Factors Influencing Girls' Choice of Information Technology Careers

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INTRODUCTION

Many western nations have experienced declining numbers of women in the information technology (IT) workforce (Trauth, Nielsen, & von Hellens, 2003). Between 1996 and 2002, women in the U.S. IT workforce declined from 41% to 34.9% (ITAA, 2003). This can hamper diversity and reduce the talent pool that can address needs of diverse end-users (Florida & Gates, 2002). Why do women choose IT careers or reject them? Multidisciplinary research on career genderization reveals gender imbalance (Trauth, Nielsen, & von Hellens, 2003). Career decisions against math, science, and technology (MST) are often made as early as age 11 without understanding long-term implications (AAUW, 2000). We examine influences on girls' choice of IT careers, modeling social, structural, and personal variables that affect IT career choice.

Using Ahuja's (2002) classification of social and structural influences on women's IT careers, Beise, Myers, VanBrackle, and Chevli-Saroq's (2003) model of women's career decisions, and individual differences suggested by Trauth (2002), we extend literature to children and adolescents' career choices. Social influences bias internal and external gender perceptions and stereotyping, role models, peers, media, and family. Institutional support such as teachers and counselors, access to technology, and same-sex versus coeducational schools are structural influences. While both can influence career decisions, social factors have the most influence on children's early perceptions. Both factors can introduce gender-stereotyping effects on career choices.

Figure 1. Factors influencing girls' career choices
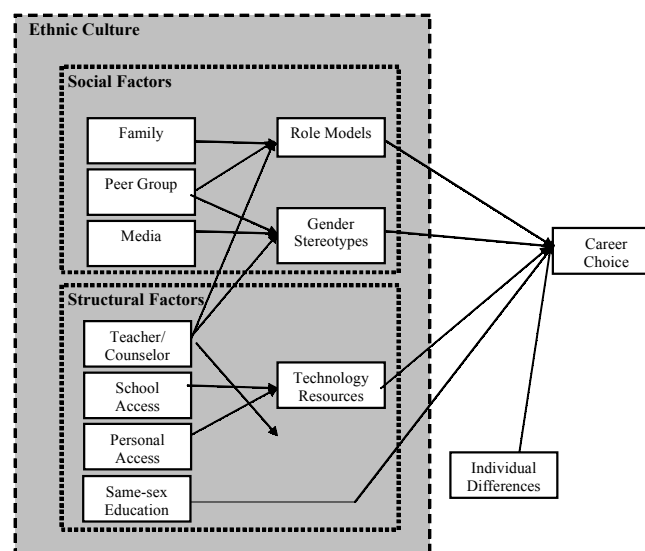
Gender stereotyping explains how girls perceive their role in society based on subtle societal cues. It can limit opportunities for both sexes. We also examine personality traits and external influences that make children unique. Their individual differences draw them to activities and content areas such as problem solving and interaction with people. Finally, ethnic culture can exert an influence on social and structural variables. Figure 1 from Adya and Kaiser (2005) presents our career choice model that is discussed in the next section.

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SOCIAL INFLUENCES

Role Models

Career choices are influenced by role models who are often familial or educational rather than famous societal figures (Dryler, 1998). Direct forms of parental influence, such as the degree to which students see their parents choosing IT careers or having contact with technology, are strong motivators to train for technical jobs. Family members can also motivate career choices indirectly by encouraging girls to pursue careers perceived to be "masculine."

Women entering male-dominated fields come from families where mothers have four year degrees, mothers are working, both parents are highly educated, and success is considered critical (Jackson, Gardner, & Sullivan, 1993; Smith, 2000). Women choosing nontraditional careers recall fathers having a strong influence on career choices in nontraditional environments such as math, science, and technology (MST) (Gates, 2002; Trauth, 2002). Older brothers can influence girls toward "masculine" careers (Banks et al., 1992). Girls with only sisters chose careers that are more "feminine." Similar sibling influence is found for boys with male siblings.

Teenage peers have greater impact on social behaviors rather than career choices. During adolescence peer influence, particularly of boys on girls, impacts female self-concept, self-efficacy, classroom experiences, and external goal orientation. Such changes cause a clear demarcation between boys' and girls' career choices despite that girls score well on national level testing (Leslie, McClure,

& Oaxaca, 1998). Among women, male peers play an important part in choice of MST as a career (Smith, 2000). Brekke (1997) on the other hand, attributes lack of participation in college-level physics to result partially from peer pressure that steers students away from MST.

Media

Media enhances gender stereotypes that emphasize physical image. Although girls interpret such images as unrealistic, they conform due to social pressure (Milkie, 1999). The few women shown in computer magazines, textbooks, and software are usually represented stereotypically (Na, 2001). Media does not depict women in positions of power or as active computer users. Analysis of television advertising reports males with central, authoritative roles having more credibility than women regarding product knowledge. Women are shown against the backdrop of children (Na, 2001). Trade journals and media may have changed for young adult women showing them in professional roles but young teens do not read these. Seventeen and Cosmo Girl, the two most popular teen magazines, have little content that portrays women in technology careers.

Gender Stereotypes

Girls' perceptions of IT jobs may mirror stereotypes that do not represent the dynamic and rewarding nature of the field (von Hellens, Pringle, Nielsen, & Greenhill, 2000). The Rhode Island Economic Policy Council (2000) reported that teenagers considered IT "uncool, nerdy, or boring." Steele (1997) found that gender stereotypes against female computer use negatively affected self-concept and career choices. Math has been stereotyped as masculine and is a critical filter that deters women from MST careers (Beise, Myers, VanBrackle, & Chevli-Saroq, 2003).

Beliefs about role-appropriate behavior restrict choice of careers in college. Up to age ten, girls have similar subject interests as boys and are perceived to be better at all or most subjects than boys. As career choices form, girls begin narrowing their career options, often excluding MST (Miller & Budd, 1999). These decisions are lifetime decisions that reduce opportunities to pursue technology careers.

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