Once again, the simplest way to interpret this interaction term between *Position* and *YearsExper* is to write out the fitted equation under different conditions. Let's focus on the effect of years of experience for varying positions. Rearranging the regression equation makes it simpler to interpret, but the calculations are tedious since we have to take into account the centering in the interaction. For women,

$$\begin{aligned}
\text{Fit} &= (113.8 + 1.4) + 6.7\ \textit{Position} - 0.35\ \textit{Years} - 0.13\ (\textit{Position} - 5.07)\ (\textit{Years} - 10.48) \\
&= 115.2 + 6.7\ \textit{Position} - 0.35\ \textit{Years} - 0.13(\textit{Position})(\textit{Years}) + (0.13)(10.48)\ \textit{Position} \\
&\qquad + (0.13)(5.07)\textit{Years} - (0.13)(5.07)(10.48) \\
&= (115.2 - 6.9) + (6.7 + 1.36)\ \textit{Position} + (0.66 - 0.35)\ \textit{Years} - 0.13\ (\textit{Position})(\textit{Years}) \\
&= (108.3 + 8.1\ \textit{Position}) + (0.31 - 0.13\ \textit{Position})\ \textit{Years}
\end{aligned}$$

The higher the position, the greater the intercept, but the smaller the slope for years of experience. It seems from this fit that those who stay too long in higher positions (Position > 2) have less pay than those who perhaps are climbing quickly through the ranks.

Here are two examples. All of the fits shown below are for women. In low grades, it's useful to have more experience.

<u>Position 1, Years Experience 1</u>

$$\begin{aligned}
\text{Fit} &= 108 + 8.1\ (1) + (0.31 - 0.13 \times 1)\ 1 \\
&= 116.3
\end{aligned}$$

<u>Position 1, Years Experience 10</u>

$$\begin{aligned}
\text{Fit} &= 108 + 8.1\ (1) + (0.31 - 0.13 \times 1)\ 10 \\
&= 117.9
\end{aligned}$$

At higher levels, it is not.

<u>Position 5, Years Experience 1</u>

$$\begin{aligned}
\text{Fit} &= 108 + 8.1\ (5) + (0.31 - 0.13 \times 5)\ 1 \\
&= 148.2
\end{aligned}$$

<u>Position 5, Years Experience 10</u>

$$\begin{aligned}
\text{Fit} &= 108 + 8.1\ (5) + (0.31 - 0.13 \times 5)\ 10 \\
&= 145.1
\end{aligned}$$