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Gender segregation contributes to continuing skills deficits in the UK, which is recognised by the government in relation to some sectors, e.g. ICT (Hewitt 2001, see Miller et al. 2004). The games industry is one of the fastest growing industries of the twenty first century (Krotoski 2004). According to an Oxford Economic report (2008) the UK's games industry employs approximately 9900 employees and had an estimated turnover of £625 million. However women are underrepresented in all roles and levels within the industry. In 2009, women comprised just 4% of the UK's games industries workforce (Skillset 2009). The WWW-ICT (2004) found that many companies had a culture of masculinity which can involve groups of young men decorating workplaces with pictures of nude women, sharing sexist jokes and socialising in all male groups (Valenduc et al. 2004). According to the WWW-ICT report: *'there is a 'masculine culture' of computing work consisting of language, images, working methods and working relationships, which women are both excluded from and find off-putting'* (p.40). Not all women, however, are put off by this work environment, but the WWW-ICT suggests that companies that claim to be 'gender-neutral' are actually gender-blind and do not notice or act upon gender inequalities. It seems women have to fit in with existing systems rather than the industry looking to understand different workplace practices and cultures. Although only one aspect of the culture, Bagihole et al (2008) argue that gender is fundamental to the cultures of organisations. The symbolic association between masculine and feminine have consequences for those working in Science, Engineering and Technology (SET) organisations. Bagihole et al put forward the need for SET organisations to challenge the perceived duality between masculinity and technology.

It has been suggested that women in ICT must develop strategies in order to cope with the challenge to their own gender identity and those of the men with whom they work with (Newell 2002). From this perspective, it is the women themselves that need to adapt to the male dominated environment rather than the workplace addressing the issues which result in the gendered inequalities. One strategy that has been put forward to cope with working in a male dominated industry is for women to make their gender identity invisible (Griffiths, Moore and Richardson 2007). Kram and Hampton (1998) suggested the visibility-vulnerability spiral takes place for women in male dominated occupations/industries. According to the visibility-vulnerability spiral, when women are underrepresented in an industry or workplace, subtle yet powerful dynamics can work to undermine the under-represented group. These dynamics produce 'heightened visibility, intense scrutiny of performance, and the pressure to assimilate into the majority culture' (Kram and Hampton 1998, p.213). Computer science in western countries has often been/ is often characterised as 'masculine' (Wajcman 2000; Clegg and Trayhurn 2000; Natale 2002; Wilson 2003) and it's partly this image that discourages women from studying the subject (Clegg and Trayhurn 2000; Wilson 2003) and moving into the employment sector (James

and Cardador 2007). According to James and Cardador (2007) women's cognitions and beliefs about technology and science are more negative than men's resulting in a disinterest in the employment sector. According to Wajcman (2007): *'technologies have a masculine image, not only because they are dominated by men but because they incorporate symbols, metaphors and values that have masculine connotations'* (p.289). Wajcman suggests that women are asked to exchange aspects of their gender identity for a masculine version without this de-gendering process occurring in men. To learn its language and enter the world of technology, Wajcman suggests women must first forsake their femininity.

Kelan (2007) suggests that the use and design of technology is gendered and according to Kelan people position themselves in relation to technology based on certain gendered assumptions about technology in societies. According to Kelan women tend to distance themselves from technology whereas men tend to appropriate technology and these subject positioning function as 'doing gender'. This distancing from the masculine technology may be viewed as the doing of gender (Kelan 2007). Many approaches to gender and technology view them as co-produced or mutually shaping (Wajcman 1991; Berg and Lie 1994; Berg and Lie 1995). Faulkner (2001) suggests that there are two distinguishing ways in which gender affects technology. Firstly, 'gender in technology' suggests that technologies contain gender scripts (Rommes et al. 1999), which prescribe by whom and how certain technologies ought to be used and it is these salient gender assumptions that are referred to as gender in technology (Faulkner 2001, p.83). Secondly, is the 'gender of technology', which refers to the symbolic association between gender and technology and tends to mean that women shy away from computing technology which is perceived as masculine. With regards to the engineering profession, Faulkner (2007) found a dualism within engineering identities with men viewed as 'technical' and women 'social'. Faulkner concluded that engineering as a profession needs to find a way of promoting a more heterogeneous image of engineering and engineering identities. In early work Faulkner (2005) found that even when women are visible as women they are invisible as engineers (see Griffiths et al. 2007).

The ideal worker in ICT is often viewed as being male (Acker 1990; Wajcman 1998). In response, Kelan (2008) through qualitative research of two ICT companies in Switzerland looked at the gendering of skills in ICT work and what skills are deemed important for ICT work. Kelan (2008) found that the ideal ICT worker needs emotional skills as well as technical skills, since there is a lot of team work involved in ICT. Kelan found the ideal worker to be gender neutral and that feminine skills in men were viewed as ideal worker skills but in women they were viewed as natural. Adkins (2002) argues that femininity is becoming a valued skill within the workplace but it is not women per se who profit from the increasing valuation of femininity. Adkins suggests that men are equally good, if not better in making use of femininity. Kelan's research lends support to this view. Hybrid roles, combining technical and traditionally female skills have been viewed as a way forward for women to adjust to working in male work cultures without them compromising their gendered identity (Guerrier et al. 2009). However, not everyone views technology as masculine. For example, Plant (1998) suggests technologies enable users to choose disguises and form alternative identities and can blur the boundaries between male and female. Plant views digital technologies as feminine media and potentially liberating for women.

Research Aims

In light of the literature on women's gender identity in male dominated occupations, it was proposed that women in the new, male dominated industry of games development will have a similar masculinity gender identity as findings of women in the wider ICT sector has revealed. However, since the games industry is a new industry, only really established as an industry since the Sex Discrimination Act nearly 40 years ago, it was viewed as both an important and interesting area of study. This paper focuses on two areas: gender identity at work and gender identification in the workplace. These two areas were viewed as particularly pertinent to women's identity since previous research suggests women adopt strategies such as becoming either masculine or gender neutral (androgynous) in order to fit into male domains. These issues are especially relevant when looking at strategies for male dominated industries such as the games industries interest in gaining a more diverse workforce. Therefore, the study will investigate the following two hypothesis:

H1: Women in the games industry will have low gender identification at work (one-way). Research has found that strongly gender identified college women liked feminine occupations significantly more than less strongly identified women (Oswald 2008). Therefore, women in the male dominated games industry will have low gender identification.

H2: Women working in the development of games will have a masculine gender identity (one-way). This is proposed since Bem (1974) suggested that high sex-typed individuals are uncomfortable performing cross sex tasks since it is incongruent with their sex role orientation. Furthermore, Long (1989) suggests that women with high masculine sex role orientation experience less strain and cope more effectively in masculine occupations.

Methodology

Participants

The sample population for the study was women working in the games industry. 454 women completed the online questionnaire which forms part of a larger study. The study is based on an international sample of female game workers who occupy varying professional identities and grades within the industry. The sample inclusion criterion was women working in the development of computer games. The sample was purposive, in that, women needed to be working in the computer games industry, at any level within the industry from junior through to executive. The sample was opportunistic, in that, all women fulfilling the former criteria and agreeing to participate in the study were included. The sample was self selective as the questionnaire was marketed to attract women who work in the development of games in a myriad of ways; contacting game studios directly, posting on message boards through women in games facebook sites and internet sites.

The sample included women who work in the very male domain of game development (N=349) and also women working in more traditional female dominated roles; non-developmental roles (N=105) such as: Human Resources (HR), marketing

and administration. The majority were young (35 or under), single or living with a partner, childless and the majority played computer games in their leisure time. All analysis was conducted using SPSS version 15.

Questionnaires

Female game workers gender identity at work was measured using the short version of the BSRI. The short version of the BSRI consists of 20 items, 10 masculine and 10 feminine and yields more comparable and reliable scores ranging from $\alpha=0.84$ to $\alpha=0.86$ for the masculine score and ranging from $\alpha=0.86$ to $\alpha=0.87$ for the feminine score (Bem 1981, see Campbell et al. 1997). Cronbach alpha's for the sample were masculinity $\alpha=0.879$, femininity $\alpha=0.895$ and therefore higher than Bem's original study. However, for the purpose of the current study, one of the feminine characteristics, that of 'loves children' was omitted. This omission was deemed necessary since the questionnaire is focusing on women in the workplace, and in the case of this study the workplace concerned has nothing to do with children. Therefore, the measure used in the study contained 19 of the original 20 characteristics.

The measure for gender identification at work consists of four questions modified by Schmader (2002) from the importance subscale of the Collective Self-esteem Scale (Luhtanen and Crocker 1992). The scale was used to assess the perceived importance of gender identity to self-definition. Schmader averaged the responses from participants to form a reliable index of gender identification ($\alpha=0.70$). Cronbach alpha for the sample was $\alpha=0.753$. Participants rated the following four items on a scale ranging from 1 strongly disagree to 5 strongly agree: being a woman is an important part of my self- image, being a woman is unimportant to my sense of what kind of person I am (reverse score), being a woman is an important reflection of who I am, being a woman has very little to do with how I feel about myself (reverse score).

Results

Eighty two percent had low gender identification at work. Participants had both high masculine identity and high feminine identity resulting in 93% having a high androgynous gender role identity. Table 1 shows the mean and standard deviations.

BSRI	M	SD
Masculine	49.21	9.308
	44.55	8.727
Feminine	10.32	8.096
Androgyny	10.32	8.096
Gender Identification	12.44	2.541

Table 1. Mean and SD Scores

In order to analyse any difference between the participants of the study; t test analysis was conducted on a number of personal and professional attributes that distinguish the women on a number of variables. The variables were; developmental versus non-developmental role, country of work, whether participants played computer games in their leisure time, the number of hours per week they worked (≤ 45 hrs or ≥ 46 hrs), intention to stay or not stay in the games industry, willingness to relocate or not, age (≤ 35 or ≥ 36), number of year they had worked in the industry (≤ 7 yrs or ≥ 8 yrs), and whether they had children or not. The significant results of the t tests are shown in table 2. Five T Tests were significant; four for the BSRI and one for gender identification scale.

		T	df	Mean	Mean
Country of work- UK/USA				Works in the UK	Works in the USA
	Masculine Identity	-4.362**	320	46.78	51.24
Women in a developmental area of work working in the UK/USA	Masculine Identity	-3.366**	231	47.24	51.42
Women in a developmental area of work working in the UK/USA	Gender identification	-2.804**	231	11.88	12.80
Willingness to stay in the computer games industry				Stay in the industry	Not stay in the industry
Intention – plan to stay/ not stay in the games industry in the next 5 years	Androgynous Identity	2.368*	300	11.03	6.83
Age				Aged ≤ 35	Aged $36 \geq$
35 or under/36 plus	Masculine Identity	-2.473*	451	48.47	50.79

** Significant at the 0.01 level.* Significant at the 0.05 level.

Table 2. T tests results

Discussion

According to Butler (1990), gender is socially constructed and something we do rather than something we are. The current study wanted to look at the gender identity and gendered identification of women working in the male dominated games industry. The aim of this was to provide a further understanding of women in male dominated occupations and industries. In general, women in the games industry had low gender identification at work; supporting previous research looking at the gender identity of women in the wider ICT (Information, Communication and Technology) sector (Griffiths, Moore and Richardson 2007). Thus, Hypotheses 1 is supported and accepted. According to Griffiths, Moore and Richardson, one strategy used by women in ICT to cope with their minority status is to make their gender identity invisible. This appears to also be the case in the new, yet male dominated industry of games development. However, it is unclear from the findings as to why participants had low gender identification and whether it was to make their identity invisible or there was some other reason for the low gender identification found. Schmader's (2002) research on stereotype threat is relevant here. Schmader found that individual differences in gender identification moderated the effects of gender identity relevance on women's but not men's maths performance. Women with high levels of gender identification performed worse than men, but women with low levels of gender identification performed equally to men. When faced with threats to their social identity, individuals who are highly identified will engage in behaviours to protect that identity. Schmader's research suggests that women who feel they must act as representatives of their gender are motivated to perform better on tasks than women who are not as closely identified with their gender.

Recent research by Derks et al (2010) suggests that the queen bee phenomenon is a consequence of gender discrimination for women in senior roles who have low gender identification. Derks et al argue that due to a low identification with their gender, some women enhance their own career success through emphasising how they differ from other women, the stereotype of women e.g. *'other women are less career orientated than men'* (p.3). Either of these reasons outlined could be reasons as to why women in the computer games industry have low gender identity in this working domain. In relation to gender identification, the only significant difference was between participants working in just the developmental roles (i.e. artists, designers, coders) in the USA and the UK. Participants in the USA had higher or stronger gender identification than those in the UK. This may well indicate that women working in a development role within the UK games industry feel a stronger need to make their gender invisible than their USA counterparts. It could perhaps be that women in the USA are more comfortable and perhaps more confident in showing their gender identity in this male dominated workplace. This suggests there are cultural differences for women working in male dominated industries. Findings from the current study tend to lend weight to the notion that one strategy possibly used by women in ICT industries is to abandon their gender identity and femininity in the workplace. More research into why women have this low gendered identification in the workplace is needed within the area of ICT, the games industry and other male dominated organisations generally in order to gain a deeper understanding as to why.

The majority of the women in the current study did have a high masculine identity. However, participants also had a high feminine identity, which, according to the BSRI, results in a high androgynous identity. Therefore, although women had a high masculine identity, hypotheses 2 is still rejected as the participants in the study scored highly on both masculine and feminine identity and therefore actually have a high androgynous identity. According to Wajcman (2007) women in ICT industries forsake their femininity and are asked to exchange aspects of their gender identity for a masculine version. Findings here suggest that women within the games industry do not forsake their femininity, or indeed solely adopt a masculine one, but rather they have or they adopt a more androgynous identity. This perhaps indicates that women in the industry are not gender specific. Adopting an androgynous identity may be one strategy women in the games industry use in order to become gender neutral or perhaps make their gender invisible.

Having an androgynous identity also lends support to the finding that women in the industry have low gender identification since; they are not identifying more strongly with either a masculine or feminine identity. Bem suggests high sex typed individuals are uncomfortable performing cross sex tasks since it is incongruent with their sex role orientation. It is possible that women working in games feel more comfortable in the male working environment by being gender neutral as previous research suggest is a coping strategy women employ (Powell, Bagihole and Dainty 2009). The findings could also suggest that women may be keeping their femininity as well as adopting a masculine one in order to fit in, whilst still retaining an element or elements of their femininity. It may possibly also be that the industry attracts and retains women who have high androgyny since they need this identity in order to fit into the industry and work environment. According to Powell and Butterfield (2003) there is an incongruity between women's gender identity and managerial roles, making femininity less applicable in the workplace. Perhaps this is also the case for the masculine domain of computer games development. More research into the identity of women in this and other male dominated working environments would be valuable in understanding women and any coping strategies developed or utilised when they are in a minority. It would also be beneficial to see if their identity is situation specific through analysis of women's identity in other life roles.

There were a number of significant differences between participants and the masculine component of the BSRI. Significant differences with regards to masculine identity were found between participants in the USA and the UK, and also between those aged 35 and under and 36 plus. Women in the USA had stronger masculine identity, as did older participants (those aged 36 and over). Reasons for these differences in masculinity could be culturally related for the differences between the USA and UK and perhaps generationally related for the age differences. For instance, Hofstede (2001) found masculinity decreased with age which does not appear to be the case here. Both areas would benefit from further research. No significant differences were found between participants and the feminine or androgynous components of the inventory.

Peng's 2006 Taiwanese study suggests that social change takes place in gendered occupations. For example, in a drive to appear less 'cold' Peng noted that the Taiwanese police changed their logo to a dove, rather than a symbol that is tough, and masculine such as a lion or an eagle. Peng suggests that the police not only

outwardly promoted a 'softer' image but that the police themselves internalised this image. Furthermore, Loughery (2008) used the short version of the BSRI in a study of male nurses in Ireland. Findings revealed that male nurses in the study identified more strongly with female more than male gender norms. This supports the notion that men who have less male stereotypical gender traits feel free to choose non-traditional careers, in this case nursing (Jome and Tokar 1998). Loughery argues that both masculinity and femininity mean different things to different people and gender roles are in a constant state of flux. A view similar to Collinson and Hearn (1994) who assert that masculinity and femininity are both constructs which are fluid and uncertain, with gender roles being stereotypical to a time and place (Loughery 2008). Most recently, Powell and Greenhaus (2010) found that women managers were significantly higher in femininity than men. Results from such studies are interesting in light of the current study, as the participants are in a masculine dominated environment one would expect them to identify themselves as more masculine in the workplace especially since the image of the games industry and computer games are in general, predominantly viewed as masculine. However, women in the study seem to be neutralising their gender identity. This could be reinforcing rather than challenging the gender stereotypes that exist (Powell, Bagihole and Dainty 2009).

Limitations and Future Directions

Although this study provides important new information about women employed in the computer games industry, it is not without limitations. Although relatively large for a difficult-to-obtain sample, the extent to which women that opted to participate in the study may differ from those who opted not to participate. Thus, the degree to which these results generalise to other women employed in the industry warrants replication in future research. For example, although the sample was international 84% identified themselves as white. Therefore, the findings may not be applicable to women in the industry from other ethnic backgrounds.

There are many areas for future research to consider. For instance, does the industry attract a certain type of woman or do women have to adapt to its masculine culture? This is especially pertinent in terms of gender identity which has been highlighted as an issue and an interesting area of research in the current study. Equalitarian gender beliefs have been previously correlated with higher self-efficacy and self esteem (Athrens and O'Brien 1996). Gaining an understanding as to why women have low gender identity in this industry would be an interesting area for future research and add to the findings from the current study.

The differences between participants in terms of gender identity also raised some interesting questions. For example, where participants attracted to the industry because of their androgynous identity? Did the USA participants become more masculine through working in a male dominated environment? And if so, why did women in the UK have less masculine identity than women in the USA? Does this difference occur in other industries? Research by Smith, Noll and Becker-Bryant (1999) found both men and women reported more masculinity when imagining themselves in a work compared to a social context. Perhaps highlighting that the workplace is still considered a male domain. Expanding on this, maybe women in games perceive themselves more masculine because they are in a masculine

industry. It would be interesting to see if any difference in the identity of participant's occurred had they considered themselves in other situations not just work, such as the home. This may throw some light onto whether the industry attracts women with a more masculine or androgynous identity or if it is, indeed a strategy used to cope with the masculine working environment.

Conclusion

Women's gender role identity has been an issue for researchers of women in male dominated industries such as the SET sector for a number of years (i.e. Miller et al. 2004; Thewlis, Miller and Neathey 2004). Gender role identity has been found as being an important consideration when looking at occupational segregation, both vertical and horizontal, within the new industry of computer games (Prescott and Bogg 2011).

Pickard and Strough (2003) found people bring their previous experiences, expectations and beliefs regarding gender into a social context and adapt their behaviour accordingly. Maybe women in the computer games industry do this, knowing the industry is a male domain. The results highlighted in this paper could also indicate that increasing the numbers of women in the computer games industry may not necessarily mean the male discourse of games will be eroded. As social identity theory (Stets and Burke 2000) suggests, women do not want to be in the out-group therefore, they may utilise more masculine characteristics and aspects of their identity, pushing out their feminine gender identities and reinforcing the image of computer games as masculine. The current findings suggest an element of this may already be happening within the industry. Perhaps if women are no longer so underrepresented and women are not in the 'out-group', the industry may change to accommodate women and a more diverse workforce.

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