

Re: testing for independence of 2 ordinal scales

Source: <http://sci.tech-archive.net/Archive/sci.stat.math/2008-08/msg00092.html>

- *From:* claire <clairehunt@xxxxxxxx>
 - *Date:* Thu, 7 Aug 2008 10:52:00 -0700 (PDT)
-

On 26 Jul, 21:21, Paul Rubin <ru...@xxxxxxx> wrote:

claire wrote:

The 246 speech items comprise: 6 speakers each saying the same 41 items.

The speakers are:

- 2 native English, noimpediment,
- 1 native English, withimpediment,
- 1 native French, noimpediment,
- 1 native Italian, noimpediment,
- 1 native Greek, noimpediment.

The presence of only one speaker with animpedimentmay be damaging -- recognition of theimpedimentcould be confounded with other characteristics of the speaker. For instance, if the speaker has animpedimentand a regional accent,impedimentsounds might be perceived as accent.

The fact that each speaker read the same 41 scripts is an issue, although I don't know ultimately whether it's an advantage or disadvantage. It creates two correlations among the observations for any given listener. Obviously, reactions to two scripts from the same speaker can easily be correlated (in fact, one might expect that). Perhaps a bit less obviously, reactions to different speakers reading the same script might be correlated (again, within one listener), since a particular script might be more difficult to pronounce, involve words less familiar to the listener, emphasize an accent issue (a script with, say, a lot of hard "c"/"k" sounds might make certain accents more noticeable).

I'm not sure if a chi-square test of independence of the two variables would work (I'm not sure if there's a way to introduce "blocking factors"), and while a paired-difference t-test benefits from having the

Re: testing for independence of 2 ordinal scales

two variables measured on the same subjects, I think there's an assumption that the differences all come from one population. Even within listeners, I'm not sure that holds up here, given multiple observations from the same speaker and multiple observations from the same script.

I wish I had something constructive to suggest, but I'm really n