



# Individual differences in gender role beliefs influence spatial ability test performance

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## Abstract

The gender role hypothesis posits that performance on a cognitive ability test is influenced by whether the test instructions frame the test as measuring a skill that is consistent or inconsistent with the test taker's gender role beliefs. The Bem sex role inventory was used to measure the gender role of female college students, and the group embedded figures test (GEFT) was used to measure their spatial ability. Masculine gender role women scored significantly higher on the GEFT when the test was described as measuring spatial ability, whereas feminine gender role women scored significantly higher when the test was described as measuring empathy. In a second experiment, men did not show the same effects. Implications of individual differences in gender role beliefs are discussed.

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## 1. Introduction

Cognitive ability tests have been used for placement decisions in schools for 100 years, dating back to Binet's pioneering research on cognitive ability testing to determine the academic placement of French school students (Wolf, 1973). However, the classical view that cognitive ability tests provide a

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straightforward measure of a student's cognitive ability has been challenged by more complex views of what influences a student's performance on cognitive ability tests. According to the situative view, a student's performance on a cognitive ability test is determined by the interaction between the student's characteristics and the student's interpretation of the testing situation. In particular, in this study, we examine the gender role hypothesis, which posits that students work harder on a cognitive test when they believe it taps a skill that is consistent rather than inconsistent with their gender role<sup>1</sup>.

## **2. Goal**

What happens when someone is asked to take a cognitive ability test? The goal of this research is to better understand how test instructions can interact with the test taker's self beliefs to influence performance on a cognitive ability test. In the present experiments, we focused on (a) test instructions that described a cognitive test as measuring empathy (which may be viewed as a feminine characteristic) or spatial ability (which may be viewed as a masculine characteristic), (b) the test taker's beliefs about seeing her gender role as feminine or masculine, as measured by the Bem sex role inventory (SSRI; Bem, 1981), and (c) performance on a test of spatial ability, namely, the group embedded figures test (GEFT; Witkin, Oltman, Raskin, & Karp, 1971). In short, our goal is to test the hypothesis that performance on a cognitive ability test is influenced by whether the task instructions frame the test as measuring a skill that consistent or inconsistent with the test taker's gender role beliefs.

## **3. Practical rational**

Each year, millions of people take tests of cognitive ability in educational contexts (to help inform decisions about academic admissions and placement or how to design appropriate learning environments) or in job contexts (to inform decisions about job selection and placement or how to design appropriate work environments). Cognitive ability tests may seek to measure general cognitive ability or more specialized cognitive abilities, such as verbal ability, mathematical ability, or spatial ability (Carroll, 1993). Given the important role that cognitive ability tests play in academic and employment decisions, it is important to understand the conditions under which people's cognitive test performance might not provide an accurate and fair measure of their cognitive ability. For example, research on stereotype threat indicates that performance on ability tests can be influenced by reminding test takers of their ethnicity (Steele, 1997).

## **4. Theoretical overview and predictions**

The classical view of cognitive testing is that people possess varying amounts of each type of cognitive ability (such as spatial ability), and tests can be designed to measure each person's ability level.

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<sup>1</sup> We will use the term "sex" to refer to physical sex (male and female) and the term "gender" to refer to the psychological construct of gender role (masculine and feminine).

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