FACIAL EXPRESSION CODING BACKGROUND

Facial Action Coding System (FACS) is a system developed to categorize the facial expressions of human beings into different emotions. Primary emotions that can be encoded are anger, contempt, disgust, fear, happy, sad, surprised, and neutral. Advanced emotions that can be encoded are frustration and confusion.

- Action Units (AU) are the 41 units of measure used in FACS that are coded together in order to categorize an emotion. AUs allow facial coding to be much more specific by deconstructing an emotion into specific facial pinpoints. AUs include such units as inner brow raiser, dimpler, and lips part.
- Originally, facial coding was done by trained coders who analyzed all of the action units by hand. Recently however facial coding software has been introduced to help standardize and speed up facial expression coding. In our lab we use two forms of this software for all of our coding (Facet Vision and Facet 2.1 SDK).

CURRENT STUDY

We measured facial expressions from 129 athletes while they stood on the medal stand soon after receiving their medals.

- The photos came from the 2014 Sochi Winter Olympics official website.
- We included one photo from each event whenever facial expressions were codable (e.g., face was not obscured) and when all three medalists were visible.

PRELIMINARY RESULTS

We found preliminary evidence that facial expressions of joy were strongest for gold, then bronze, then silver medalists. Analysis was done using the following variables: medal, gender, race, and Sports Illustrated medal predictions.

- Sports Illustrated medal predictions were directionally consistent with the paper "Expectations and Emotions of Olympic Athletes" but were not statistically significant.

PAST RESEARCH

Our current study is based off of research from three separate papers:

1) "When Less Is More: Counterfactual Thinking and Satisfaction Among Olympic Medalists" The researchers propose that people’s responses to events are influenced by counterfactuals, or what they believe could have been an alternative outcome. Researchers found evidence supporting this hypothesis with medalists in the 1992 Olympics. Bronze medalists appeared happier on average than silver medalists. In addition, they found evidence that this was due to counterfactual thinking (e.g. silver medalists thought they could have won gold while bronze medalists thought they could have not medaled at all).

2) "Expectations and Emotions of Olympic Athletes" This paper proposed that counterfactual thinking is more likely to occur because of prior expectations (e.g. being predicted to win gold by sporting publications).

3) "The Thrill of Victory and the Agony of Defeat: Spontaneous Expressions of Medal Winners of the 2004 Athens Olympic Games" The study uses a more detailed coding technique (FACS) than the earlier papers to categorize the expressions of Olympic medalists immediately after competition and on the medal stand. The authors propose that spontaneous athlete expressions immediately after competition are more genuine than on the medal stand.

WORKING CONCLUSIONS

- Our findings are consistent with prior work: we find evidence that gold medalists were the happiest followed by bronze and then silver.
- This demonstrates how automated facial coding software can useful when analyzing large data sets. The software has advantages over manual encoding such as speed and lack of experimenter bias.
- Faster analyses allow us to test additional hypotheses that would be difficult or impossible to do with manual processing such as:
  - Investigating how gender, race, and/or culture interact with our main findings
  - Analysis of videos when place in event is revealed (as opposed to medal stand photos).

POSSIBLE FUTURE DIRECTIONS

- Analyzing additional medal stand photos from the 2014 Sochi Winter Olympic Games. These photos would help determine how additional factors interact with our main findings. We have analyzed all publicly available photos. Additional photos would require cooperation from the Olympic Games.
- Analyzing photos from other Olympic Games. This would give us much stronger statistical tests and would be a better test for factors such as race and country since many countries are underrepresented at the Winter Olympic Games.

CURRENT STUDIES USING FACIAL EXPRESSION CODING

We are currently running multiple studies in our lab that utilize facial expression encoding including:

1. Comparison of multiple methods: we are collecting subjective responses, pupil dilation, heart rate, and facial expressions from participants while they view standardized emotionally evocative stimuli in an effort to validate these measures and determine how to use them most effectively.
2. Advertising: we ask subjects to view then rate TV advertisements. We’re determining when and how facial expression encoding can help improve or predict advertising effectiveness.
3. Movies: we ask subjects to view movie trailers while encoding their facial expressions. We’re evaluating when facial expressions, subjective reports, expert ratings, and social media are effective at predicting box office performance.
4. Consumption: we will soon be collecting large amounts of real-time facial expression data to see if it can be used to predict consumption after controlling for other factors such as the weather, day of the week, and time of year. Given the large amount of data being analyzed, this kind of study could only be done with automated encoding.

REFERENCES


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