

Analysis of the Behavioral Mechanisms with Structural Equation Model: Based on Experimental Study of Students' Exercise Behavior in Junior High School

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One of the most important goal of the human behavioral science is to seek scientific explanation for varieties of behavioral phenomena, then develop interventions to eliminate problem behaviors (such as smoking), or increase the target behavior (exercise). Recent philosophical work on scientific explanation has been dominated by two approaches: Kitcher's explanatory unification approach suggests that explanations explain by showing how diverse phenomena fit into unifying patterns, while Salmon's causal-mechanical approach suggests that scientific explanations explain events by showing how they fit into the causal structure of the world. Recent years, social scientists have become cognizant of the extent to which implicit understandings of causation condition our understanding of the social world. This realization has generated an outpouring of work on mechanistic explanation in the various disciplines of the social sciences. Based on causal relationship, behavioral mechanisms reveal the regularity of behavior change. Study on behavioral mechanisms will be extremely important and foundational work both in explaining behavior phenomenon as well as developing and improving behavioral interventions.

The development of modern transport and network technology causes a significant increase of sedentary behavior in youth, such as transportation, watching TV, and using the computer, resulting at an increasing number of students failing to meet physical activity level that maintains physical and mental health benefits. It has become an urgent need to explore the mechanisms that reveal the regularity of exercise behavior change. However reviews in this area show that considerable work needs to be done (e.g., identifying potential mechanisms and designing studies for testing both mediation and moderating effects)

Based on perspective of mechanism theory and with the method of structural equation modeling analysis, this project attempted to reveal the mechanism of students' exercise behavior change in junior high school. The project consists of two stages, the first stage mainly about interviews and survey research (completed), so as to explore the factors that influence the exercise behavior as well as the influence of each factor. The second stage is experimental study (in progress), through the physical education curriculum, the study intervened students' self-efficacy, sport motivation and perceived value of exercise to change their exercise behavior, and then explored and tested (seeking mediators and moderators and analysis of mediating effect and moderating effect) the potential causal mechanisms of exercise behavior change with the method of structural equation model.

Key Words: behavioral mechanisms, structural equation model, exercise behavior