Noldus
Information Technology

The Observer XT

Organizing event data at different hierarchical levels

Observational data are usually organized in discrete elements of varying complexity. In many cases it is important to relate data to variables that represent the context in which the observation takes place, for example the temperature of the room or the age of the subjects. Several of these variables may have different values in the same context, for example different subjects interacting in a room may have different ages. It is therefore important to relate data to such variables defined at different hierarchical levels. The Observer XT offers this possibility by linking subjects and multiple data sets to specific independent variables.

Recording observational data with the aid of computers forces us to code events according to a set of criteria, which determines not only the way an event is coded but also the relationships among the data entered. In general, observational data are organized in discrete units that represent single events, postures, actions and behaviors initiated by one or more subjects. The way we organize those units affects the way we analyze the data afterwards.

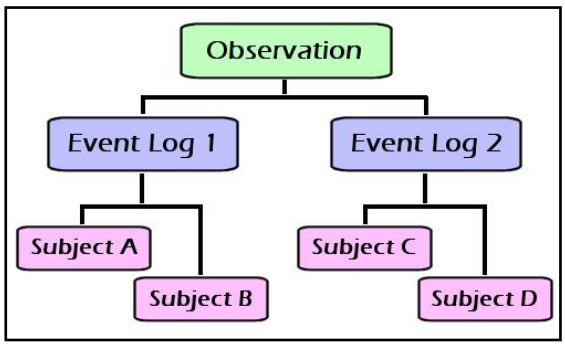
Why organize data?

Using computers to record observation data requires that one thinks of how to organize the data even before collecting them. This is an extremely important step in many fields of research since it determines how the data look like once one wants to analyze them. Therefore, one must think in advance of how the data set will be structured, which data will be scored at the level of the single individual and which at a more general level (that is, values of a category are valid across subjects).

A classic example is relating behavioral data to the experimental treatment. Subjects are given a certain treatment (Treatment 1, Treatment 2, and Untreated Control). If subjects are tested independently and each observation session refers to one individual, then an observation should be labeled with the value of the Treatment for that subject. Defining *Treatment* as an independent variable provides the opportunity to have results sorted by treatment. This is very useful when exporting data to a statistics package, for example when *Treatment* is a factor in an analysis of variance.

Why hierarchical organization is important

It is often important to relate observation data to two or more variables organized according to some hierarchy. Back to the example above, two or more subjects – which may have different treatments - may be placed in the same experimental trial, therefore being part of the same observation session.



This means that the subjects are 'nested' in each observation session. Since each subject has its own type of treatment and an observation session has its own properties (for example, date and time of recording), then the variable *Treatment* associated to subjects is automatically 'nested' in any variable describing the observation session.

With The Observer XT you can define a hierarchy of variables at up to 3 levels (subjects, event logs and observations, where an observation can contain more event logs, and an event log can contain data of more subjects). The importance of organizing data in such a way becomes clear when planning data analysis. Some variables like *Treatment* need to be linked to a certain level (the subject) while others like *Temperature* need to be linked at higher levels (the observation session). This structure is essential if you want to build a complex protocol of your tests/experiments. Furthermore, you can easily extract, process and possibly export subsets of data without re-arranging them.

Examples

Observe two or more subjects interacting, but with some common properties

In a study of communication among children two subjects are watched in the same observation session. Since age and gender vary between subjects within observation sessions, these are defined as independent variables linked to the subjects. Furthermore, suppose you want to analyze data according to whether the subjects are of the same gender. This property is common to both subjects within an observation, that is, subjects are either the same gender or not. Therefore, it can be defined as a variable linked to the observation.

Observe events multiple times from the same video, and keep the data in different units (data files)

Several students are asked to score events from the same video episode. You want to keep the data in the same functional unit (the observation) but in different sub-units for easy comparison between them. The name of the student is defined as a variable linked to the sub-unit (the event log) while the name of the video episode is a variable linked to the main unit (the observation). This structure enables you to easily extract the data of those observers you want to compare, and for a certain video episode.

Organize physiological data sets in The Observer XT

Blood pressure is recorded on three subjects in each of 10 trials. Data are imported in The Observer XT and linked to the subject level, while the trial number is linked to a higher level (observation).

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			Age of Subject	Name of Observer	Video Episode
Observation	**Event Log Data Set**	**Subject**			
Observation 1	Event log0001	Red	23	Jessica	...\Phone test V03.mpg
		Blue	25		
Observation 2	Event log0001	Red	29	Frank	...\Phone test V03.mpg
		Blue	29		
Observation 3	Event log0001	Red	32	Jessica	...\Phone test V03.mpg
		Blue	27		
	Event log0002	Red	28	Frank	
		Blue	33		

An example of hierarchy of data sets. Two observers (Jessica and Frank) scored a video episode in which two subjects (Red and Blue) interact. Each observer has scored the video once (Observation 1 and Observation 2, respectively), then a second time in the same observation (Observation 3), but in different event logs.

International Headquarters
Noldus Information Technology bv
Wageningen, The Netherlands
Phone: +31-317-473300
Fax: +31-317-424496
E-mail: info@noldus.nl

North American Headquarters
Noldus Information Technology Inc.
Leesburg, VA, U.S.A.
Phone: +1-703-711-0440
Toll-free: 1-800-355-9541
Fax: +1-703-771-0441
E-mail: info@noldus.com