**Theorem** The noncentral $t$ distribution is a special case of the doubly noncentral $t$ distribution when $\gamma = 0$.

**Proof** Let $X \sim N(\delta, 1)$. Let $Y$ be a noncentral chi-square random variable with parameters $n$ and $\gamma$ which is independent of $X$. The random variable

$$\frac{X}{Y/\sqrt{n}}$$

has a doubly noncentral $t$ distribution with parameters $n$, $\delta$, and $\gamma$. When $\gamma = 0$, the random variable $Y$ becomes an ordinary chi-square random variable with $n$ degrees of freedom. This means that

$$\frac{X}{Y/\sqrt{n}}$$

has the noncentral $t$ distribution with parameters $\delta$ and $n$. More on the doubly noncentral $t$ distribution can be found at Krishnan, Marakatha (1968), “Series Representation of the Doubly Noncentral $t$-Distribution,” *Journal of the American Statistical Association*, Volume 63, Number 323, pp. 1004–1012.