

Analyzing two-phase single-case data with non-overlap and mean difference indices: Illustration, software tools, and alternatives

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Two-phase single-case designs, including baseline evaluation followed by an intervention, represent the most clinically straightforward option for combining professional practice and research. However, unless they are part of a multiple-baseline schedule, such designs do not allow demonstrating a causal relation between the intervention and the behavior. Although the statistical options reviewed here cannot help overcoming this methodological limitation, we aim to make practitioners and applied researchers aware of the available appropriate options for extracting maximum information from the data. In the current paper, we suggest that the evaluation of behavioral change should include visual and quantitative analyses, complementing the substantive criteria regarding the practical importance of the behavioral change. Specifically, we emphasize the need to use structured criteria for visual analysis, such as the ones summarized in the What Works Clearinghouse Standards, especially if such criteria are complemented by visual aids, as illustrated here. For quantitative analysis, we focus on the non-overlap of all pairs and the slope and level change procedure, as they offer straightforward information and have shown reasonable performance. An illustration is provided of the use of these three pieces of information: Visual, quantitative, and substantive. To make the use of visual and quantitative analysis feasible, open source software is referred to and demonstrated. In order to provide practitioners and applied researchers with a more complete guide, several analytical alternatives are commented on pointing out the situations (aims, data patterns) for which these are potentially useful. © 2016 Manolov, Losada, Chacón-Moscoso and Sanduvete-Chaves.

Data analysis

Guidelines

Methodological quality

Non-experimental

Single-case