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An investigation of the fear responses of children in the dental situation

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The chi-square test yielded a value of chi-square = .15, which is well below the critical value of 3.84. H_o cannot be rejected in favour of H_1.

Using the P.S.I. as a measure of the fearfulness of mothers, and the response schedule as a measure of the fearfulness of children, Table 1(b) was obtained.

TABLE 1(b)

Fearful and Non-fearful Mothers and Children as Measured by P.S.I. and R.S.

Children	Mothers		
	Fearful	Non-fearful	
Fearful	5	5	10
Non-fearful	10	10	20
	15	15	30

The chi-square test yielded a value of chi-square = .15, which is clearly well below the critical value of 3.84. H_o cannot be rejected in favour of H_1.

Hypothesis 2

Non-fearful children are more likely than fearful children to have mothers who are positive.

The Response Schedule (R.S.) was used as the measure of positive and negative behaviour of mothers. Children's fearfulness was measured both by the P.S.I. and the response schedule (R.S.). The figures set out in Table 2(a) were obtained.

TABLE 2(a)

Positive and Negative Mothers and Fearful and Non-fearful Children as measured by R.S. and P.S.I.

Children	Mothers		
	Positive	Negative	
Fearful	10	4	14
Non-fearful	4	12	16
	14	16	30

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In this Table, 14 children are classified as fearful and 16 as non-fearful. Of the fearful children, 10 have positive mothers and 4 negative mothers. Of the 16 non-fearful children, 4 have positive mothers and 12 have negative mothers. A contradiction of the hypothesis is thus indicated.

Since the expected frequency in every cell exceeded 5, the chi-square test of significance was used. This yielded a value of chi-square = 6.54. At a significance level of .05, the critical value is 3.84, and the obtained value therefore is clearly well above the critical value.

The result obtained after testing this hypothesis shows that there is a ~~significant~~ difference, but with a tendency in the opposite direction. Since we are interested in only one direction, however, this result is a contradiction of the hypothesis as originally stated, and no difference can be claimed between positive and negative mothers with regard to fearfulness in their children. Using the response schedule as a measure of the positive and negative behaviour of mothers, and the response schedule as a measure of the fearfulness of children, the figures in Table 2(b) were obtained.

TABLE 2(b)

Positive and Negative Mothers with Fearful and Non-Fearful Children as measured by the R.S. for both Mothers and Children

Children	Mothers: Positive	Mothers: Negative	
Fearful	7	3	10
Non-fearful	8	12	20
	15	15	30

The chi-square test yielded a value of chi-square = 1.35, which is well below the critical value of 3.84. The obtained result is not significant and H_o cannot be rejected in favour of H_1. No difference therefore in the number of non-fearful and fearful children who have positive mothers can be claimed.

Hypothesis 3

Mothers who verbalise their fears in front of their children are more likely to have fearful children than mothers who do not verbalise their fears in front of their children.

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Data on mothers' fear verbalisations were obtained from the response schedule for mothers. Both measures of childrens fearfulness were used and they were paired with their respective mothers. The figures set out in Table 3(a) were obtained, using R.S. as a measure of mothers' verbalisations and F.S.I. as a measure of children's fearfulness.

TABLE 3(a)

Mothers' Verbalised Fears and Children's Fearfulness as measured by R.S. and P.S.I.

Mothers	Children: Fearful	Children: Non-fearful	
Verbalised Fears	2	4	6
Do not verbalise fears	12	12	24
	14	16	30

The lowest expected cell frequency was below 5, which necessitated the use of the Fisher test. This yielded a value of $p = .16$, which is clearly well above the critical level of .05. There is no significant difference, therefore, between fearful and non-fearful children with regard to the verbalisation of fears by their mothers.

Using R.S. as a measure of mothers' verbalisations and R.S. as a measure of children's fearfulness, Table 3(b) was obtained.

TABLE 3(b)

Mothers' Verbalised Fears and Children's Fearfulness as measured by R.S. for both mothers and children

Mothers	Children: Fearful	Children: Non-fearful	
Verbalise Fears	2	5	7
Do not verbalise fears	8	15	23
	10	20	30

The Fisher test was applied, since the lowest expected cell frequency was below 5, and this yielded a value of $p = .30$. This value is clearly well above the critical value of .05 and indicates therefore that there is no significant difference. No difference, therefore, between fearful and non-fearful children with regard to mothers who verbalise their fears can be claimed.

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Hypothesis 4

Children who have had dental experience of a traumatic nature are more likely to be fearful than children whose dental experience has been non-traumatic.

Measurements of children's fears were obtained with the P.S.I. and the response schedule. Results are presented in the following Table 4(a).

TABLE 4(a)

Children's Fearfulness with Traumatic and Non-traumatic Histories as measured by the P.S.I.

History	Children		
	Fearful	Non-fearful	
Traumatic	4	1	5
Non-traumatic	12	13	25
	16	14	30

The Fisher test was again applied and yielded a value of $p = .043$ which is below the critical value of .05. This means that the obtained value is significant and that H_o may be rejected in favour of H_1. A significant difference, therefore, between fearful and non-fearful children with regard to their traumatic histories can be claimed.

The final distribution is of children's dental history and their fearfulness as measured by the response schedule.

TABLE 4(b)

Children's Traumatic and Non-traumatic Histories and their Fearfulness as measured by the R.S.

History	Children		
	Fearful	Non-fearful	
Traumatic	4	1	5
Non-traumatic	6	19	25
	10	20	30

The Fisher test was again applied and yielded a value of $p = .030$. This value is clearly below the critical value of .05, which indicates therefore that H_o may be rejected in favour of H_1. Again, a significant difference on this measure between fearful and non-fearful children with regard to their traumatic histories may be claimed.

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SUMMARY

Four hypotheses were tested and yielded the following results. Hypotheses 1 and 3 were rejected and hypothesis 4 confirmed. No support for hypothesis 2 can be claimed since the use of one-tailed tests allows for the interpretation of results in one direction only. Although the P.S.I. measure showed a leaning in the opposite direction, the opposite tendency cannot be viewed as a significant difference. Furthermore, there is no way in which this tendency can be tested.

Using the response schedule as a measure of mothers' positive and negative behaviour, and the response schedule as a measure of children's fearfulness, no significant difference was found.

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CHAPTER VIII

DISCUSSION

EVALUATION OF METHODOLOGY

The present study has presented a method of investigation of fear responses of children in the dental situation. Since pain is a central feature of certain dental procedures, the widely held expectation is that it is to such a stimulus that children will respond with fear. However, since the sample included 12 children who had had no previous dental experience, of whom some were fearful, the investigation suggested an emphasis in a different direction, i.e., in a direction away from pain-oriented hypotheses.

The notion that fear is not necessarily related to pain is supported in a study by Shoben and Borland (1954), who indicated that dental fears are not always specific to the dental situation. They showed, in fact, that amongst a number of hypotheses tested, the ones that emerged as fairly conclusive were that:

(a) fearful dental patients come from families whose dental experience has been unfavourable, and

(b) fearful dental patients come from families in which unfavourable attitudes towards dental work are typically expressed.

With this evidence in mind, therefore, the emphasis in the present study centred essentially on the mother-child relationship. It was felt that if families in general could influence its members' attitudes towards dental work, the influence of a mother on her young child was thought to be far greater.

The hypotheses, therefore, reflected certain characteristics and behaviour patterns of mothers and the assumption that their childrens' fearfulness of the dental situation would be related to these characteristics and behaviour patterns.

The method of investigation used in the present study has certain advantages and disadvantages. Its greatest advantage is that the situation is not contrived in any marked way. It occurs within the normal framework of a general dental practice where the routines and the procedures remain

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both undisturbed and unchanged. Other than the fact that the chosen subjects were requested to participate in the study, and were subjected to P.S.I. measures, no other artificial conditions were introduced into the situation. To what extent these factors affected the responses of the subjects is unknown, but it is suggested that their influence is minimal and that the responses would not be significantly different from those people who normally come for dental attention and who are not subjected to these added procedures. It is assumed then that the observed responses were a "true" reflection of behaviour one would expect to find in the dental situation.

A comparative study using a control group could help to verify this assumption, but since this suggestion lies within the province of future research, this statement can at this stage only remain an assumption and must therefore be treated with some caution.

Although both mother and child were being observed throughout the visit, no records were made in their presence. Not making these records would have the advantage of reducing the awareness of the subjects that they were in an experimental situation, and also of preserving natural conditions. By not introducing this added factor, it was assumed that customary behaviour would manifest itself. To what extent this is actually successful is also unknown, since the unfamiliar and additional role of the dentist as a participant observer may be an inhibiting factor. The role of the participant observer will be discussed later.

A problem always facing the field-method investigator is the reliability of his observations. Krech, Crutchfield and Ballachey (1962) point out that, where two anthropologists, for instance, have studied the same group, important discrepancies have been revealed in their accounts of their observations, suggesting that the field method is not free of error. The observations of Redfield (1946) and Lewis (1951) have been cited as an example and the importance of the comments by Krech, Crutchfield and Ballachey emphasise the need to reduce experimenter bias. To what extent experimenter error is prevalent in this study is not known, but cognisance is taken of this problem, and should further research be undertaken, refinement of the method of investigation may help to solve it. One possible way might be the use of an additional trained observer to verify the observations of the experimenter.

A problem common to all investigations concerned with "interactive" behaviour is the difficulty of accurately interpreting the meaning of such behaviour. Even if every possible contaminating factor could be,

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and were, allowed for, and the ideal of objectivity attained, it would still prove a difficult task. An example may serve to illustrate the problem present in this study.

Mother behaviour that may appear as comforting and reassuring could perhaps be mistaken for over-protectiveness, and a mother who is "neutral" in her responses to her child may not necessarily reflect lack of interest or indifference, but perhaps a genuine desire for her child to learn to cope with problems on his own.

Interpretive problems in this study are further complicated by the fact that, in the dental situation, the dentist becomes an added member in the interactive processes that occur between mother and child. His propinquity and involvement help to add a further dimension to the mother-child relationship, modifying and complicating it and thus making the interpretation and understanding of the meaning of this interactive behaviour still more difficult.

Added to this is the fact that not only does the presence of the dentist (which implies passivity) influence the relationship, but that his involvement is also active. This active involvement may, and in fact does, give rise to variability in dentist behaviour which springs essentially from two sources. In the first place, the dual role he plays, that of dentist and participant observer, may give rise to inconsistencies. Role conflict and/or role confusion may occur which may perhaps cloud his ability to observe mother and child behaviour as objectively as possible and therefore make it more difficult to interpret the meaning of their behaviour.

In the second place, certain personality factors of the dentist, plus situational factors, may intrude, thus emphasising the difficulty of maintaining objectivity on the part of the investigator. Since the present investigation, as mentioned earlier, was carried out in the setting of a busy dental practice where stress can sometimes be considerable, it is not unusual to find variability and inconsistency in dentist behaviour. Responses to different people at different levels of emotional intensity may occur, difficulties in keeping appointments on time, emergencies, interruptions, etc., all serve to influence the mood and behaviour of the dentist. Despite these factors, it is the belief of the investigator of the present study that the records of observed behaviour were accurate and that he was further aware of these problems and their influence.

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At this stage, it may be useful to contrast this with other forms of participant observation. The Middletown study by Lynd and Lynd (1929) provides one example. Here the experimenters lived for an extended period of time with the people who were being investigated ".... sharing life in the city, making friends and assuming local ties as would any other residents of Middletown. In this way a large measure of spontaneity was obtained and the 'bug on a pin' aspect reduced."

A second example is that of Whyte (1943) in his study of street gangs in Boston. He lived with them as a quasi-member and participated with them in their day-by-day activities. The natural group in this study was mobile and engaged in a variety of behaviours not under the control of the investigator. He also lived with them for a long period. His attitude, as stated in an earlier chapter, was ".... to play a semi-detached role, to participate in all their activities ... but still to have it known that you are interested in research."

To sum up then, the dental situation is a natural-group situation with two important characteristics, which constitute two differences from the examples already mentioned. Firstly, it is of short duration and is highly structured in terms of goals and objectives; and secondly, the dentist, and in this case the participant observer, is an intimately associated and active member of the group. In the present experiment, the likelihood of the observer being affected by other group members is greater and his potential for response variability increases. Many factors seem to be present which operate in many different ways and which therefore make for difficulty of control in an investigation of this nature.

In an earlier section, mention was made of the advantages of using the P.S.I. as a physiological measure of fear. Such attributes as simplicity of use, permanence of records, a potentially non-fear evoking stimulus, etc., were discussed and use of the P.S.I. during this investigation seemed to point to these factors as being valid. More important, however, was the fact that it appeared not to disrupt the flow and continuity of the visit, thus helping to preserve and maintain natural conditions. As mentioned earlier, all recordings were taken prior to the commencement of treatment and it is suggested that this standardising practice was also helpful in reducing both subject awareness and experimental contamination to a minimal level.

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EVALUATION OF RESULTS

Four hypotheses were tested and the following results were found. Two were shown to have no significant differences between fearful and non-fearful children in relation to:

(a) fearful and non-fearful mothers, and
(b) mothers who verbalise their fears and those who do not.

A third hypothesis was shown to have a leaning in the opposite direction, on the P.S.I. measure alone. No significant difference can be claimed, since the results can only be evaluated in one direction. On the response schedule, no significant difference was found with regard to fearful and non-fearful children in relation to positive and negative mothers. The expectation was that non-fearful children would relate to positive mothers.

Finally, a significant difference was found between fearful and non-fearful children in relation to past dental experience of a traumatic nature. These findings will be discussed separately, beginning with the significant result.

The expectation that children whose previous dental experience has been traumatic, which trauma relates to their fearfulness, has been met. This supports the common-sense notion that appears to be widely held and is also consistent with certain aspects of learning theory. One of the postulates of learning theory states that in the presence of a noxious stimulus, the most likely response will be fear. Of those subjects who had had previous histories of traumatic dental experience, the underlying assumption is that the trauma consisted of painful stimuli. Since pain is an unconditioned stimulus, its associated unconditioned response would be relief from pain. At the activity level this might give rise to escape and/or avoidance responses, but at the emotional level fear of pain. It is now this fear that becomes the motivating factor in the formation of avoidance responses, but since the avoidance response also becomes a response to the fear, it occurs as soon as the fear is felt. Making the response, however, relieves the fear and the relief from fear serves as a reinforcer for the response. Moreover, the avoidance response keeps the person away from the primary reinforcement, i.e., the original fear-producing situation, so that there is no chance for the fear response to be extinguished. Hence, there is no extinction training for the fear response and the avoidance response to the fear stimulus, therefore, becomes self-perpetuating.

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The above may explain why fear of the dental situation occurs, and what the effect of the fear might be. In the first place, the experience of pain may give rise to the fear. In seeking relief from fear, the patient develops an avoidance response to the fearful situation, which eliminates the fear, but which perpetuates his absence from the dental situation.

The second hypothesis states that non-fearful children are more likely to have positive mothers than are fearful children. Using the response schedule as one measure, no significant difference was found. Using the P.S.I., however, a leaning in the opposite direction was noted. Even though the use of the P.S.I. in the present study may be questionable, the single readings fell within the range of mean readings of P.S.I. measures used in other studies, notably those of Johnson and Dabbs (1967), Thomson and Sutarman (1953), and Harrison, McKinnon and Jones (1962), which does not entirely invalidate the use of the P.S.I. as a measure in the present study. In spite of this opposite tendency, however, no significant difference can be claimed, since the use of one-tailed tests precludes interpretations in more than one direction.

We may now turn to the question of why significant differences were not found in the other hypotheses. A number of possible reasons may be considered.

A) SAMPLE

Representativeness

In any research project, the investigator would like to be reasonably confident that the group of subjects he has chosen would produce comparable results with any other similar group chosen from the same population, the attributes of which he wishes to study. The essence of subject sampling, as of all sampling, is adequate representativeness of the population to which one wishes to generalise. It is possible that in this study the sample is not representative of mother and child pairs, which would in this case constitute the population from which this sample was chosen. To what extent, therefore, any measures of central tendency of the sample deviates from the central tendency of the population, is not known.

B) MEASURES

One of the fundamental objectives of psychological research is the continued search for accurate and sensitive measures of behaviour. The

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researcher is never sure that his instruments are completely valid and reliable and their inaccuracy must affect the validity of the data. It is always possible, therefore, that the unreliability of measuring instruments may affect the outcome of any research project.

C) TESTS OF SIGNIFICANCE

The very nature of the data obtained in the present study, which were of nominal value only, precluded the use of more sensitive statistical tests. For the purpose for which they are intended, they are obviously adequate, but since the data permit themselves for gross classification only, i.e., fearful and non-fearful, these tests tell us nothing of the more subtle variations of fear both qualitatively and quantitatively. Since fear is a variable occurring on a continuum, we do not know the differences of degrees of fear, nor whether the fear observed is part of a general fearfulness of the subject or whether it is only specific to the dental situation. Had the data permitted the use of more sensitive tests, it is possible that if differences existed, they may have been detected.

D) LACK OF CONTROL

The dental situation, although fairly highly structured, is (like other group situations) also highly complex. The multiplicity of factors involved make it difficult to isolate the variables under study; and to keep all other factors constant is a difficult task. The possibility in such situations always exists, then, that other factors may have exercised an influence, thus contaminating the variables under investigation. This difficulty in control may have helped to account for the lack of significant differences found in two hypotheses in the present study.

E) UNDERLYING THEORY

Perhaps the most important factor underlying the failure to obtain support for hypotheses is the theory upon which these hypotheses were based. The findings of Shoben and Berland (1954) showed that dental fears were not necessarily specific to the dental situation, but could apparently be related to the ".... unfavourable attitudes typically expressed" by various members of the patient's families. It was then argued that since the mother was the most significant adult in the life of her young child, then the source of the child's fear of the dental situation could be understood in terms of the mother-child relationship, without having to investigate the total family environment. Furthermore, the investigation of the mother-child relationship would take place within the specific context of the dental situation.

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The hypotheses, therefore, express the specific nature of the relationship between the two variables which were expected to be found. These expectations derive not only from the findings of Shoben and Borland, but also from the informal observations of the investigator of the present study.

Insofar as the findings contradict three of the hypotheses, it is possible either that dental fears are not related to the mother-child relationship, or that they are related, but in a manner different to that hypothesised.

Accepting now the possibility that there may indeed be no relationship between the child's dental fears and his relationship with his mother, an enquiry shall now be made into other possible sources of their fear. These may be subsumed under two broad headings:

(a) Those intrinsic to the dental situation
(b) Those extrinsic to the dental situation.

The most obvious source of fear intrinsic to the dental situation is pain, either its direct experience or its anticipation. Other factors, particularly those affecting young children, may be unfamiliarity and strangeness, both of the situation and people, and noises peculiar to dental procedures, notably the high-speed drill and other mechanical devices.

Being affected by the negative behaviour of others, is another possible source of fear, particularly in young children.

These possible sources of fear and their mode of functioning may be directly related to one or more postulates derived from learning theory. Evidence culled from the work of Pavlov, Skinner and Bandura and Walters in one way or another, support the postulates presented here.

Those sources of fear extrinsic to the dental situation may include the following:

(a) A traumatic hospital or medical experience. This is the most obvious source, and it is not too difficult to understand that, because of the similarity of the situations, or even similarity of aspects of the situations (which may also include people), fear responses may be evoked and generalised from one situation to another. This generalisation from one stimulus situation to another is consistent with the classic experiment on little Albert by Rayner and Watson (1920), from which the above postulates may be derived.

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(b) The total social environment of the young child. It is a source rich in fear potential. As already noted, unfavourable attitudes expressed by the family, including the mother (this is not necessarily specific to the mother-child relationship as proposed in the present study, which is based on the study by Shoben and Borland), are potentially fear-inducing. Similar attitudes expressed by their peers provide additional sources of fear.

Finally, it is also possible that a child who is generally fearful may bring with him into the dental situation fears of other seemingly unrelated situations. Fear of the dark, fear of the unknown, fears rooted in fantasy, may all be sources from which dental fears spring.

Using analytic theory as a frame of reference, and based upon Freud's study of little Hans, it is possible to understand and perhaps even "explain" fears in analytic terms, but they remain uninvestigable, essentially because such variables as the unconscious, fantasy, dreams, etc., remain inaccessible to scientific measurement.

CONCLUSIONS

1. There is evidence to show that a relationship exists between a child's fearfulness of the dental situation and previous dental experience of a traumatic nature. This substantiates a proposition which may be directly deduced from the postulates of learning theory.

2. There is no evidence, in the light of the findings in this study, to indicate that there is a significant difference between fearful and non-fearful children in relation to:

(a) fearful and non-fearful mothers
(b) mothers who verbalise their fears and those who do not.

The explanation of the negative findings in relation to (a) and (b) must remain an open question, since we are unable, on the basis of the present study, to determine whether they are the consequence of incorrect conceptualisation or of inadequacy of sampling and measurement techniques.

3. In the case of the second hypothesis, no significant relationship was found between the child's non-fearfulness and positive mothers, when the child's fearfulness was assessed by means of the response schedule. However, when the P.S.I. measure of the child's fearfulness was used, a leaning in the opposite direction was noted. The use of one-tailed tests

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precluded the use of two-directional interpretation, and no support for this hypothesis can therefore be claimed. It may be concluded, then, that on both measures, no significant relationship was found between the child's non-fearfulness and positive mothers.

4. A further possibility, which may account for the lack of significant findings in three hypotheses, is that fear in the dental situation is specific and limited to that situation. If this were so, then the role of the mother's influence would be different from what it has been assumed to be in the present study.

5. The alleviation of fear is the most important practical aspect of the present study. However, it is impossible to say in the light of the findings of the present study whether alleviation of fear is to be achieved by manipulation of the mother-child relationship, the dental situation (particularly with regard to the attidue of the dentist), or the family environment as a whole.

SUGGESTIONS FOR FURTHER STUDY

1. Techniques

Apart from sampling shortcomings, which are problems common to all investigations in the behavioural sciences, refinement of techniques if often necessary.

(a) Use of the P.S.I. as a more reliable physiological measure of fear. The following methods are suggested:

(i) use of several readings in order to standardise each individual

(ii) comparing mean readings of mother and child

(iii) comparing mean readings of mother and child in other situations which are fear-evoking.

All these, however, must first be validated in terms of external criteria, i.e., assessment of overt behaviour by observation and ratings of observed behaviour by trained independent judges.

(b) Clearer conceptualisation of positive and negative mothers in order to clearly differentiate between distinct positive and negative "personality types". Personality differences may be drawn from elements of behaviour in response to the situation under investigation, and assessed in relation to standardised personality inventories.

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(c) Abstraction of relevant aspects of the fear schedule survey for use in studies of this nature. Since the F.S.S. is essentially a clinical diagnostic measure of general fearfulness, it is not necessarily comparable with other measures; nor, probably, does it measure what is needed.

2. Theoretical

Earlier, reference was made to the use of certain theoretical systems to substantiate certain postulates or to explain certain findings. The postulates of learning theory, for example, could be profitably used in deriving hypotheses that may be testable in a study designed to help solve the problem of the alleviation of dental fears.

It has already been suggested that three areas could be seen as possible sources of dental fears: the mother-child relationship, the family environment as a whole, and the dental situation. Since all these situations are concerned with groups, it may be relevant to investigate certain aspects of interactive behaviour which may relate to dental fears. An investigation concerned with this form of behaviour may be carried out along the lines suggested by Bishop.

Since one of the findings in this study was a significant relationship between traumatic dental experience and fear of the dental situation, this finding may have important implications both theoretically and practically. From a theoretical point of view, such factors as the nature of a trauma and its immediate effects may be relevant areas of study. Furthermore, attention may also be given to its long term effects, particularly with regard to the recency and intensity of the experience. In so far as the author of the present study has heard fearful adults refer to traumatic dental experiences during their childhood as the cause of their present fear of the dental situation, this apparent long-term effect may provide a fruitful area of investigation.

From a practical point of view, knowledge of a previous history of dental trauma could help to solve at least one aspect of the problem of the alleviation of dental fears.

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SUPPLEMENT

AN INVESTIGATION OF THE FEAR RESPONSES OF CHILDREN IN THE DENTAL SITUATION

SUMMARY & APPENDIX

A. A. BRAND

SUMMARY

In the present study, an attempt has been made to show that the dental fears exhibited by children are both intrinsic and extrinsic to the dental situation. Extrinsically, the area isolated for investigation was the mother-child relationship. Where children did not have previous dental experience and were fearful of the dental situation, the mother-child relationship was seen as the most likely source of these fears. Where children had had precious dental experience it was postulated that any fears exhibited, may have been due to a dental experience of a traumatic nature.

Thirty mother-child pairs were selected for investigation. The children were of both sexes with ages ranging from three to twelve years. The fears of the mothers and children were tested both behaviourally and physiologically, and a history of previous dental experience was documented for each child subject. A response schedule for mothers was constructed (see Appendix) so that mother behaviour could be documented. This behaviour was rated by independent judges and categorised according to previously defined concepts of positive and negative.

The following results were obtained:

Support was not obtained for the hypotheses that fearful and non fearful children would differ with regard to -

(a) whether their mothers were fearful or not

(b) whether their mothers verbalised their fears in front of their children or not.

Testing of hypothesis II produced a contradiction. The hypothesis was that non fearful children are more likely than fearful children to have mothers who are positive. The reverse in fact occurred viz., that fearful children had positive mothers. This may have been due to the fact that mothers showed positive behaviour (i.e. being comforting and reassuring) to already fearful children.

Hypothesis IV was confirmed. It was that children who had had previous dental experience of a traumatic nature showed

fearfulness in the dental situation.

It may be said then, that the present study has tended to confirm the common sense notion that the factors concerned with dental fears seem to be intrinsic to that situation. This does not exclude the possibility that extrinsic factors may in fact be present but were not demonstrated in this study. A more sophisticated experimental design, a larger sample and more adequate measures may help to tap these extrinsic factors as further possible sources of fear of the dental situation.

APPENDIX

SCHEDULE A. (children)

"The schedule of responses of, and other relevant data on the child in the dental situation" reproduced below, was based on many years prior experience of the author with children in a dental situation. On this basis the author had formulated an idea of what might be called a fear syndrome in such patients. The schedule represents a transalation of these ideas into concrete behaviours each of which could be observed and noted.

Certain items of behaviour may be regarded as central to the fear syndrome, whereas the meaning of others would depend to a greater extent on the general behavioural pattern. Thus for example, behaviour such as kicking (item 3), or screaming (item 4), or running away (item 19), may clearly be regarded as a reflection of fear whatever other behaviour accompanied them. On the other hand, crying (item 2), hand extension (item 13), need to go to the toilet (item 16) could only be understood in terms of the total behaviour pattern. These latter items are probably most useful in indicating the degree of fear - where this is in fact present - rather than its actual occurence.

In completing the schedule, each child was scored on each item immediately following the treatment session in terms of whether the behaviour occurred or not (YES OR NO), and also at what stage of the session the behaviour occurred. The purpose of recording the stage of the visit at which the behaviour was manifested, was to assist in reconstructing its context which in turn facilitated its interpretation.

The way in which each item was interpreted is indicated below. The following is a complete list of items classified according to its interpretive categories. Following that is a reproduction of the format of the schedule used during the data collecting stage of the investigation.

INTERPRETIVE CATEGORIES

A. Always indicative of fearfulness

ITEMS 1) trembling, 4) screaming, 5) clinging to mother, 6) resistance to entering surgery, 7) resistance to sitting in chair, 10) jaw clenching, 19) running away, 25) pleading.

B. Usually indicative of fearfulness - depends on occurence of other fearful behaviour.

ITEMS 18) agitation, 28) hyperventilation.

C. Could be indicative of fearfulness but could also be spontaneous response to pain - depends on total context

ITEMS 2) crying, 3) kicking, 15) grasping dentist's hand, 24) aggression.

D. Could be indicative of fearfulness - depends on context.

ITEMS 8) leaning forward in chair, 9) grasping armrests, 11) head aversion, 12) fist clenching, 13) hand extension, 16) need to go to the toilet, 17) gross sweating, 30) calling for mother, 31) asking mother to accompany child into surgery, 32) asking mother to stand close to chair, 33) asking mother to hold hand.

E. Not useful indicators of fearfulness, but could be fearful depending on context. (in practice these items were found to be of limited usefulness and were therefore discarded).

ITEMS 20) restlessness, 21) wriggling, 22) nail biting, 23) facial and other tics, 27) asking questions, 34) pallor and fainting.

SCHEDULE B (Mothers)

"The schedule of responses of, and other relevant data on the mother of a child in the dental situation", was devised to assess whether the mother was positive or negative in relation to her child. (for definitions of positive and negative see pages 22 and 25). It was also used to record whether fearful mothers verbalised their fears in front of their children or not. The behaviour items used in the schedule were derived from the author's experience in the same way as that used for the schedule for the children.

Scoring ofthe schedule was in terms of whether the behaviour occurred or not (yes or no), their verbal responses (which were assumed to reflect positive or negative attitudes held by the mother) and the stage of the visit at which these behaviours occurred. The last mentioned criterion was used to assist in reconstructing the context of the situation, which in turn facilitated its interpretation.

Items (10) and (16) referred to the criterion of mothers fearfulness in the dental situation with or without an accompanying verbalisation of these fears. Scoring procedure is self-evident

INTERPRETIVE CATEGORIES

A. Always indicates positive mothers.

ITEMS 1) comes with child, 7) reassures child, 8) comforts child 13) praises child, 17) encourages child, 18) explains nature of dental experience to child.

B. Could be positive or negative - depends on context.

ITEMS 2) stays away from child, 3) stays near child, 12) leaves child, 14) promises reward.

C. Always indicates negative mother.

ITEMS 5) hits child, 6) belittles child, 9) threatens punishment 15) Overprotective (unnecessary fussing).

D. Never an indication of positive, but not necessarily negative - depends on context.

ITEM 4) Admonishes child.

SCHEDULE A.

NAME DATE.

SCHEDULE OF RESPONSES OF, AND OTHER RELEVANT DATA OF THE CHILD IN THE DENTAL SITUATION.

RESPONSE.	YES	NO	STAGE OF VISIT	PURPOSE OF VISIT	PREVIOUS VISITS (NATURE OF EXPERIENCE -CHILD'S REACTION.
1. TREMBLING					
2. CRYING					
3. KICKING					
4. SCREAMING					
5. CLINGING TO MOTHER					
6. RESISTANCE TO ENTERING SURGERY					
7. RESISTANCE TO SITTING ON CHAIR					
8. LEANING FORWARD IN CHAIR					
9. GRASPING ARMRESTS					
10. JAW CLENCHING					
11. HEAD AVERSION					
12. FIST CLENCHING					
13. HAND EXTENSION					
14. PUPILLARY DILATATION					
15. GRASPING DENTIST'S HAND					
16. NEED TO GO TO TOILET					
17. GROSS SWEATING					
18. AGITATION					
19. RUNNING AWAY					
20. RESTLESSNESS					
21. WRIGGLING					
22. NAIL BITING					
23. FACIAL AND OTHER TICS					
24. AGGRESSION TO A) MOTHER					
B) DENTIST.					
C) NURSE					
D) OTHER					

RESPONSE	YES	NO	STAGE OF VISIT	PURPOSE OF VISIT	PREVIOUS VISITS (NATURE OF EXPERIENCE - CHILD'S REACTION.
25. PLEADING					
26. TALKATIVENESS					
27. ASKING QUESTIONS					
28. HYPERVENTILATION					
29. GAGGING					
30. CALLING FOR MOTHER					
31. ASKING MOTHER TO ACCOMPANY CHILD INTO SURGERY					
32. ASKING MOTHER TO STAND CLOSEBY					
33. ASKING MOTHER TO HOLD HAND					
34. PALLOR, FAINTING					

SCHEDULE B.

NAME DATE.

SCHEDULE OF RREPONSES AND OTHER RELEVANT DATA

OF MOTHER WITH CHILD IN DENTAL SITUATION

RESPONSE	YES	NO	VERBAL RESPONSE	STAGE OF VISIT
1. COMES WITH CHILD				
2. STAYS AWAY FROM CHILD				
3. STAYS NEAR CHILD				
4. ADMONISHES CHILD				
5. HITS CHILD				
6. BELITTLES CHILD				
7. REASSURES CHILD				
8. COMFORTS CHILD				
9. THREATENS PUNISHMENT				
10. AGITATION				
11. WISH TO "ESCAPE FROM FIELD"				
12. LEAVES CHILD				
A. AT DENTIST'S REQUEST				
B. OWN CHOICE				
C. AT CHILD'S REQUEST				
13. PRAISES CHILD				
14. PROMISES REWARD				
15. UNNECESSARY FUSSING (OVERPROTECTIVE)				
16. VERBALISATION OF FEARS IN FRONT OF CHILD.				
17. ENCOURAGES CHILD				
18. EXPLAINS TO CHILD NATURE OF DENTAL EXPERIENCE				

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