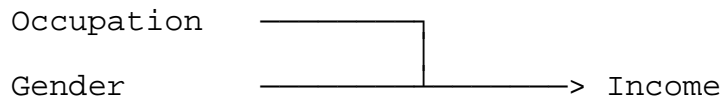


## Interaction Effects

Interaction effects Model:



This model provides an example of an INTERACTION effect; there is an interaction between gender and occupation; the relationship between gender and income is contingent on the occupation of the individual.

The following examples illustrate different types of interactions. The row variable is gender (Male or Female), the column variable is type of occupation (A, B, or C). Each cell gives the mean income (in thousands of dollars) for the particular combination of gender and income.

### 1. No interaction between gender and occupation

	Occupation A	Occupation B	Occupation C
Male	$\mu_{MA} = 15$	$\mu_{MB} = 17$	$\mu_{MC} = 19$
Female	$\mu_{FA} = 13$	$\mu_{FB} = 15$	$\mu_{FC} = 17$

In each occupation, men enjoy a \$2,000 a year advantage over their female counterparts. Hence, the effect of gender does not vary by occupation; type of occupation has nothing to do with the amount of advantage men have over women.

### 2. Interaction effects I - differing magnitudes of effects.

	Occupation A	Occupation B	Occupation C
Male	$\mu_{MA} = 12$	$\mu_{MB} = 16$	$\mu_{MC} = 26$
Female	$\mu_{FA} = 10$	$\mu_{FB} = 14$	$\mu_{FC} = 18$

Men consistently make more than women, but the advantage is especially great in occupation C. Ergo, the degree of men's advantage over women depends on the occupation.

### 3. Interaction effects II - differing directions of effects.

	Occupation A	Occupation B	Occupation C
Male	$\mu_{MA} = 18$	$\mu_{MB} = 16$	$\mu_{MC} = 14$
Female	$\mu_{FA} = 14$	$\mu_{FB} = 16$	$\mu_{FC} = 18$

In this example, the effect of gender depends on occupation. Males do better than women in Occupation A but worse in occupation C; in Occupation B there is no difference. Hence, some occupations are better for men while others are better for women; which gender has the advantage is contingent on the type of occupation.