

# Abstract for the EMPG 1999 Meeting in Mannheim

## A Boolean Approach to Hierarchical Data Analysis, an Overview

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Boolean analysis of questionnaires (Flament, 1976) is a method for data-analysis with a much larger scope than only questionnaires. In fact any set of binary data can be analyzed with this method and results in a unique set of equivalent implication schemes. Boolean analysis – we drop the ‘questionnaires’ from here on – is a partial order generalization of Guttman’s scalogram analysis. One of the criticisms to scalogram analysis is that in practice it is rare to find data that can be fitted well to the scalogram model. Generally other than the Guttman patterns are observed which results in low fit parameters. In Boolean analysis this problem does not exist, as this method basically does not impose any constraints on the patterns that can be modeled. At first sight this feature seems most promising: indeed, Boolean analysis allows one to build a perfectly fitting model for any set of observed patterns. In practical applications, however, approximated implication schemes that meet some criteria concerning avoidance of error, simplicity or structure are preferred over perfect schemes that accommodate all observed patterns. This paper provides an overview of methods, called dichotomization methods, that were introduced (see for example Theuns, 1994, 1998) for selecting ‘optimal’ sets of patterns to be modeled. Depending on the kind of application the selection method focuses on either avoiding error, simplicity of the resulting implication schemes or (closure) criteria concerning the structure of the set of modeled patterns.

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