

# Notation Conventions for Regression Slopes

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The notation for regression coefficients is often inconsistent. Sometimes, students with prior experience in statistics classes find the notation conventions common in psychology confusing, and vice versa. This table illustrates some of the different symbols that are used to refer to regression coefficients.

First of all, statistics that estimate the linear relationship between variables are sometimes referred to verbally as “coefficients,” “slopes,” “estimates,” “Bs,” or “betas,” among other words and phrases. All of these words refer to more or less the same category of mathematical objects. If more precision is required, it should be provided.

Second, each regression model produces a vector of coefficients, not just a single coefficient. For this reason, coefficients are often written with subscripts:  $b_0 \dots b_i \dots b_k$ . The first coefficient,  $b_0$ , indicates the intercept or constant. Some people indicate the constant using  $a$  instead of  $b_0$  (or  $\alpha$  instead of  $\beta_0$ ).

This list of symbols is simplified and not comprehensive. For example, some statisticians and people from other fields may use notation not covered here. If you have encountered other notation that you believe is likely to confuse some students, email me and I will add it to the chart.

	Statistics						Psychology
True Unstandardized Coefficient (Parameter)	$\beta$						
Estimated Unstandardized Coefficient (Statistic)	$\hat{\beta}$		$b$		$B$		$b$
True Standardized Coefficient (Parameter)	$\beta^*$	$\beta'$	$\beta^*$	$\beta'$	$\beta^*$	$\beta'$	
Estimated Standardized Coefficient (Statistic)	$\hat{\beta}^*$	$\hat{\beta}'$	$b^*$	$b'$	$B^*$	$B'$	$\beta$

Note that the prime ( $\beta'$ ,  $b'$ ) notation for standardized coefficients only works if you're using something like  $\mathbf{X}^T$  rather than  $\mathbf{X}'$  to indicate the transpose of a matrix.