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# Chewing efficiency in 6 to 18 months old children: evolution with age and relationships with food texture acceptance

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Chewing skills start to be learned between 6 and 12 months and greatly develop during the two first years of life. However, so far the evolution of chewing efficiency has only been indirectly characterized in infants, because the methods applied in adults are not very suitable for infants. We recently developed a method based on a gel enclosed in a feeder, specifically adapted to measure chewing efficiency in infants and toddlers (Tournier et al., 2015). In this study we evaluated how this measure of chewing efficiency could predict children's acceptance of solid foods varying in textural properties. Measurements were performed in a longitudinal study involving 2 groups of children: G1 (n=25), followed at 6, 8 and 10 mo and G2 (n=24) followed at 12, 15 and 18 mo. Chewing efficiency was evaluated from the ability to break down a gel enclosed in a feeder into particles via oral processing. Texture acceptance was determined from the ability to process and swallow foods of various textures (smooth and rough purees, cooked and sticky pieces, raw and hard foods).

Children's compliance to the method was lower in G2 children than in younger ones (G1). Chewing efficiency increased with age: as children grew up their ability to break the gel into more particles increased ( $10 \pm 2$  particles at 6 mo to  $278 \pm 30$  at 18 mo). Inter-individual differences in the number of bolus particles were explained by differences in individual oral processing strategy (sucking vs. biting on the gel) and dentition for G1 children, and were found to predict food texture acceptance between 12 and 18 mo for bread and biscuit but not for food pieces. This suggests that the crushing action of chewing cannot solely explain children's ability to process food and that other parameters (e.g. tongue mobility) should also be considered.