Sample research paper on single subject research

Life, Emotions

Citation: Busso, C., & Narayanan, S. (2007). Interrelation between speech and facial gestures in emotional utterances: a single subject study. Audio, Speech, and Language , X(XX), 1–16. Retrieved from http://ieeexplore. ieee. org/xpls/abs_all. jsp? arnumber= 4317558

Single subject research has always posed some significant challenges to researcher s and scientists working in the field of experimental psychology. The fact remains that unlike popular opinion, single subject research can have statistical validity and can provide the necessary tools to provide usable data during many experiments(Kratochwill, 1978). Horner et al., (2005) provided some useful insights on how to assess the quality of a single subject research paper.

The reviewed paper is a single subject study on interrelation of speech and facial gestures in emotional utterances, which was conducted by Busso and Narayanan in 2007. The study looked at the present paper looks at the verbal and non-verbal channels of human communication that are internally and intricately connected to each other. Therefore the authors hypothesized that the gestures and speech are highly correlated with one another. To this effect, the authors mapped the facial expressions of an actress as she read or talked about different emotional subjects. This study duly showcases that a well-designed study with a good experimental design can be as effective as a study with many participants.

Participants

The participant in this study was an actress who was selected to map the facial gestures that were associated with emotional speech utterances. The method of selection of participant was not discussed in the paper. We know

that in order to experimental validity one must select participants and explain the methodology so that others can replicate the experiment. However, the authors of this paper did not discuss the participant selection in much detail. One must consider the fact that since this was a study on changes in facial features and their correlation with emotional speech recitation, the results would have been similar for any human as the facial muscles are similar. Still, the participant section is a drawback of the paper. The critical features for future selection of participants to replicate the experiment was also not discussed properly in this paper. Therefore, it is unlikely that anyone can replicate this experiment.

Dependent variables

The objective of this experiment was to show a correlation between the original facial expression signal and the predicted facial expression signal that were estimated from speech acoustic features using linear mapping techniques. Therefore the dependent variable in this study was the facial expression signal. The dependent variables for this study also included the pitch of voice, RMS energy and other Mel-frequency Cepstrum Coefficients.

- The independent variables were measured with a great degree of operational precision.

- The dependent variable was measured with a procedure that generated a quantifiable index.

- The dependent variable data was not checked for reliability in this study. This is because the study was not based on any subjective evaluations. In this study the measurement of Inter observer reliability was redundant as the dependent variable was simply a numerical value that was calculated

from the facial expression signals of the participant.

Independent variable

In this study, the independent variable was the speech that was recited by the actress during the study(Busso & Narayanan, 2007).

- The independent variable was described with good precision and it can be used in other experiments that want replicate the current study.

- The independent variable was given in terms of different emotional speech recitations by the experimenters. Therefore it was under direct control of the authors and could be manipulated easily based on the requirements of the study.

- Since the study was done with the help of an actor, the facial expressions associated with emotional speeches were a bit artificial, but the authors adjusted for this minor problem since they designed the speech to include a wide variety of phonetic and emotional variability so that all facial features (dependent variables) could be measured.

Baseline

Baseline data is collected ahead of the experimental intervention to understand the subject's relationship between the independent and dependent variable under normal circumstances. Therefore when the experimental condition is imposed the change in relationship between the independent and dependent variables can be shown.

In this particular study, the authors did not measure the subject's facial expressions during normal speech, which could have given some really interesting information on how the subject's facial expressions change as she uttered normal sentences as compared to emotional sentences.

Therefore this is a major drawback of the current study.

Experimental control

Experimental control in a study tries to replicate the different scenarios in a manner so that all possible values of independent variables and covariates can be achieved. This ensures that we get a good spread of data and the confounding variables in the study can be accounted for. The experimental control of a study provides validity to the study. The authors of the present study used different types of speeches with different levels of articulation and consonant content to obtain a high degree of variation in facial expressions as the actress recited the phrases.

The results of this experiment were well constructed and showcased good internal validity. The experimenters provide adequate arguments to prove that the study was not exposed to any rival hypothesis that could destabilize the internal validity of the setup.

The results of the study showcased a pattern that signals towards good experimental control. The experimenters controlled for all confounding variables in the study so that the correlation between facial expression and emotional context of speech could be documented.

Social Validity

The present study, has a high amount of social validity as it shows how facial expressions change as we utter emotional sentences. Although, it is a single subject study, still it proves conclusively that there is a high degree of correlation between the content of the speech and the facial expressions associated with it. The results from this study can be used in various fields of real world applications, which includes lie-detection, interviews, aptitude

tests etc. The experiment has reliability and barring some minor flaws. The paper is a good example of a well-designed single-subject study. Therefore the dependent variable is socially important.

- The amount of correlation between speech and facial expression was quite significant in the current study. Therefore this

- The experiment was very well designed and therefore the implementation of the independent variable was practical and effective. The experimenters simply had to provide the subject with a different type of speech to recite that would have different emotional connotations, which would result in a change in dependent variables.

- The validity of the study was greatly enhanced by repeated implementation of the independent variable in various contexts. Therefore, this paper has a good amount of social validity.

Conclusion

We evaluated the paper by Busso and colleagues (2007) based on the framework provided by Horner and colleagues (2005). The paper was evaluated on various aspects as it tried to provide the interrelationship between emotional context of speech and facial expressions. The study was conducted on a single subject, but due to a good experimental design, it was able to establish the hypothesis in a strong fashion. The study had a good methodology, with well-defined dependent and independent variables. The participants and the mode of selection of participant was not very well defined. However the paper matched most of the requirements of single subject studies as delineated by Horner and associates (2005), therefore this paper can be considered as a good quality single subject research paper.

References

Busso, C., & Narayanan, S. (2007). Interrelation between speech and facial gestures in emotional utterances: a single subject study. Audio, Speech, and Language , X(XX), 1–16. Retrieved from http://ieeexplore. ieee. org/xpls/abs_all. jsp? arnumber= 4317558

Horner, R. H., Carr, E. G., Halle, J., Mcgee, G., Odom, S., & Wolery, M. (2005). The Use of Single-Subject Research to Identify Evidence-Based Practice in Special Education. Exceptional Children, 71, 165–179.

Kratochwill, T. R. (1978). Single subject research: Strategies for evaluating change. Academic Pr.