4) From our survey we can calculate how well you think you’ll do on Exam 1 as a function of how much you think you’ll like this class. Here is a table of statistics based on our survey:

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>Just a little</th>
<th>A fair amount</th>
<th>Very much</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>14</td>
<td>56</td>
<td>75</td>
<td>6</td>
</tr>
<tr>
<td>mean</td>
<td>81.64</td>
<td>84.04</td>
<td>86.32</td>
<td>93.67</td>
</tr>
<tr>
<td>SS within</td>
<td>1127.2144</td>
<td>2873.9296</td>
<td>4184.32</td>
<td>259.3334</td>
</tr>
</tbody>
</table>

Calculate the standard errors of the mean for each of the 4 groups. Make a bar graph of the means for each of the 4 groups with error bars as the standard error of the means. Using an alpha value of $\alpha = 0.01$, is there a difference in predicted Exam 1 score across the 4 groups of how much you think you’ll like Psych 315?

$$\text{SS}_{\text{within}} = 1127.2144 + \cdots + 259.3334 = 8444.8$$

$$\text{df}_{\text{within}} = N_{\text{total}} - K = 151 - 4 = 147$$

$$\text{MS}_{\text{within}} = \frac{\text{SS}_{\text{within}}}{\text{df}_{\text{within}}} = \frac{8444.8}{147} = 57.4476$$

$$\text{SS}_{\text{between}} = \sum e_i (\bar{x}_i - \bar{x})^2 = 14 (81.64 - 85.3311)^2 + \cdots + 774.65$$

Short cut for $\text{SS}_{\text{between}}$ → $\text{SS}_{\text{total}} = \text{SS}_{\text{between}} + \text{SS}_{\text{within}}$, $\text{SS}_{\text{between}} = \text{SS}_{\text{total}} - \text{SS}_{\text{within}} = 9219.4437 - 774.65 = 8444.8$

$$\text{df}_{\text{between}} = K - 1 = 4 - 1 = 3$$

$$\text{MS}_{\text{between}} = \frac{\text{SS}_{\text{between}}}{\text{df}_{\text{between}}} = \frac{774.65}{3} = 258.2185$$

$$F = \frac{\text{MS}_{\text{between}}}{\text{MS}_{\text{within}}} = \frac{258.2185}{57.4476} = 4.4949$$

$P = .0048$

We reject $H_0$.

Your predicted exam 1 score varies significantly with how much you think you'll like this class, $F(3, 147) = 4.4949$, $p = .0048$. 