False-Positive Psychology

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One of the glaring weaknesses of this paper is its own susceptibility to the effects of increasing false positive rate from the authors' degrees of freedom. Their degrees of freedom on the example studies (the 2 on music) were what type of experiment to conduct, what degrees of freedom to abuse and to hide, and what data to collect, giving them total freedom over creating a data set demonstrating their predicted effects. It would be more convincing if they randomly sampled a body of existing studies and analyzed whether their claims fell apart when analyzed similarly to how they did with their own study (although the difficulty of convincing the original authors to share the whole data would be high). In essence, compare the actual false positive rate to the average rate stated in the hypothesis.

Another topic not directly addressed is the scope of the findings. To what extent does this effect exist in the various sciences? A study on this would be interesting. My hypothesis is that the more deterministic (in the sense of variables we can control) the field is, the less prevalent the effect would be. An extreme is mathematics - most math proofs involves manipulation of concepts (formulae and theorems) fully captured by the direct content of the paper. There are fewer degrees of freedom (mostly in the axioms chosen) and subsequently more stringent requirements in the field for presenting all choices of degrees of freedom. In contrast, sociology and psychology (sciences that require the study of people) have some of the greatest degrees of freedom. The people chosen, their background and mental state, the time of day of the experiment, and the exact interaction of the experimenter with those studied are all degrees of freedom too complex to capture in a presentable form. Because of this, the field allows these degrees of freedom to be ambiguous, and thus researchers could get away with tuning the degrees of freedom to yield significance.