A MOVIE FOR CONTEXTUALIZING HYPOTHESIS TESTING
IN APPLIED SOCIAL SCIENCES

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Understanding hypothesis testing requires a grasp of the various concepts that often involve a certain level of abstraction. Many books on Statistics present these concepts and offer examples from the fields of exact or biological sciences, which are far from the field of action of applied social sciences. We have developed a method that presents a new perspective for learning hypotheses testing. The method which facilitates understanding hypothesis testing is based on analogies drawn between concepts of the theme and elements of a movie. Produced and interpreted by Henry Fonda, “Twelve Angry Men” is a suspense movie which tells the story of eleven jurors convinced a defendant is guilty of murder, while the twelfth juror believes he is innocent. The plot consists of this man’s attempts to persuade the other jurors to reach the same conclusion. This method draws analogies between concepts of the theme and elements of the movie to help the student understand hypothesis testing.

To clarify the concepts of hypothesis testing, the movie was exhibited twice to undergraduate students (Business Administration, FEA-RP/USP, and Publicity and Advertising, IMESB – Bebedouro/SP) and twice to post-graduate students working on their master’s degree (Organizational Business Administration Program, FEA-RP/USP). The movie was also shown several times to lato sensu post-graduate students of various courses. The dynamics of the use of this movie progresses in the following steps: 1) Students are asked to watch the movie before beginning the content of hypothesis testing. 2) Upon starting the first class on hypothesis testing, the students are asked whether they were able to associate the movie with Statistics. No clear ideas are given at first. The teacher simply waits to hear the students’ feelings and opinions. 3) On the second occasion, preestablished parts of the movie are presented. To heightening the viewers’ curiosity, the end of the movie is not shown. 4) The students are again asked what the purpose of the movie is. The new answers are analyzed here (from students who had not seen the movie, or new opinions), as well as the answers given previously. At this point, the students often realize that there is an issue that corresponds to the movie’s principal theme: Is the son guilty or not of murdering his father? This question can be rephrased in two statements: “The son is not guilty” or “The son is guilty.” These two statements are then associated with the hypotheses in a hypothesis test. 5) A chart is drawn on the whiteboard relating the decision (non-sentencing or sentencing) with the fact (not guilty or guilty).

At this point, several concepts of hypothesis testing are presented, initially using the students’ own words. The following concepts can be worked on analogously to the presentation of the movie: null hypothesis, alternative hypothesis, Type I error, Type II error, probability of Type I error, probability of Type II error, level of significance, population and sample. An analysis is also made of what it means to reject or not to reject the null hypothesis. Even without considering the use of calculations, at this point it is possible to present to the students the steps for the construction of a hypothesis test.

Overall, the movie resulted in the students’ greater involvement with the content when compared with the presentation of the content without using the approach of the movie. Another result, which was unexpected, was that many students resort to the analogy of the movie when they are in doubt about how to outline hypotheses in other exercises involving hypothesis testing.