


Abstract

A Mini Review on the Effects of Experimental Design, Including Variations in Participant Baseline Performance, When Testing the Efficacy of Polyphenol Consumption to Enhance Mood and Cognitive Function in Humans from a New Researcher Perspective [†]

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Abstract: This review discusses the implications, from a new researcher's perspective, of variations in the design, dose and participant age group used and their subsequent effects on the cognitive performance and mood observed in studies investigating the effect of foods rich in phenolic compounds. In this context, 'new researchers' design and conduct new exploratory research on this topic, such as testing novel products for these properties. Previous systematic reviews and meta-analyses have concluded that foods rich in phenolic compounds have an enhancement effect on cognition, providing a motive for exploring the benefits of different types of foods with such constituents; however, these benefits were inconsistent across the studies. This has prompted the present review to assess the literature to elucidate the potential causes of the variability in outcomes. One source of variation was inconsistency in the cognitive assessment tools used across studies. Another was participant age, where the positive effects were seen more in elderly populations than in a healthy young population with a high baseline performance. Also, the frequent absence of primary outcome identification and other indications of a less cautious approach to statistical analyses may have contributed to instances of type 1 errors. In conclusion, new researchers should use well-validated assessment tools, study populations with a modest baseline performance, and predefined appropriate statistical procedures to minimize irreproducible outcome variations.

Keywords: experimental design; predefined outcomes; reproducibility; effect size



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