

EXPLORING THE RELATIONSHIP BETWEEN INDIVIDUAL DIFFERENCES ON VISUAL AND VERBAL TEST ITEMS AND STUDENT LEARNING STYLES

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ABSTRACT

Many educators and researchers have suggested that some students learn more effectively with visual stimuli (e.g., pictures, graphs), while others learn more effectively with verbal information (e.g., text). Yet, many assessment methods such as the multiple-choice test banks available with many text books are verbally based. A new test with visual questions and verbal questions was designed for study here. No differences were found across self-reported learning style groups on relative performance on the two parts of this exam. Differences were found, however, related to aptitude as measured by the SAT.

Past research suggests that learning style may be related to performance on different types of assessment items. In addition, if learning styles exist, but cannot be reliably identified, it may be important to offer a test with different types of items to be fair to all students. Two research questions reflect these observations:

- RQ1: Will self-reported visual-verbal learning style be related to individual differences in performance on visual and verbal test items?
- RQ2: Do some individuals consistently perform better on visual test items than verbal test items?

Two studies involving student achievement as measured by traditional verbal questions and new visual questions were conducted to address these research questions.

Primary data for both studies were collected in an Introduction to Marketing course at a medium-sized private school in the western United States. For the first study, the students were asked to complete an eight-item visual-verbal scale. In the second study the students were asked to complete an 11-item revised visual-verbal scale. Student identification numbers were also collected to match learning style scores to test information. A 100-question, traditional (verbal) multiple-choice final exam had been given in all sections of the Introduction to Marketing course for several terms. For each study, 25 of the 100 questions were changed to visual questions, such

as a figure from the text followed by a multiple-choice question. Students also gave permission to access their GPA and SAT Math (SATm) and SAT Verbal (SATv) from the Registrar.

The results of both studies indicate that student self-reports of learning styles are uncorrelated with individual differences in performance across visual and verbal test questions. Interestingly, a modest correlation was found between SATm and self-reported learning style ($r = .254$, $n = 90$, $p = .02$). This correlation may suggest that performance differences may be correlated more highly with differences in aptitude. This correlation also offers one clue as to how students come to believe they have a visual learning style. They may have noted that they understand graphs well, and inferred that this was a visual learning style, when it might be better described as a mathematical aptitude.

The present research found evidence that self-reported learning styles are not related to individual differences in performance on visual and verbal test items. However, this performance difference appeared to be more related to a content difference than a format difference. Further, the visual items used in this study appeared to be more mathematical, and the SAT mathematics score was found to correlate with performance on the visual items.

More generally, this study can be seen as one that questions the relationship between learning style and performance on matched test items. Even with a fairly reliable measure, learning style differences were not associated with differences in performance. Thus, this finding suggests that differences in student ability may be more relevant than differences in learning style. Meaningful interventions might therefore be designed around remediation for students with weaknesses in some areas (e.g., reading or math). Similarly, student differences might be accommodated by providing a range of learning experiences that utilize multiple learning styles.

References Available on Request