"If you want to advance in the ICT industry, you have to work harder than your male peers." Women in ICT Industry Survey: Preliminary findings

Associate Professor Neil Anderson
Carolyn Timms
Lyn Courtney

School of Education
James Cook University
Cairns, Queensland
Email: Neil.Anderson@jcu.edu.au
Email: Carolyn.Timms@jcu.edu.au
Email: Lyn.Courtney@jcu.edu.au

Abstract

This paper provides early findings from the 'Women in Information and Communication Technology (ICT) Industry' survey, which is the final stage of a large research project into low participation rates of girls in ICT. Preliminary results from 289 women in ICT industries, Australia-wide, suggest that ICT career women are extremely satisfied with their career choice overall. However, further findings, and comparisons with a study conducted in the United Kingdom (UK), suggest that subtle discrimination, a 'glass ceiling' effect, in the ICT workplace continues to provide a source of job dissatisfaction for women in this industry.

Keywords

Women, Information and Communication Technology (ICT), Discrimination, Glass Ceiling

INTRODUCTION

This study is funded through the Australian Research Council's (ARC) Linkage Grant Scheme. It involves a research partnership between Education Queensland (EQ), industry partner Technology One and academic researchers at James Cook University (JCU) investigating factors associated with low participation rates by females in education pathways leading to professional level ICT careers (Anderson, Lankshear & Klein 2005; Anderson, Lankshear, Courtney & Timms 2006). As the culminating phase of a wider study, the Women in ICT Industry Survey aimed to investigate perceptions of women working in the ICT industries and compare them to those of girls who are making decisions about their future careers as previously reported in Anderson, Timms and Courtney (2006).

The wider study included a pilot study of high school girls' (years 11 and 12) attitudes towards advanced level ICT subjects in 2004. The pilot study subsequently informed the development of a survey instrument 'Girls and ICT Survey'. The survey was administered in 2005 to 1,453 high school girls from 26 Queensland Government schools (GS) and Non Government schools (NGS). The survey was followed by focus groups conducted during 2006 in four GS and NGS spanning rural to major metropolitan centres. The Women in ICT Industry online national survey was launched in July 2006 and has just now completed the data collection phase (n = 289). The current paper presents initial analyses of the data, which indicates that women working in the ICT industry view their work as dynamic, interesting and challenging. In addition, these women reported that ICT careers provided rewarding remuneration and status with abundant opportunities for advancement across a variety of career fields.

Because the ICT industry is dominated by men, its culture has been fashioned into a particular mould, thereby disadvantaging women who wish to enter the field (Anderson et al. 2005; Grey & Healy 2004; Griffiths & Moore 2006; Liu & Wilson 2001; Moore, Griffiths & Richardson 2005a, 2005b) and denying representation to a society that has become increasingly reliant on Information Technology (IT) systems (Millar & Jaggar 2001; Trauth 2002). Computer software is used by large numbers of people in modern industrialised society to fulfill tasks ranging from filling in insurance proposals to booking airline tickets. However, these experiences can be frustrating as technology designers often have not accurately predicted the needs or computer knowledge of the user or have assumed that their own "preferences and skills were representative of those of the user" (Oudshoorn, Rommes & Stienstra 2004, p. 41). Consequently, the homogeneous disposition of those who create technology has, at times, meant that they were fascinated by the technology and its intricacies, rather than the needs of users (Oudshoorn et al. 2004; Woodfield 2002). This observation has entered popular stereotype and language conjuring up for many users of technology an image of a computer science field populated by "geeks" and "nerds"; beings who inhabit a sedentary and antisocial world (American Association of University Women [AAUW] 2000). Many females, therefore, are influenced by the stereotype and consequently do not consider the ICT industry as a viable career alternative.

It is noted however, that men as well as women are alienated from ICT because of its image (Faulkner 2002), therefore they are considering the ICT industry as a viable career alternative in ever reducing numbers (AAUW 2000) and are changing from computer science majors to alternative majors at the university level (Cohoon 2003). It appears that the tendency of some authors to construct the reality of reduced numbers of females working in ICT as a gender issue is rather one-dimensional, in terms of masculine/feminine dichotomy (Griffiths & Moore 2005a), rather than that of a very particular, and perhaps personality dominated culture (Bridges 1992). For example, the 'long hours' and 'presenteeism', or lack of work/life balance, appear to be pervasive and much rewarded features of ICT culture (Griffiths & Moore). This is often combined with valuing of the 'hacker' qualities (Sørensen 2002) and fascination with technology for its own sake with little reflection on the characteristics of the requirements of the users of this technology (Oudshoorn, et al. 2004; Woodfield 2002). This subsequently suggests an industry where employees are rewarded for their similarity, rather than for their diversity. This is supported by the work of Trauth (2002) who found that women working in IT viewed themselves as 'different' from other women,

> The respondents, collectively, described themselves as powerful people: forthright, strong, driven, ambitious, mathematical, less social than other women, logical and competitive. They considered these traits to be necessary for success in the IT field and also what set them apart from other women (p. 110).

The disjunction between technology designers and those who use their products, along with ever reducing numbers of people, especially women, entering ICT industries and relevant university courses, has led to widespread concern at the government level in many countries (Millar & Jagger 2001). A comparative study of the UK, the United States of America (USA), Canada, Taiwan, Spain and Ireland noted that female computing graduates are in decline in all of these counties (Millar & Jagger). The Department of Trade Industry (2004) in the UK reported that the number of women in ICT had fallen in 2003 by 3% despite an overall growth in the ICT workforce, resulting in a 'skills shortage' being reported in e-Skills (e-Skills 2003) *Quarterly Review of the ICT Labour Market.* Similarly in Australia, female participation in both ICT education and in the ICT workforce has declined despite ICT becoming increasingly pervasive and accessible (von Hellens & Nielsen 2001). Recent data from the Department of Education, Science and Technology (DEST) indicated that the proportion of women relative to men in ICT has fallen steadily from 26.65% in 2001 to 20% in 2005; only about one-fifth of the ICT workforce (Coonan, March 8 2005).

It is widely felt that a more diverse workforce, one that is more inclusive and equitable in ICT, would ensure that technology was more representative of the needs of its users (AAUW 2000; Miller & Jagger 2001). It is to this end that a number of researchers, including the authors' team at JCU, have directed their attention to factors influencing choices of girls at the secondary school level (Anderson, et al. 2006; Anderson, Lankshear, Timms & Courtney 2006) and more recently to perceptions of those women who are working in the ICT industry. Previous and parallel work in the UK have indicated that women who are working in the ICT industry have opinions which are both at odds with prevailing stereotypes and also confirm them to some extent. For instance, Griffiths and Moore (2006) found that while women in the ICT industry generally enjoy their work and are comfortable within it, there is still a sense of a 'long hours culture' with 65% of people working longer than ten hours per day. This would suggest cultural "norms that silently support gender inequity" (Meyerson & Fletcher 2000, p. 132). For example, many workers may be placed at a clear disadvantage if they wish to progress their careers. They work in an industry where there is a clear lack of boundaries and laid back attitudes around the timing of meetings and scheduling. This is coupled with the expectation that work is the main priority of a person's life (Meyerson & Fletcher). Consequently, this detracts from workers' (which may include some men) ability to meet other life commitments such as family, sport and community.

The Australian Equal Opportunity for Women in the Workplace Act (EOWA) aims to "promote merit in employment; promote equal employment opportunities and eliminate discrimination; and encourage consultation between employers and employees on these issues" (EOWA 1999, p. 1). However, in their discussion of subtle discrimination within Westpac Bank (one of the largest banks in Australia), Beck and Davis (2003) identified reticence to cultural change as instrumental in a "slow and patchy progress that has been made in pursuit of EEO for female employees" (p. 1). Hence, women may well find that all the right rhetoric and policies are in place to accommodate their active employment, only to be discouraged by aspects of their experience in working in ICT which may include some of the key areas identified by Leiter and Maslach (1999); workload, control, reward, community, fairness or values. For example, the Griffiths and Moore's findings, cited above, would belong to the workload category, and, if the extra hours are expected and unacknowledged by the employer, the employee would experience a personal crisis by finding her extra sacrifice of time was psychologically unrewarded. It would appear that this has some consistency with the concept of the 'glass ceiling' experienced by many women in business (Meyerson & Fletcher 2000).

It is anticipated that the qualitative analysis will shed further light on the quantitative results reported in this paper. For purposes of parsimony, it is proposed that the current paper will report on one comparison between girls in secondary school (Anderson et al. 2006) with women in the ICT industry, to demonstrate that familiarity with advanced computing subjects provides students with an opportunity to appreciate the intrinsic interest of technology. A further objective of the current paper is to draw comparisons with a study recently completed in the UK. A bank of questions from the Women in Information Technology (WINIT) Project (Griffiths & Moore, 2006) was included in the current survey for purposes of making such international comparisons. A further aim of the present study was to determine if provisions of the EOWA (1999) provided for freedom of discrimination with the Australian ICT industry.

METHODOLOGY

The Australia-wide Women in ICT Industry national online survey consisted of: demographic questions; 'school experience' questions, consisting of both open and closed questions; and 'reasons for choosing ICT as a career field' and 'experiences and perceptions of the ICT industry' questions, consisting of predominantly closed questions on a 5-point Likert scale (from strongly disagree to strongly agree). Table 1 outlines the format of the online survey questions and the origins of some of the questions. It is noted that some questions had their origins in findings from the Girls and ICT survey (Anderson et al. 2006) and others came directly from the WINIT survey (Griffiths & Moore, 2006). The online survey was active for three months, participants were sought by request in Business Review Weekly (July 27 - August 2, 2006), JCU press release and by direct email to major ICT companies (e.g., Technology One); universities (e.g., Queensland University of Technology); Government agencies (e.g., EQ); and organizations (e.g., Australian Women in Information Technology). The online survey was built using Remark Web Survey (Version 3: Professional) which allowed for exporting survey responses to SPSS for data analysis. Table 1 outlines the origin of survey questions.

Table 1. *Description of Online Women in ICT Industry survey sections.*

Section	*Description*	*Origin of questions*
Section A	Demographic Questions	JCU research team in consultation with EQ
Section B	School Experience	JCU research team in consultation with EQ
Section C 1-5	Reasons for choosing ICT as your career	Adapted from Young, 2002
Section C 6-7	Workplace specific Questions	Adapted from Griffiths and Moore, 2006
Section C 8-10	Open Questions (to achieve more depth of comment)	JCU research team in consultation with EQ

RESULTS

Demographics

A total of 289 women responded to the Women and ICT survey. The sample represented women from all Australian states and territories (see Table 2).

Table 2. *Respondents by state.*

State or Territory	Number	Percent
Australian Capital Territory (ACT)	25	8.7
New South Wales (NSW)	72	24.9
Northern Territory (NT)	10	3.5
Queensland (QLD)	78	27.0
South Australia (SA)	19	6.6
Tasmania (TAS)	7	2.4
Victoria (VIC)	41	14.2
Western Australia (WA)	37	12.8
Total	289	100.0

The largest age group comprised women aged 35-39 years (18.7%) while the second largest age group was women aged 40-44 years (17.0%). This contrasted with Griffiths and Moore's (2006) demographics (n=479) in which the largest group of their respondents were aged 30-34 (20%) with the second largest group was women aged 25-29 (17%). However, analogous to Griffths and Moore's sample, there was a noticeable decline of women aged 55 years and over (6.2%) compared to the other groups (see Table 3).

Table 3. *Age groups of respondents.*

Age Group	Number	Percent
25 years or less	30	10.4
25 - 29 years	25	8.7
30 - 34 years	43	14.9
35 - 39 years	54	18.7
40 - 44 years	49	17.0
45 - 49 years	34	11.8
50 - 54 years	36	12.5
55 - 59 years	15	5.2
60 years or over	3	1.0
Total	289	100.0

Demographics and School Experience

All except four respondents were Australian citizens or permanent residents (n = 285) with 238 (82.6%) having receiving their secondary education in Australia. The majority of respondents n = 187 (64.7%) respondents identified their place of work as the ICT industry. Thirty eight (13.1%) respondents identified their place of work as education. Other industries represented by the respondents included government administration and defence (n = 16, 5.5%), mining (n = 10, 3.5%), finance and insurance (n = 20, 6.9%) and health and community services (n = 6, 2.1%). The largest group of respondents (n = 110, 38.1%) had been working in the ICT field for 15 or more years, with a fairly even spread across the other categories: 8.3% (n = 24) indicated that they had been working in the ICT industry less than 2 years; 19.0% (n = 55) indicated 2 – 5 years; 18.0% (n = 52) indicated 6 – 9 years and 16.6%% (n = 48) indicated 10 – 14 years within the industry.

Only 58 (20.1%) respondents indicated that they had studied advanced computing subjects at high school. Of the remaining, 91 (31.5%) respondents said that they had not chosen the subjects and a further 140 (48.4%) respondents said that the subjects were not available when they attended high school.

Comparison between Secondary School Girls with Women in Industry

A total of 1,453 Queensland Year 11 (n = 673) and Year 12 girls (n = 763), and 16 respondents who did not indicate their year, were surveyed in 2005. The respondents were divided into 'Takers' (n = 131) of advanced level ICT subjects and 'Non Takers' (n = 1,322) of these subjects (Anderson, et al. 2006). The figures below indicate comparisons of responses between secondary school girls and women in the ICT industry. Figure 1 demonstrates that women working within the industry did not find ICT boring, whereas secondary school respondents had a jaundiced attitude towards ICT. However, Figure 2 clearly demonstrates that girls who were Takers of advanced computing subjects had similar perspectives to those of women within the industry. This would indicate that experience with ICT provides females with a more positive perspective, whereas the perceptions of those with no experience must necessarily be based on stereotype and/or lack of information.

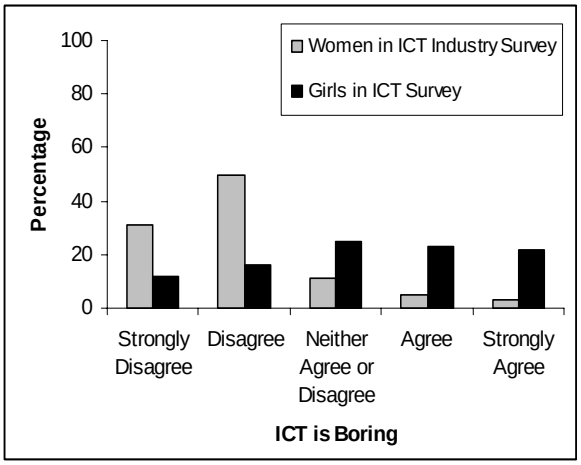

Figure 1: Comparison of Year 11 and 12 girls with women in ICT industry regarding perceptions that ' ICT is boring'.

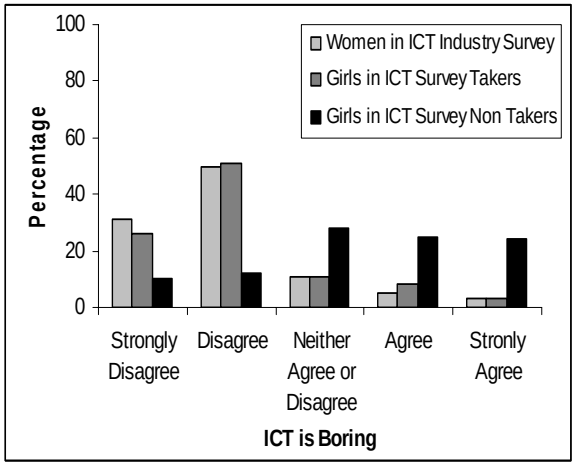

Figure 2: Comparison of Year 11 and 12 girls divided into Takers and Non Takers of advanced ICT subject with women in ICT industry regarding perceptions that 'ICT is boring'.

Experiences and Perceptions of the ICT Industry

It was previously noted that many respondents reported that advanced computing subjects were not available when they attended high school. It is expected that reasons for their choice of ICT as a career will unfold as qualitative data is subjected to analysis. The majority of women (52.9%) indicated that they entered the ICT industry through non university pathways, and most of these women (70.6%) were aged 35 and older.

The Women in ICT Industry survey incorporated 15 questions taken from the WINIT Project (Griffiths & Moore 2006). While there is a difference between the WINIT Project sample size (n=479) and the Women in ICT Industry survey sample size (n=289), some comparisons were possible; two are included in Figure 3 and Figure 4.

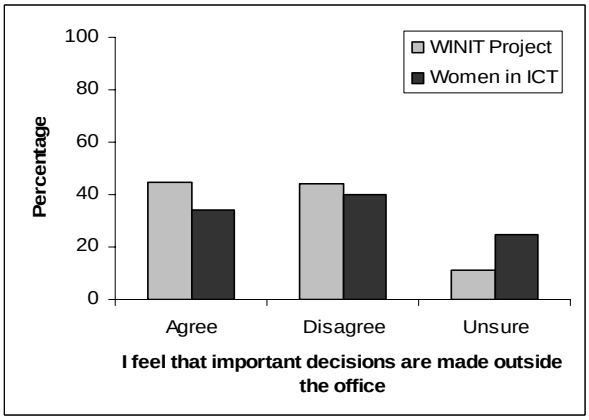

Figure 3: Comparison between WINIT Project and the Women in ICT Industry survey regarding the percentage of women who felt that important decisions were made outside of the office.

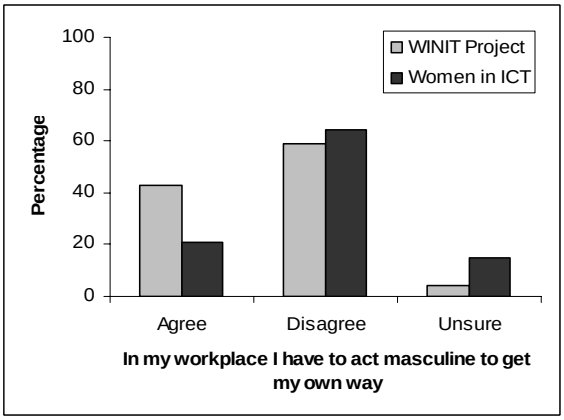

Figure 4: Comparison between WINIT Project and the Women in ICT Industry survey regarding the percentage of women who felt that in their workplace they needed to act masculine to get their own way.

Griffiths and Moore (2006) did not report on the results of some questions that were incorporated in the Women in ICT Industry survey, therefore, the following four graphs only include data from the Women in ICT Industry survey.

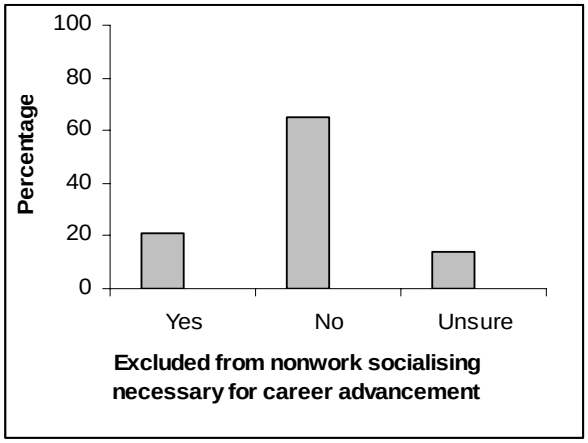

Figure 5: Women in ICT Industry survey responses by percentage to the question, "In my workplace there is a 'culture' of women being excluded from non-work socializing which is necessary for career advancement."

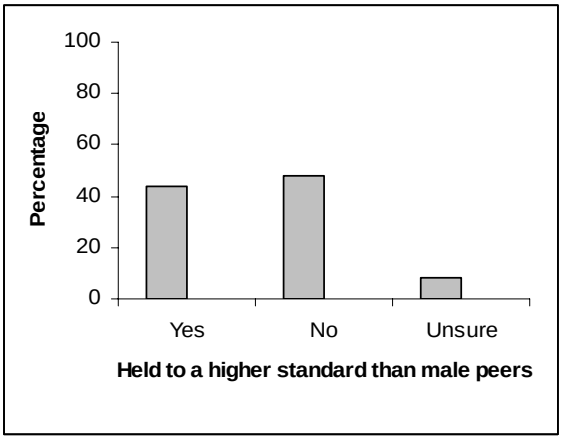

Figure 6: Women in ICT Industry survey responses by percentage to the question, "In my workplace there is a 'culture' of women being held to a higher standard than their male peers; men can assume a place at the table and women must earn a place."

Figure 5 reports women's responses to the question, "In my workplace there is a 'culture' of women being excluded from non-work socialising which is necessary for career advancement". The majority of women, 65.5% (n=109) disagreed with this statement. In contrast, Figure 6, "In my workplace there is a culture of women being held to a higher standard than their male peers; men can assume a seat at the table and women must earn a place" indicated that women's responses were almost equally divided between the two views indicating some polarity between them.

Figures 7 and 8 report women's perceptions of a culture of blatant or subtle discrimination in their workplace. While 77% women (n = 221) overwhelmingly disagreed that a culture of blatant discrimination existed in their workplace, 53% of women (n = 153) indicated that a culture of subtle discrimination was present.

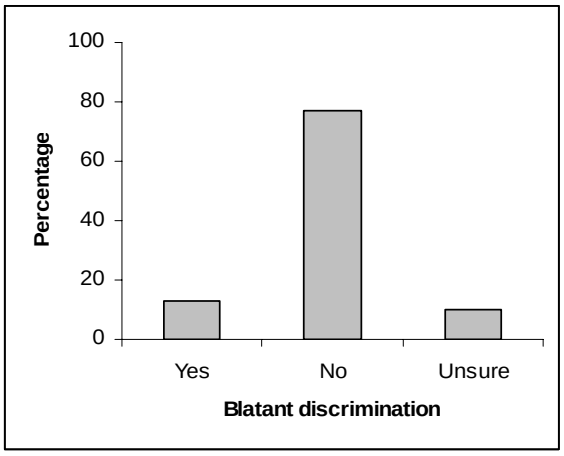

Figure 7: Women in ICT Industry survey response percentage to the question, " In my workplace there is a 'culture' of women experiencing blatant discrimination."

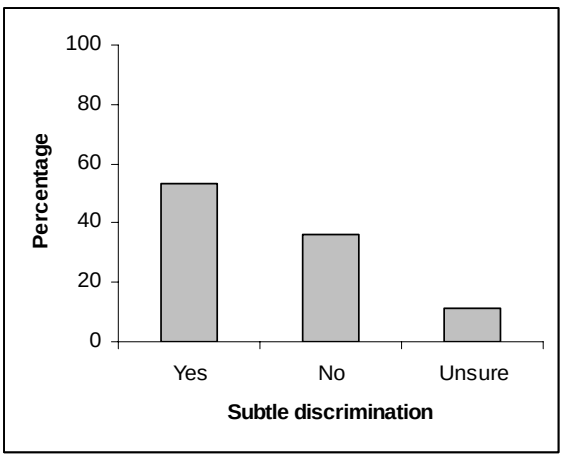

Figure 8: Women in ICT Industry survey by percentage to the question, "In my workplace there is a 'culture' of women experiencing subtle discrimination."

DISCUSSION

Comparison Between High School Girls and Women in the ICT Industry

The first aim of this paper was to present preliminary findings of the Women in ICT Industry Survey in regard to comparisons between it and the recently completed Girls and ICT survey. It is noted that many survey items were constructed on the basis of findings from the girls survey (Anderson, et al. 2006) and will be addressed in further analyses. The most salient comparison between the perceptions of secondary school girls and those of the women were in regard to "ICT is boring" displayed in Figures 1 and 2. ICT industry women responses suggest a similar pattern to secondary school girl Takers in response to that question, with only Non Takers agreeing that ICT was boring in significant numbers. This is noteworthy because most participants did not study advanced ICT subjects at school (and hence would have been classified as Non Takers if these women had been surveyed when they were in secondary school), with 48.4% indicating that the subjects were not available when they attended high school. This would appear to indicate that it is irrelevant whether exposure to ICT happens at the high school level or later in life. As most participants in the Girls and ICT Survey were Non Takers (n=1,322) they provided important insights into perceptions of ICT which may well permeate the society they live in. As previous findings indicated (Anderson, Lanshear, Courtney & Timms, 2006), there was a positive correlation between participation in computer clubs and special events and finding ICT interesting. Furthermore, once girls became familiar and fluent with the technology they were more likely to indicate their intention to study ICT at tertiary level. With respect to the Girls and ICT Survey, it would appear that the predominately negative view regarding ICT is based on perceptions and stereotypes rather than experience. Insights from the Women in ICT Industry Survey provide further clarity as to the impact of developing competency and confidence with ICT.

The majority of women in the present survey (52.9%) entered the ICT industry through the non university pathway. Some of these women made reference to its consequent effect on their career prospects. An example of such a comment is,

> I have found it difficult to re-enter ICT after having a 3 year break to have children. My original lack of academic qualifications may be a factor. New people are coming through with a much higher level of qualification (eg: Masters Degree).

It is, therefore, apparent that this means of entry is not afforded as much value as that afforded to people who joined the industry through more academic channels. In addition, most (70.6%) of the women who entered the industry through non university pathways were over 35 years of age. The consequent message for younger women from a survey respondent was, "know your stuff, and be prepared to defend your opinions". Embedded within this advice is the necessity to have the qualifications which will invite respect from others in the industry, especially one as male dominated as the ICT industry. Another respondent would advise girls to "Get good scores in your tertiary studies and make sure you get work experience while studying - Even if there is no pay associated with it. Make sure you document everything you've done during work experience", again emphasizing the importance placed on both qualifications and experience within the industry.

Comparisons Between the WINIT Survey and the Women in ICT Industry Survey

Comparisons drawn between the WINIT survey (Griffiths & Moore 2006) and the Women in ICT Industry Survey demonstrated some similarities and differences (for example, Figures 3 & 4). In both studies similar trends were noted in that almost equal numbers of respondents indicated agreement with 'important decisions are made outside the office' as indicated disagreement with this statement. Although respondents were generally happy to respond with helpful qualitative comments, there were no comments explaining their agreement or disagreement on this point. On the statement 'in my workplace I have to act masculine to get my own way', the WINIT survey and the Women and ICT survey respondents diverged, 43% of WINIT respondents agreed with this statement, whereas only 18.4% of respondents in Women in ICT Industry Survey agreed and the majority (63.4%) disagreed with the statement. This would indicate that respondents in the current survey did not feel, at least in the Australian context, that it is necessary to 'act masculine' in the ICT industry. However, the fact that this does happen is revealed in the advice that one respondent would give to young women contemplating entering the ICT industry. Her recommendation was, "don't play the masculine game - women are far better at other methods of dealing with people including other women. Use those skills and be true to yourself".

In their report, Griffiths and Moore (2006) have not provided information as to how respondents replied to a bank of questions regarding ICT culture. Some of the responses to these questions from the Women in ICT Industry Survey are presented in Figures 5, 6, 7 and 8 regarding the issue of discrimination within the ICT industry. In Figure 5, the majority of respondents indicated that they did not feel that such a culture existed. However, this diverges from another Australian study (von Hellens & Neilson 2001) that found a culture where career progression was closely linked to "extensive non-work socializing with male colleagues (such as

attendance at sporting events)" (p. 50), specifically indicating a perception that important decisions were made outside the office, and perhaps shedding some light on the findings outlined in Figure 3. It is noted that the non work socialising is not specified within the question, whereas von Hellens and Neilson referred expressly to sporting events. 'Non work socialising' could include many activities apart from sporting activities, and it is interesting that 65.1% did not feel excluded from those activities that were necessary for career advancement.

Discrimination Within the ICT Industry

Figures 6, 7 and 8 provide an intriguing picture of respondents' experience of discrimination within the ICT industry. Figure 6 illustrated that there was a fairly even distribution of responses with 43.6% agreeing and 48.1% disagreeing that women were held to a higher standard than their male counterparts (8% unsure). Those who agreed with the statement supported Trauth's (2002) findings. For example, many women described their difficulties in terms of inflexible gender distinctions and the need to work harder in order to achieve respect within the industry. One respondent would advise young women, "ensure that you keep up with the latest technical trends if you want respect from your male peers. If you want to advance in the IT industry, you have to work harder than your male peers". Yet another respondent would advise, "be prepared to work your butt off, while others around you snooze. However, if you do work hard and make it visible you will be recognized". This perceived double standard, on the basis of gender, could well be seen as discrimination within the industry. However, from the responses in the survey it would seem that the discrimination is covert, rather than overt. For example, respondents demonstrated an almost emphatic response in Figure 7, where 76.5% indicated their disagreement with the statement that there was a culture of blatant discrimination in the ICT industry. However, 52.9% of respondents agreed that there was a culture of subtle discrimination in the ICT industry (see Figure 8).

This is evocative of the 'glass ceiling', a transparent but unyielding barrier preventing women from advancing their careers (Meyerson & Fletcher 2000). The glass ceiling was mentioned specifically by a number of respondents. It was usually associated with the experience of having been passed over in consideration for promotion, for example one respondent commented,

> Sick of banging my head on the glass ceiling - sick of the added scrutiny - just plain tired of corporate life - upset when yet again passed over for a dill who thinks he's my equal (when he has less experience, less know how and fewer quals [sic]).

Many respondents made specific reference to the difficulties inherent in working in a culture dominated by men who were not tolerant of diversity, for example, one women would advise young women to offset the experience of being belittled by 'counter patronization', "know your stuff, and be prepared to defend your opinions." She then added, "Also, don't take it too hard when the guys talk over you - it doesn't mean that they're any smarter, it just means they need approval, poor things that they are. Also, make really bad coffee!" Another made reference to the personal qualities which attracted the respect of those in positions of authority within the ICT industry, "We women can do it; sadly, yes, we do/just need to prove it to the men, who tend to think that ICT is not for women, but only geek women!" The reference to 'geek' women is reminiscent of Trauth's (2002) observation that women working in IT saw specific traits as necessary for success in the ICT field and that similarity with the existing culture was valued highly. There were however few direct references to the qualities that are valued within the ICT industry.

Redolent within these preliminary findings is the realization on the part of women that while they work in a society where their employment opportunities and rights are protected by legislation (EOWA 1999) and overt discrimination is illegal, they also work in an industry where the culture is intransigent and similarity is valued above diversity. Thereby perpetuating an invisible but nevertheless real form of discrimination for women, who simply by their gender, defy cultural norms which are well established within the ICT industry. Meyerson and Fletcher (2000) made the following observation about gender inequity in organizations.

> Today discrimination against women lingers in a plethora of work practices and cultural norms that only appear unbiased. They are common and mundane – and woven into the fabric of an organization's status quo – which is why most people don't notice them, let alone question them. But they create a subtle pattern of *systemic* disadvantage, which blocks all but a few women from career advancement (p. 128).

It would appear from the preliminary findings in this study that although women working in the ICT industry are excited, fascinated and energized by their work "Are you kidding! I love this industry", they are also dealing with the reality of immutable resistance to change which characterizes many corporate work cultures in addition to ICT (Beck & Davis 2003). Consequently, these women experience a work community on a day to day basis that is not always accommodating or appreciative of the worthwhile contributions they make. Many respondents

commented on the intractable nature of the industry, for example, "long and unpredictable hours, too much travel, stressful, caused heath issues. Requests to work from home 1 day a week, and /or to work part-time denied". Such a situation can only create issues of fairness and control (Leiter & Maslach 1999), as well as workload, for people in the workplace environment, leading ultimately to health issues for the individual concerned and stifling their creativity, energy and enthusiasm for their work.

Other respondents did not feel so trapped by their work circumstances, for example one woman commented that the ICT field had "excellent opportunities, high level of acceptance of women's abilities, however more senior male managers (or maybe that is older men in the industry?) may subtly discriminate, even though they think they judge everybody on their merits". When asked what advice these women would give to young women interested in ICT careers one women commented, "Be aware that it is a male-dominated industry, be strong, don't let anyone push you around or discriminate against you" and another women stated, "You CAN do it! Don't let the males try and tell you otherwise or patronize you. You are just as worthy and sometimes more so than any male working in the industry" and "Don't ask for or accept special treatment just because you're female".

CONCLUSION

While the majority of school girls had a jaundiced view towards the ICT industry and considered it boring, Takers of ICT subjects and women working in the ICT industry viewed it as an interesting and a rewarding career. It appears salient that the girls who were Takers of advanced level ICT subjects, and women working in the ICT industry who had gained experience and fluency with the technology, similar positive views of ICT. On the other hand, the opinions of the Non Takers would appear to be based on negative perceptions and stereotypes without any real foundation.

Furthermore, the findings suggest that women in the ICT industry are aware of the need to work within the existing culture. Women do not accept it by acquiescence, but rather chip "away at the barriers that hold women back without sparking the kind of sound and fury that scares people into resistance" (Meyerson & Fletcher, 2000, p. 128). Therefore, some women are achieving small, incremental, but nevertheless decisive changes that will ultimately benefit other women in the industry. As the current paper reports only the quantitative data derived from the survey, it is anticipated that qualitative analyses will clarify some of the issues raised in the discussion. The current study has juxtaposed the reality of women's experiences of an exciting, fulfilling career, continually unfolding in it scope and challenges to individual creativity (albeit with some problems) against the perception of high school girls that ICT was boring and irrelevant. The consequent collision of favourable perceptions based on reality against those based on unfortunate experience and/or misinformation provides researchers with an interface for continued investigation. The challenge for stakeholders within the ICT industry is to address the problem of reduced participation of women at its source. It may well be that such an undertaking will not only introduce more women to ICT but also expand the diversity of the industry overall.

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