Statistical Power Analysis for Construct Validity

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Confirmatory factor analysis method is usually used in psychological surveys to evaluate the construct validity. But most of the researchers have been wasting their resources (e.g. effort, time, money) without power analysis at the beginning of their studies. The main purposes of this study are to analyze the statistical power, to estimate sample size for the confirmatory factor analysis model and to maximize the utility of the sources owned by the researchers. Monte Carlo Simulation is adopted to explore the power of the five-factor model. According to the result, the power is changed under different conditions. We found that the model has low power when the RMSEA value is closed to the alternative hypothesis' RMSEA. That is, the lower RMSEA of model does not necessarily have high power. The change of power is very complex, because it is subject to a number of factors that are different sample size, different alternative hypothesis, different estimator and different model.

Key Words: Power, Confirmatory Factor Analysis, Sample Size, Monte Carlo, Construct Validity