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# Research Proposal: Assessing the Link Between IS Personnel and Training in Music

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## Introduction

In 1998, there were over 600,000 unfilled jobs in information systems (ITAA, 1998). Companies report going to extreme measures to recruit and retain qualified personnel. Even with eased immigration policies and increased spending on computing in education, the shortage continues (Engler, 1998). It is clear that, in order to fill these vacancies, companies will need to consider individuals without computing backgrounds.

## Literature review

What makes a successful information systems employee? Many researchers have attempted to identify characteristics of individuals that excel in information systems. The Myers-Briggs type indicator (MBTI) has been used in various studies (Bishop-Clark & Wheeler, 1994; Carland & Carland, 1990). Some results indicate that, to a small degree, introversion contributes to success in a programming class or that personality type does not have a significant impact. Most of this existing research has examined programming skills. Fowler and Glorfeld (1981) developed a classification model using logistic classification analysis to predict student aptitude in computer programming. They found that GPA was the most important predictor in the model. Other significant variables included SAT math score, number of math courses, and age. A variety of demographic variables as well as a variable for the Wolfe Programming Aptitude Test were also analyzed, but none were significant.

Evans and Simkin (1989) analyzed 34 independent variables and six dependent variables to build a series of linear equations to predict computer aptitude. The independent variables fell into four different categories: demographic, behavioral, academic, and prior computer training and experience. Evans and Simkin (1989) also used the Myers-Briggs type indicator and a problem–solving test to measure cognition. They did not find a single set of predictors for student performance. However, several of the regression models did have cognitive variables which were significant. They state that "this observation is important because it suggests that cognitive processes can be important predictors of computer proficiency." (p. 1326)

Wolfe (1970), DeNelsky and McKee (1974), Cronan, Embry, and White (1989-90), and Fleury (1993) have all conducted studies designed to address computer programming specifically. However, as IS researchers we need to look at a larger picture. The role of IS personnel is no longer limited to just programming. As Couger, Higgins, and McIntyre (1993) advocate, creativity and innovation are qualities each IS person should possess and develop. Research indicates that everyone possesses creativity (Maslow, 1959); however, as we mature we use our creative abilities less and less. In fact, "American school children reveal progressively lower scores on creativity tests as they move through the school system." (Couger et al, 1993, p. 378) One of the possible ways to enhance and develop creativity may be through music. Phillips (1993) contends that "music provides a means for developing self-expression and creativity" (p. 18). IS professionals need to have good problem-solving skills and the ability to develop creative solutions to the infinite number of business problems they are called upon to solve. Music may provide one of the avenues to promote creativity and problem-solving skills. We have not located previous IS research examining a link between musical training and computer aptitude.

This idea has, however, been indicated in the popular press. There have been several suggestions that companies should hire musicians for training as IS personnel (Melymuka, 1998). In fact, our informal observations indicate that there seems to be a high number of successful people in information systems that have a background in music, either formally or informally. We have also seen discussions in the popular press (Silvia, 1998) that suggest that companies have at times successfully hired musicians to be trained as programmers, systems analysts, designers, and network administrators. The line of reasoning appears to be that there are similarities in the structured environment of music and that of information systems (Silvia, 1998). While this may be, as suggested, a spurious correlation, there may also be skills that are developed through musical training that are easily transferable to information systems.

Both information systems and music involve coordination of various complex processes. They both require concentration and problem solving skills. Research has shown that listening to music increases scores on intelligence tests. The same research suggested that actually *making* music may have a longer term effect (Rauscher, et.al., 1993). If music actually teaches persistence and self discipline (Miller & Coen 1994), if it helps individuals develop the ability to visualize multiple solutions to a problem (Phillips, 1993), then these skills may provide an edge when it comes to information systems. It seems that some interesting research could explore this relationship. Our initial research questions are:

H1: Are students with backgrounds in music more likely to choose computer information systems as a major than other business majors?

H2: Do students that have backgrounds in music exhibit higher levels of performance in IS classes?

In order to address our first hypothesis, a survey will be developed to administer to undergraduate students. The control group will be undergraduate business majors and the experimental group will be the students majoring in information systems. An initial assessment will be made to determine if there is a difference in the music backgrounds of the IS majors and the other business majors. The instrument will be tested for its validity and reliability. We will then address our second hypothesis by examining our experimental group more closely to see if, of those with backgrounds in music, there is an effect on class performance.

Our research will initially examine undergraduate business students. A second phase of research will include an industry survey.

## Research Agenda

### Step One: Build a Model

Ultimately, this study will be a multi-phase study exploring numerous aspects of the model. However, this research proposal addresses only a portion of the proposed model. Model building and testing is an iterative process which may require the researchers to make modifications, test, and retest. Based upon the publicity in the popular press as well as numerous conversations with recruiters regarding their hiring practices of IS professionals, we suspect there is some relationship between IS success and those individuals which have a musical background. The proposed model, presented in Figure 1, is a first take at what relationships may exist. Our model suggests that individuals with a background in music will demonstrate higher scholastic aptitude in computing courses. This will, in turn, influence their success in the IS workplace. We believe that a background in music contributes to the development of creativity, persistence, problem solving skills, and cooperative learning. These skills are directly applicable to information systems.

### Step Two: Validate the Instrument

In order to test the model, a survey instrument will be developed to administer to undergraduate students. So that the instrument may be assessed for its validity and reliability, the instrument will be administered to all undergraduate business majors taking a required management information systems course at a large university in the south. An initial assessment will be made to determine if there is a difference in the music backgrounds of the IS majors and the other business majors.

Additionally, the sample used to test the second hypothesis will include all junior and senior computer information system majors at a large university in the south. Grades will be used as a surrogate measure of IS performance. Student grades in the courses of cobol, advanced cobol, systems analysis and design, and visual basic will be used. The survey instrument will be tested for its validity and reliability and modifications will be made to the instrument as deemed necessary. Any questions with poor reliability or validity will be excluded.

### Step Three: Test the Model

Once the instrument has been validated and corrections or deletions have been made, a portion of the model will be tested. Concurrently, data will also be collected from several companies regarding the musical background of their recent new hires. Hopefully some insight will be attained in order to further develop the model and perhaps find better ways to measure the constructs.

Once the results from the student sample have been analyzed, an industry survey will be conducted. The instrument will be mailed to IS employees in selected Fortune 100 companies. By the time of the AIS Conference in August, all of the data will be collected from the student population and initial findings will be presented.

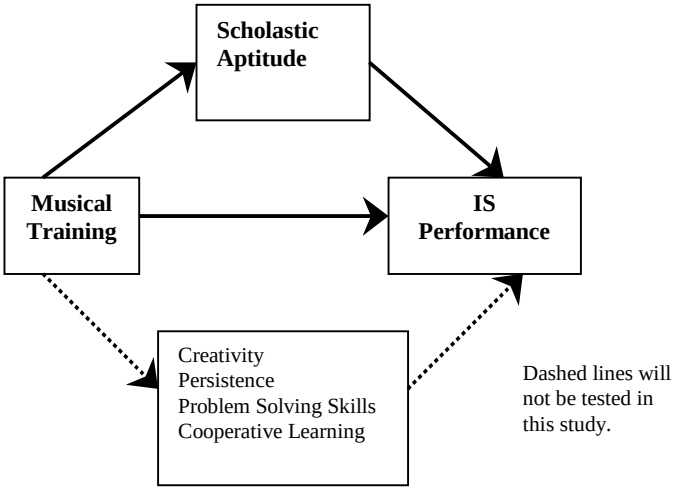


Figure 1

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