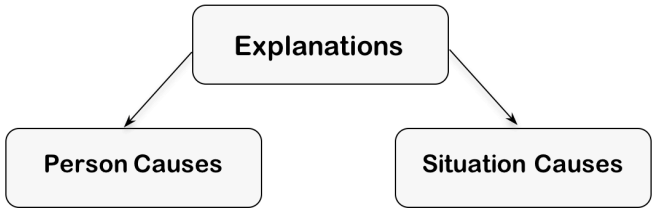
Multivariate Statistical Techniques
CLPS2908, Spring 2019
Prof. Bertram Malle

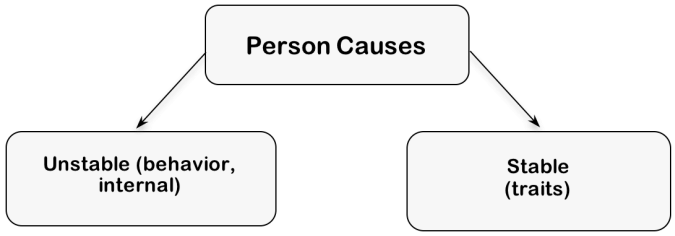
HW12: Loglinear Analysis and Modeling

The study for this homework was conducted in my lab many years ago to see whether I could replicate the traditional hypothesis of an "actor-observer asymmetry" in ordinary people's explanations of behavior. According to this hypothesis, people explain their own unintentional behavior (in the role of "actors") more by reference to situation causes, whereas they explain other people's unintentional behavior (in the role of "observers") more by reference to person causes. Moreover, the literature distinguished two kinds of "person" causes: those that are temporally stable (e.g., personality traits) and those that are unstable (e.g., a fleeting thought or emotion). Thus, there were two hypotheses to be tested:

(H1) Do observers use more person (versus situation) causes than actors do?



(H2) Do observers use more stable (vs. unstable) causes than actors do?



For the study we selected a clearly unintentional behavior (being in a certain mood state) and asked undergraduate students to explain their own mood (actor role) or someone else's mood (observer role). To control for valence of mood (positive, negative), participants were first asked in what mood they were (or in what mood the other person was), using response options *good, so-so, bad*, and then they actually explained why they were (or the other person was) in that mood state.

The resulting verbal explanations were content-coded. Coders classified each explanation into the category **P cause** ("mentions a person cause"), **S cause** ("mentions a situation cause") or — because some explanations simply couldn't be classified as either person or situation — **PS cause** ("mentions a cause that involves both P and S). They also classified each P cause into one of three subtypes: behavioral, internal (both instances of **unstable**) or trait (instance of **stable**). (Inter-rater reliability was of course assessed, and it was satisfactory.)

H1 can be tested by contrasting **P causes** with **S causes**. According to the classic literature, observers should cite more P (vs. S) causes than actors do.

H2 can be tested by contrasting **unstable P cause** subtypes (behavioral, internal) with the **stable P cause** subtype (traits). According to the classic literature, observers should cite more stable (vs. unstable) P causes than actors do.

Because no predictions followed from classic theory about valence of the explained event (here, the valence of the mood state), one would expect that any detected actor-observer asymmetries should hold equally across valence of mood.

The data file (in Excel and SPSS formats) shows 242 cases.

1. Begin with preliminary work on H1.

(a) Create a new variable that analyzes only P vs. S causes, ignoring mixed (PS) causes. Call it CAUSE2.

(b) Inspect the crosstabulation of ROLE (actor vs. observer) by CAUSE2 (P vs. S); then break this pattern down further by MOOD (positive, neutral, negative). What patterns, if any, do you detect? Are there main effects, interactions? A graph may help.

2. Perform a 3-way hierarchical loglinear analysis, ROLE × CAUSE2 × MOOD. Which effects seem to be strong enough to retain? Use partial chi-squares and parameter estimates to answer this question. Note that the parameter estimates represent "deviation contrasts" (see Readings folder for "SPSS Manual: Appendix B–Categorical variable coding schemes"), so an interpretation of specific contrasts needs to take this scheme into account.

3. Perform model testing (using appropriate /DESIGN commands and LR χ^2 change calculations), addressing the question whether the hypothesis of an actor-observer asymmetry for types of causes (the ROLE x CAUSE2 interaction) is necessary to account for the data:

(a) First use the bottom-up approach: Start with a minimal model (e.g., just main effects) and add terms, testing their importance by way of improvement LR $\chi 2$.

(b) Then use the top-down approach that is akin to backward elimination, in which you start with the saturated model and systematically remove terms (beginning with the 3-way interaction) until you can't remove any further terms without letting the model fit deteriorate significantly.

(c) Settle on a final model that integrates the results from the two approaches (justify your choice).

4. Now test H2. The factors are ROLE (actor vs. observer), MOOD (negative, neutral, positive), and the specific P_CAUSE variable. Because P_CAUSE originally had three levels (behavioral, internal, trait), you will have to decide on a contrast that tests the stable vs. unstable hypothesis.

(a) Begin with inspecting the crosstabulations (across and within MOOD).

(b) Perform a 3-way loglinear analysis of ROLE × P_CAUSE × MOOD, forming an appropriate contrast for the P_CAUSE variable. Note that you must use SPSS's

LOGLINEAR procedure (not HILOG) to have control over contrasts. LOGLINEAR does not force you to use hierarchical models, but you should still follow a hierarchical approach. No model testing is needed here.

(c) Besides the a priori hypothesis H2, are there other patterns that one should take into account when drawing conclusions about this data set? Use parameter estimate contrasts to answer this question.

5. Write a brief summary of your results, addressing both actor-observer hypotheses and the role of valence in each.

I trust you will savor every minute of this last homework.