Salivary DHEA and Physical Maturity: Age and Sex Differences

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What is DHEA?  Dehydroepiandrosterone (DHEA) is a hormone that increases in circulating concentration during childhood and adolescence, beginning around 5- to 7-years of age for girls and 5- to 9-years of age for boys (Sulcova et al., 1997). Its role in the human body is as a precursor to testosterone and estrogen and, thus, it may be a good bio-marker for pubertal maturation.

How is DHEA measured?  Most research involving DHEA has been performed using serum or plasma measurements. Non-invasive salivary measurement is also possible, but research using this type of measurement is scarce, especially in children and youth (Granger et al., 1999). However, newly available and relatively inexpensive kits for the assay of salivary-source hormones like DHEA can bring important bio-marker tools to developmental researchers.

Why is the current study important?  The current study is important for two main reasons; first, it uses this new method for salivary DHEA measurement in childhood and early adolescence, and second, it assesses the convergence of individual differences in DHEA levels with another measurement of physical maturity, relative stature.

Results
Significant age and sex patterns were identified with an ANOVA (see Table 1). Girls mature earlier than boys, as shown by our RS findings in Figure 1. Our DHEA findings confirm previous results in showing that girls' levels are higher than boys' during this age range. Girls' levels begin to increase around 10 years, whereas boys' levels begin to increase at about 12 years (see Figure 2). DHEA and RS were strongly related, \( r \) (114) = .63, \( p < .0001 \), but this relation was not attributable to shared age variance only; the DHEA-RS correlation remained significant, \( r \) (113) = .38, \( p < .0001 \), with age partialled out.

Table 1. Age x Sex ANOVA Results for DHEA and Relative Stature

<table>
<thead>
<tr>
<th>Source</th>
<th>( df )</th>
<th>( F ) for DHEA</th>
<th>( F ) for RS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>5, 104</td>
<td>9.97*</td>
<td>102.85**</td>
</tr>
<tr>
<td>Sex</td>
<td>1, 104</td>
<td>8.70*</td>
<td>209.33**</td>
</tr>
<tr>
<td>Age x Sex</td>
<td>5, 104</td>
<td>0.28</td>
<td>0.00</td>
</tr>
</tbody>
</table>

* \( p < .001 \).  ** \( p < .0001 \).

Discussion
Similar age and gender patterns emerged for DHEA and a more traditional measure of physical maturity in the present study. These results suggest that salivary DHEA may be a valid, non-intrusive, and practical bio-marker for assessing individual differences in physical maturation during middle childhood and early adolescence.

References