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An investigation of language used by children to describe discomfort expected and experienced during dental treatment

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Summary. *Objectives.* A study of dental pulp testing has shown that children's linguistic comprehension and chronological age independently influence their descriptions of pain. The present study sought first to demonstrate this for expectations and experience of routine dental treatment, and secondly, to determine whether the effect of age was the result of previous dental and medical experience.
Sample. Forty-six children between 6 and 17 years of age attending two paediatric dental clinics for routine invasive procedures comprised the study sample.
Methods. To describe their expectations of forthcoming treatment, each child selected words from a published list, and gave ratings on scales describing the degree of severity as 'sore' or 'tingly'. They also completed the Child Dental Anxiety Scale and the Spielberger State-Trait Anxiety Scale for Children. After treatment, they described the treatment with the same list and scales, then completed the British Picture Vocabulary Scale and a dental–medical history questionnaire.
Results. The children, especially the most anxious ones, chose more words from the list for their expectations than for their experience of treatment, suggesting, as in previous studies, that they expected more discomfort than they experienced. Ratings of 'sore' and 'tingly' did not show this discrepancy. For both expectations and experience of treatment, the children with the largest vocabularies chose the fewest words, thus being more discriminating in their choices. However, vocabulary had no effect on ratings of 'sore' and 'tingly'. There were no significant relationships among age, estimates of discomfort and medical–dental histories.
Conclusions. The results suggest that a list of adjectives provides the most discriminating measure of discomfort. They also show that it is necessary to take into account children's linguistic development to evaluate their estimates of pain so as not to entertain the belief of many clinicians that children exaggerate such reports.

Introduction

Anxious children often expect more discomfort than they experience in dental treatment [1], and once they are hurt, their expectations contribute to a lasting fear of dentistry [2]. Sudden discomfort does occur during treatment even now [3], and therefore, more acceptable and more effective ways of administering local anaesthesia are continually sought [4,5]. It would be encouraging if such innovations led to reduced expectations of pain.

Reliable and valid ways of detecting and measuring pain are essential in order to develop and administer effective analgesics. It is remarkable that the

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quality of the evidence used by clinicians for the occurrence of pain receives little or no attention in studies of local anaesthetic failure in children [3,6,7]. In a paper by Nakai *et al*. [3], the children were not even consulted about pain, perhaps because some clinicians believe that young children cannot report pain accurately [8], or even exaggerate its severity [2]. On the other hand, while clinicians [9] may underestimate operative pain in children, parents [10] overestimate it. A sample of dentists in the USA even held simultaneously contradictory views, i.e. 'it is difficult to know when children are in pain', but 'children's reports of pain are genuine' [2].

There have been many attempts to develop valid observational measures [11] and means to allow children to report pain [12,13]. However, these have only recently been tested in dentistry for children [14]. Toole *et al*. [14] showed that the oldest children gave the greatest estimates, on adjectival measures, of severity of pain during dental pulp testing. On the other hand, when chronological age was controlled statistically, the children with the least well-developed linguistic comprehension, according to a standard psychometric test, were shown to give the most severe representations of discomfort. The authors had expected that those children would give the lowest estimates because they would have the smallest vocabularies and least understanding of the task. However, the above study [14] suggested that children appear to be more selective in their choice of words for experimentally manipulated pain as their linguistic development improves. Nevertheless, as they grow older, they would have more experience of operative pain, and therefore, have more pain words to describe it.

Such experimental manipulations can produce misleading conclusions about unpredictable pain in clinical practice [15]. Therefore, the present study sought to test these findings more robustly, and extend them for the expectations and experience of pain during routine diverse dental treatment in children by using measures of their vocabulary, and their dental and medical experience. As in previous studies [1], the authors expected that: (1) the children would expect more discomfort than they would experience in that treatment, this discrepancy being greatest in the most anxious subjects; (2) those with the smallest vocabularies would give the greatest estimates of pain, their chronological ages and anxiety having been held constant statistically; and (3) the youngest children would rate their discomfort least severely, the statistical effect of their vocabularies being controlled. If the third hypothesis was found to be true, the authors would expect that: (4) the youngest children would have least experience of medical and dental treatment; and (5) those with most experience would attribute most pain to the treatment.

Subjects and methods

Ethical approval

Approval for the project was given by the Research Ethical Committees of the Institute of Psychiatry and St George's Hospital, London, UK.

Experimental design

A repeated measures design compared the pain that each child expected and then experienced during dental treatment on the day. Covariate measures were the children's current anxiety, their habitual anxiety about dentistry, the extent of their vocabularies and their chronological ages.

The authors' previous study [14] indicated that they would need around 75 children to reject the null hypothesis for the relationship between developmental measures and reports of pain with a power of 80%, but they were prepared to stop the experiment with fewer subjects if data predicted that rejection of the hypotheses would require fewer or an infinitely greater number.

Subjects

All consecutive children, up to 75 in number, between the ages of 6 and 17 years who were to have treatment and who attended the Department of Paediatric Dentistry at King's College Hospital or St George's Hospital, London, UK, together with their parents, were asked to participate. Children were excluded if they did not consent, if they had a diagnosed neurodevelopmental disorder affecting language comprehension, if English was not their first language, if they had suffered a trauma on the day leading to the dental visit, or if they required regular invasive treatment or investigation for an illness such as diabetes. Under local anaesthesia, 11 children underwent extractions, one had a frenulectomy and eight had root canal treatment; eight received cavity preparation with or without local

anaesthesia, four were given fissure sealants, and two had adjustments to uncomfortable dentures.

Measures

To ensure consistency, all the following were administered by the investigator (K.H.): To describe the severity of discomfort, the children were asked to choose from a list of 56 adjectives and adjectival phrases, such as 'throbbing', compiled to describe pain. The list included some nonsense words, such as 'galumphing' [14]. The more severe the pain, the more words the subjects chose [14]. The children also gave estimates on five-point rating scales, i.e. 'not sore', 'a little sore', 'quite sore', 'very sore' and 'extremely sore', and similarly did so for 'tingly'. Ratings for 'tingly' and 'sore' had been higher for the real pulp test than for the simulated pulp test in the authors' previous study [14], suggesting that it could provide a measure of dental discomfort. To describe habitual anxiety about dentistry and current anxiety, the present authors used, respectively, the Child Dental Anxiety Scale (CDAS) [16], consisting of eight questions, and the Spielberger State-Trait Anxiety Inventory for Children (STAIC) [17], comprising 20 questions. The British Picture Vocabulary Scale (BPVS) [18] assessed the size of the children's receptive vocabulary in response to a list of words spoken by the investigator who had to be an appropriately qualified clinician. A dental–medical history questionnaire (DMHQ) of nine questions was devised for the present study.

Procedure

All children and their parents or guardians were approached in the waiting-room by the investigator (K.H.) and asked if they would participate in this study. Each was told that the authors were interested in how children describe discomfort in dentistry. In order to reduce that discomfort for other children, it would help if they could complete questionnaires before and after their own dental treatment. As summarized on a written sheet given to them, they were told that the treatment would be as originally planned by the dentist, it would not be affected by the questionnaires and that they could withdraw from the authors' enquiries at any time without affecting their dental treatment. If they consented to this, by completing a prepared form, the investigator took them to a quiet room, if available, or to the dentist's single-chair surgery, where the children completed the CDAS and the STAIC. The investigator read the questionnaires to the children if they would, or did, have difficulty in reading. She then showed the word list to the children immediately before dental investigation, and said that the words described how people feel when they have dental treatment. Hence, the investigator asked them to choose as many or as few words as they needed to describe how they thought their treatment would feel. She asked them to say 'yes' or 'no' accordingly as she read each word slowly in a uniform voice, their responses being recorded on the list. The investigator then read the rating scales for 'sore' then 'tingly', and noted their responses. Immediately after dental treatment completed by one dentist (A.A.), the children were asked by the investigator to complete their estimates again to say how the treatment had felt. The vocabulary test was then completed by the children in order to avoid anxiety about treatment affecting the results of that test. Afterwards, the parents completed the DMHQ.

Data analysis

The distributions of the numbers of words chosen from the list, and of the ratings for 'sore' and 'tingly' were skewed. Most children chose only a few words and gave low ratings. Therefore, each of these variables was transformed by adding one to each child's observation and computing the square root of that sum in order to achieve an approximately normal distribution of data. All analyses were done with the SPSS 11·5 statistical software package [19]. Regression analyses followed a hierarchical procedure in which each independent variable (e.g. chronological age) was entered alone into an analysis of the dependent variable (e.g. ratings of 'sore'). Then all those independent variables which had a significant association with the dependent variable were entered into a multiple regression analysis of the dependent variable to determine the effect of each while controlling for the others.

Analysis of the data from 40 children showed that the present authors could reject several of the null hypotheses (see 'Results' below) and that it would require a very much larger number of children to reject the remainder. Therefore, according to the rule included in the experimental design that was required by the present authors' ethical committees, they stopped collecting data at that point.

Table 1. Mean values for independent variables describing the children: (SD) standard deviation.

Variable	Mean (± SD)
Child Dental Anxiety Scale	16·07 ± 4·73
State-Trait Anxiety Inventory for Children	34·80 ± 7·87
British Picture Vocabulary Scale:	
raw score	106·77 ± 27·39
age equivalent (years)	11·08 ± 3·43

Results

Characteristics of the children

Forty children completed the present study. Their average age (± standard deviation) was 11·08 ± 2·60 years (range = 6–17 years). Twenty-three subjects were girls. The other independent variables are summarized in Table 1. The raw scores on the BPVS were expressed in years. These were significantly positively and highly correlated with the children's chronological ages ($\rho = 0{\cdot}60$, $P < 0{\cdot}001$) and there was no significant discrepancy between these (Wilcoxon $Z = -0{\cdot}28$, $P = 0{\cdot}78$). The responses to the STAIC and the Modified CDAS were moderately correlated ($\rho = 0{\cdot}39$, $P = 0{\cdot}008$), suggesting that, if the children were anxious at the time of testing, they were afraid, at least in part, because of the forthcoming dental treatment.

Discrepancy between expected and experienced pain

Numbers of words chosen from the list. A repeated-measures analysis of variance, with state anxiety as a covariate, showed that the children chose more words for the pain that they expected than for the pain experienced ($F = 5{\cdot}42$, d.f. = 1, $P = 0{\cdot}025$), but the significant interaction between anxiety and time of measurement showed that the discrepancy was greater for the more anxious children ($F = 6{\cdot}36$, d.f. = 1, $P = 0{\cdot}015$). See Table 2.

'Sore' ratings. There was no difference (Table 2) between expected and experienced discomfort ($F = 0{\cdot}99$, d.f. = 1, $P = 0{\cdot}32$), even for the most anxious children ($F = 0{\cdot}59$, d.f. = 1, $P = 0{\cdot}45$).

'Tingly' ratings. There was also no significant discrepancy (Table 2) either as a main effect ($F = 0{\cdot}05$, d.f. = 1, $P = 0{\cdot}82$) or as an interaction with anxiety ($F = 0{\cdot}001$, d.f. = 1, $P = 0{\cdot}97$).

Expected pain

Numbers of words chosen from the list. Univariable regression analyses showed that vocabulary ($\beta = -0{\cdot}34$, $t = -2{\cdot}282$, $P = 0{\cdot}028$) and state anxiety ($\beta = 0{\cdot}50$, $t = 3{\cdot}74$, $P = 0{\cdot}001$), but not chronological age ($\beta = -0{\cdot}23$, $t = -1{\cdot}47$, $P = 0{\cdot}16$), predicted the numbers chosen. A linear multiple regression analysis of these independent variables, therefore omitting chronological age, confirmed that the children with the most extensive vocabularies chose fewer words than those with the smallest vocabularies ($\beta = -0{\cdot}38$, $t = -3{\cdot}08$, $P = 0{\cdot}004$), while the most anxious children chose more words than the least anxious ($\beta = 0{\cdot}51$, $t = 4{\cdot}12$, $P \leq 0{\cdot}001$).

'Sore' ratings. Univariable analyses showed that state anxiety ($\beta = 0{\cdot}45$, $t = 3{\cdot}29$, $P = 0{\cdot}002$), but neither vocabulary ($\beta = -0{\cdot}04$, $t = -0{\cdot}27$, $P = 0{\cdot}79$) nor chronological age ($\beta = 0{\cdot}18$, $t = 1{\cdot}18$, $P = 0{\cdot}25$), significantly predicted the dependent variable. The most anxious children gave the highest ratings.

'Tingly' ratings. There were no significant effects of chronological age ($\beta = 0{\cdot}09$, $t = -0{\cdot}57$, $P = 0{\cdot}57$), vocabulary ($\beta = 0{\cdot}12$, $t = 0{\cdot}79$, $P = 0{\cdot}44$) or anxiety ($\beta = 0{\cdot}13$, $t = 0{\cdot}89$, $P = 0{\cdot}38$) according to univariable analyses.

Experienced pain

Numbers of words. Univariable analyses showed that the children with the largest vocabularies chose the fewest words ($\beta = -0{\cdot}44$, $t = -3{\cdot}14$, $P = 0{\cdot}003$), but chronological age ($\beta = -0{\cdot}20$, $t = -1{\cdot}33$,

Table 2. Average numbers of words chosen from the list and ratings given by highly anxious [≤ 19 on the State-Trait Anxiety Inventory for Children (STAIC)] and less anxious (> 19 on the STAIC) children for pain expected and experienced: (SD) standard deviation.

	Pain expected (mean ± SD)		Pain experienced (mean ± SD)	
Variable	Less anxious children	Highly anxious children	Less anxious children	Highly anxious children
Numbers of words	10·91 ± 9·06	14·26 ± 15·16	10·18 ± 12·96	12·29 ± 9·75
'Sore' ratings	1·73 ± 1·56	1·18 ± 1·17	1·27 ± 1·27	1·15 ± 1·26
'Tingly' ratings	1·73 ± 1·19	1·47 ± 1·05	1·45 ± 1·57	1·32 ± 1·43

$P = 0{\cdot}19$) and anxiety ($\beta = 0{\cdot}05$, $t = 0{\cdot}35$, $P = 0{\cdot}73$) had no significant effects.

'Sore' ratings. Neither vocabulary ($\beta = -0{\cdot}11$, $t = -0{\cdot}73$, $P = 0{\cdot}47$), chronological age ($\beta = 0{\cdot}02$, $t = 0{\cdot}14$, $P = 0{\cdot}89$) nor anxiety ($\beta = 0{\cdot}20$, $t = 1{\cdot}316$, $P = 0{\cdot}20$) had a significant influence.

'Tingly' ratings. Neither vocabulary ($\beta = 0{\cdot}07$, $t = 0{\cdot}45$, $P = 0{\cdot}69$), chronological age ($\beta = 0{\cdot}14$, $t = 0{\cdot}91$, $P = 0{\cdot}37$) nor anxiety ($\beta = 0{\cdot}11$, $t = 0{\cdot}73$, $P = 0{\cdot}47$) influenced ratings.

Previous medical–dental history and estimates of discomfort

The responses to the present authors' MDHQ had a moderately high internal consistency reliability according to a Cronbach's coefficient ($\alpha = 0{\cdot}57$). However, there was no relationship between total scores on the questionnaire and estimates of discomfort expected and experienced. The highest value of ρ was $-0{\cdot}25$ ($P = 0{\cdot}91$) for the relationship between history scores and 'sore' ratings for expected discomfort.

Discussion

The authors' previous investigation [14] showed that all the children they surveyed chose more words to describe the discomfort of a real pulp test than that of a simulated test. This resembles findings for adults with the McGill Pain Questionnaire (MPQ) [20], and thus confirms that the numbers of words chosen is a measure of the severity of discomfort: more words mean more pain. The present study has shown that anxious children chose more words from a list to describe expected discomfort than experienced discomfort, consistent with previous studies in different locations which have shown that anxious patients expect more pain than they experience in dentistry [1]. However, in the present investigation, the children's ratings of 'sore' and 'tingly' did not confirm this. This may have occurred because 'sore' and 'tingly' were not the most apt words in the opinion of the children to describe the severity of dental discomfort. Nevertheless, 'sore' is one of the most popular words chosen by children to describe pain [14]. Secondly, in the present study, the discomfort may have been too variable in quality, the children having experienced several different dental procedures, for a single word such as 'sore' or 'tingly' to describe their experience accurately. Thirdly, discomfort even from a single source such as cavity preparation would require several adjectives to describe the experience, and therefore, a list of words such as the present authors' (e.g. the MPQ [20]) would be best to describe it. Fourthly, it is an axiom of psychometric assessment that several estimates, as in the present authors' word list, of the same attribute, such as pain, give a more accurate measure of the true value of the attribute [21] (e.g. see the Spielberger STAIC [17]). Fifthly, children may be more accustomed to pain-free dentistry now than at the time of earlier studies [1], and therefore only a very sensitive measure would be capable of detecting a small difference between expected and experienced pain. Sixthly, the children could have become fatigued by the time they completed the 'tingly' and 'sore' rating scales, and therefore, may have given random answers following treatment. However, the present authors think this is unlikely because these scales were very short. Furthermore, in their previous study [14], the scales also followed the word choice after pulp testing and other tests, but did show significant differences. Therefore, fatigue is an unlikely cause of the failure to find significant differences for these scales in this study. Seventhly, the low scores for 'sore' and 'tingly' may have been too low to allow any difference between expected and experienced discomfort to be evident: a floor effect. However, the transformed data for these scales were normally distributed, and therefore there should have been sufficient variation to allow such differences to be detected by them. For expected pain, for similar reasons, it is probably not surprising that there was a significant relationship only between the numbers of words chosen by the children and the size of their vocabulary, the effect of anxiety having been held constant statistically. The children with the most extensive vocabularies chose the fewest words, similar to the relationship observed for experienced discomfort in the authors' previous study. As in previous studies [1], the most anxious children expected the most pain, suggesting a causal relationship between anxiety and expectations of pain. That was evident for the numbers of words chosen and for 'sore' ratings, but not for 'tingly'.

For experienced pain, there was only a significant influence for the choice of words: again, the children

with the greatest vocabularies chose the fewest words. There was no effect of anxiety on any measure, consistent with previous findings that anxiety has less of an effect on experience than on expectations of pain [1]. In the authors' previous study [14], they used a measure of linguistic comprehension, based on the children's capacity to understand passages of prose, to predict their descriptions of discomfort. That measure may have predicted the children's capacity to understand the task, as well as their use of their vocabulary, to describe their experience of pulp testing. In the present study, the effect of the children's vocabulary on the numbers of words which they chose for expectations and experience of a variety of dental procedures is consistent with the interpretation of the authors' previous finding [14]: as their vocabularies grow, children become more careful in their choice of words.

In the present investigation, unlike the authors' previous study, however, there was no relationship between linguistic development and ratings of 'sore' and 'tingly'. The lack of such a relationship here may have occurred because these ratings would have been less dependent on the size of the children's vocabulary, as measured here, than on their understanding of the language used to describe the task to them, as assessed in the previous study.

Chronological age had no effect on measures of discomfort, unlike the previous study. Therefore, it was not surprising that there was no significant correlation between estimates of discomfort and previous medical and dental experience. However, the internal consistency reliability of the authors' DMHQ was moderate, and therefore a better test of these relationships should await the development of a more reliable questionnaire. The lack of an effect of age here may suggest that dental treatment was too varied in the present study to enable experience of previous dentistry to provide the children with a vocabulary to describe their treatment.

In conclusion, linguistic development influences children's descriptions of the severity not only of discomfort in dentistry, but also of their expectations of that discomfort, according to the numbers of words which they choose. Furthermore, that variable is probably the most discriminating measure of pain in dentistry for children. Vocabulary had a substantial influence on estimates of expected pain and a moderate effect on those of experienced discomfort, explaining, respectively, 20% and 11% of variance in the measures. The negative relationship between the linguistic measures and pain suggests two hypotheses: The children with the smallest vocabularies choose words on their understanding that more words, regardless of their meaning, denote more pain. On the other hand, the children with bigger vocabularies also believe that more words means more pain, but choose words according to their meaning and so become more economical in their choice. Therefore, it is not surprising that clinicians believe, in error, that young children exaggerate reports of pain [2].

The present study offers a means of correcting this. The high correlation between size of vocabulary and age might suggest that chronological age would be sufficient to predict the effect of children's linguistic attainment on their estimates of pain. The present authors' studies show that that would not always be appropriate because chronological age is not always a good predictor of linguistic attainment in children [14]. Moreover, chronological age had no significant relationship with the children's descriptions of pain in the present study. Research elsewhere claims that children's reports provide a 'gold standard' for measures of their pain [22]. However, in order to achieve that for children's expectations and experience of pain, it would be necessary to take account of measures of their vocabulary and linguistic comprehension.

What this paper adds

- This study provides information about how children describe their expectations and experience of pain during routine dental treatment.
- Anxious children generally choose more words from a list to describe expected than experienced discomfort.
- Children with the greatest vocabularies chose the fewest words to describe their discomfort.

Why this paper is important for paediatric dentists

- The level of children's linguistic development needs to be taken into account in evaluating their descriptions of expected pain and pain experienced during routine dental treatment. Chronological age may be a less good indicator.
- Children with smaller vocabularies may choose more words, irrespective of their meaning, to describe more pain.

Résumé. *Objectifs.* Une étude sur l'évaluation de la pulpe dentaire a montré que la compréhension linguistique de l'enfant et l'âge chronologique influencent

de façon indépendante leurs descriptions de la douleur. La présente étude a d'abord cherché à le démontrer quant aux attentes et à l'expérience d'un traitement dentaire de routine puis à déterminer si l'influence de l'âge était le résultat d'une expérience dentaire ou médicale antérieure.
Echantillon. Quarante-six enfants âgés de 6 à 17 ans fréquentant deux cliniques de dentisterie pédiatrique pour des traitements invasifs de routine.
Méthode. Chaque enfant, pour décrire ses attentes par rapport au traitement à effectuer, a sélectionné des mots à partir d'une liste établie et à donné des classements sur des échelles décrivant la sévérité de «douloureux» et «picotement». Ils ont aussi rempli l'échelle d'anxiété dentaire de l'enfant et l'échelle d'état d'anxiété pour enfant de Spielberger. Après le traitement, ils ont décrit le traitement à l'aide des mêmes liste et échelles, puis rempli l'échelle de vocabulaire d'image britannique et un questionnaire sur les antécédents médicaux et dentaires.
Résultats. Les enfants, notamment les plus anxieux, ont choisi plus de mots dans la liste pour leurs attentes que pour leur expérience par rapport au traitement, suggérant comme lors de précédentes études qu'ils craignent plus les désagréments qu'ils ne les ont connus. Les classements de «douloureux» et «picotement» n'a pas montré cette différence. A la fois pour les attentes et l'expérience face aux traitements, les enfants avec le vocabulaire le plus large ont choisi le moins de mots, étant par là même plus discriminatifs dans leurs choix. Cependant, le vocabulaire n'avait pas d'influence sur les classements de «douloureux» et «picotement». Il n'y avait pas relation significative au niveau de l'âge, les estimations d'inconfort et les histoires médicales-dentaires.
Conclusions. Les résultats suggèrent qu'une liste d'adjectifs donne la mesure d'inconfort la plus discriminante. Ils montrent également qu'il est nécessaire de prendre en compte le développement linguiste des enfants pour évaluer leurs estimations de la douleur afin d'éviter de conforter de nombreux praticiens dans leur croyance que les enfants exagèrent quand ils en parlent.

Zusammenfassung. *Ziele.* Eine Studie bezüglich Pulpatestung hat gezeigt, dass chronologisches Alter und Sprachverständnis von Kindern deren Beschreibung von Schmerz beeinflussen. Die vorliegende Studie versuchte erstens dies für Erwartungen und Erleben von zahnmedizinischen Routinebehandlungen zu zeigen sowie zweitens zu bestimmen, inwiefern ein Alterseffekt durch Erfahrung mit vorangegangenen medizinischen/zahnmedizinischen Behandlungen bedingt war. *Stichprobe*: Sechsundvierzig Kinder und Jugendliche im Alter zwischen 6 und 17 Jahren, welche eine von zwei Zahnkliniken für eine invasive Zahnbehandlung aufsuchten.
Methode. Jedes KindUm die Erwartungen der bevorstehenden Behandlung zu beschreiben, suchte jedes Kind Wörter aus einer vorgegebenen Liste heraus und bewertete diese anhand von Skalen, welche die Schweregrade von "unangenehm" und "Kribbeln" beschrieben. Außerdem wurde der Child Dental Anxiety Scale sowie der State Anxiety Scale for Children nach Spielberger ausgefüllt. Nach der Behandlung wurde die Therapie mit den selben Wortlisten und Skalen beschrieben. Außerdem wurde der British Picture Vocabulary Scale Test ausgefüllt und ein Fragebogen zur zahnmedizinisch-medizinischen Vorgeschichte.
Ergebnisse. Die Kinder, insbesondere die ängstlichsten, suchten mehr Wörter für aus der Liste für die Beschreibung ihrer Erwartungen als für die Beschreibung der Therapie, was in Übereinstimmung mit früheren Studien darauf hinweist, dass die Erwartung unangenehmer war als die tatsächlich eingetretene Erfahrung. Die Einordnungen auf den Skalen "schmerzend" und "kribbelnd" zeigte keine derartige Diskrepanz. Kinder mit dem größten Vokabular wählten die wenigsten Worte, sowohl für Erwartung als auch für die Ablaufbeschreibung, was auf eine höhere Trennschärfe der Wortwahl schließen lässt. Es ergaben sich keine Zusammenhänge zwischen Alter, Einschätzung der Abläufe und Erfahung mit vorangegangenen Behandlungen.
Schlussfolgerungen. Die Ergebnisse zeigen, dass eine Liste von Adjektiven die am besten trennende Messmethode für Behandlungsunannehmlichkeiten ist. Weiterhin wird gezeigt, dass die Sprachentwicklung der Kinder bei der Bestimmung ihrer Erwartungen einberechnet werden muss, um die Annahme vieler Kliniker nicht zu unterhalten, dass Kinder bei solchen Angaben übertrieben.

Resumen. *Objetivos.* Un estudio sobre el test pulpar dentario ha mostrado que la comprensión ligüística de los niños y la edad cronológica influyen de forma independiente en sus descripciones del dolor. El presente estudio debía primero demostrar esto en relación con las expectativas y sensaciones del tratamiento dental rutinario y segundo determinar si el efecto de la edad era el resultado de la experiencia médica y dental previas.

Muestra. Cuarentaiséis niños de entre 6 y 17 años, atendidos con procedimientos dentales invasivos de rutina, en dos clínicas odontopediátricas. Método. Describir las expectativas de respuesta del tratamiento, cada niño seleccionó palabras de una lista publicada y dio puntuaciones a escalas que describen severidad de "dolor" y de "estremecimiento". También completaron la Escala de Ansiedad Dental y la Escala de Estado de Ansiedad para Niños de Spielberger. Después del tratamiento describieron el tratamiento con la misma lista y escalas; luego lo completaron con la Escala Británica de Vocabulario por Dibujos y un cuestionario de historia Médico-Dental. *Resultados*. Los niños, especialmente los más ansiosos, escogieron más palabras de la lista por sus expectativas que por lo experimentado en el tratamiento, sugiriendo como en estudios previos que ellos esperaban más malestar que el que experimentaron. Las puntuaciones de "dolor" y "estremecimiento" no mostraron esta discrepancia. Tanto para las expectativas como para la experimentación del tratamiento los niños con vocabularios más amplios escogieron el menor número de palabras, siendo así más discriminantes en sus elecciones. Sin embargo, el vocabulario no tuvo efecto en las puntuaciones de "dolor" y "estremecimiento". No hubo relaciones significativas entre la edad, estimaciones de malestar e historias médico-dentales.
Conclusiones. Los resultados sugieren que una lista de adjetivos proporciona la medida más discriminante del malestar. También señalan que es necesario tener en cuenta el desarrollo lingüístico de los niños para evaluar sus estimaciones de dolor y así no considerar la creencia de muchos clínicos de que los niños exageran tales informes.

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