

Abstract of thesis entitled:

Three Advances in Moderated Mediation: Detection of Spurious Effects, Elimination of Measurement Error, and Differentiation of Equivalent Models

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To answer the questions of “*how*” and “*when*” for different psychological phenomena, we heavily relied on the analysis of mediation, moderation and even their synthesis. Among different synthesis of mediation and moderation, moderated mediation undoubtedly is one of the most common frameworks being utilized to conceptualize different psychological phenomena. On this trend, three advances in moderated mediation were initiated to provide more rigorous moderated mediation analyses. Specifically, this dissertation project aimed at addressing three distinct but relevant methodological questions in a moderated mediation model, namely 1.) *Does index of moderated mediation conclude a spurious moderated mediation effect?* 2.) *Is factor score approach by no means better than other approaches in handling measurement error in a moderated mediation model?* and 3) *Can we differentiate conceptually competing but analytically equivalent moderated mediation models?* To answer these questions, an Index of Weak Invariance of Mediation ( $I_w$ ) (Chapter 2), an application of a straightforward and implementation-friendly alternative – Factor Score Approach (FS) (Chapter 3), and a Single-Level Coefficient-As-Outcome Approach (*SiLCO*) (Chapters 4) were proposed. Throughout these three chapters, simulation studies and real data demonstration were conducted to evaluate the empirical performance of these proposals under various data-analytic conditions. As a primary focus, the results of this dissertation project aimed providing concrete guideline for applied researchers about the choices of different analytical approaches in handling the three methodological issues investigated in this dissertation project.

在回答不同心理現象“怎樣”發生、“何時”發生等一類問題時，中介和調節分析，以及兩者的結合被大量使用。在中介和調節分析的眾多組合之中，帶調節的中介分析無疑是心理學研究中最為廣泛使用的模型之一，其被用以解釋形形色色

的心理現象。因此，順應此趨勢，本論文嘗試做三點推進和貢獻，以提供更為嚴謹的分析模型。具體而言，本論文圍繞有調節的中介這一主題，解決了三個相互獨立又彼此關聯的問題，即 1.) 帶調節的中介模型指標是否會推斷出一個偽效應？ 2.) 在處理測量誤差時，其他分析方法是否一定優於因子分數方法？ 3.) 我們能否能夠區分那些在概念上相互競爭，但統計上又是相等的一系列有調節中介模型？為回答以上三個問題，本論文提出做出了三點提議：中介的弱不變性指標（第二章），更直接且便於實施的替代選擇——因子分數方法的應用（第三章），以及單層係數結果法（第四章）。本論文的三個章節通過模擬研究和真實數據演示，檢驗了三者在不同數據分析條件下的實際表現。作為研究的主要焦點，本論文的研究結果旨在為不同研究者提供具體指導，選擇適宜的統計分析方法以解決本論文聚焦的三個方法學問題。