# Meaningful Change Estimation

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It seems that there is some way to obstacle the problem of what is "meaningful change" when working with Trans-theoretical Model (TTM) [1]. First of all, it depends on the investigators or researchers time and budget, as well as their accessible resources. Then it depends on the objectives of the study, which in turn relies on the first mentioned point.

But most of the time, there are some gold standards reported by the international organizations such as the World Health Organization (WHO) [2]. For instance, in Healthy People 2010 [3], it is stated that being physically active at least 30 minutes for most of the day or even everyday can be considered a gold standard in instructional designs.

Moreover, one needs to have SMART (Specific, Measurable, Appropriate, Reasonable and Time bounding) objectives to make it possible to measure specific changes, in particular when applying TTM and its construct of the stages of change. As mentioned in the editorial, in an interventional study, in order to increase the Decay-Missing Filled (DMF) index through promoting students' brushing behavior, someone may claim that a meaningful change has occurred in the brushing behavior of the students who never used to brush their teeth because they brush at least twice a day after the intervention. Hence, focusing on both the efficiency and effectiveness of the brushing behavior depends on the gold standards of the study, which have been recognized rational by the involving research team.

Furthermore, in observational studies and clinical trials, the clinical meaning of change in behavioral measures must be exactly determined in order to interpret the beneficial future effects over time, and such specified measures should be in agreement with the other supportive evidence. For example, since the measures of physical performance are becoming the preferred indicators of health and the seniors' function [4], it is essential to develop supportive evidence for their use as

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measures of change.

To sum up, depending on the field of study, meaningful change has different meanings. Unfortunately, there is not universally accepted definition of responsiveness and even the measure of responsiveness. In a recent review, Terwee and colleagues found 25 different definitions and 31 different measures of responsiveness [5]; however, debate exists over the appropriateness of their two broad categories, distribution-based or anchor-based. Recently, some researchers have triangulated distribution-based methods with anchor-based methods, and even combined these two methods to improve our understanding of meaningful change [6].

## References

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