13.2 ± 4.1	57.3 ± 22.0	2.7 ± 0.9	45.2 ± 11.5	47.3 ± 9.2	6.4 ± 1.0
Relationship not asserted (<i>n</i> = 257)	m 102 fm 155	14.0 ± 2.7	10.6 ± 3.5	39.3 ± 14.2	2.4 ± 0.9	37.5 ± 10.8	39.7 ± 9.9	6.3 ± 1.3
Sig. level	n.s.	n.s.	++	++	n.s.	++	++	n.s.

Gender distrib = gender distribution; DAS = Dental Anxiety Scale; DFS = Dental Fear Survey; EXP = Expectation Scale; STAI-S and STAI-T = State and Trait Anxiety Inventory; Lest = Median value of Lester's Attitude Toward Death Scale; () = number of assertions; Sig. level = level of significance; + = $P \leq 0.01$; ++ = $P \leq 0.01$; - = not significant.

TABLE 5. Influence of gender, age, and several scale scores on the subjects' assertion of absence of relationship between dental fear and fear of death

	Gender distrib	Mean age	DAS	DFS	EXP	STAI-S	STAI-T	Lest
Absence of relationship asserted (<i>n</i> = 228)	m 88 fm 140	18.9 ± 2.8	10.5 ± 3.5	38.9 ± 13.5	2.4 ± 0.9	37.0 ± 10.7	39.3 ± 9.7	6.3 ± 1.3
Absence of relationship not asserted (<i>n</i> = 49)	m 26 fm 23	14.6 ± 2.6	12.1 ± 4.1	48.5 ± 21.4	2.5 ± 0.9	42.6 ± 11.2	44.6 ± 10.7	6.5 ± 1.4
Sig. level	+	n.s.	++	++	n.s.	++	++	n.s.

Gender distrib = gender distribution; DAS = Dental Anxiety Scale; DFS = Dental Fear Survey; EXP = Expectation Scale; STAI-S and STAI-T = state and trait anxiety inventory; Lest = median value of Lester's Attitude Toward Death Scale; () = number of assertions; Sig. level = level of significance; + = $P \leq 0.01$; ++ = $P \leq 0.01$; - = not significant.

TABLE 6. Influence of gender, age, and several scale scores on the appearance of death-related contents in drawings and written free associations (couplings)

	Gen	Age	DAS	DFS	EXPE	STAI-S	STAI-T	Lest
Drawing (<i>n</i> = 12)	+	-	-	-	-	-	-	-
Coupling (<i>n</i> = 29)	-	++	-	-	+	++	-	-
Drawing and/or coupling (<i>n</i> = 35)	-	++	-	-	+	-	-	-

Gen = gender; DAS = Dental Anxiety Scale; DFS = Dental Fear Survey; EXPE = Expectation Scale; STAI-S and STAI-T = State and Trait Anxiety Inventory, Lest = Median value of Lester’s Attitude Toward Death Scale; () = number of drawings and couplings containing death-related contents; + = $P \leq 0.01$; ++ = $P \leq 0.01$; - = not significant.

surrounding people (Expectation Scale), although dental fear level (DAS and DFS) was not influenced by fear of death scores.

It was also interesting to find that dental fear scores (DAS and DFS) had a relation to only one certain item of Lester’s Scale, with the most refusing attitude toward death (TABLE 3), and participants with higher dental fear scores more frequently nominated this item as believed to be true. More pronounced relation was found between the individual items of Lester’s Scale and the Expectation Scale (TABLE 3) supporting the above finding that expectations of the participants about the dental fear of their surrounding people is more closely related to the attitude toward death than dental fear itself.

A percentage of 7.22 of the participants asserted that “dental treatment may induce fear of death.” (TABLE 4), and a percentage of 17.69 of the participants did not assert that “dental treatment never induces fear of death.” (TABLE 5). On the basis of these data, we can conclude that a not quite negligible percentage of the participants experience some relation between fear of death and dental fear. The experience of such a relation seems to be stronger in participants with higher anxiety and dental fear scores (TABLES 4 and 5).

Death-related contents were found in 12.6% of the participants either in drawings or in written free associations or in both (TABLE 6). This finding renders a relation between tooth (teeth) and fear of death at the unconscious level of imaginations (notions) as well. Interestingly, no relation was found between the appearance of death-related contents and dental fear scores (DAS and DFS), whereas expectations of the participants (Expectation Scale) influenced the appearance of such contents significantly (TABLE 6).

Summarizing the data, the authors conclude that there is a significant relation between the conflict of transitoriness (mortal nature, death) and the tooth/teeth-related psychological events including dental fear. This relation is detectable at both conscious and unconscious level, especially in participants with higher dental fear scores.

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