Comparison of the behavior of children undergoing restorative dental treatment at the first visit versus the second visit in a private pediatric dental practice

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The purpose of this study was to determine if there was a difference in the behavior of child patients undergoing restorative dental treatment at the first office visit versus those whose first restorative treatment visit was after an initial non-threatening dental visit in a private pediatric dental practice. For patients up to and including age 9, patient behavior was recorded during the restorative session using the Sarnat scale, which rate behavior in 5 levels, from completely cooperative to completely uncooperative. Variables such as age, method of payment, referral source and sex were also recorded. The results showed that there was no statistically significant difference in the behavior of children, who had the first restorative dental experience at the initial office visit versus those children who had the first restorative procedure after a non-invasive introductory visit in all instances. There were no differences according to age, sex, socio-economic status or source of referral. It is concluded that a child may not exhibit more negative behavior as a restorative dental patient when the first visit is for restorative therapy than if the restorative treatment is delivered at a later date after a non-threatening introduction to the dental environment. Thus, a pediatric dentist need not hesitate to treat a child at the first visit for fear that it may engender more negative behavior than if the restorative dental treatment was postponed until another time.

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INTRODUCTION

Dentists empirically hold that a non-threatening, non-invasive introduction to dental care results in better behavior of children for the subsequent first restorative visit. Unfortunately, there are no reports in the literature to validate this belief.

While there are no published studies examining this tenet, it has been shown that behavior of the child in the dental office is associated with the type of procedure, age and socio-economic status. The younger the child and the more threatening the procedure, the more often negative behavior was observed. In addition, patients from lower socio-economic strata were found to more often exhibit negative behavior as dental patients. However, no difference due to sex was observed.[1]

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Such findings are consistent with behaviors noted in clinics and university settings where it was observed that children's behavioral and physiological responses to multiple and sequential dental visits were not consistent, with responses that ranged from no change to improvement in behavior to regression in behavior.[2-11]

The purpose of this study was to determine if there was a difference in behavior of those children who underwent a restorative dental procedure immediately after the new patient work-up versus children who had their first restorative session at a later date. Correlation between age, sex, socio-economic status and referral source were also evaluated.

MATERIALS AND METHODS

Patients up to and including 9 years of age presenting to the author's private pediatric dental practice during a 6-month interval for their first restorative dental experience, without pharmacological aides, were eligible to be included in this study.

When a parent/responsible adult made the initial contact with the office, the appointment coordinator asked several questions about the child; these included the referral source, method of payment, whether or not the child was in immediate distress and if it was suspected that decay was present. If the answer was affir-

mative to the latter two questions, the child was appointed for an examination/ new patient work-up to be immediately followed by restorative therapy. The examination/new patient work-up, in addition to a review of medical, familial and dental history, included a clinical examination radiographs when indicated and achievable, home-care and diet instructions, followed by a prophylaxis and topical fluoride application. This is the standard protocol used by the author in his practice for patient triage.

For this study, restorative dentistry was defined as an invasive procedure, such as an extraction, impression for a space maintainer, or a procedure requiring the use of a local anesthetic followed by placement of a dental restoration. Application of a dental sealant was included in this category.

Patients were assigned to one of three age groups: those up to 36 months (0-3 years old); between 37 and 72 months (3-6 years old) and 73 to 98 months (6-9 years old). Parents and/or legal guardians gave written informed consent for treatment, for any behavioral modification methods used during the course of therapy and for record review of anonymous patient data for inclusion in pertinent studies submitted for publication in the dental literature. The data for this study was gleaned from a retrospective review of patient charts using the aforementioned informed consent.

The author using the Sarnat behavior scale scored all patient behaviors.[12] The Sarnat scale is as follows:

- Active Cooperation- Smiles, offers information, initiates light conversation, gives positive responses;
- Passive Cooperation – Indifferent, but obedient, follow instructions, quiet;
- Neutral, Indifferent- Needs convincing, mild crying follows instructions under pressure;
- Opposed, disturbs work – Seizes hands of the dentist, not relaxed, sits and stands alternatively;
- Completely uncooperative, strongly opposed- Cries, refuses to sit or enter office.

For each patient visits, the age, sex, method of payment, Sarnat score and referral source were noted. Behavior observation data were recorded by the author on the patient's chart and transferred to a computer data-base program for storage, tabulation and analysis. Statistical analysis of age group response was done using the chi-square test with $P \leq 0.05$ considered as significant for differences in the behaviors S3, 4, and 5 grouped together vs. S1 and 2 grouped together.

RESULTS

There were 289 patients whose first restorative dentistry experience was at their initial visit. These patients had restorative treatment delivered immediately after the new patient visit/work-up. This consisted of a clinical examination, radiographs when indicated and achievable, home care instructions, dietary counseling, prophylaxis and topical fluoride.

Table 1. Demographic characteristics of the study population of children undergoing restorative dentistry

Restorative Dentistry	Restorative Dentistry At First Visit		At Second Visit	
	n	(%)	n	(%)
Total Number of Patients	289		110	
Gender				
Males	145	(50)	53	(48)
Females	144	(50)	57	(52)
Payment Method				
Fee For Service	81	(28)	45	(41)
Medicaid	208	(72)	65	(59)
Age Group (years)				
0-3	77	(26)	24	(22)
3-6	158	(55)	51	(46)
6-9	54	(19)	35	(35)
Referred by General Dentist	184	(64)	38	(35)

There were 110 patients who had their first restorative session at a later date after the new patient work-up. This was usually within two weeks of the initial visit.

Table 1 presents the socio-demographic distribution of these patients. For those undergoing restorative treatment at the initial visit, the distribution of males and females was essentially the same (145 vs 144); 72% (208) of the patients were covered by Medicaid and 64% (184) were referred by general dentists. For those children having restorative treatment done at their second visit, the male/female ratio was also essentially equal (53 vs 57); 59% (65) were covered by Medicaid and 35% (38) were referred by general dentists.

Figure 1 shows all patients grouped together for the first restorative dentistry experience for both the initial and second office visits. It can be observed that the younger the child, the more often negative behavior is observed. However, within each specific age group, i.e., 0-3, 3-6, 6-9, there are no statistically significant differences in response greater than $P \leq 0.76$, $\chi^2 = 0.009$, between the first and second visit for restorative dental procedures.

Figure 2 shows the results for males, which follows the same trend as for all patients. Behavior of male patients within age 0-3 and 6-9 was virtually the same whether they had restorative treatments on the first or second visit. There was a slight difference between first and second visit behavior for those in age group 3-6, but not statistically significant beyond $P \leq 0.87$, $\chi^2 = 0.002$. Females, as seen in Figure 3, did not have the same variation in age groups as males, with the difference in response between visit one and visit two much closer to each other, but again, not significantly differ-

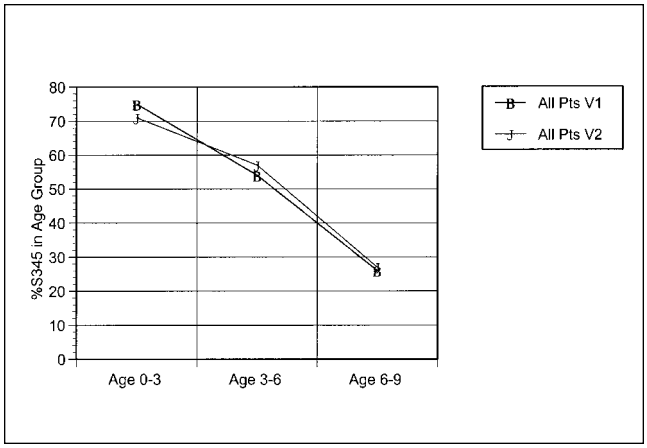

Figure 1. All Patients with Sarnat Score 3, 4 or 5 (S345): V1-Restorative Dentistry at First Visit; V2-Restorative Dentistry at Second Visit

#S345	V1	V2	V1	V2	V1	V2
# in age	56	17	86	29	13	9
Group	77	24	158	51	54	35
χ^2 =		0.003		0.009		0.003
P ≤		0.86		0.76		0.86

V1 = Restorative Dentistry at First Visit
V2 = Restorative Dentistry at Second Visit

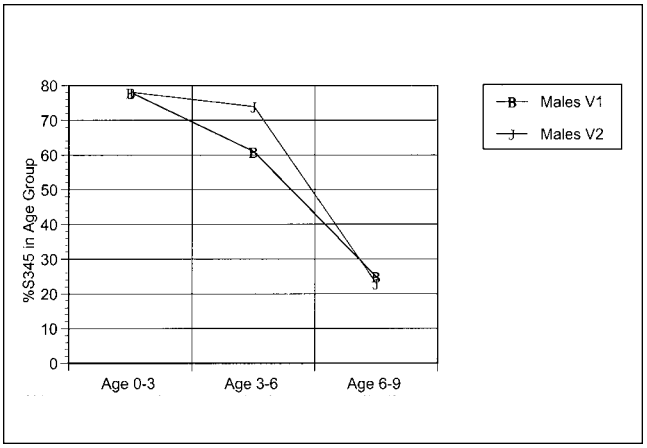

Figure 2. Male Patients with Sarnat Score 3, 4 or 5 (S345): V1- Restorative Dentistry at First Visit; V2 – Restorative Dentistry at Second Visit

#S345	V1	V2	V1	V2	V1	V2
# in Age	34	8	44	16	6	3
Group	47	11	72	27	26	15
χ^2 =		0.0006		0.002		0.005
P ≤		0.98		0.87		0.92

V1 = Restorative Dentistry at First Visit
V2 = Restorative Dentistry at Second Visit

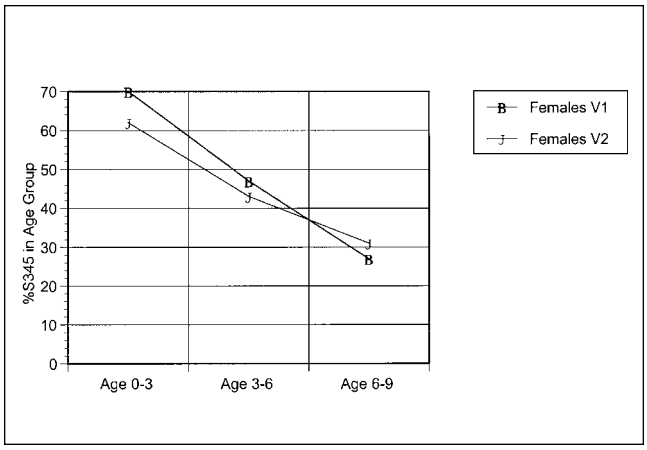

Figure 3. Female Patients with Sarnat Score 3, 4 or 5 (S345): V1 – Restorative Dentistry at First Visit; V2 – Restorative Dentistry at Second Visit

#S345	V1	V2	V1	V2	V1	V2
# in Age	22	9	42	11	7	6
Group	30	13	86	24	28	20
χ^2 =		0.076		0.007		0.147
P ≤		0.78		0.79		0.70

V1 = Restorative Dentistry at First Visit
V2 = Restorative Dentistry at Second Visit

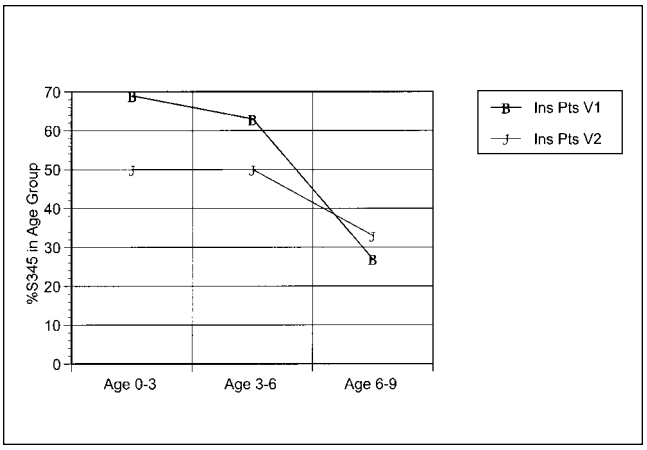

Figure 4. Fee For Service Patients with Sarnat Score 3, 4 or 5 (S345): V1 – Restorative Dentistry at First Visit; V2 – Restorative Dentistry at Second Visit

#S345	V1	V2	V1	V2	V1	V2
# in Age	12	5	33	11	3	4
Group	17	10	53	24	11	13
χ^2 =		1.14		1.82		0.003
P <		0.18		0.17		0.85

V1 = Restorative Dentistry at First Visit
V2 = Restorative Dentistry at Second Visit

ent. Fee for service patients (Figure 4) in age groups 0 to 3 and 3 to 6 did have some variation, but the difference was also not significant with P ≤ 0.17, χ^2 = 1.82. Medical Assistance patients age 3 to 6 did had a slight variation in their response when comparing first versus second visit for restorative treatment, but the difference in their reaction was significant was P ≤ 0.27, χ^2 = 1.22 (Figure 5). Likewise, patients referred by general dentists, as shown in Figure 6, showed no statistically significant differences between the age groups.

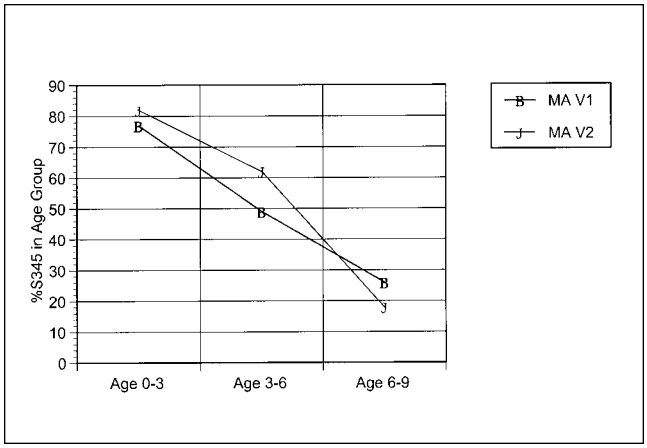

Figure 5. Medical Assistance Patients with Sarnat Score 3, 4 or 5 (S345): V1 - Restorative Dentistry at First Visit; V2 – Restorative Dentistry at Second Visit

#S345	V1	V2	V1	V2	V1	V2
in Age	44	12	53	18	10	5
Group	60	14	105	29	43	22
χ^2 =		0.945		1.22		0.002
P <		0.33		0.27		0.96

V1 = Restorative Dentistry at First Visit
V2 = Restorative Dentistry at Second Visit

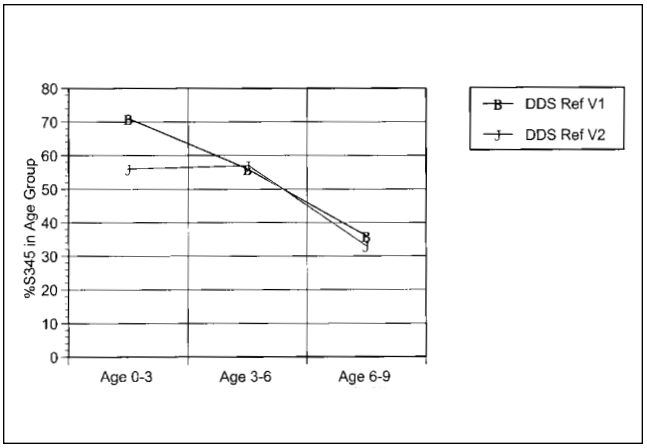

Figure 6. Dentist Referred Patients with Sarnat Score 3, 4 or 5 (S345): V1 – Restorative Dentistry at First Visit; V2 – Restorative Dentistry at Second Visit

#S345	V1	V2	V1	V2	V1	V2
# in Age	27	7	64	14	9	3
Group	41	13	114	25	29	9
χ^2 =		0.610		0.001		0.016
P <		0.44		0.99		0.90

V1 = Restorative Dentistry at First Visit
V2 = Restorative Dentistry at Second Visit

DISCUSSION

For well over 20 years, dentists have been advised by pediatric dental educators to, "…attempt nothing but simple procedures…and gradually build up to normal routine procedures that are necessary for health service." [1,3]

The results of this study question this long held belief that children do better as restorative patients if they have a non-threatening first dental visit. In this study, patient behavior was the same whether the first restorative session was at the initial or second contact with the practice, in all circumstances. Thus, a pediatric dentist may not need to postpone treatment of active dental infections for fear of "traumatizing" a child, until a future visit.

There are no similar studies that compare the effect of restorative treatment delivered at the first or second visit on child behavior. However, Howitt and Stricker found that experience as a dental patient resulted in reduced arousal levels and that as children got older they became less aroused to dental treatment.[7] Venham *et al.* found that children's response to dental treatment became more negative over time, but did reverse when they had 5 or 6 restorative visits[10] and Venham and Quatrocelli found the least cooperative behavior on the second treatment visit.[10]

In the present study, all patients reacted similarly within the age group. There were no behavioral differences due to sex, nor financial coverage by Medicaid, an indicator of socio-economic status. Additionally, dentist referred patients also exhibited no differences in behavior between the two treatment regimens.

As in a prior study reported by the author, it was felt for this investigation that the 5 leveled Sarnat scale was more useful as a descriptor of pediatric dental patient behavior, in agreement with Wright *et al.*[1,4] Also, as in the prior study, Sarnat scores of 3, 4 or 5 were grouped together as an indication of negative behavior, i.e., the behavior which elicits referral of a child patient by a general dentist to a pediatric dentist.[1]

A limitation of this study might be the way the patients were assigned to their restorative sequence; i.e., it is possible that random assignation of patients to either of the treatment regimens may have produced different results. This was not done, however, because the rationale for sequence selection was medical necessity based upon the perception of the parent, from either the evaluation of the needs of the child or information provided by a referring general dentist.

It may also be true that children with identifiable dental pathology who are appointed for restorative dental procedures on the first visit would be expected to have higher Sarnat scores, since they did not have an introductory initiation to the office. In addition, the children in the second group would be expected to have less complicated restorative needs because the dental pathology that was present was likely not as severe as those in the first group. Since this study found no difference in behavior between the two groups despite these two factors, it can be assumed that randomness would show no differences and that the extent

of decay and the degree of difficulty of the procedures needed to address it was of no consequence.

It is also true that the author, as recorder of the behaviors of the children in this study was not blind to patient socio-economic, referral status or whether the restorative visit was on the first or second visit. While it could be argued that this is a serious flaw in experimental design in that without conscious intent bias in evaluation of behavior could be introduced, every effort was made at consistency of evaluation regardless of patient status. Even when considering these limitations, the results are helpful when determining whether restorative treatment should or should not be attempted during the first visit of the child. To the practicing pediatric dentist, the most important consideration is relief of pain and suffering in a timely fashion. The results of this study indicate that performing restorative treatment on the first versus the second visit does not seem to have an adverse effect on the behavior of the child.

CONCLUSION

The widely held belief that children behave better for restorative dental procedures when they have a non-threatening first visit to a dental office was shown not to be true in the private pediatric dental practice of the author. Therefore, these data indicate that comprehensive treatment of the dental pathology of the child at the first visit should be considered, without prejudice, by the clinician.

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