Dentists' Technical Competence, Communication, and Personality as Predictors of Dental Patient Anxiety

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Previous research has found that many factors influence patients' dental anxiety, many of which are related to the practitioner's technical and interpersonal skill. Unfortunately, a confirmatory factor analysis of scales used in dental anxiety research revealed numerous problems with the measurement devices. The Spielberger State-Trait Anxiety Inventory (STAI) split into two subscales: calmness and anxiety. The Corah Dental Anxiety Scale (CDAS) was unidimensional but was unable to detect relationships between anxiety and interpersonal or communication factors. Interestingly, patient satisfaction, dentist behavior, and empathy items did not load on independent scales, as previously reported in the literature. Instead, five clusters were detected: positive and negative communication, positive and negative interpersonalness, and perceived technical competence.

KEY WORDS: dental; anxiety; practitioner.

INTRODUCTION

Estimates of the number of dental apprehensives range from 6% (Kleinknecht *et al.*, 1973) to as high as 20% (Agras *et al.*, 1969) of the general population. Increasingly, studies of dentist-patient relationships (see Ayer and Corah, 1984; Bochner, 1988; Church *et al.*, 1979; Linn, 1971) have revealed the vital role interpersonal communication plays in dental anxiety.

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Kleinknecht *et al.* (1973) found that 91% of all respondents cited perceptions of their dentist to support their general attitude toward dentistry. Interestingly, 81% did not cite pain as the main factor influencing attitudes; rather, they felt that the dentist's personality had a greater impact. Exploratory studies have found that people feel better dentist-patient communication would allay their anxiety (O'Shea *et al.*, 1986b; Rankin and Harris, 1985). Related experimental research (Corah *et al.*, 1985b, 1988; Milgrom *et al.*, 1985) has reported that particular dentist behaviors (i.e., preventing pain, being friendly, having a calm manner, providing moral support and reassuring about pain) also influence patient anxiety.

Other researchers (McKeithen, 1966; Van Groenestijn *et al.*, 1980) have examined people's "ideal" dentist and found that components such as professional and interpersonal skill play a strong role in patient satisfaction. Corah *et al.* (1985b) reported that anxiety during treatment was significantly influenced by patient satisfaction with the dentist's technical competence, understanding/acceptance, and information/communication skills. Liddell and May (1984) found that "irregular attenders" tended to have high levels of anxiety. Kent (1984) reported that patient anxiety was an important factor in determining whether a patient sought care. Similarly, Biro and Hewson (1976) found that 24% of patients who did not have confidence in their dentist and only 30% who thought the dentist was rude utilized dental services once a year.

Unfortunately, it is fairly common for practitioners to enter the marketplace more concerned about new procedures than patient management. Corah *et al.*, (1985a) found that 74% of dentists learned how to talk with anxious patients by trial and error. This "hit-and-miss" orientation eventually influences profits. Collette (1969) found that about 50% of dentists surveyed reported that they lost patients due to poor interpersonal relations. Martin (1970) found that 93% of practitioners said they were inadequately trained in managing their practices, with 58% claiming they were inadequately trained in handling children and 52% reporting problems with adults. Similarly, a third of the dentists surveyed by Blandford and Dane (1981) reported problems with the human relation aspects of their work.

Despite the fact that dental anxiety has far-reaching implications on practitioners and researchers, there is little consensus regarding the *dimensions* of the dentist-patient relationship which influence patient anxiety. Although researchers have developed instruments to measure such variables as anxiety (Corah, 1969; Spielberger *et al.*, 1970), satisfaction (Corah *et al.*, 1984; Hengst and Roghmann, 1974; Kent, 1984; Koslowsky *et al.*, 1974; Murray and Wiese, 1975), and dentist behaviors (Corah *et al.*, 1985b, 1988; Weinstein *et al.*, 1982), the relationship between these variables has gone relatively unexplored. Moreover, no one has attempted to determine if there are underlying constructs fundamental to dentist-perception. One such possible con-

struct is positive-negative affect. Communication researchers (Tomkins, 1962, 1963; Ekman and Friesen, 1986; Izard, 1977) have long acknowledged that both positive and negative emotions play a major role in human interaction. The purpose of this study was to assess current measures of dental anxiety, explore dimensions of the dentist-patient relationship and to relate these dimensions to dental anxiety.

METHODS

Participants in the study were 236 undergraduate students in basic social science courses. Participants filled out a 106-item questionnaire and provided information on their gender, their dentist's gender and type of practice, as well as how recently they had visited a dentist. The 106 items on the survey assessed patients' anxiety, satisfaction, as well as their perceptions of dentist behavior and empathy. The respondents were instructed to recall their most recent visit to a dentist when answering the questions. Given that the majority of the respondents were from an age group prone to orthodontic treatment, they were told to exclude trips to an orthodontist.

Patient Anxiety

Dental anxiety was measured with two scales, the Corah Dental Anxiety Scale (Corah, 1969) and the Spielberger State-Trait Anxiety Inventory (Spielberger *et al.*, 1970). Used in an array of studies, the Corah scale consists of four items and has an estimated coefficient alpha reliability of .82 (Corah, 1969). The Spielberger scale (STAI) consists of 20 items and has an estimated coefficient alpha reliability of .70–.90 (Zuckerman and Spielberger, 1976). The STAI was modified in three ways. First, the original instructions were changed to "Please read each statement and then write which number best describes how you feel when you are receiving dental treatment." Second, based on previous research by one of the authors, two items were not included in the survey ("I feel joyous" and "I feel rested"). These two items were neither internally nor externally consistent with other items in the scale. Finally, 5-point scales were used in place of the 4-point responses used by Spielberger. The five responses were 1 = Never, 2 = Rarely, 3 = Somewhat, 4 = Often, and 5 = Always.

Patient Satisfaction

Scale construction studies of patient satisfaction have used various methods, sample sizes, and groups, ranging from private practice to low-

income health center patients. "Satisfaction" has been operationalized to examine satisfaction with the profession as a whole (Hengst and Roghmann, 1978), the practitioner (Koslowsky, *et al.*, 1974), or even a particular visit (Corah *et al.*, 1984). Item content has been equally diverse. Koslowsky *et al.*'s (1974) Patient Satisfaction (KPS) questionnaire divides patient satisfaction into dimensions of the dentist's personality, technical ability, office and financial concerns. Corah *et al.*'s (1984) Dental Visit Satisfaction Scale (DVSS) modified an existing medical scale (Wolff *et al.*, 1978) and detected dimensions of technical competence, understanding/acceptance and information/communication. Hengst and Roghmann (1978) reported two dimensions of satisfaction: resentment and general glorification.

It should be noted that all these researchers advised caution when using their measurement tools. In addition to stressing that a generalization of their sample (welfare mothers) to all dental patients would be "premature," Hengst and Roghmann (1978) acknowledged that their findings have other significant limitations. "First, only one provider was studied. Second, the setting of the scale administration (dental waiting room) may have distorted the response toward higher satisfaction with dental care. Third, the sample was probably biased toward satisfied patients, as dissatisfied ones may not have returned for a second visit" (p. 203). In Koslowsky *et al.*'s study (1974), they noted that care must be taken when interpreting results of their research since the data had an extreme negative skew, such that very few patients were extremely dissatisfied with their dentists. And finally, Corah *et al.* (1984) reported that "normative data would be required for each type of specific clinical use, since the DVSS appears to be potentially sensitive to a variety of different situations" (p. 373). Given these methodological concerns, a close examination of these satisfaction measures is warranted.

Yet another concern surrounds the use of exploratory data reduction techniques such as factor analysis in some of the studies. Researchers have begun with 20 (Hengst and Roghmann, 1978), 28 (Corah *et al.*, 1984), and 57 (Koslowsky *et al.*, 1974) items and gradually reduced them to a smaller, more manageable set. However, as with any type of exploratory analysis, the interpretability of results is open to question. Since exploratory analysis does not control for chance or sampling error, neither reliability nor validity is solidly demonstrated. This is especially problematic with factor analysis, where several different solutions are obtained with neither theory nor hypotheses to sort them out. Hence, the task of confirming hypothesized factor structures for all scales has remained unfinished.

Two satisfaction scales, the DVSS and the KPS scale, were selected for this analysis primarily because of their private practice orientation and high reliability scores, .92 and .89, respectively. All 10 of the DVSS items as well as the personality and technical ability aspects of the KPS were included.

Since the survey was concerned primarily with the link between anxiety and person-perception, the office and financial aspects of the KPS were only of tangential interest to this project and were excluded from the survey. Subjects were asked to read 20 statements (i.e., "I feel confident in the care of my dentist") and indicate their level of agreement on the same 1 to 5 scale.

Dentist Behavior

Development of a dentist behavior scale was first initiated by Corah et al.(1985b). While item generation reflected a wide range of dentist behaviors, item selection was not systematic, relying only on a theoretical analysis of helping relationships (Janis, 1982) and an informal survey at a dental hygiene school's tooth fair (Corah et al. 1985b). Not surprisingly, reliability has not been reported.

When the scale was used again by Corah et al. in 1988, several modifications were made, though the rationale for alterations was not specified. Items which had significant correlations with anxiety and/or satisfaction in the earlier study (i.e., asked about "health," "nervousness," and "allergies," "encouraged talk," "washed hands," and "took on time") were not included in the 1988 survey. Even more disturbing is the inconsistency of item correlations between the first and the second administration of the scale. Several items (i.e., "criticized," "waited until numb," "worked quickly," "described procedure," "paid attention," "calm manner," and "took seriously") reported inconsistencies as to the direction of the correlation, while other items (i.e., "criticized," "welcoming," "paid attention," "asked about discomfort," "calm manner," "asked about anxiety," and "took seriously") were inconsistent as to whether the relationship was significant.

Another problem with these scales is that they allow only "yes" or "no" responses. Unfortunately, this dichotomous format provides patients no opportunity to distinguish degrees of behavior, and restricts the range of the variable. For instance, the practitioner who inquires about the patient's nervousness only once during treatment would receive the same rating as the dentist who routinely asks about anxiety at stressful points during treatment. Since these behavioral styles are vastly different, measurement scales should allow a wider range of choices to detect such differences. Furthermore, restriction in range will lower the correlations between scale items, and the correlation of the total scale score with other scales.

Thirty-one different dentist behavior items reported in the literature (Corah et al., 1985b, 1988) were included in the current survey. One additional item, "My dentist touches me in a reassuring fashion," was added since some literature indicates that empathic touch may influence patients'

willingness to communicate (Aguilera, 1967; Pattison, 1973). Subjects were asked to select from the same five-point scale used with the anxiety measures in order to describe the frequency of the dentist's behavior during a particular visit.

Empathy

Research (Corah *et al.*, 1988; Haase and Tepper, 1972; Harrigan and Rosenthal, 1986; Janis, 1982) suggests that "feeling as the other person feels" may play a vital role in clinical relationships. The Hogan empathy scale (Hogan, 1969), reliability of .62, was modified to reflect a dental context. People were asked to indicate how frequently they felt their dentist could be described by a series of 15 statements using high (i.e., pleasant, charming, cheerful, sociable, discreet, tactful) and low (i.e., cruel, cold, quarrelsome, hostile, bitter, unemotional, unkind, argumentative, and opinionated) empathy words (i.e., "My dentist is cheerful"). Some of Hogan's suggested empathic words which were deemed inappropriate for a dental context (e.g., "dreamy," "sentimental," "imaginative," and "hard-hearted") or which were redundant with other items on the survey (i.e., "friendly") were not used.

Constructing a Measurement Model

Responses to the 106 items from the anxiety, satisfaction, behavior, and empathy scales were correlated then subjected to a confirmatory factor analysis. Item quality was judged using three criteria: item content, internal consistency, and parallelism. Internal consistency requires that the items in a cluster correlate with one another to approximately the same degree. Parallelism demands that items measuring the same underlying construct correlate with outside variables to approximately the same degree. Items not meeting the three criteria were placed in a residual cluster.

The results of the confirmatory factor analysis suggested a model which showed little resemblance to the original scales. The anxiety items split into three clusters. The satisfaction, behavior, and empathy scales formed five clusters: positive and negative communication, positive and negative interpersonal, and perceived technical competence.

The 24 anxiety items formed three clusters. Corah's scale was unidimensional and purposely left intact, so that results could be compared with those from Spielberger's items. The STAI, as expected, consisted of two subscales, one made up of items referring to positive emotions (a calmness scale) and the other made up of items referring to negative emotions (an anxiety scale). These two subscales were not generally parallel. Hence, the two scales did not simply reflect response set. The 8-item calmness and the 10-item anxiety scales

Table I. Primary Factor Loadings for Anxiety Items

Item	Factor loading
Spielberger Calmness	
I feel calm	.88
I feel secure	.87
I feel relaxed	.86
I feel comfortable	.85
I feel at ease	.84
I feel content	.81
I feel pleasant	.78
I feel self-confident	.75
Spielberger Anxiety	
I feel nervous	.84
I feel jittery	.83
I feel worried	.82
I feel tense	.76
I feel high-strung	.72
I feel overexcited or rattled	.72
I feel upset	.71
I feel worried	.59
I feel regretful	.55
I feel anxious	.49
Corah Anxiety	
You are in the dentist's waiting room	.80
You are going to the dentist tomorrow	.72
You are in the chair while the dentist gets his drill ready to begin work on your teeth	.67
You are in the chair while the dentist is getting out the instruments to scrape your teeth around your gums	.62

have coefficient alpha reliabilities of .95 and .91 respectively. Corah's scale had a reliability of .79. These reliabilities are consistent with those found in previous research. The factor loadings of the anxiety items are given in Table I.

Two communication clusters emerged from the analysis (see Table II). The nine-item, positive communication factor was concerned mainly with statements from the dentist which provide moral support. The seven-item negative communication factor was concerned mainly with statements from the dentist regarding pain. The positive and negative communication scales had coefficient alpha reliabilities of .86 and .80, respectively. The 14-item technical competence scale (see Table III) had a coefficient alpha reliability of .93.

Two interpersonal clusters were culled from the data (see Table IV). The 15-item positive interpersonal factor was concerned mainly with cheerful dentist behavior. The seven-item negative interpersonal factor was concerned mainly with cruel or unfriendly dentist behavior. The positive and negative interpersonal scales had coefficient alpha reliabilities of .95 and .91,

Table II. Primary Factor Loadings for Communication Items

Scale/item	Factor loading
Positive communication	
My dentist provides me with moral support	.78
My dentist provides ongoing explanation	.74
My dentist asks about my discomfort	.69
My dentist describes the procedures	.64
My dentist encourages questions	.64
My dentist encourages me to talk	.55
My dentist touches me in a reassuring fashion	.55
My dentist prevents my pain	.55
My dentist knows my feelings	.54
Negative communication	
My dentist reassures me about pain	.80
My dentist asks if I'm anxious	.71
My dentist tells me to be calm	.67
My dentist warns me about pain	.61
My dentist really knows how upset I was about the possibility of pain	.55
My dentist asks if I'm allergic	.49
My dentist waits until I am numb	.42

Table III. Primary Factor Loadings for Perceived Technical Competence Items

Item	Factor loading
My dentist told me all I wanted to know about my dental problem(s)	.77
I really felt understood by my dentist	.77
My dentist explains things to me	.76
My dentist was thorough in doing the procedure	.76
My dentist answers my questions fully	.75
I am satisfied with what my dentist did	.72
My dentist knows what he/she is doing	.70
My dentist gives thorough examinations	.70
I feel confident in the care of my dentist	.70
My dentist knows the latest techniques	.69
After talking with my dentist, I know what the condition of my mouth is	.67
My dentist devotes sufficient time to me	.67
After talking with my dentist, I have a good idea of what changes to expect in my dental health in the next few months	.61
My dentist is too rough	.51

respectively. Respondents' scale scores were obtained by unit weighting and summing their item scores.

RESULTS

The two measures of anxiety derived from Spielberger's scale, plus the Corah anxiety scale, were used as criterion variables in a multiple regression

Table IV. Primary Factor Loadings for Interpersonal Items

Scale/item	Factor loading
Positive interpersonal	
My dentist is friendly	.79
My dentist is sociable	.79
My dentist smiles	.79
My dentist is cheerful	.78
My dentist is pleasant	.77
My dentist is polite	.73
My dentist pays attention to what I say	.73
My dentist makes me feel welcome	.73
My dentist is patient with me	.70
My dentist is reassuring	.69
My dentist takes me seriously	.69
My dentist makes conversation	.68
My dentist accepted me as a person	.66
My dentist is charming	.66
Negative interpersonal	
My dentist is cruel	.90
My dentist is bitter	.88
My dentist is quarrelsome	.80
My dentist is cold	.77
My dentist is unkind	.75
My dentist is hostile	.72
My dentist is argumentative	.57

analysis. Six predictors of anxiety were examined. Five of the predictors were based on the reanalysis of existing scales: positive and negative communication, positive and negative interpersonal, and perceived technical competence. Recency of the respondent's last visit to the dentist was considered as a control variable. Preliminary analysis of the data showed that the other control variables had little or no impact on anxiety. The omnibus test of significance was significant for all three anxiety measures: Spielberger's calmness [$F(6,218)$ = 19.30, $p < .001$, $MR = .589$], Spielberger's anxiety [$F(6,218) = 9.59$, $p < .001$, $MR = .457$], and Corah's anxiety [$F(6,219) = 9.70$, $p < .001$, $MR = .459$].

Predictors were entered simultaneously in each of the three regressions. Table V contains the beta weights for the seven predictors of the three dependent measures. The results show that across the three measures, recency of visit had a negative impact on anxiety. The more recent the visit to the dentist, the more anxious the patient.

The largest predictor of anxiety was the patient's perception of the dentist's technical competence. Across all three measures, the more competent the dentist, the lower the anxiety. Interestingly, positive and negative communication also had an impact on anxiety, but only if the Spielberger-based anxiety measures were used. Not surprisingly, positive communication relaxes the patient and reduces anxiety, and negative communication increases

Table V. Beta Weights of Predictor Variables

| | Criterion variable | | |
| | Spielberger | | Corah |
Predictor	Calmness	Anxiety	Anxiety
Recency of visit	−.15**	.14*	.19**
Technical competence	.37***	−.31**	−.32***
Negative communication	−.24**	.23**	.16
Positive communication	.25*	−.22	−.15
Negative interpersonal	.05	.17*	−.01
Positive interpersonal	.13	.08	−.04

*p < .05.
**p < .01.
***p < .001.

patient anxiety. The Corah scale does not detect an important relationship between dentist communication patterns and patient anxiety. Positive communication, in the form of statements which provide moral support, significantly reduces patient anxiety. However, negative communication, primarily about pain, seems to increase patient anxiety. Negative interpersonal behavior also appears to increase patient anxiety. This effect was detected by the Spielberger scale but not Corah's scale.

DISCUSSION

These findings have both pragmatic and academic implications. From a research point of view, this study urges caution when using the satisfaction, dentist behavior, and empathy scales used in this analysis. Although the underlying constructs of technical competence, interpersonalness (or "understanding") and communication are consistent with previous research, in many cases individual items did not load on the factors suggested by the original researchers. For instance, two of the DVSS's communication items ("After talking with the dentist I know what the condition of my mouth is" and "After talking with the dentist, I have a good idea of what changes to expect in my oral health in the next few months") loaded on technical competence in this analysis. KPS items, supposedly measuring personality and technical satisfaction, loaded across all five clusters.

It is tempting for researchers to use a global measurement device such as "satisfaction," but this research indicates that such a construct is not valid. Alternatively, the clusters of positive and negative communication, positive and negative interpersonalness, and technical competence provide researchers with highly reliable subscales which can be used in future research to test specific hypotheses regarding satisfaction with the dentist-patient relationship.

Furthermore, this research indicated that the CDAS was not able to detect the effect of interpersonal and communication factors. With this scale being used in studies examining such dentist behaviors (Cohen *et al.*, 1982; Corah, 1984; Corah *et al.*, 1985b, 1988), researchers should consider whether these studies have missed a relationship between anxiety and communication or personality. This analysis suggests that studies focusing on such factors of the dentist-patient relationship should use the Spielberger subscales which demonstrated an ability to detect such effects.

From a practitioner's perspective, this analysis lends credence to the idea that patients seek competence, interpersonal and communication skill from dentists. Based on the results from the CDAS alone, however, it would be easy for dentists to conclude that only technical competence influences patients' anxiety. Alternatively, these results suggest that dentists need to examine critically their interpersonal style since an abrupt personality tends to increase patient anxiety. This is consistent with Kleinknecht *et al.*'s (1973) finding that patients tend to describe personal attributes when they don't like dentists (i.e., "he's cold," "nasty," "disinterested," "nervous," "mean," "uncaring," and "cold").

Similarly, findings on the Spielberger subscales empirically confirm that communication plays a vital role in coping with anxiety. As a result, practitioners should be encouraged to provide moral support to patients via positive communication. In contrast, since communication about pain tends to increase anxiety, practitioners should minimize negative messages and/or attempt to reframe negative communication in more positive terms (O'Shea *et al.*, 1986b; Milgrom *et al.*, 1985). For instance, instead of telling patients that some people have difficulty breathing during impressions, dentists should explain how breathing through their nose and relaxing will make the procedure more comfortable. These findings suggest that such "information exchange" helps patients to think of what is happening in more positive terms by omitting or downplaying descriptions of threatening stimuli.

REFERENCES

Agras, S., Sylvester, D., and Oliveau, D. (1969). The epidemiology of common fears of dentistry. *Comp. Psychiat.* 10: 151-156.

Aguilera, D. C. (1967). Relationship between physical contact and verbal interaction between nurses and patients. *J. Psychiat. Nurs.* 5: 5-21.

Ayer, W. A., and Corah, N. L. (1984). Behavioral factors influencing dental treatment. In Cohen, L. K., and Bryant, P. S. (eds.), *Social Sciences and Dentistry: A Critical Bibliography*, Quintessence, London, pp. 267-322.

Biro, P. A., and Hewson, N. D. (1976). A survey of patients' attitudes to their dentist. *Austral. Dent. J.* 21: 388-394.

Blandford, D. H., and Dane, J. K. (1981). Problems in dental practice: A pilot study for continuing education. *J. Am. Dent. Assoc.* 103: 869-874.

Bochner, S. (1988). *The Psychology of the Dentist-Patient Relationship,* Springer-Verlag, New York.

Church, T., Morretti, R., and Ayer, W. A. (1979). Issues and concerns in the development of the dentist-patient relationship. *New Dent.* 10: 20-24.

Cohen, L. A., Snyder, T. L., and La Belle, A. D. (1982). Correlates of dental anxiety in a university population. *J. Publ. Health Dent.* 42: 228-235.

Collette, H. A. (1969). Influence of the dentist-patient relationship on attitudes and adjustment to dental treatment. *J. Am. Dent. Assoc.* 79: 879-884.

Corah, N. L. (1969). Development of a dental anxiety scale. *J. Dent. Res.* 48: 596.

Corah, N. L. (1984). Reduction of patient stress and the patient-dentist relationship. *N. Y. State Dent. J.* 50: 478-479.

Corah, N. L. (1986). Methodological needs and behavioral research with adult dental patients. *Anesth. Prog.* 33: 46-49.

Corah, N. L., O'Shea, R. M., Pace, L. F., and Seyrek, S. K. (1984). Development of a patient measure of satisfaction with the dentist: The dental visit satisfaction scale. *J. Behav. Med.* 7: 367-373.

Corah, N. L., O'Shea, R. M., and Ayer, W. A. (1985a). Dentists' management of patients' fear and anxiety. *J. Am. Dent. Assoc.* 110: 734-736.

Corah, N. L., O'Shea, R. M., and Bissell, G. D. (1985b). The dentist-patient relationship: Perceptions by patients of dentist behavior in relation to satisfaction and anxiety. *J. Am. Dent. Assoc.* 111: 443-446.

Corah, N. L., O'Shea, R. M., Bissell, G. D., Thines, T. J., and Mendola, P. (1988). The dentist-patient relationship: Perceived dentist behaviors that reduce patient anxiety and increase satisfaction. *J. Am. Dent. Assoc.* 116: 73-76.

Davies, A. R., and Ware, J. E., Jr. (1982). *Development of a Dental Satisfaction Questionnaire for the Health Insurance Experiment,* Rand, Santa Monica, CA.

Ekman, P., and Friesen, W. V. (1986). A new pan-cultural facial expression of emotion. *Mot. Emot.* 10: 159-168.

Haase, R. F., and Tepper, D. T. (1972). Nonverbal components of empathic communication. *J. Counsel. Psychol.* 19: 417-424.

Harrigan, J. A., and Rosenthal, R. (1986). Nonverbal aspects of empathy and rapport in physician-patient interaction. In Blanck, P. D., Buck, R., and Rosenthal, R. (eds.), *Nonverbal Communication in the Clinical Context,* Pennsylvania State University Press, University Park, pp. 36-73.

Hengst, A., and Roghmann, K. (1978). The two dimensions in satisfaction with dental care. *Med. Care* 16: 202-213.

Hogan, R. (1969). Development of an empathy scale. *J. Consult. Clin. Psychol.* 33: 307-316.

Izard, C. E. (1977). *Human Emotions,* Plenum Press, New York.

Janis, I. L. (1982). Helping relationships: a preliminary theoretical analysis. In Janis, I. L. (eds.), *Counseling on Personal Decisions: Theory and Research on Short-Term Helping Relationships,* Yale University Press, New Haven, pp. 19-46.

Kent, G. (1984). Satisfaction with dental care. *Med. Care* 22: 585-585

Kleinknecht, R. A., Klepac, R. K., and Alexander, L. D. (1973). Origins and characteristics of fear of dentistry. *J. Am. Dent. Assoc.* 86: 842-848.

Koslowsky, M., Bailit, H., and Valluzzo, P. (1974). Satisfaction of the patient and the provider: Evaluation by questionnaire. *J. Publ. Health Dent.* 34: 188-194.

Linn, E. L. (1971). The dentist-patient relationship. In Richards, N. D., and Cohen, L. K. (eds.), *Social Sciences and Dentistry: A Critical Biliobraphy,* Federation Dentaire Internationale, London.

Martin, R. T. (1970). *An Investigation of the Attitude and Adjustment of Practising Dentists and Dental Students to Their Profession.* The Dental Health Education and Research Foundation of the University of Sydney, Sydney.

McKeithen, E. J. (1966). The patient's image of the dentist. *J. Am. Coll. Dent.* 33: 87-107.

Milgrom, P., Weinstein, P., Kleinknecht, R., and Getz, R. (1985). *Treating Fearful Dental Patients: A Patient Management Handbook,* Reston, VA.

Murray, B. P., and Wiese, H. J. (1975). Satisfaction with care and the utilization of dental services at a neighborhood health center. *J. Publ. Health Dent.* 35: 170-176.

O'Shea, R. M., Corah, N. L., and Ayer, W. A. (1983). Dentist's perceptions of the "good" adult patient: An exploratory study. *J. Am. Dent. Assoc.* 106: 813-816.

O'Shea, R. M., Corah, N. L., and Ayer, W. A. (1984). Sources of dentists' stress. *J. Am. Dent. Assoc.* 109: 48-51.

O'Shea, R. M., Corah, N. L., and Ayer, W. A. (1986a). Why patients change dentists: Practitioners' view. *J. Am. Dent. Assoc.* 112: 851-854.

O'Shea, R. M., Corah, N. L., and Thines, T. J. (1986b). Dental patients' advice on how to reduce anxiety. *Gen. Dent.* 1: 44-47.

Pattison, J. E. (1973). Effects of touch on self-exploration and the therapeutic relationship. *J. Counsel. Clin. Psychol.* 40: 170-175.

Rankin, J. A., and Harris, M. B. (1984). Dental anxiety: The patient's point of view. *J. Am. Dent. Assoc.* 109: 43-47.

Rankin, J. A., and Harris, M. B. (1985). Patients' preference for dentists' behaviors. *J. Am. Dent. Assoc.* 110: 323-327.

Spielberger, C. D., Gorsuch, R. L., and Lushene, R. E. (1970). *STAI Manual for the State-Trait Anxiety Inventory,* Consulting Psychologists Press, Palo Alto, CA.

Tomkins, S. (1962). *Affect, Imagery, and Consciousness: The Positive Affects, Vol. 1,* Springer, New York.

Tomkins, S. (1963). *Affect, Imagery, and Consciousness: The Negative Affects, Vol. 2,* Springer, New York.

Van Groenestijn, M. A. J., Maas-de Waal, C. J., Mileman, P. A., and Swallow, J. N. (1980). The ideal dentist. *Soc. Sci. Med.* 14A: 533-540.

Weinstein, P., Getz, T., Ratener, P., and Domoto, P. (1982). The effects of dentists' behaviors on fear-related behaviors in children. *J. Am. Dent. Assoc.* 104: 32-37.

Wolff, M. H., Putnam, S. M., James, S. A., and Stiles, W. B. (1978). The medical interview satisfaction scale: Development of a scale to measure patient perceptions of physician behavior. *J. Behav. Med.* 1: 391-401.

Zuckerman, M., and Spielberger, C. D. (1976). *Emotions and Anxiety: New Concepts, Methods and Applications,* Lawrence Erlbaum Associates, Hillsdale, NJ.