



UvA-DARE (Digital Academic Repository)

Treating highly anxious dental patients in a dental fear clinic

Aartman, I.H.A.

Publication date
2000

[Link to publication](#)

Citation for published version (APA):

Aartman, I. H. A. (2000). *Treating highly anxious dental patients in a dental fear clinic*. [Thesis, fully internal, Universiteit van Amsterdam].

General rights

It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

Disclaimer/Complaints regulations

If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: <https://uba.uva.nl/en/contact>, or a letter to: Library of the University of Amsterdam, Secretariat, Singel 425, 1012 WP Amsterdam, The Netherlands. You will be contacted as soon as possible.

Chapter 6

RELIABILITY AND VALIDITY OF THE FEAR SURVEY SCHEDULE III IN A POPULATION OF HIGHLY ANXIOUS DENTAL PATIENTS¹

¹ An adapted version of this chapter is submitted for publication as: Aartman, I.H.A. , Jongh, A. de, & Hoogstraten, J. Reliability and validity of the Fear Survey Schedule III in a population of highly anxious dental patients.

Introduction

Excessive dental fear may originate from conditioning, transmission of information, or observational learning (Berggren & Meynert, 1984; De Jongh, 1995; Rachman, 1977). Moreover, individual characteristics of anxious persons influence their response to dental care. Dental anxiety may also be a manifestation of the presence of other fears or mere general psychopathology, such as panic disorder, social phobia, post-traumatic stress disorder, and generalized anxiety disorder (De Jongh, 1994). Indeed, it has been found that a large proportion of persons with a high level of dental anxiety also suffer from other fears or general psychopathological symptoms (e.g., Aartman, De Jongh, & Van der Meulen, 1997; Berggren, 1992; Fiset, Milgrom, Weinstein, & Melnick, 1989; Kvale, Berg, & Radaal, 1998; Locker, Liddell, & Shapiro, 1999; Makkes, Schuurs, Thoden van Velzen, Duivenvoorden, & Verhage, 1986; McNeil & Berryman, 1989; Schuurs, Duivenvoorden, Makkes, Thoden van Velzen, & Verhage, 1988), or meet criteria for other psychiatric diagnoses (Enneking, Milgrom, Weinstein, & Getz, 1992; Moore, Brødsgaard, & Birn, 1991; Roy-Byrne, Milgrom, Tay, Weinstein, & Katon, 1994). There are indications that concomitant anxieties and other psychopathological symptoms have a negative influence on treatment success (e.g., Berggren & Carlsson, 1985; Kleinhauz, Eli, Baht, & Shamay, 1992). Therefore, identifying patients who are prone to fail or succeed when treated for their dental anxiety is important in order to permit a more adequate selection of patients for specific treatment modes. Thus, instruments are needed that ensure a quick diagnosis of fear-provoking areas and psychopathological aspects.

To assess psychopathological dimensions of highly anxious dental patients treated in dental fear clinics, the Symptom Checklist 90 (SCL-90) is used in our and other clinics (Aartman et al., 1997; Berggren, Carlsson, Hakeberg, Hägglin, & Samsonowitz, 1997; Kleinhauz et al., 1992; Willumsen, 1999). However, no consensus seems to be reached with regard to a measurement instrument to assess concomitant fears. In Sweden and Denmark several modifications of the Fear Survey Schedule (Lang & Lazovik, 1963) have been used in the dental situation. For example, the Geer Fear Scale (GFS; Berggren & Carlsson, 1984), a modified and shortened version of the FSS-II (Geer, 1965) consisting of 18 divergent stimuli, was used to determine the presence of other fears and phobias in highly anxious dental patients (e.g., Berggren & Carlsson, 1985;

Moore, 1991). This questionnaire, rather than tapping separate anxiety constructs, assesses an overall fear score.

Because the GFS did not satisfy, another modification of the FSS-II was introduced in Sweden (Berggren, Carlsson, Gustafsson, & Hakeberg, 1995; Hakeberg, Gustafsson, Berggren, & Carlsson, 1995). The explorative and confirmative factor analyses carried out with this scale in small samples yielded five factors (i.e., 'fear of illness and death', 'fear of failures and embarrassment', 'fear of social situations', 'fear of physical injuries', and 'fear of animals and natural phenomena'). However, a sufficient amount of studies supporting the reliability and validity of this version is lacking.

In The Netherlands, the Fear Survey Schedule III (FSS-III; Wolpe & Lang, 1964) was used in the dental situation to assess the construct validity of the Dental Anxiety Inventory in first year psychology students (Stouthard, Hoogstraten, & Mellenbergh, 1995). The psychometric properties of this questionnaire have been studied extensively, and this version of the FSS-III proved to be reliable and factorial invariant across several populations, countries, and gender (Arrindell, Emmelkamp, & van der Ende, 1984; Arrindell, Solyom, Ledwidge, Van der Ende, Hageman, Solyom, & Zaitman, 1990). Like the FSS-II, the FSS-III taps five factors as well, that is, 'social phobia', 'agoraphobia', 'blood, injury, illness and death', 'harmless animals', and 'sex and aggression'. These dimensions seem more comparable to the anxiety dimensions (i.e., 'interpersonal events or situations', 'death, injuries, illness, blood and surgical procedure', 'animals', and 'agoraphobic' fears) found in a review of factor analytic studies of fear questionnaires (Arrindell, Pickersgill, Merckelbach, Ardon, & Cornet, 1991) than the five factors of the FSS-II. Therefore, it was decided to use the FSS-III. Nevertheless, since this version of the FSS-III has not been used before in populations of persons suffering from high dental anxiety, the aim of the present study was to assess the reliability and factorial validity, and construct validity of the FSS-III in such a population.

Material and methods

Subjects

The study was conducted at a dental fear clinic in Amsterdam, The Netherlands. Patients (n=597) who applied for treatment between February 1997 and August 1999 were used for the present research purpose. The age of these 378 women and 219 men

varied from 15 to 76 years ($M=35.5$, $SD=10.9$). It was on average 6.8 years ago that they visited a general dental practitioner (range 0-50, $SD=8.6$).

Instruments and procedure

The FSS-III consists of 52 items² that can be answered on a 5-point scale ranging from 1 (not anxious at all) to 5 (extremely anxious) (Arrindell, et al., 1984; Arrindell, et al., 1990). The items refer to stimuli of which patients are requested to indicate the degree these stimuli provoke anxiety. The 52 items yield five dimensions and a total score.

The Short version of the Dental Anxiety Inventory (S-DAI; Aartman, 1998) and the Dental Anxiety Scale (DAS; Corah, 1969) were used to assess dental anxiety. The S-DAI consists of nine items with total scores ranging from 9 (not anxious at all) to 45 (extremely anxious). The mean score in the present sample was 40.7 ($SD=5.26$). The DAS consists of four questions and total scores range from 4 to 20 (extremely anxious). The mean score in the present sample was 17.8 ($SD=2.46$). In addition, a 10-point Likert anxiety scale was used (AS). Patients rated how anxious they were to visit a dentist from 1 to 10 ($M=9.3$, $SD=1.21$).

The Dutch version of the Revised Symptom Checklist (SCL-90; Arrindell & Ettema, 1986) was used to assess psychopathological dimensions. This questionnaire consists of 90 items, which provide an indication of psychological dysfunctioning on eight dimensions: agoraphobia, somatization, anger-hostility, depression, interpersonal sensitivity and paranoid ideation, anxiety, cognitive-performance difficulty, and sleep disturbance.

Data analysis

The factor structure of the FSS-III was assessed using a principal component analysis with varimax rotation. Reliability (internal consistency) was assessed by Cronbach's α . Average inter-item correlations and item-remainder correlations are presented too. Means and standard deviations are given per scale and item and the mean factor scores were compared by paired t-tests. Finally, correlation coefficients were computed (Pearson) between the FSS-subscales, the dental anxiety questionnaires, and the SCL-

² The 12 appended items suggested in Arrindell et al. (1984) were omitted. Not yet published data show that this 52-item version is factorial invariant across a large number of countries (Arrindell, personal communication, 18 September 1998 and 30 May 2000).

90 to give an indication of the construct validity (both convergent and discriminant) of the anxiety scales in this population.

Results

The principal component analysis revealed ten factors with an eigenvalue higher than 1, explaining 63.1% of the variance. The first five factors explained 47.1% of the variance in the 52 items. With respect to these percentages per factor, after the first and fourth factor a drop in percentage of explained variance was found (Table 1), indicating that the fifth factor, sex and aggression, was not as strong as the other factors. Eight items loaded higher on a factor other than the theoretically assumed one (Table 2). Seven of these loadings were lower than 0.40, however, all other loadings were practically significant (i.e., higher than 0.40; Stevens, 1996). Means, standard deviations and item-remainder correlations per item are given in Table 2 as well.

Table 1 Eigenvalues and percentages explained variance per factor

Variables	Eigenvalue	% of variance explained
FSS-social phobia	8.2	15.8
FSS-agoraphobia	5.4	10.4
FSS-blood injury, illness and death	4.4	8.4
FSS-harmless animals	4.2	8.2
FSS-sex and aggression	2.2	4.3

Reliability coefficients (Cronbach's α and average inter-item correlations), means, and standard deviations for each factor and the total scale are shown in Table 3. The average inter-item correlations varied from 0.36 for the sex and aggression dimension to 0.51 for the social phobia scale. The total scale had the lowest average inter-item correlation (0.29). Comparison of the mean scores indicated that patients scored highest on the blood, injury, illness and death dimension. In addition, all mean scores were statistically significant different from each other (t 's varied from 8.53 to 24.04, $df=596$, $p<0.001$), except the means of the FSS-social phobia and FSS-harmless animals scales and of the FSS-agoraphobia and FSS-sex and aggression scales. These latter two scales had the lowest mean scores.

Table 2 Factor loadings, means, standard deviations, and item-remainder correlations per item

Items	Factor loading	Mean	SD	Item-remainder correlation
<i>Social phobia</i>				
5. Speaking in public	0.56	2.62	1.42	0.54
8. Being teased	0.70	1.86	1.25	0.68
9. Failure	0.77	2.23	1.33	0.76
11. Entering a room where other people are already seated	0.61	1.94	1.17	0.65
16. Strangers	0.51	1.63	0.93	0.59
21. People in authority	0.51	1.46	0.90	0.55
29. Being watched working	0.67	2.02	1.25	0.69
37. Being criticized	0.76	2.22	1.26	0.76
46. Feeling rejected by others	0.76	2.22	1.33	0.77
51. Feeling disapproved of	0.84	2.25	1.33	0.81
57. Being ignored	0.75	2.29	1.39	0.75
62. Making mistakes	0.70	2.15	1.28	0.74
63. Looking foolish	0.67	2.20	1.36	0.69
<i>Agoraphobia</i>				
2. Being alone	0.38³	1.68	1.15	0.52
3. Being in a strange place	0.55	1.81	1.09	0.68
6. Crossing streets	0.52	1.19	0.60	0.54
7. Falling	0.26	1.56	1.00	0.43
12. High places on land	0.42	2.52	1.52	0.47
18. Journeys by train	0.83	1.39	0.97	0.68
19. Journeys by bus	0.84	1.42	0.99	0.69
20. Journeys by car	0.67	1.34	0.85	0.60
24. Crowds	0.63	2.01	1.33	0.64
25. Large open spaces	0.69	1.35	0.92	0.62
39. Being in an elevator	0.63	1.81	1.27	0.62
45. Enclosed places	0.56	2.39	1.47	0.64
49. Aeroplanes	0.48	1.74	1.26	0.44

³ Items with a higher factor loading on another scale are given in bold type

<i>Blood injury, illness and death</i>					
1.	Open wounds	0.60	2.65	1.40	0.61
4.	Dead people	0.44	2.71	1.49	0.56
13.	People with deformities	0.27	1.61	1.01	0.47
15.	Receiving injections	0.65	3.26	1.55	0.47
23.	Seeing other people injected	0.78	2.46	1.53	0.61
36.	Sick people	0.47	1.91	1.21	0.62
40.	Witnessing surgical operations	0.73	3.39	1.52	0.63
42.	Human blood	0.71	2.30	1.42	0.75
44.	Animal blood	0.60	2.32	1.44	0.69
50.	Medical odours	0.60	2.30	1.33	0.51
56.	Cemeteries	0.38	2.12	1.41	0.54
60.	Doctors	0.51	2.19	1.25	0.46
<i>Harmless animals</i>					
14.	Worms	0.69	1.7	1.17	0.62
17.	Bats	0.76	2.00	1.29	0.72
22.	Flying insects	0.64	2.06	1.23	0.58
31.	Crawling insects	0.69	2.60	1.43	0.67
41.	Mice	0.66	1.90	1.39	0.60
52.	Harmless snakes	0.66	2.32	1.43	0.60
<i>Sex and aggression</i>					
26.	One person bullying another	0.23	2.31	1.40	0.62
28.	Tough-looking people	0.31	1.99	1.22	0.64
30.	Dirt	0.52	1.70	1.21	0.59
32.	Sight of fighting	0.30	2.46	1.39	0.64
34.	Ugly people	0.61	1.19	0.56	0.47
38.	Strange shapes	0.53	1.25	0.73	0.50
58.	Nude men	0.54	1.34	0.88	0.42
59.	Nude women	0.62	1.19	0.64	0.45

Table 3 Reliability coefficients (Cronbach's α) of the five factors and the total score of the FSS

Variables	Number of items	Cronbach's α	Average inter-item correlation	Mean	SD
FSS-total	52	0.95	0.29	2.01	0.67
FSS-social phobia	13	0.93	0.51	2.08	0.93
FSS-agoraphobia	13	0.88	0.39	1.71	0.73
FSS-blood injury, illness and death	12	0.88	0.38	2.43	0.91
FSS-harmless animals	6	0.85	0.48	2.10	1.00
FSS-sex and aggression	8	0.81	0.36	1.68	0.69

Table 4 Pearson correlation coefficients of the FSS-scales with the DAS, S-DAI, AS, and SCL-90 dimensions

Variables	FSS- total	FSS-social phobia	FSS- agoraphobia	FSS-blood injury, illness and death	FSS- animals	FSS-sex and aggression
DAS	0.13	0.08*	0.09	0.14	0.10	0.11
S-DAI	0.18	0.09	0.12	0.21	0.16	0.14
AS	0.14	0.09	0.10	0.13	0.08*	0.14
SCL-Tot	0.68	0.64	0.63	0.42	0.36	0.55
SCL-Ago	0.64	0.50	0.81	0.37	0.29	0.49
SCL-Anx	0.60	0.50	0.60	0.40	0.32	0.46
SCL-Dep	0.63	0.59	0.57	0.39	0.36	0.51
SCL-Som	0.55	0.44	0.55	0.36	0.34	0.44
SCL-CPD	0.53	0.53	0.47	0.32	0.27	0.44
SCL-ISPI	0.67	0.74	0.55	0.37	0.33	0.58
SCL-AH	0.42	0.41	0.33	0.30	0.21	0.33
SCL-Sle	0.41	0.33	0.40	0.28	0.25	0.33

*: $p > 0.05$ (not significant)

Correlation coefficients were computed between the FSS-subcales on the one hand and the DAS, S-DAI, AS, and SCL-90 subscales on the other (Table 4). Correlations with the dental anxiety questionnaires were low and some were not significant. Inspection of the correlation coefficients with the SCL-90 scales revealed that FSS-social phobia correlated highest with the SCL-interpersonal sensitivity and paranoid ideation scale ($r=0.74$, $p<0.001$), FSS-agoraphobia with SCL-agoraphobia ($r=0.81$, $p<0.001$), FSS-blood injury, illness and death with SCL-anxiety ($r=0.41$, $p<0.001$), and FSS-harmless animals with SCL-depression ($r=0.36$, $p<0.001$). The FSS-harmless animals dimension had the lowest correlations with the SCL-90 subscales.

Discussion

From the results it can be concluded that the FSS-III is a suitable instrument to assess the presence of anxiety dimensions in a population of dental patients suffering from high levels of dental anxiety. The results of the reliability analysis were acceptable and comparable to the results found in several phobic populations with the FSS-III (Arrindell et al., 1984; Arrindell et al., 1990). Average inter-item correlations tend to be low for the total scale.

Factor analysis showed that the five factors (i.e., 'social phobia', 'agoraphobia', 'blood, injury, illness and death', 'harmless animals', and 'sex and aggression') were present in this population of dental fear clinic patients too. There were some small deviations from the classification of the items in the five dimensions. These deviations, however, were not that severe that another structure should be chosen. In sum, these results together with the results of the reliability analysis seem to imply that the use of the separate anxiety constructs is justified, and that these subscale scores provide far more reliable information than the less reliable total score of the FSS-III (see also Arrindell, et al., 1984). However, the results for the sex and aggression dimension, i.e., the relatively low eigenvalue and Cronbach's α , indicate that this scale may still need some revisions (see also Arrindell et al., 1984).

The correlation between the agoraphobia scales of the FSS-III and the SCL-90, the only two dimensions supposed to measure the same construct, indicated a good convergent validity for the agoraphobia dimension of the FSS-III. Furthermore, the factor representing fear of harmless animals had the lowest correlations with the psychopathology dimensions of the SCL-90. Apparently, this factor had the least in common with the scales of the SCL-90. The correlations with the dental anxiety measures were statistically significant, although far from impressive. This is undoubtedly due to the small variation in the dental anxiety scores as a result of the restricted range of scores in the present sample. These low correlations imply that the FSS does not measure dental anxiety, but separate anxiety constructs. Overall, the correlation coefficients and the results of the factor analysis are in favour of the validity of the FSS in this population of highly anxious dental patients.

In conclusion, the present study supplies further information about the factorial invariance and suitability of the FSS-III, this time in a population of highly anxious dental patients. In Chapter 10 the usefulness of this questionnaire in predicting treatment outcome at the dental fear clinic will be assessed. In the future this instrument might be helpful in early identification of patients who need additional psychotherapy in order to achieve a better treatment outcome.

References

- Aartman, I.H.A. (1998). Reliability and validity of the Short version of the Dental Anxiety Inventory (S-DAI) in a group of highly anxious dental patients applying for treatment in a dental fear clinic. *Community Dentistry and Oral Epidemiology*, 26, 350-354.
- Aartman, I.H.A., Jongh, A. de, & Meulen, M.J. van der (1997). Psychological characteristics of patients applying for treatment in a dental fear clinic. *European Journal of Oral Sciences*, 105, 384-388.
- Arrindell, W.A., Emmelkamp, P.M.G., & Ende, J. van der (1984). Phobic dimensions: I. Reliability and generalizability across samples, gender and nations. The Fear Survey Schedule (FSS-III) and the Fear Questionnaire (FQ). *Advances in Behaviour Research and Therapy*, 6, 207-254.
- Arrindell, W.A. & Ettema, J.H.M. (1986). *SCL-90; Handleiding bij een multidimensionele psychopathologie-indicator*. Lisse: The Netherlands: Swets Test Services.
- Arrindell, W.A., Pickersgill, M.J., Merckelbach, H., Ardon, A.M., & Cornet, F.C. (1991). Phobic dimensions: III. Factor analytic approaches to the study of common phobic fears; an updated review of findings obtained with adult subjects. *Advances in Behaviour Research and Therapy*, 13, 73-130.
- Arrindell, W.A., Solyom, C., Ledwidge, B., Ende, J. van der, Hageman, W.J.J.M., Solyom, L, & Zaitman, A. (1990). Cross-national validity of the five-components model of self-assessed fears: Canadian psychiatric outpatients data vs. Dutch target ratings on the Fear Survey Schedule-III. *Advances in Behaviour Research and Therapy*, 12, 102-122.
- Berggren, U. (1992). General and specific fears in referred and self-referred adult patients with extreme dental anxiety. *Behaviour Research and Therapy*, 30, 395-401.
- Berggren, U. & Meynert, G. (1984). Dental fear and avoidance: causes, symptoms, and consequences. *Journal of the American Dental Association*, 109, 247-251.
- Berggren, U. & Carlsson, S.G. (1984). A psychophysiological therapy for dental fear. *Behaviour Research and Therapy*, 22, 487-492.

- Berggren, U. & Carlsson, S.G. (1985). Usefulness of two psychometric scales in Swedish patients with severe dental fear. *Community Dentistry and Oral Epidemiology*, 13, 70-74.
- Berggren, U., Carlsson, S.G., Gustafsson, J.E., & Hakeberg M. (1995). Factor analysis and reduction of a Fear Survey Schedule among dental phobic patients. *European Journal of Oral Sciences*, 103, 331-338.
- Berggren, U., Carlsson, S.G., Hakeberg, M., Hägglin, C., & Samsonowitz, V. (1997). Assessment of patients with phobic dental anxiety. *Acta Odontologica Scandinavica*, 55, 217-222.
- Corah, N.L. (1969). Development of a dental anxiety scale. *Journal of Dental Research*, 48, 596.
- Enneking, D., Milgrom, P., Weinstein, P., & Getz, T. (1992). Treatment outcomes for specific subtypes of dental fear: Preliminary clinical findings. *Special Care in Dentistry*, 21, 214-218.
- Fiset, L., Milgrom, P., Weinstein, P., & Melnick, S. (1989). Common fears and their relationship to dental fear and utilization of the dentist. *Anesthesia Progress*, 36, 258-264.
- Geer, J.H. (1965). The development of a scale to measure fear. *Behaviour Research and Therapy*, 3, 45-53.
- Hakeberg, M., Gustafsson, J.E., Berggren, U., & Carlsson, S.G. (1995). Multivariate analysis of fears in dental phobic patients according to a reduced FSS-II scale. *European Journal of Oral Sciences*, 103, 339-344.
- Jongh, A. de (1994). Angststoornissen in de tandartspraktijk. Deel 2. Behandeling van patiënten met angst. *Nederlands Tijdschrift voor Tandheelkunde*, 101, 238-239.
- Jongh, A. de (1995). *Dental anxiety: a cognitive perspective*. PhD Thesis. University of Amsterdam, Amsterdam.
- Kleinhauz, M., Eli, I., Baht, R., & Shamay, D. (1992). Correlates of success and failure in behavior therapy for dental fear. *Journal of Dental Research*, 71, 1832-1835.
- Kvale, G., Berg, E., & Radaal, M. (1998). The ability of Corah's Dental Anxiety Scale and Spielberger's State Anxiety Inventory to distinguish between fearful and regular Norwegian dental patients. *Acta Odontologica Scandinavica*, 56, 105-109.
- Lang, P.J. & Lazovik, A.D. (1963). Experimental desensitization of a phobia. *Journal of Abnormal and Social Psychology*, 66, 519-525.

- Locker, D., Liddell, A., & Shapiro, D. (1999). Diagnostic categories of dental anxiety: a population-based study. *Behaviour Research and Therapy*, 37, 25-37.
- Makkes, P.C., Schuurs, A.H.B., Thoden van Velzen, S.K., Duivenvoorden, H.J., & Verhage, F. (1986). Clinical measurement of dental anxiety. *Community Dentistry and Oral Epidemiology*, 14, 184.
- McNeil, D.W. & Berryman, M.L. (1989). Components of dental fear in adults? *Behaviour Research and Therapy*, 27, 233-236.
- Moore, R. (1991). Dental fear treatment: comparison of a video training procedure and clinical rehearsals. *Scandinavian Journal of Dental Research*, 99, 229-235.
- Moore, R., Brødsgaard, I., & Birn, H. (1991). Manifestations, acquisition and diagnostic categories of dental fear in a self-referred population. *Behaviour Research and Therapy*, 29, 51-60.
- Rachman, S. (1977). The conditioning theory of fear-acquisition: a critical examination. *Behaviour Research and Therapy*, 15, 375-387.
- Roy-Byrne, P.P., Milgrom, P., Tay K.-M., Weinstein, P., & Katon, W. (1994). Psychopathology and psychiatric diagnosis in subjects with dental phobia. *Journal of Anxiety Disorders*, 8, 19-31.
- Schuurs, A.H.B., Duivenvoorden, H.J., Makkes, P.C., Thoden van Velzen, S.K., & Verhage, F. (1988). Personality traits of patients suffering extreme dental anxiety. *Community Dentistry and Oral Epidemiology*, 16, 38-41.
- Stevens, J. (1996). *Applied multivariate statistics for the social sciences*. 3rd edition. Mahwah: Lawrence Erlbaum.
- Stouthard, M.E.A., Hoogstraten, J., & Mellenbergh, G.J. (1995). A study on the convergent and discriminant validity of the dental anxiety inventory. *Behaviour Research and Therapy*, 33, 589-595.
- Willumsen, T. (1999). *Treatment of dental phobia: short-time and long-time effects of nitrous oxide sedation, cognitive therapy and applied relaxation*. PhD Thesis. University of Oslo, Oslo.
- Wolpe, J., & Lang, P.J. (1964). A fear survey schedule for use in behaviour therapy. *Behaviour Research and Therapy*, 2, 27-30.