



# **CASE TEACHING NOTES** **for** **“The ‘Mozart Effect’:** **A Psychological Research Methods Case”**

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## **INTRODUCTION / BACKGROUND**

The research methods course in psychology is often taught in the junior/senior year and is typically designed to teach students to apply the scientific method in evaluating research and in conducting their own research. In my courses, I show students how the research methods course can aid them in their daily lives by teaching them how to evaluate media reports and advertisements with the skepticism of a scientist. I usually like to start the course with an introduction to the application of the scientific method by having students apply some of the basic concepts related to research design.

This case study combines several approaches including a directed case approach with the use of journal articles combined with lecture, individual assignments, and small groups. In this case study, students are given information regarding an advertisement and a website both claiming that listening to the classical music in the advertised CD set will enhance people’s cognitive skills and creativity. Students are asked to:

- evaluate the claims and the evidence cited to support the claims;
- use the claims as a way of comparing the scientific method to a non-scientific, everyday approach;
- evaluate published research that has been conducted on the claims;
- complete a literature review to obtain further information on the claims; and
- design and conduct a test of the claims.

## **Objectives**

Upon completion of this case, students should be able to:

- Identify and critically evaluate the claims being made in the advertisement.
- Determine how to independently verify the claims.
- Compare and contrast a scientific approach with a non-scientific, everyday approach.
- Design and evaluate an experiment to test the claims.
- Read and analyze the components of scientific reports investigating a phenomenon similar to the one described in the advertisement.
- Determine whether they can rely on advertised claims.

## **BLOCKS OF ANALYSIS**

### **Part I**

Students are asked to read an exchange that takes place between two students, Bill and Fred. Bill is describing a set of CDs that he purchased. Listening to the CDs is supposed to improve Bill’s mental abilities and creativity. Fred expresses skepticism regarding the legitimacy of the product. Students must identify the claims that are being made, evidence to support the claims, and ways in which Fred and Bill could independently verify the claims.

The initial purpose of this first part of the case is to get students into the mindset of thinking like a scientist—being skeptical and critical. In addition, students are asked to use their information literacy skills to identify ways in which they can substantiate claims made in the media or by individuals they know. The goal is for students to realize that they do not have to accept all claims at face value and that they have the resources and knowledge to investigate these claims.

The second purpose of Part I is to get students to consider the differences between everyday approaches to knowledge and the scientific approach to knowledge by using the table adapted from Shaughnessy *et al.* (2003) presented in Part I. This part of the analysis clarifies the difference between these two approaches and introduces students to the language of science.

## **Part II**

Students help Fred and Bill design an experiment to test the effectiveness of the CDs. Students are given specific design issues that they must address. This analysis allows instructors to introduce the following concepts: operational definitions, hypotheses, independent variables, dependent variables, and control procedures (these are standard concepts taught in all research methods courses).

## **Part III(A)**

In Part III(A) the instructor provides students with a scientific article from *Nature* by Rauscher *et al.* (1993) and asks them to analyze it. As part of this, the students are required to identify basic elements of experimental design. Question 6 requires students to critically evaluate the *Nature* article and the methods used and conclusions reached by the authors. It also provides the opportunity for instructors to discuss important methodological issues through a critique of the study. An analysis of the experimental design and results of the study are provided in the [Detailed Case Analysis](#).

## **Part III(B)**

Students are given a second article ([Steele \*et al.\* 1999](#)) that fails to replicate the results of Rauscher *et al.* reported in *Nature* and are asked to apply the same six questions as they did to the Rauscher *et al.* article. Using the Steele *et al.* article allows the instructor to demonstrate good research design to students, as this study provides more control than that provided by Rauscher *et al.* An analysis of the experimental design and results of the study are provided in the [Detailed Case Analysis](#).

## **DETAILED CASE ANALYSIS**

Detailed case analysis is provided in a separate file that is password-protected. To access this information, go to the [detailed case analysis](#). You will be prompted for a username and password. If you have not yet registered with us, you can see whether you are eligible for an account by reviewing our [password policy and then apply online](#) or write to [answerkey@sciencecases.org](mailto:answerkey@sciencecases.org).

## **CLASSROOM MANAGEMENT**

### **Part I**

I found that it worked well to have students read Part I in class and share their responses in small groups. Small groups then shared the consensus of their group with the rest of the class. If instructors want students to go to the website listed in Part I (<http://www.springhillmedia.com/b.php?a=DCAMPBELL>), they may want to have students do this outside class.

By using the table in Part I, instructors can conduct a more detailed discussion of the characteristics of the scientific approach by explaining each term and giving examples before students conduct an analysis of the characteristics.

## **Part II**

I allowed students to use their textbooks for this part of the case study. Any standard research methods textbook should have material covering hypotheses, independent and dependent variables, and control techniques. Instructors could have students complete this part on their own and then share their responses or could use this part as a graded assignment. The information is shared and critiqued as part of the larger class. If students have had little or no exposure to these concepts, instructors can take one of two approaches: (a) introduce and teach the concepts and then have students apply them; or (b) have students actively discover the concepts without the use of scientific terminology. The instructor then labels what the students have done using the scientific terminology (filling in the blanks where necessary).

## **Part III(A)**

Instructors could have students retrieve the article on their own. In order to save time, I provided students with the article. Both this part and Part III(B) below could be used as group or individual assignments, graded or ungraded.

## **Part III(B)**

Reading and reviewing this article gives the student an excellent opportunity to contrast a poorly designed study with a well-designed one. This allows the instructor to point out additional aspects of “good research.” It also allows the instructor to discuss operational definitions and clearly written methods sections and how these relate to replication (and its importance) in science.

## **Part IV (optional)**

If time and resources allow, instructors could have students try to replicate Rauscher *et al.*'s 1993 study based on their own recommendations outlined in the introduction to the article by Steele *et al.* (1999) or obtained directly from Rauscher and Shaw (1998). Inclusion of this option also allows instructors to incorporate the skills necessary for conducting thorough literature reviews. Replication of the study may be somewhat time-consuming, but tasks could be assigned to groups of students and the materials involved are relatively low cost.

A nice follow-up is to have students analyze data and write an APA style report on their study. I would assign individual grades for the report.

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- The Mozart Effect®—The Spring Hill Media Group  
<http://www.springhillmedia.com/b.php?a=DCAMPBELL>.

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