

Why are Q-ODM's Pattern-Centered Methods (PCM) More Realistic and Useful for Evaluators?

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Pattern-centered theory and methods (PCM) can be used to tell simple and accurate stories about how real persons grow in real school and afterschool classrooms. Stories about the quality and outcomes (i.e., causes and effects) that are modeled using PCM are particularly useful because they can address questions related to “how” programs and classrooms work and “how much” children grow skills.

Most training for education researchers and evaluators is focused on variable-centered methods (VCM), also called linear statistical methods (regression, the analysis of variance, and structural equation modeling) or the general linear model. VCM are powerful in cases where the causes and effects are similar across individuals and classrooms. In cases where that's not true – which is most school and afterschool classrooms – VCM designs tend to provide information that means practically nothing about the actual people or contexts involved. Some of the basic issues have been summarized nicely by Todd Rose in the following TEDx presentation: <https://youtu.be/4eBmyttcfU4> (“The Myth of Average”), but the critique is not new.

To better illustrate the point, let's talk about three basic assumptions about the person-reality in afterschool classrooms and how PCM applies:

A person's socio-emotional skills are most accurately represented as a pattern with multiple skills indicated simultaneously. This is not just about more information from more variables, although that is also a fundamental advantage of pattern-centered methods. The neuroperson is also a “*multilevel system*” – which is mouthful but as detailed in White Paper 1: Different parts of mental skill change for different reasons, on different timelines, and cause different types of behavior! This means different amounts and types of cause are involved in changing any mental skill or behavior. How could one variable at a time constraints of VCM ever do an adequate job of representing socio-emotional skill? PCM are uniquely fit for sorting out multilevel causal dynamics so that the full meaning encoded in the data can emerge.

Change in socio-emotional skill is always *qualitative*, from one pattern to a different pattern at a later time point. Given the multilevel nature of socio-emotional skills, the combination of skill parts is likely to differ at different time points and in different settings. The fact that skills turn into different skills as they change has been an Achilles heel for VCM. Check out the “Analytic Tools” section of White Paper 3 to see how PCM can be applied to (a) identify each individual's unique pattern of skill parts at different points in time and then (b) compare across those qualitatively different patterns to detect stability, growth, or decline for each individual. When coupled with the sensitivity of *optimal skill measures* (see White Paper 2), PCM are ideal for describing the *how* (e.g., an individual child's movement from one pattern to a subsequent pattern) and *how much* (e.g., how many children grew) of skills-change over short time periods, such as a semester or school year.

The same classroom causes different patterns of change for different subgroups of children. An adage from mid-20th century psychology (Kluckhohn and Murray, 1948, p. 35) is a helpful reminder: Any individual can, for different causal variables, be simultaneously like all others, like some others, or like no others. VCM work only in the first case, where every person experiences a very similar type of cause

and effect. Case-study and qualitative methods are preferred in the third case, where the causes and effects may apply only to a single person. PCM are uniquely fit for the second case; that is, where different subgroups of children with different socio-emotional histories have qualitatively different types of responses to the same education settings.

In the end, VCM assumptions about the validity of single variables, the quantitative nature of skill change, and the homogeneity of causal dynamics lead to an impoverished view of reality – and likely a lot of inaccurate conclusions about what to do.

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