

## **The Quality and Length of Stressed versus Unstressed Vowels in Saanich (Salish):**

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Unstressed vowels in Saanich (an endangered Salish language of the Pacific Northwest) are documented and spelled as schwa. This convention hints at a lack of vowel contrast in unstressed position. The goal of this preliminary study is to determine if a lack of unstressed vowel contrast is reflected acoustically.

The words used in this study are from the speech of two fluent Saanich speaking elders and are analyzed following the methodology of previous acoustic research in the Salishanist tradition (Barthmaier 1998, Blake & Shahin 2008, Montler 1998, and Nolan 2017). The production data involve 80 tokens of stressed full vowels and 80 tokens of unstressed full vowels extracted from reduplicated forms. 20 tokens of stressed underlying schwa and 20 tokens of unstressed underlying schwa extracted from words where the vowel's distribution is phonologically unpredictable. 20 tokens of stressed epenthetic schwa and unstressed epenthetic schwa extracted from words where the vowel's distribution is phonologically predictable.

The formant measurements for stressed full vowels /a/, /e/, and /i/ show that they occupy distinct vowel spaces and show little colouration by adjacent consonants. The formant measurements for unstressed full vowels reflect an overall more centralized vowel space and a degree of variation suggestive of consonant colouration. This variation differs slightly for each full vowel type. The formant measurements for stressed underlying schwa and stressed epenthetic schwa are characteristic of the vowel [ʌ]. Unstressed underlying schwa and unstressed epenthetic schwa exhibit formant measurements which reflect the same centralized vowel space and a similar degree of vowel colouration, which is greater than both stressed epenthetic schwa and stressed underlying schwa.

The duration measurement for tokens of stressed underlying vowels vary with /a/ the longest (average 169ms), /e/ the next longest (average 154ms), and /i/ the shortest of the full vowels (average 140ms). The average length of both stressed underlying schwa and stressed epenthetic schwa is 131ms. The average length of all unstressed underlying full vowels is 82ms. The average length of unstressed underlying and unstressed epenthetic schwas is 72ms.

The preliminary findings suggest two patterns. Firstly, the formant measurements of unstressed full vowels reflect a small degree of contrast, as compared to their stressed counterparts, between each full vowel type. Secondly, both formant and duration measurements for the unstressed epenthetic schwa and unstressed underlying schwa reflect a lack of contrast between each type of schwa.

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