The statistical implicative analysis for repeated measures. A pro-environmental behavior study

Daniel Pasquier
EA 2114-Université de Tours (France)
avenirentreprise@free.fr
&
Liliane Rioux
EA 4386-Université de Paris Ouest-Nanterre La Défense (France)
lrioux@u-paris10.fr

Statistical implicative analysis (Gras et al., 1996) has become very well-established in recent years (Gras, Régnier, & Guillet, 2009). Traditional psychometric methods are based on symmetrical relationships between variables, making it impossible to arrange inter-variable correlations in an implicative sequence. Implicative analysis of data makes it possible to order variables sequentially.
In this poster, we present an example of the use of this type of analysis in a pro-environmental behavior study.

Method

This research extends a study (ECP, 2009) conducted with a group of secondary school children in France in which (a) we identified seven behavior profiles concerning the sorting of used batteries:

Profile 1: neither throw away nor recycle their used batteries because their parents deal with them
Profile 2: systematically throw their used batteries away
Profiles 3, 4 and 5: think about recycling used batteries but do not systematically do so (Profile 3: they throw them away; Profile 4: their parents throw them away; Profile 5: they occasionally take their batteries to a collection site).
Profile 6: systematically recycle their used batteries
Profile 7: use rechargeable batteries

and (b) we showed the impact of an awareness-raising action on the adoption of a behavior of worn piles sorting.
But did we collect a pro-environmental behavior or simply an environmental action? To answer this question, the study was extended during 3 years. The CHIC (Classification Hiérarchique Implicative et Cohésive) programme used to process the data in this study revealed the probable pathways from the end of the awareness-raising action over the following three years.

Results

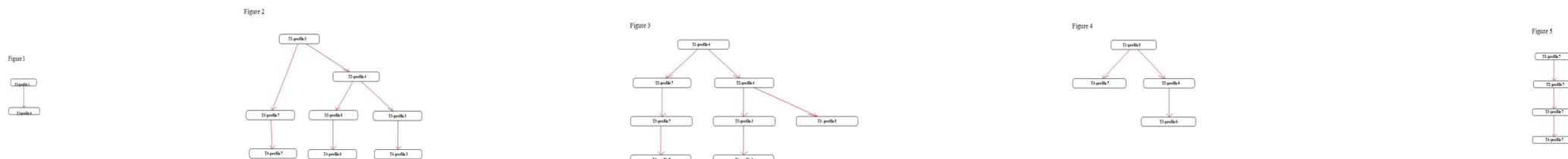Figure 1   Figure 2   Figure 3   Figure 4   Figure 5

Figure I is that of the young people who did not recycle their batteries during the awareness-raising action but who did recycle them at T4, three years later. Note that these were children who did not previously manage their own batteries, this being done by their parents.
Figure 2 shows the pathway of the children who thought about collecting used batteries but continued to throw them away during the awareness-raising action. Over time, some of them started to use rechargeable batteries while the majority did not change their behavior. These were essentially children who threw their batteries away before the system was set up.
The group represented in Figure 3 was composed of children who thought about recycling their batteries during the protocol but did not bring them to the collection point. Some opted for rechargeable batteries, but most continued to think about it without actually recycling their batteries over time. As could be expected, they had already thought about the question before the protocol without doing anything about it.
Figure 4 shows the implicative pathways from T1 for the children who brought in some of their used batteries during the awareness-raising action. They continued their pro-environmental behavior, either by recycling their used batteries, or by using rechargeable batteries.
Finally, Figure 5 shows the implicative pathways of the children who used rechargeable batteries at T1. This group included the children who used this type of battery before the action was set up and also those who did not manage their own battery use, generally leaving this to their parents.

Conclusion

These pathways shows clearly that the young people who maintained the battery-sorting behavior were (a) those who already had this behavior prior to the awareness-raising action, and (b) those who had never thought about sorting because their parents dealt with it. Most of the participants who had thought about recycling prior to the awareness-raising action without actually doing anything about it continued the same type of behavior. In other words, this study confirms the importance of training young people as early as possible, before the question of whether or not to recycle is raised.

Références

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