

Childhood Interest in Computers and Adult Career Choices in IT

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INTRODUCTION

A considerable amount of interest in the past several years has been devoted to the characteristics and dynamics of the fast-growing information technology (IT) industry in the United States (U.S.). Particular attention has been focused on how gains from increasing computer and Internet use are distributed across society. Do all segments of society enjoy the same level of access and use of computers and the Internet, or do some segments of society benefit more from computer and Internet use than others? This question has engaged a widespread and prolonged debate surrounding the issues of fairness of IT participation and use in the U.S. By the same token, many in recent years have also focused on how *interest* in IT and computer and Internet use are distributed across society. In this article, I focus attention on gender participation in IT: Are there differences in both interest in IT as a profession, and computer and Internet use across the U.S., and do these differences persist among young people? While there is considerable evidence that gaps in Internet access and use by gender have largely disappeared (Mossberger, Tolbert, & Stansbury, 2003; Comanie, 2001; Norris, 2001; Warschauer, 2003), there is a growing concern that differences in interest in the IT industry by gender are, in fact, widening.

Although evidence suggests that the societal gender gap in Internet access and use has largely disappeared, a gender gap in IT professions still exists and, in fact, is widening. Measuring the magnitude of the gap is complicated because there are varying definitions as to which occupations comprise the core IT professions. Using data from the U.S. Department of Commerce, Current Population Survey (CPS), Meares and Sargent identify four core IT occupations: computer scientists, computer engineers, systems analysts, and computer programmers (1999, pp. 3-4), while The Council of Economic

Advisors identifies five core IT occupations: electrical and electronic engineers, computer systems analysts and scientists, operations and systems researchers and analysts, computer programmers, and computer operators (The Council of Economic Advisors, 2000, p. 3). Assuming that working in an IT occupation constitutes interest in the field, then if the level of participation among women in IT declines, presumably, so does their interest in the IT industry.

BACKGROUND

The statistics on changes in the participation rate of women in the IT professions are ominous. The Council of Economic Advisors reported that female participation in core IT occupations had actually been declining since 1986, when it was 42.2%. Within the core IT occupations, women were even more underrepresented within the high-paying electrical and electronic engineering occupations, comprising only 10.1% of the workforce (Council of Economic Advisors, 2000). According to the latest research in the IT workforce, *Untapped Talent: Diversity, Competition, and America's High-Tech Future*, just released by the Information Technology Association of America (ITAA), the number of women making up the U.S. IT workforce fell 18% in 8 years. Last year, women accounted for 32% of the IT workforce, down from a high of 41% in 1996, while during the same time the percentage of women in the overall workforce was virtually unchanged, at approximately 46% (ITAA, Executive Summary).

The literature shows that differences in interest, access and use of IT, and attitude toward IT (Mossberger, 2003) are generally very complex and reflect society's choices in work and leisure activities, which depend on educational, social, institutional and cultural backgrounds (Warschauer, 2003). To more fully understand the underrepresentation of

women in IT professions, the dynamics of choice that lead people to these professions must be examined. Ultimately, career choices are affected by a broad range of factors that have historical, cultural, geographical and environmental dimensions.

Many argue that adult interest in IT is determined in large part by the nature and level of exposure to the discipline as a child. Therefore, examining interest in IT among children and, in particular, girls, can serve as a major predictor of future career choice in an IT field. To measure the level of interest in IT among children, the level of Internet use can serve as a proxy indicator.

Interest in IT Among Children

Understanding the relationship between gender, career choices and the world of IT should begin with an exploration of the level of interest in IT among young people. The level of interest in IT acquired at an early age, in part, determines the level of interest generated in the adult's world. The level of interest in IT among children is based on a wide array of both internal (peer, adult, home related) and external (environmental, economic, social) factors.

Earlier research indicated that among both adults and children, females were less likely to use the Internet than males (see Attewell & Battle, 1999; Baumgarten, 2003; Corporation for Public Broadcasting, 2003; DeBell, Matthew, & Chapman, 2003; Haugland, 1992; Mengel, 1995. Hoffman pointed out that women were less likely to use the Internet than men, and that age, education and gender all affect the levels of Internet use (Hoffman, 1996).

From a societal perspective, empirical evidence shows that the existence of disparities in computer and Internet use, a "digital divide," (O'Malley, , 1999, pp. 86-87) has generally been shrinking over time for certain groups, such as women, while expanding for others. According to the U.S. Department of Commerce National Telecommunications and Information Administration (NTIA), the Internet use penetration rate in society, overall, has grown from about one-fourth of all households (26.2%) in 1998 to over one-half (54.6%) in 2003 (NTIA, 2004).

More current research now suggests that computer and Internet use among girls has caught up significantly to that of boys and that gender inequal-

ity has all but disappeared. Anderson, Bikson, Law and Mitchell (1995) point out that gender access inequality had largely disappeared by 1993, while Attewell and Battle (1999, p. 4) cited the 1994 *Times Mirror* survey, which suggested that home computer use among girls is not that different than for boys.

The Internet use penetration rate for both males and females has continued to increase since data have been reported. Not only have reported Internet use rates for males and females nationwide remained similar from 1998 to 2003, the reported rates for females actually surpassed that of males in 2003. Internet use rates from any location for males and females increased from about one-third of all households in 1998 (34.3% for males, 31.4% for females) (NTIA, 1998) to more than one-half in 2003 (58.2% for males, 59.2% for females) (NTIA, 2004).

Recent Study Findings

A study conducted by Cleary, Pierce and Trauth (2005) examined the dynamics of disparities of Internet use among school age children in the U.S. The study consisted of examining demographic, socioeconomic and geographic differences in Internet use among children using data from the September 2001CPS Computer and Internet Use Supplement (Cleary et al., 2005).

Principle results show that, not surprisingly, a broad range of interrelated demographic, socioeconomic and computer resource factors were important determinants of Internet use among school-age children, regardless of gender, but among other important findings, Internet use did not differ by gender. In fact, the Internet use of girls 6-17 years of age slightly outpaced that of boys. Results show that Internet use among boys (62.2%) was slightly outpaced by that of girls (63.7%) (Cleary et al., 2005).

Demographic Factors

The underlying household factors that affect the level of Internet use and interest in IT among school-age children are both numerous and complex. The study found that five key factors had the greatest effect on Internet use among children and potentially on interest in IT: the age of the child, the race and

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