



FIGURE 26.4. Studies based on associations between disease and markers in the population as a whole have more power to detect linkage than studies that use only associations within families. The graph shows the chance of detecting an allele that increases disease risk by a factor γ in a survey of 1000 families of affected sibling pairs (this chance is termed the statistical power). The *red curve* shows results based on whether the affected siblings share an allele. This test only involves associations within families, and so is relatively weak: The allele is likely to be detected only if it increases disease risk by ~ 2.5 times. The *blue curve* shows results from the **transmission disequilibrium test (TDT)**, which looks for alleles that are transmitted in excess to affected offspring. This requires a consistent association (i.e., linkage disequilibrium) in the population as a whole and can in principle detect alleles that increase disease risk by $\sim 25\%$.