STATEMENTS OFTEN MADE TO DISCREDIT EARLY TREATMENT PHILOSOPHY AND THE RESEARCH REFERENCES THAT TEND TO SUPPORT TREATMENT PROCEDURES IN THE 5-7 YEAR OLD.

1. One cannot predict malocclusions at such early ages.

A.) Crowding is predictable from early ages

   82% of straight incisors at 8 years of age were straight at 14, while 89% of crowded incisors at 8 years were crowded at 14.


   If no spaces in deciduous dentition - 69% had permanent crowding. 37% had increase in mandibular crowding 6 to 14 years of age. 24% had increase in maxillary crowding 6 to 14 years of age.


- The following 5 studies (#5-9) substantiate arch enlargement as a result of incisors erupting without rotations or displacement.

   Eruption of lower permanent incisors have (38%) less arch enlargement when these teeth erupt crowded as when they erupt straight.

6. Lewis, S.J. and Lehman, I.A., Observations on Growth Changes of the Teeth and Dental Arches, *Dent. Cosmos*, 71: 480-499, 1929. Incisal crowded cases have 2.13 mm. canine-to-canine enlargement while uncrowded cases have 3.44 mm. expansion.

   Deciduous incisors that have interproximal spacing have 20% less arch enlargement than deciduous teeth without spaces.

   If permanent incisor does not erupt into arch, there is no increase in arch dimension. If lower incisors come directly into arch without rotations, the arch dimension can be increased as much as 5 mm. (upper,
6.5 mm). Mean enlargement was 2.3 mm. Spaced deciduous incisors result in 10% less arch enlargement as the permanent incisors erupt than deciduous incisors without spaces.
   In a case with a missing lower permanent lateral, there was no change in deciduous arch size, while upper arch in same case with all incisors present had normal upper arch enlargement.

- **Crowded adult dentitions have narrower arches (lower canine-to-canine is 3 mm. smaller) than well-aligned arches (tooth sizes being the same), (#10- #12). This supports premise that when teeth erupt rotated they develop narrower arches and conversely.**


- **The prediction of crowding and spacing between the deciduous and permanent dentitions (#13 - 18)**

   Crowded deciduous incisors 100% chance of permanent incisal crowding
   No spaces deciduous incisors 67% chance of permanent incisal crowding
   Less than 3 mm. spaces deciduous incisors 50% chance of permanent incisal crowding
   3 - 6 mm. spaces deciduous incisors 20% chance of permanent incisal crowding
   Over 6 mm. spaces deciduous incisors 0% chance of permanent incisal crowding


   If no spaces between deciduous upper incisors - 77.8% got crowding of permanent incisors.


   75% of poor occlusions in permanent dentitions had poor deciduous dentitions. 89% of good occlusions in permanent dentitions had good deciduous dentitions.

   Can predict adult crowding from available space at 5 years of age.

- **Studies Substantiating Arch Enlargement as a Result of Incisors Erupting without Rotations (#19 - #23):**


• Deciduous Crowding Incidence (#24 - 26):
25. 14.0% Barrow, G.V. and White, J.R. 1952.

• Permanent Crowding Incidence (#27 - 32):
28. 61% Seipel, C.M. 1946.
29. 51% Barrow, G.V., and White, J.R., 1952.

• Arch Enlargement During Incisor Eruption - Lower Arch Increases During the Eruption of Lower Permanent Incisors (#33 - #37):
33. Lewis, S.J. and Lehman, I.A., 1929 N=31 3.06 mm.
34. Korkhaus, G. and Neumann, F., 1931 N=18 2.62 mm.
35. Baume, L.J., 1950 N=33 2.60 mm.
mean 3.21 mm.

• Upper Arch Increases During the Eruption of Upper Permanent Incisors (#38 - 42):
38. Lewis, S.J. and Lehman, I.A., 1929 N=30 5.04 mm.
41. Baume, L.J. 1950 N=33 2.76 mm.
mean 3.70 mm.

• Sequence of enlargement as eruption occurs.
43. Moorrees, C.F.A., 1959
Mandible 47.5% (1.64 mm.) of the arch enlargement occurs as centrals erupt
37% (1.28 mm.) of the arch enlargement occurs as laterals erupt
15% (0.52 mm.) of the arch enlargement occurs 6 months after laterals erupt
Maxilla 73.3% (2.57 mm.) of the arch enlargement occurs as centrals erupt
26.7% (0.93 mm.) of the arch enlargement occurs as laterals erupt

• Maximum lower arch enlargement as the permanent incisors erupt:
44. Lewis, S.J. and Lehman, I.A., 1932 N=21 5.5 mm.

• Maximum upper arch enlargement as the permanent incisors erupt:
47. Baume, L.J., 1950 N=12 6.5 mm.
• Incidence and severity of crowding in permanent dentition (#48 & #49).

48. Lundstrom, A., The Significance of Early Loss of Deciduous Teeth in the Etiology of Malocclusion, *Am. J. Ortho.*, 41: 819-826, 1955. 82% of crowding in maxilla is 3 mm. or less and 90% of crowding in mandible is 3 mm. or less.


77.2% of all crowding is in the anterior segment, while only 22.8% of crowding is in the posterior segment. 82% of mandibular permanent incisal crowding (in Class I occlusions) is 3 mm. or less. 8.5% have 4 mm. of crowding and 4.9% have 5 mm. or more.

• Percentage of children with mandibular crowding (maxillary crowding in parenth. (#50 - #55):

50. 52.6%  
   (max. 32.2%)  

51. 51%  
   (max. 24%)  
   Barrow, G.V. and White, J.R., 1952.

52. 50%  
   (max. 33%)  

53. 48.3%  
   (max. 26.4%)  

54. 69%  

55. 51%  
   (max. 25%)  
   Seipel, C.M., 1946.

• Incidence of Malocclusions (#56 & #57):


<table>
<thead>
<tr>
<th>Age</th>
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<tr>
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<td>17%</td>
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<td>6-7 yrs</td>
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<tr>
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73.1% of all Class I malocclusions had crowding.
77.2% of all Class II malocclusions had crowding.
83.9% of all Class III malocclusions had crowding.
82% of all crowding is less than 3 mm. (N=1000)


Cases starting out normal (at 9-10) stayed straighter than those cases that started out crowded treated orthodontically (to 19-20 yrs). The treated group had increases in crowding at twice the rate of the untreated normals.


Untreated children with no crowding at 14 years of age had wider arches. Also showed that when permanent lower molars erupt distally and incisors labially, there is less tendency for crowded incisors.

B.) Overbite and overjet are predictable from early ages:


Showed a significant relation between overjet at 2½ years of age and overbite at 18 years of age in the same untreated individuals.
• Overbite increases about 2 mm. from the primary to the mixed dentition (#61 - #64):

61. 1.75 mm.  N=51  Barrow, G.V. and White, J.R., 1952.
64. 1.75 mm.  N=43  Methenitou, S., Shein, B., Ramanathan, G. and Bergersen, E.O., 1990.

• Overbite remains constant from 8 years to adulthood (#65 - #73):


72. Moyers, R.E., et. al., Univ. of Michigan, Ann Arbor, Michigan, 1976.


• Incidence and severity of overbite and overjet:

74. Luffingham, J.K. and Campbell, H.M., The Need for Orthodontic Treatment, A Pilot Survey of 14 Year Old School Children in Paisley, Scotland, *Tr. Europ. Ortho. Soc.*, 50th Congr.: 259-267. 1974. 76% of overbites were 3 mm. or more, and 68% of overjets were 3 mm. or more.

• Overjet Remains the Same From the Primary to Permanent Dentition (#75 - #77):


C.) The molar relations are predictable from early ages (#78 - 82):

   - 80% of Class I occlusions did not improve from deciduous to permanent dentitions.
   - 76% of Class II occlusions increased severity from deciduous to permanent dentitions.
   - 89% of Class III occlusions increased severity from deciduous to permanent dentitions.

79. Leighton, B.C., 1969. The antero-posterior relation is constant from deciduous to permanent dentitions.


   - At 11-12 years of age, 73.1% had malocclusions.
   - 50.7% had Class I malocclusions.
   - 19.6% had Class II malocclusions.
   - 2.55% had Class III malocclusions.
   - 0.76% were unclassifiable.

82. Sillman, J.H., Development of Occlusions: A Serial Study from Birth to Seven Years, *J. Second Dist., Dent. Soc.*, 31: 153-163, 1945. At 20 months of age when the 1st deciduous molar (upper and lower) erupt, the prognosis of a malocclusion can be made and the outcome of the molar relation is predictable.

D.) The arch form and cross-bites are predictable from early ages (#84 - 85):

83. Leighton, B.C. 1975. Arch form stays the same from deciduous to permanent dentitions.

84. Moorrees, C.F.A., 1959. "V" shaped arches remained the same from 6-7 years to 16-18 years.


2. Cases treated at early ages won't stay, they will relapse and make the cases more complicated at a later age. Research indicates that early treatment does retain better and is healthier on the dentition (#86 - 98):

   - In treating with functional appliances before 6 years of age, 12.3% had relapse and 26.1% had other complications seen 4 years after completion of permanent dentition in 65 children.

   - Treating at an early age reduces relapse of incisal crowding in 83 cases.

   - Showed that 90% of cases (N-31) treated with four premolar extractions (with standard fixed appliances) had relapse to end with unacceptable mandibular incisal alignment.
89. Little, R.M., Personal communication. Stated that when cases are started before the loss of deciduous molars by maintaining the original distal erupted position of the first permanent molars - these stay better long term than any other cases by far. Also in those untreated cases that start out with straight teeth at 8 years - these cases stay straighter long term than any other type cases.

Cases starting out normal (at 9-10) stayed straighter than those cases that started out crowded treated orthodontically (to 19-20 yrs). The treated group had increases in crowding at twice the rate of the untreated normals.

Untreated children with no crowding at 14 years of age had wider arches. Also showed that when permanent lower molars erupt distally and incisors labially, there is less tendency for crowded incisors.

Early treatment before root are fully formed may prevent relapse due to formation of fibers after the teeth are straightened.

Early treatment before root formed would solve relapse because of fiber development after straightening. Fibers around root rearrange first after 28 days, marginal fibers takes longer than 7.5 months.

Cementoid delays root resorption. Uncalcified predentin is not attacked by resorbing cells, therefore treatment before root is fully developed can prevent resorption.

Treating at earlier ages with incomplete root formation reduces risk of root resorption. Functional appliances had half of the resorption that fixed appliances had. Especially risky are Class II elastics, edgewise fixed appliances and pre-treatment signs of resorption.


Activators don't cause root resorption. Risk of root resorption lessened whenever fixed phase is reduced with little use of Class II elastics and reduced use of fixed appliances and heavy wires.

98. Rosenberg, M.N., An Evaluation of the Incidence and Amount of Apical Root Resorption and Delaceration Occurring in Orthodontically Treated Teeth Having Incompletely Formed Roots at the Beginning of Begg treatment, *Am. J. Ortho.*, 61: 524-525, 1972. Teeth with incomplete root ends will develop normal roots when active orthodontics is done and will have less root resorption when compared to teeth with completely formed roots.

82% of straight incisors at 8 years of age were straight at 14, while 89% of crowded incisors at 8 years were crowded at 14.


If no spaces in deciduous dentition - 69% had permanent crowding. 37% had increase in mandibular crowding 6 to 14 years of age. 24% had increase in maxillary crowding 6 to 14 years of age.

75% of poor occlusions in permanent dentitions had poor deciduous dentitions. 89% of good occlusions in permanent dentitions had good deciduous dentitions.

- **Incidence of crowding increases from the deciduous to the permanent dentition (#103 - 113):**

103. Seipel, C.M., Variation in Tooth Position, *Svensk Tandlakare-Tidschr.*, Vol. 39, Suppl., 1946. Indicated that deciduous crowding was present in 10.6% of cases.

104. Barrow, G.V. and White, J.R. 1952. Indicated deciduous crowding to be 14.0%.


- **Permanent Crowding Incidence:**


107. Seipel, C.M. 1946. Indicated permanent lower crowding to be 61% while upper was 25%.

108. Barrow, G.V., and White, J.R., 1952. Indicated permanent mandibular crowding to be 51%, maxillary crowding is 24%.


111. Heckman, U., 1973. Indicated permanent crowding to be 28.0%.


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Showed a significant relation between overjet at 2½ years of age and overbite at 18 years of age in the same untreated individuals. Can prevent overbite from developing by retarding the overeruption of the maxillary permanent incisors.

- **Overbite increases about 2mm from the primary of the mixed dentition (#114 - 117):**

  114. 1.75 mm. N=51 Barrow, G.V. and White, J.R., 1952.


- **Overbite remains constant from 8 years to adulthood (#118 - 126):**


  125. Moyers, R.E., et.al., Univ. of Michigan, Ann Arbor, Michigan, 1976.


- **Overjet remains constant from the primary to the permanent dentition (#127 - 129):**


- **Molar Relations remain the same or get worse from the primary to the permanent dentition (#130-133):**


  80% of Class I occlusions did not improve from deciduous to permanent dentitions.
76% of Class II occlusions increased severity from deciduous to permanent dentitions.
89% of Class III occlusions increased severity from deciduous to permanent dentitions.

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- Incidence of TMJ symptoms usually increase with age (#134 - 141):

- Incidence of TMJ Clicking Sounds usually increase with age (#142-144):
  142. 5% 3-5 yrs of age  Bernal, M. and Tsantsouris, A., 1986.
  143. 10% 6-8 yrs of age  Grosfeld, O. and Czarnecka, B., 1977.

- Importance of early detection of TMJ problems:
  In children (N=150) from 7 to 16 years of age with TMJ problems 37% had degenerative arthritis and 46% had meniscal displacement without reduction.

- Gingival tissue effects with increasing age (#146-157)
   Showed significant correlation with overbite, lower incisal crowding, overjet and lack of posterior intercuspation to periodontal status, pocket depth, gingivitis and looseness of teeth.


   Mouth breathing and severe protrusion of teeth causes periodontal problems.


   Irregularity and crowding of lower incisors is associated with loss of gingival tissue.


   The thinness of the mandibular symphysis is correlated with an increase in clinical crown height with gingival recession.

   Teeth displaced during eruption had more long-term proximal bone loss than normal erupting teeth.

156. Position Paper of American Academy of Periodontology, Periodontal Diseases of Children and Adolescents, *J. Periodont.*, 67: 57-62, 1966. Children 5-11 years have up to 9% loss of periodontal attachment and bone support; 12-15 years have up to 46%. Generalized juvenile periodontitis, consisting of marked inflammation and heavy plaque and calculus, begins at or around puberty.

157. Tala, H., Community Periodontal Index of Treatment Needs in Finland, Int. D. J., 37: 179-182, 1987. (CIPTN) from Ainamo - 6 sextants are measured and there are 6 categories, namely, supraingivial calculus, subgingival calculus, pocket 4 to 5 mm., pocket of 6+ mm., bleeding after probing, recession (now eliminated). 43% of 7 year olds had healthy gingival tissue and, rather consistently dropped so that by 12 years only 27% had healthy tissues.

4. **No proof it works on the specific children of that country, such as Germany.**
   In U.S. there is such a diversion of inherited characteristics from all over the world, such a statement is really quite unbelievable. A preformed positioner which is the adult version of the Nite-Guide® has been used in Germany for 20 years by the orthodontist and is still being used.

5. **Orthodontics is simply too complicated for early treatment to work and so it must be done at a later age.** Research shows that treatment at early ages takes less time and teeth move more easily with fewer complications.


- **Open bite and tongue thrust effects with increasing age is similar to early age requirements for learning language skills (#161 - 165):**

- **Language skills learned 4-10 years of age when cerebrum is plastic and receptive:**

- **Development of foreign accents at 10 years of age when cerebral neuroplasticity is lost:**

- **Root resorption problems with increasing age (#168 - 174):**


Teeth with incomplete root ends will develop normal roots when active orthodontics is done and will have less root resorption when compared to teeth with completely formed roots.

6. Such early treatment has risk of causing (a) TMJ problems (b) root resorption (c) growth problems (d) will tip teeth only (e) periodontal problems.

(a) Early treatment reduces risk of TMJ problems (#175 - 180):


(b) Early treatment reduces risk of relapse.


185. Rosenberg, M.N., An Evaluation of the Incidence and Amount of Apical Root Resorption and Delaceration Occurring in Orthodontically Treated Teeth Having Incompletely Formed Roots at the Beginning of Begg Treatment, *Am. J. Ortho.*, 61: 524-525, 1972. Teeth with incomplete root ends will develop normal roots when active orthodontics is done and will have less root resorption when compared to teeth with completely formed roots.

(c) **Having sufficient growth remaining during orthodontic treatment is essential for long-term overbite stability:**

   Showed that vertical jaw growth has significant influence on success of long-time overbite stability following orthodontic treatment.

(d) **Early treatment does not necessarily cause excessive tipping of teeth (#187 - 189):**

187. Methenitou, S., Shein, B., Remanathan, G. and Bergersen, E.O., Study found that lower incisors were more lingual in position following early Nite-Guide treatment than that present in control sample.


(e) **Early treatment can avoid similar periodontal problems that are seen when treatment is done at later ages (#190-201):**

   Showed significant correlation with overbite, lower incisal crowding, overjet and lack of posterior intercuspation to periodontal status, pocket depth, gingivitis and looseness of teeth.

   Deep bites associated with periodontal disease, bone tissue resorption with looseness and loss of teeth in 142 patients.

   Mouth breathing and severe protrusion of teeth causes periodontal problems.


   Irregularity and crowding of lower incisors is associated with loss of gingival tissue.


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7. **A Preformed appliance simply cannot work - there is too much human variation as to teeth size, size of arch, freeway space, and individual anatomical variations.**

202. Methenitou, S., Shein, B., Remanathan, G. and Bergersen, E.O., 1990. Showed a significant relation between overjet at 2½ years of age and overbite at 18 years of age in the same untreated individuals. Indicates that a preformed appliance can prevent overbite from developing by retarding the overeruption of the maxillary permanent incisors, and correct overjet as well.


205. Hixon, E.H. and Oldfather, R.E., Relations of lower permanent incisors to posteriors (canine, premolars) are significantly correlated (r = 0.69).

206. Bergersen, E.O., The Preformed Orthodontic Positioner and Eruption Guidance Appliance, Northwestern Univ., Chicago, IL, 1981. Showed that the following correlations were significant: Relation of maxillary adult anterior and posterior vs. mandibular anterior and posterior r = 0.86.

Relation of maxillary anterior vs. mandibular posterior r=0.80**
Relation of maxillary posterior vs. mandibular posterior r=0.80**
Relation of mandibular anteriors vs. mandibular posteriors $r=0.64^{**}$
Relation of maxillary anteriors vs. maxillary posteriors $r=0.61^{**}$
Relation of size of teeth to size of arch width significant $r=0.28^{*}$

- Relation upper 1st premolar vs. lower 1st premolar $r=0.96$
- Relation upper 2nd premolar vs. lower 2nd premolar $r=0.5$
- Relation upper 1st premolar vs. lower 1st premolar $r=0.61$
- Relation lower incisors vs. lower canine, premolars $r=0.65$


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