B. Longitudinal Analysis

Comment: The availability of the computer for data analysis has been critical for the shift of focus from cross-sectional designs to longitudinal designs. Cross-sectional designs have often presented a distortion due to recall bias and difficulty in determining the true causal path. Longitudinal designs can assess the pattern of change over time. The major issues with longitudinal designs are the lack of independence between observations on different occasions and problems with attrition. Early papers involved multiple regression, then the basic method of analyzing longitudinal data with a battery of predictors employed to predict future behavior. Two types of predictor variables involved theoretical issue, the moderator variable and the suppressor variable. The Velicer (1972b) and Velicer (1978) provided a means of defining these types of predictors. However, the work in time series analysis represents the first true longitudinal method. There are a number of practical issues that had to be solved for this method to be employed in research applications. The first was the issue of model identification. Velicer & Harrop (1983) demonstrated that this could not be done reliability and accurately. Velicer and McDonald (1984) introduced the general transformation approach as a solution to this issue. Harrop and Velicer (1985) demonstrated that this solution worked very well in practice. A second issue was generalizing across time series studies. Logical inference was the main approach available. Velicer and McDonald (1991) provided a means of direct statistical comparison. Missing data is an practical problem for time series analysis and the Velicer and Colby papers (2005a, 2005b) demonstrate that modern missing data procedures provide very accurate estimates. Velicer et al (1992) and Velicer and Plummer (1998) provide some early examples of applications of time series to applied problems. Velicer and Fava (2003) provide the latest critical overview of this method.

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