

# Chapter 25

## Investigation into Gender Perception toward Computing: A Comparison between the U.S. and India

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### ABSTRACT

*A potential explanation for the decline of female participation in computing-related education and careers in the United States is the perception that computing is for males. In this regard, declining participation limits diversity in the IT workforce. Therefore, this paper investigates the impact of two psychological factors, computer anxiety and computer self-efficacy, on gender perception toward computing between American male and female students. The authors also investigate whether the same relationship is found in India, where, while computing is dominated by males, female participation is rapidly increasing due to global IT outsourcing.*

### INTRODUCTION

Computing has been perceived as a male domain for some time. When perceived as a specific gender domain, it can discourage the other gender from participating in computing-related activities, which impacts diversity and work productivity between male and female employees in computing-

related activities. In recent years, female participation in computing-related education and careers has declined in the U.S. One explanation for this problem is the female perception that computing is a male domain (Nobel, 2007; Leventman et al., 2004; Tahmincioglu, 2008). When computing is perceived as a male domain, it means that computing is perceived as an occupation-stereotyped

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male, males have higher computer self-efficacy than females, and males have lower computer anxiety than females (Rainer et al., 2003, p. 108). Tahmincioglu (2008, paragraph 12) reported that American females perceive computing as a male activity and a “geeky and nerdy” profession. According to Collis (1985), females tend to stereotype computer users – people who like computers are not socially or athletically-inclined. The decline of female participation reinforces male domination. When males dominate computing, they may be able to control computing-related activities by establishing behaviors that cause negative experiences for females, such as discrimination and the “glass ceiling” phenomenon (Rainer et al., 2003). This, in turn, discourages female participation even further.

Studies show that computer self-efficacy and computer anxiety are closely related to gender perception toward computing. However, no model has previously demonstrated the relationship between these three constructs. We believe that there is a relationship among these constructs which explains differences in perception between males and females. This study intends to develop a model that demonstrates these relationships.

Additionally, this study investigates whether our model holds across the U.S. and India; where, as in the U.S., computing is dominated by men (Dasgupta, 2004). Due to global IT outsourcing, computing has presented increased opportunities for both Indian men and women. Consequently, the number of Indian females in computing has been rising (Agarwal, 2005). We attempt to understand whether our model, which identifies the potential differences between American males and females, holds across both countries and also if the relationships among the psychological factors for Indian males and females offer insights toward decreasing gender stereotyping and/or increasing female participation in computing in the U.S.

## **THEORETICAL DEVELOPMENT AND RESEARCH HYPOTHESES**

### **Gender Perception toward Computing**

A gender-typed activity/occupation is defined as one where males or females are perceived as possessing different abilities, levels of ability, personality attributes, and/or interpersonal interaction styles (Astone, 1995, pp. 4, 8). Activities/occupations are described as either gender-type male or gender-type female (Astone, 1995, p. 4). Computing is widely perceived as a male domain. Based on the gender schema theory developed by Bem (1981), the gender difference in roles is mediated by cognitions as children encode and organize incoming information according to the definition of “male” and “female” behavior current and active in the society at that time.

Several studies find computing as a male domain. Wilder et al. (1985) determined that the computer was perceived to be more suitable for males. In a study with students in grades K-12, Smith (1986) found significant differences between males and females, with males having stronger beliefs in their ability and competencies in the use of computers. Rosen & Maguire (1990) found that women seem to suffer greater computer phobia than men. Using a gender stereotyping of computing scale to measure perceptions, Astone (1995) reported that, overall, computing was viewed as slightly feminine. Following Astone’s study, Rainer et al. (2003) investigated how college students’ gender perception toward computing had changed between the years 1995 and 2002. They found that computing was perceived as a female domain in 1995, but the perception had changed to a male domain in 2002. Hafkin and Taggart (2001) found that assumptions about gender and IT had already been established in developing countries. These assumptions may be determin-

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