The correct answer is \*\*(D) Type 2 error\*\*. Here's a breakdown of why, explained with the rigor expected of a graduate statistics student:

\* \*\*Hypothesis Testing Basics:\*\* Hypothesis testing involves assessing the evidence against a null hypothesis (H₀). We aim to determine if there's sufficient evidence to reject H₀ in favor of an alternative hypothesis (H₁).

\* \*\*Error Types:\*\* There are two fundamental types of errors we can make in hypothesis testing:

\* \*\*Type 1 Error (α):\*\* Rejecting the null hypothesis when it is actually true. This is a false positive. The probability of making a Type 1 error is denoted by alpha (α), which is often set at 0.05 or 0.01.

\* \*\*Type 2 Error (β):\*\* Failing to reject the null hypothesis when it is actually false. This is a false negative. The probability of making a Type 2 error is denoted by beta (β).

\* \*\*The Question's Scenario:\*\* The question describes the situation where we \*don't\* reject H₀, but H₀ is, in reality, false. This directly corresponds to the definition of a Type 2 error.

\* \*\*Why the other options are incorrect:\*\*

\* \*\*(A) alpha (α):\*\* Alpha represents the probability of making a Type 1 error (rejecting a true null hypothesis).

\* \*\*(B) Type 1 error:\*\* While related, the question describes the \*consequence\* of a false negative, not just the act of rejecting a true null hypothesis.

\* \*\*(C) beta (β):\*\* Beta is the probability of making a Type 2 error, but the question asks for the \*description\* of the error.

\*\*In summary:\*\* Failing to reject a false null hypothesis is the definition of a Type 2 error, making (D) the correct answer. The probability of making a Type 2 error is represented by beta. Therefore, a graduate-level answer needs to understand the definitions of the errors and their consequences.