Lawful Variation of the Exponent in the 'Near-Miss-to-Weber's Law'
J.-Cl. Falmagne, C. Southworth, B. G. Berg, M. L. Morrison

A recent result of Falmagne (1994) showed that the value of the exponent in the near-miss-to-Weber's Law could in principle vary with that of the discrimination criterion. He also deduced the functional form of the dependence in the context of a general Fechner-Thurstone type model. This paper describes an experimental follow-up of these results in a psychacoustic situation. It is verified that the exponent varies systematically over the full range of criterion values. Some theoretical consequences of this fact are also discussed. One of them is that the scales of the Fechner-Thurstone must be log-log function. A particular discrimination model of the Fechner-Thurstone type is fit to the data, with satisfactory results. In this model, the value of the exponent $\beta(\pi)$ varies as a function of the criterion π according to the form $\beta(\pi) = \beta_0 1/\pi$, where β_0 and π are parameters. Thus Weber's Law arises as a limit case where $\beta_0 = 1$ and π is large.