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Cynthia Riemenschneider
University of Arkansas

Deborah Armstrong
University of Arkansas

Myria Allen
University of Arkansas

Margaret Reid
University of Arkansas

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What I’m Not Willing to Share: A Discussion of Turnover and Barriers to Promotion with Women IT Workers

Cynthia K. Riemenschneider
University of Arkansas
criemen@walton.uark.edu

Deborah J. Armstrong
University of Arkansas
darmstrong@walton.uark.edu

Myria W. Allen
University of Arkansas
myria@mail.uark.edu

Margaret Reid
University of Arkansas
mreid@uark.edu

ABSTRACT

In 2002, women comprised 46.6% of the overall U.S. workforce; however, the percentage of women in the Information Technology (IT) workforce in 2002 was only 34.9%. In 1996, the percentage of women in the IT workforce was 41%. To help explain the declining and overall disproportionate number of women in IT, we designed an in-depth study to analyze the individual cognitions of women working in IT to determine the causes of turnover intention as well as the perceived challenges women currently face. We employed a qualitative research design using a revealed causal mapping approach to identify key concepts surrounding the challenges women in IT face regarding promotion and turnover. In our analysis we identified implicit causal statements and created a cognitive map of the concepts and linkages between the concepts surrounding this issue. The concepts evoked are Barriers/Promotion, Challenges/Stress, Work Schedule Flexibility, Barriers/Age and Barriers/Problems with Respect.

Keywords
Women in information technology, barriers to promotion, revealed causal mapping, turnover

INTRODUCTION

Retaining valued employees can be a costly challenge in any organization. Failure to retain valued employees results in both economic and non-economic costs. Economic costs include separation, replacement and training costs, and the annual economic per-person cost of turnover can range from $1,200 to $20,000 (Hatcher, 1999) while an experienced IT computer programmer may cost almost $20,000 (Griffeth and Hom, 2001). Potential non-economic costs include loss of leadership, loss of organizational knowledge, loss in innovation capacities, disruption of work processes, increased stress on the remaining workforce, and diminished attention to external changes and stakeholder needs (e.g., Woodka, 2001).

The overall study of employee turnover has been an area of interest for quite some time. Management researchers and organizational psychologists have studied the antecedents to employee turnover (Griffeth, Hom, and Gaertner, 2000; Mobley, Griffeth, Hand and Meglino, 1979; Porter and Steers, 1973). However the focus on turnover of information technology employees has been a more recent issue. Studies in the IT field have looked at the relationships between voluntary turnover and organizational variables such as career expectations, job involvement, job satisfaction, role conflict and role ambiguity (e.g., Carayon, Haims, and Kraemer, 2001; Guimaraes and Igbaria, 1992; Igbaria, Parasuraman, and Badawy, 1994; Sethi, Barrier, and King, 1999).

Petronio (1991) developed the communication boundary management theory of private discourses that includes a useful set of ideas about the complexity of self-disclosure. She says individuals are constantly managing the boundaries between the public and the private, between those feelings and thoughts they are willing to share and those they are not. Maintaining a closed boundary can lead to more autonomy and safety, while opening the boundary can promote more intimacy and sharing at the cost of personal vulnerability. The focus of the overall study is the challenges and barriers women in IT face regarding promotion and turnover. This paper is focused on the implicit causal statements the women made therefore the application of the communication boundary management theory is particularly appropriate for this study. Considering the inconclusive results from prior research, the questions still remain, are there gender differences of IT workers related to turnover intentions; what are the perceived challenges/barriers women working in IT face; and is it possible that the existence of
barriers might influence the turnover intentions of employees? Further, are there deep issues or concerns that women are reluctant to explicitly discuss in the open? To answer these questions we took an in-depth qualitative approach to study the causes of turnover intention as well as the perceived barriers the women currently working in IT face.

**IT EMPLOYEES' VOLUNTARY TURNOVER INTENTIONS**

Several previous studies regarding IT employees have analyzed voluntary turnover intention as the dependent variable (e.g., Thatcher, Stepina, and Boyle, 2002; Carayon, et al., 2001; Moore, 2000; Guimaraes and Igbaria, 1992). Igbaria et al., (1994) did focus on the relationship between IT career expectations (advancement and developmental prospects), job involvement, work experience, and indicators of working life. Additional variables previously linked to IT employee turnover intentions are role conflict and role ambiguity (e.g., Guimaraes and Igbaria, 1992; Igbaria et al., 1994), pay, status, salary, promotability, job satisfaction (e.g., Igbaria and Siegel, 1992), and work exhaustion (e.g., Moore, 2000). The practitioner-oriented IT literature suggests issues related to mentoring, training, benefits, flexible hours, casual dress, equity incentives and praise/recognition are linked to retention (e.g., Agarwal and Ferratt, 2001; Goff, 1999; Harris, 2000).

**GENDER DIFFERENCES**

However, women in IT are not immune to gender discrimination (Truman and Baroudi, 1994): filling fewer management positions and receiving lower salaries than men even when controlling for age, work experience, and job level (Igbaria and Chidambaram, 1997). Igbaria and Baroudi (1995) found women are seen as having less favorable promotion chances than men.

The Report of the Congressional Commission on the Advancement of Women and Minorities in Science, Engineering and Technology Development (CAWMSET, 2000, p. 4) claims... “The Commission recognizes that ...gender stereotypes are still pervasive in professional life. For women...these problems are manifested in inadequate work and family life accommodation, unequal pay scales and advancement...” Subsequently Ahuja (2002) theorized the barriers women in IT face including social expectations (e.g., anxiety and limited self-efficacy), work-family conflicts, the prevailing occupational culture (e.g., long hours), the lack of role models, the lack of mentors, and problematic institutional structures (e.g., need for travel, flattened organizational structures), and she called for additional research investigating such barriers.

**SELF-DISCLOSURE**

The complexity of self-disclosure presented by Petronio (1991) in the communication boundary management theory of private discourses is applicable to women discussing sensitive issues in a focus group setting. Admittedly, there are cultural dangers associated with disclosing; self-disclosure can be difficult or painful because an individual reveals herself to herself as well as to others. People struggle between being open and expressive with others and being private. But sometimes individuals self-disclose in order to receive social support from others, for self-clarification, self-validation, impression formation, catharsis, and in reciprocity.

However, self-disclosure also carries with it risks of rejection or potential loss of influence (Rosenfeld, 2000). “Revealing personal thoughts and feelings can be especially risky on the job, where the politics of the workplace sometimes require communicators to keep feelings to themselves in order to accomplish both personal and organizational goals” (Eisenberg, 1990; Eisenberg and Witten, 1987, as cited in Rosenfeld (2000, p. 10). However, the risks of not self-disclosing include the threat of being seen as rude or unsociable, or lacking trust.

**METHOD**

This study seeks to understand not only the concepts women associate with voluntary turnover and barriers to promotion but also the causal reasoning and linkages behind the actions of women in this field, lending insight into the why of the behavior. To understand the concepts, linkages, and reasoning underlying these issues we must study the cognitive structures of the women. In order to understand cognitive structures that are held within the mind, we need to elucidate and study the cognitive representations of the individual. For that purpose we employ a causal mapping methodology, which allows us to explicate and assess the structure and content of mental models (Axelrod, 1976).

We used a six-step process previously described in the literature to access women’s causal reasoning processes (Narayanan and Fahey, 1990; Nelson, Nadkarni, Narayanan, and Ghods, 2000). The first step is to select a source for the data and gather narratives. The second step is to identify the causal statements and the third step is to construct the ‘raw’ causal maps. In Step 4 the coding scheme is developed. In Step 5, the ‘raw’ maps are recast into revealed causal maps; and the final step is to derive measures for the maps. Each of these steps is briefly discussed below.
The source of the data is a Fortune 500 manufacturing organization employing over 120,000 people worldwide. Thirty-nine women (53%) working in a range of IT positions volunteered; the participants worked in the corporate office or a nearby office building. Most women had only worked in IT for the company where we held the interviews (49%) or for that company and one previous employer (31%). The women had worked for the company between two months and 21 years. The average participant had worked in the IT field for eight years, with 54% having worked in IT five years or less. Over half (56%) had worked three years or less at the current employer. Only 15% of the women were supervisors and they managed between three and 11 employees.

The method used to gather the narratives was interviews with focus groups. In our case, six same-sex focus groups facilitated by female researchers were conducted. The focus groups were held in workplace conference rooms over a two-week period with four to eight women per group. The women discussed several open-ended questions of relevance to the current study. One question was “Do you think women in the IT workplace face different or more barriers than men?” Audiotapes made during the focus groups allowed for verbatim transcription of the discussions, which resulted in six manuscripts.

The causal statements were then identified. According to Axelrod (1976, p. 293), “Some relationships are implicit in the phrase, sentence, or group of sentences. These cases are those in which the phrase, sentence, or sentences do not constitute relationships in a grammatical, structural sense.” Because of the flow of discussion and the way comments or thoughts are continued or elaborated upon in a group setting, we felt it would be best to code the implicit causal statements as well as the explicit causal statements so that we did not miss any concepts or major points of discussion. Axelrod (1976) suggests that content analysis should be used to code these cases of implicit relationships. The key words used in identifying implicit causal statements are “think,” “know,” “use,” and “believe.” For example, the sentence, “I don’t think it [gender] should be an issue, I would promote whoever is smartest” was coded as an implicit statement. The researchers methodically examined each of the manuscripts and where disagreement occurred the discrepancies were resolved through discussion leading to a 100% level of agreement on all of the causal statements. As we were interested in the topics that individuals would not be comfortable addressing directly this project is focused on the implicit statements only.

The causal statements were then separated into the ‘effects’ and ‘causes’ in order to construct the raw causal maps. Exact language from the participants was used to construct the raw causal map. The phrase, “If I want to get beyond where I am today” was coded as the cause and the phrase “then I know I am going to have to go outside of the business” was coded as the effect. The result of this step was six raw maps (one per focus group.)

Using the raw causal statements, the relevant concepts were then identified and a coding scheme was developed. The coding process involves grouping words frequently mentioned in the statements (Narayanan and Fahey, 1990), and creating a word or word group to capture the essence of the phrase. Once the coding scheme was created, the raw maps were recast into revealed causal maps. Each of the causal statements was placed into the appropriate concept for each of the focus groups. These maps were then aggregated (Axelrod, 1976) to obtain an overall map.

Lastly, measures were created for the maps. These measures included centrality and the reachability matrix, which are borrowed from the social network analysis field (see Knoke and Kuklinski, 1982). Centrality is a measure used for the individual concepts within a map and is a measure of how central or involved the concept is to the map. Centrality is a ratio of the aggregate of linkages involving the concept divided by the total linkages in the matrix (Knoke and Kuklinski, 1982).

The reachability matrix indicates the cumulative direct and indirect effects of a variable on all other variables, which in effect represents the strength of the relationship (Nelson et al., 2000) and is calculated by the formula:

\[ R = A + A^2 + A^3 + \ldots + A^{n-1} \]

where \( R \) is the reachability matrix, \( A \) is the adjacency matrix, and \( n \) is the number of variables (concepts). The reachability of each linkage is reported on the linkage between the nodes on the revealed causal map. The reachability allows for a more holistic picture of the causal relationships (Axelrod, 1976; Nelson, et al., 2000; Knoke and Kuklinski, 1982).

RESULTS

The results section is divided into two parts; first, a discussion of the structure of the map is presented, and then a discussion of the content of the map.

Structure

For readability purposes, only those concepts with a reachability cutoff of 0.04 or greater are included in the map. The map presented and discussed in this study includes only those concepts and causal connections that were identified as implicit as discussed in the Method section. Figure 1 shows the implicit concept level map.
The map reveals five concepts that women in the focus groups shared with implicit statements. These concepts were not explicitly expressed but only recorded through implicit evocation. It is interesting to note that turnover did not appear as a concept on the implicit concept level map. It did however appear on the explicit concept level map which is not the focus of this paper. Of particular interest is the concept of Barriers/Promotion, which is an effect concept only (all of the arrows point to the concept, no arrows are leaving the concept). The other four concepts on the map are all causes of the Barriers/Promotion concept. The Barriers/Age concept and the Challenges/Stress concept are cause only concepts. Two of the concepts, Barriers/Problems with Respect and Work Schedule Flexibility are mixed (both cause and effect). Figure 1 also shows the reachability values for the implicit concepts. The connection from Barriers/Age to Barriers/Promotion has the highest reachability value of .07 in this map, which means this is the strongest linkage in the map. The connections from Barriers/Age to Barriers/Problems with Respect, from Work Schedule Flexibility to Barriers/Problems with Respect, from Barriers/Problems with Respect to Barriers/Promotion, and from Work Schedule Flexibility to Barriers/Promotion all have a reachability value of .06. The challenges from stress cause barriers to promotion, a lack of work schedule flexibility, and problems with respect. The centrality for each of the implicit concepts is shown in Table 1. The concepts with the highest centrality are Barriers/Promotion and Work Schedule Flexibility. This means that they are the most central or involved concepts in the map. A discussion of the content of the maps is presented next.

<table>
<thead>
<tr>
<th>Concept</th>
<th>Centrality</th>
</tr>
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<tbody>
<tr>
<td>Barriers/Promotion</td>
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</tr>
<tr>
<td>Work Schedule Flexibility</td>
<td>.731</td>
</tr>
<tr>
<td>Barriers/Problems with Respect</td>
<td>.594</td>
</tr>
<tr>
<td>Challenges/Stress</td>
<td>.457</td>
</tr>
<tr>
<td>Barriers/Age</td>
<td>.274</td>
</tr>
</tbody>
</table>

Table 1. Centrality

**Content**

*Barriers/Problems with respect*

During the focus groups, the women gave examples where they had problems receiving the respect they deserved with those inside as well as outside the company. In particular one woman shared an experience within the company, “Actually I’ve had experience during analysis on a project where the users (internal to the company but outside the department) wouldn’t even look at me or answer my questions. I’d ask a question and they’d look at my male companion and answer my question to
him. This went on all day long.” Another mentioned a situation with clients external to the company, “It happens a lot with vendors when you are in a room with them and they don’t know who is in charge and they just assume the man is.” One woman summarized the issue this way, “There’s been times that I have noticed that as a woman you feel that you are not taken seriously either by the IT department or by customers in the field. And I noticed there were cases where some of the men overpower and step in and compensate maybe and give the (women) less credibility in the field.” Women mentioned males “taking control”, “guys taking over in a meeting has happened to me before when you are trying to get a point across. And they jump in there when they think you are not doing quite well enough and confuse the issue a little bit more.”

**Barriers/ Promotion**

Some of the discussion around the concept of barriers to promotion was that the criteria for promotion differed among male and female IT employees. Comments such as the following were typical, “If he did the same thing, he definitely would be paid for it and promoted. A lot of people know what she does around here and that it has been unjust that she hasn’t been promoted or compensated for it”. Other comments such as, “There is a very defined progression chart for our department. But if you actually look at it, the women are on the lower end, and it seems the men progress much further up.” Another woman stated her frustration a little differently, “The reason they can be okay with it is because, when they look at it, they say, we’ve got 80% men and 20% women, therefore the majority of the leaders come from the men.” In regard to discrimination with promotion and hiring, one recalled a situation where a management position had been vacated and the company decided to fill that position with someone from outside the company. However, the only candidates the company interviewed were men. Prior research has also shown that women are perceived to have a less favorable chance for promotion than men (Igbaria and Baroudi, 1995). Additionally, in Truman and Baroudi’s (1994) analysis of data gathered by the Society for Information Management, they found a higher percentage of men in the IS managerial ranks than women.

Several comments were made regarding organizational inconsistencies in applying promotion policies. The manager you worked for influenced the amount of time you had to wait for a promotion, if you actually qualified for promotion. One woman commented, “How they decide who gets promoted isn’t really clear to everyone.” Another claimed that “it’s just we’re not real clear how they (promotions) come about.” An example was shared of a male manager “who got promoted to a director but turned around and said, ‘by the way, I am not going to promote any of my direct reports. I am not going to promote any of them to take over my old job title.’”

**Barriers: Age**

The discussion around the concept of age had three main components. The first component was age as a barrier to initial employment. As one participant stated, “A young pretty women has a harder time [getting hired in IT].” Whereas another participant in response stated, “I don't know. The older women do too. When I was just under 50 and trying for a new job, it took about three years.” From the comments it appears that it is not only age but also physical appearance that is a barrier to initial employment.

The second component was age in workplace interactions. The participants felt that their age was a detriment in interactions with colleagues and clients. As one woman stated

> It’s tough for a young woman to be patronized and be spoken to in a condescending way. I have never seen a man being treated that way [several women in the group nodded] whether he’s young or older. But especially when you are young and you got some old grumpy men who have been around the block a long time calling you "little missy". It's a very hard thing to overcome especially when you are young.

The third component was age and promotion. As one participant stated, “Because I am a woman and I have been here so long and they remember me as being young I have had to claw my way to where I am, and basically throw it in their faces. I did this and I did this. It's very difficult.” Another participant stated, “when you're young it's a very hard thing to overcome, it holds you back.”

**Challenges: Stress**

One participant commented, “When I first got in this profession and they put me on call, I wondered why I didn’t go into the medical profession and get paid three times to get woke up in the middle of the night to fix problems. Because once you are awake, you are awake and you cannot go back to sleep so there is a lot of stress. When we have projects, when we have deadlines, we have to work to meet those deadlines.” Another woman stated, “I agree with X on the stress part of our department. We are a shared service here. You don’t know how many days we hear this is a rush. They have to have it tomorrow or they have to have it this afternoon. You know, we can’t say no. We can’t do it. I mean we might even set up rules here. And then all of a sudden because somebody needs something, this is used to break the rules.” Another woman
expressed her stress, “I think sometimes it’s hard for me to justify to my family if I have to work late or come in on the weekend.”

**Work Schedule Flexibility**

An example of the discussion of work schedule flexibility came from one manager, “We had a very good employee that was going to leave the company and we made a special arrangement to have a reduced work schedule and whenever she comes in, that’s fine and if she works from home, that’s fine. Just as long as we get the work done.” Another woman commented, “Maybe our department is pretty unique, but they are very flexible. If you got to go to take care of personal business and stuff, you just schedule it.” One woman shared about a friend who had changed companies because of work schedule flexibility issues. She stated, “… the company that she chose to go to had a very good flex-time policy. Basically theirs was, it was something like you have to be in the office by 10 in the morning and you had to be at the office until 2 in the afternoon. But beyond that, it was up to you.” The flexibility of work hours was an important issue for these women.

**DISCUSSION**

From the map we can see that there were three concepts identified under the Barriers heading (Respect, Promotion, and Age) and two concepts identified under the Challenges heading (Stress, Work Schedule Flexibility). From the data it is clear that the barriers encountered by women that they don’t easily talk about are gender specific and purely work related. It is not just a lack of respect with the position or because the individual is young, but directly intertwined with gender and self-disclosure.

In the focus groups the women engaged in self-disclosure but they were trying to balance that boundary between the public and the private in what they said. Because issues related to age and lack of respect are more threatening to the core of a woman’s self-concept than some of the other topics discussed, the women used less direct messages when discussing these topics. When making explicit statements the women directly link the cause and effect. Because of the sensitive or emotionally threatening nature of the two topics of age and respect, the women did not explicitly make the causal connection so as to protect themselves. When an individual makes an implicit argument, he/she distances himself/herself from the statement and protects himself/herself from being called upon for pointing out the relationship.

In the existing culture for professional women, the topics of age and respect are more closely related to the woman’s sense of self than other identified concepts. In the case of age this is something beyond the woman’s control that automatically devalues her in society. Many of the barriers mentioned explicitly are outside the woman and are caused by workplace conditions. But a woman’s age, just like her gender, is intrinsic to her. Age and appearance are core to women. To feel that one is judged not good enough because one is too young or too old is more core to one’s own self-definition that most of the other issues the women discussed. The same idea applies to lack of respect—this issue strikes at the core of one’s self-definition of who he/she is. The participants were professional women who have worked hard to be respected; and to feel that there is little they can do in terms of respect, strikes at the core of who they are.

In contrast, the challenges women in IT face are work-family conflict issues and are not gender specific. The stress felt by these women in the work place and the stress regarding the balance between work and family time could apply to both men and women. So the challenges to IT workers are not gender specific, but there appears to be some gender bias/difference with regard to career advancement and the barriers women face in their IT careers.

**CONCLUSION**

In our analysis we identified implicit causal statements and created a cognitive map of the concepts and linkages between the concepts surrounding this issue. The concepts evoked were Barriers/Promotion, Challenges/Stress, Work Schedule Flexibility, Barriers/Age and Barrier/Problems with Respect. This study lends insight into the complexity and the difficulty of gathering data and perceptions that often are sensitive. Cognitive maps provide insights into the factors influencing the retention of female IT employees in a way that traditional survey data does not.

**ACKNOWLEDGMENTS**

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