Measuring women's beliefs about glass ceilings: development of the career pathways survey

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Abstract

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Keywords

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Paper type - Research paper

Introduction

There is strong evidence of the under-representation of women in leadership positions in many countries such as Australia (Davidson, 2009; Maginn, 2010; Still, 2006), China (Tan, 2008), France (Barnet-Verzat and Wolff, 2008), South Africa (Booysen and Nkomo, 2010; Mathur-Helm, 2006), United Kingdom (Davidson, 2009; Thomson *et al.*, 2008) and United States (Eagly and Carli, 2007; Fassinger, 2008). The glass ceiling metaphor is frequently used to describe the obstacles and barriers in front of women seeking promotions to the top levels of organizations (Burke and Vinnicombe, 2005; International Labour Office, 2004; McLeod, 2008). In this paper we describe the development of a measure of women's thoughts and attitudes towards glass ceilings, the Career Pathways Survey (CPS).

Undoubtedly, a wide range of theoretical explanations have been proposed to make sense of glass ceilings (Barreto et al., 2010; Eagly & Carli, 2007). A comprehensive review of these theories is beyond the scope of this paper. Instead, the following examples highlight the great diversity of causes proposed for glass ceilings. Some evolutionary psychologists explain glass ceilings as a by-product of natural selection, resulting from hard-wired adaptations that increased the success of the human species over the last 20,000 years (Browne, 2006; Buss, 1995). Most commonly, the scarcity of female leaders is linked to ongoing prejudice and discrimination against women in the workplace (Weyer, 2007). For example, Fassinger (2008) cites women being denied access to the old boys' club, tokenism, shadow jobs (women being subjected to extra scrutiny), plus a lack of mentors and role models as forming a package of barriers acting against women. Women who become mothers often encounter an array of prejudice against career advancement that creates a maternal wall (Crosby et al., 2004). Several researchers emphasize gender differences as the major reason for gender inequality in leadership. Olsson (2002) gives a qualitative analysis which uses ancient Greek heroes Ulysses and Xena as a double-metaphor for different ways men and women search for

satisfying careers. Hakim (2006) proposes her preference theory citing gender differences in life goals, values, abilities and competitive behavior. O'Connor (2001) hypothesizes that the existence of glass ceilings is largely due to 'different needs' between women and men. She sums up these differences with more metaphors: women prefer career trees whilst men are much more likely to climb career ladders.

The genesis of the CPS began in our review of the literature on the causes of glass ceilings. Of particular value in understanding the glass ceiling phenomenon is the role congruity theory of prejudice toward female leaders (Eagly and Karau, 2002). This theory is based on the key proposition that most beliefs about the sexes are related to communal and agentic attributes. Communal characteristics, which are strongly associated with women, include being nurturant, helpful, kind and sympathetic whilst men are strongly linked to agentic attributes such as being assertive, ambitious, independent, forceful and self-confident (Embry *et al.*, 2008; Heilman and Okimoto, 2007; Phelan *et al.*, 2008). Agentic characteristics are usually seen as being essential for successful leadership (Duehr and Bono, 2006; Eagly and Carli, 2007; Weyer, 2007).

Eagly and Karau's theory (2002) is based on two categories of stereotypes: descriptive stereotypes (expectations about what members of a group are actually like) and prescriptive stereotypes (what they should ideally be like). An interplay of these stereotypes results in women being seen as less suitable for leadership roles as they are most likely thought to exhibit communal characteristics, while leaders need to fulfil the descriptive stereotype of being agentic. A second incongruity acts as an extra obstacle for women aspiring to be leaders. Eagly and Karau (2002) point out that female leaders are likely to be evaluated less favourably when they exhibit agentic behaviours because this contradicts the prescriptive stereotype that women should be communal. These two forms of prejudice are at the foundation of the phenomenon of glass ceilings (Eagly and Carli, 2007; Eagly and Karau, 2002; Weyer, 2007) and their influence is pervasive because women as well as men can accept these stereotypes (Eagly and Karau, 2002).

Eagly and Karau's (2002) theory of prejudice against women leaders makes an excellent paradigm for much more research into glass ceilings. After identifying the major role of gender stereotypes, beliefs and attitudes in supporting and perpetuating the problem of glass ceilings, we reviewed the literature on women's beliefs about glass ceilings. The decision to focus on women and exclude men was made after it was found that there was a scarcity of studies of women's thoughts and beliefs about glass ceilings.

Measuring Women's Beliefs About Glass Ceilings

Women's opinions about the causes of glass ceilings are usually reported in qualitative studies (e.g., Kumra and Vinnicombe, 2008; Mathur-Helm, 2006; Wrigley, 2002). Three qualitative studies stand out for their thoroughness. Morrison, White and Van Velsor (1992) interviewed 82 managers at *Fortune* 100 companies, mostly from mid-management levels, and Goward (2001) interviewed 32 self-employed Australian women who were winners of the prestigious Telstra Awards which are given annually to recognise high achievers in Australian business. Goward identifies a common reason for these women striving out on their own: many of the women had ended unhappy marriages. Since the mid 1990s, the number of female business operators in Australia has been growing at three times the rate than that for males (Goward, 2001). Stone (2007) reported the results of detailed interviews with 54 women who opted out of high profile careers to focus on family life. She found a major reason for this life change was the refusal of husbands to modify their own careers (Stone, 2007).

Our review of research related to glass ceilings found the following instruments: Women As Managers Scale (WAMS; Terborg *et al.*, 1977) Managerial Attitudes Toward Women Executives Scale (MATWES; Dubno *et al.*, 1979) and Women Workplace Culture Questionnaire (WWC; Bergman, 2003). There are also three unnamed instruments used by Jackson (2001), Wood and Lindorff (2001) and Elacqua *et al.* (2009).

The MATWES is a 38-item questionnaire with a 5-point Likert scale from 'highly agree' to 'highly disagree'. Concurrent validity was assessed by administering the scale with the WAMS yielding a correlation of .73. The MATWES was developed "to serve as a practical research tool for identifying organizational climates potentially hostile to the introduction of women into positions of executive responsibility (Dubno, 1985, p. 236). Everett *et al.* (1996) used the MATWES in a study of cognitive development of MBA students, stating that high scores indicate negative attitudes toward female managers. No other scoring criteria could be found. There have been strong concerns about the validity and reliability of the 21-item WAMS (Cordano *et al.*, 2003; Crino *et al.*, 1981).

The WWC is a 24-item measure with four factors: Perceived burdens on women (11 items, $\alpha = .87$); Personally experienced burdens (9 items, $\alpha = .84$); Sexual harassment (4 items, $\alpha = .80$); Inadequate organizational support (3 items, $\alpha = .71$). The first two factors share four items that have high loadings on both factors. Even though all items have fixed response alternatives, the WWC uses a wide range of behavioral descriptors as well as 2, 4 and 5-point rating scales. Bergman (2003) recommends further research with women with lower levels of education and in a wider range of job positions as most of the women tested with the WWC worked within two faculties of a single university.

Jackson (2001) developed a questionnaire to assess women's perceptions about glass ceilings. It was completed by 47 women and limited to women who were in upper or mid-level management positions and only within organizations with a minimum of 400 employees. Jackson acknowledged the limitations of her pilot study, recommending that a larger sample from a much wider geographical area be surveyed. Women's perceptions to career barriers were measured by a 52 items, each rated on a 5-point response scale. Six scales with a total 45 items were generated: Perception and stereotyping; Work-family conflict; Old boy network; Valuing women and tokenism; Management style; Career development opportunity. No details of factor analysis or reliability levels were given (Jackson, 2001).

Wood and Lindorff (2001) also attempted to quantify explanations from women ($n = 156$), as well as men ($n = 351$) about career progress. Attributions for overall career progress were measured by 14 items, on a 5-point rating scale. Factor analysis identified a four-factor model. The factors were: Personal qualities ($\alpha = .74$), Gender-based policies ($\alpha = .60$), Social network resources ($\alpha = .44$), and Political awareness (single item). A 15-item instrument was used to investigate the glass ceiling in a large insurance company (Elacqua *et al.*, 2009). The instrument was designed by staff with the guidance of a psychologist. Elacqua and her colleagues provide no details of factor analysis. Analysis of the responses from 685 managers ($n = 221$ women) in the company who completed the questionnaire enabled the construction a 13-pathway model linking manager's beliefs about interpersonal and organizational factors with glass ceilings (Elacqua *et al.*, 2009).

No study could be found which extensively examined opinions from women at all stages of career advancement. This observation, plus the limitations of the instruments discussed above, prompted us to undertake the present study. The aim of this study was to construct an instrument that allows quantitative analyses of women's beliefs about glass ceilings.

Development of Instrument

Wrigley's (2002) qualitative study of why women deny the existence of glass ceilings helped guide us in the development of a four-factor model of women's attitudes towards glass ceilings. Consequently, this led us to develop a new measure of women's beliefs about glass ceilings. Wrigley argues that denial of glass ceilings by women is a factor that perpetuates the problem of glass ceilings. This insight has not been found elsewhere in the literature. After in-depth interviews with 27 female managers, Wrigley (2002) proposed a new theoretical concept called 'negotiated resignation' which she describes as a form of denial. She identified examples of comments that contradicted previous denials about glass ceilings and observes that these contradictory comments were only made by women who had not reached the top level of management. Thus, Wrigley believes that rationalizations based on negotiated resignation help women resign themselves to work in organizations where glass ceilings exist. This combination of denial and resignation could lead to women giving up on seeking promotions. However, she fails to point out that resignation could also have no connection to denial, and a woman's decision not to seek promotions might be for valid reasons, such as discrimination if they seek leadership roles.

Most of the participants in Wrigley's (2002) study were seen as ambitious and there is no discussion of women rejecting the intense commitment usually needed for corporate success. Women who do reject this commitment reflect a different definition of success. Not wishing to be promoted is a rational and healthy option for women who share this belief. These beliefs result in an acceptance of glass ceilings by women and this theory has strong support among evolutionary psychologists (Browne, 2006; Buss, 1995; Pinker, 2002) and O'Connor (2001) who proposes a different needs theory for women and men. Thus, it is necessary to separate Wrigley's (2002) concept of 'negotiated resignation' into three factors: denial, resignation and acceptance. We have also identified a fourth factor, unnamed in Wrigley's study. Many of the women in the interviews expressed a resilience to eventually break through glass ceilings. We incorporated resilience with the previous three factors into the development of a questionnaire that could take into account the complex factors related to attitudes to glass ceilings. The Career Pathways Survey was designed for women at all levels of careers, from staff to top management.

Forty items about career progression of women were used in the initial testing of the CPS. Several items were based on information gathered from women attending corporate workshops given by the first author. Other items in the survey were identified from research which was reported by Eagly and Carli (2007). The items encompass issues raised in the research cited above. The CPS attempts to assess levels of four factors: Resignation, Acceptance, Resilience and Denial.

Resignation about glass ceilings is based on statements that indicate why women give up or fail to pursue promotions because of social and organisational obstacles. Examples include: 'Women are seldom given full credit for their successes'; 'Women in senior management positions face frequent putdowns of being too soft or too hard'. *Acceptance* of glass ceilings is a collection of items showing why women are satisfied and happy not seeking high level positions. It can be argued the items say why women don't want what men want, if the masculine definition of success is high levels of power. Alternatively, agreement with this factor could be interpreted as seeking justification for not showing more commitment to career development. Examples include: 'Women reject the need to work incredibly long hours'; 'Women prefer a balanced life more than gaining highly paid careers'. *Resilience* of glass ceilings is based on statements that show how women feel they can and will go forward. Examples include: 'When women are given opportunities to lead they do effective jobs'; 'A supportive spouse/partner or close friend makes it easier for a woman to achieve success in her career'. *Denial* of glass ceilings is composed of items that show why some women believe glass ceilings are now myths and non-existent. Examples include: 'Women and men

have to overcome the same problems at the workplace'; 'Women have reached the top in all areas of business and politics'. Two studies were conducted to investigate the four-factor structure of the CPS. The first, a pilot study, resulted in a preliminary version of the Career Pathways Survey. The follow-up study was carried out to confirm the factor structure and introduce new items with high face validity.

Study 1
Method
Participants
One hundred and fifty women in Australia were contacted via a newsletter from the first author and the snowball sampling method used to recruit a total of 243 female participants. Of the 243 women in Study 1, 73.3% worked in organizations; 40.7% occupied staff positions; 32.5% worked in middle or top management; 6% were self-employed; 70.8% were up to 50 years old; 84.7% were married or in a relationship; 37% had no children; 50.6% lived in urban areas.

Instrument
Each item on the CPS reflects a perception about how women face difficulties in their career progress. This survey allows women to rate their level of agreement with each statement on a seven-point Likert scale, with anchors of strongly agree (1) and strongly disagree (7). Eight of the 40 items were written in a negative direction. The CPS questionnaire package began with a site for women to register demographic details on age, career level, locality (urban/rural), marital status and number of children. Completion of the survey was reported to take less than 10 minutes.

Procedure
The invitation to participants included an Information Sheet and those agreeing to participation subsequently entered a secure, supervised website that enabled them to access the survey and submit their responses anonymously. Ethics clearance was obtained from the University's Human Research Ethics Committee. Participants completed the questionnaire in the two month period that the contact website was kept open.

Results
Data Analysis
The factor structure of the CPS was analysed using SPSS Version 15.0. Four factors were extracted by principal axis factoring and a promax rotation with Kaiser normalization. Assumptions of a factor analysis were met using the Kaiser-Meyer-Olkin measure of sampling adequacy and Bartlett's test of sphericity. Factor solutions of three, four and five factors were explored. The final factor solution was meaningful and the only one with satisfactory internal consistency, as each factor had a Cronbach alpha reaching or exceeding .70.

Five of the 40 items failed to load on any the four factors using the loading criterion of 0.3 and above. The items consequently rejected were: 'It's a strong disincentive when other women are badly hurt trying to gain leadership positions' (This item was expected to load on Resignation factor); 'Women enthusiastically develop social networks to enhance career success' (This was expected to load on Acceptance when reverse scored); 'Discrimination against women is a major problem only in non-Western countries' (This was expected to load on Denial); 'Government regulations cannot ensure women have equal job opportunities with men' and 'Women usually struggle to be selected as team leaders' (Both of these items were expected to load on Denial when reverse scored).

The four factors identified, in order of descending variance, were as follows: Resignation contained

nine items with a Cronbach alpha of 0.79; Resilience initially had eight items and a Cronbach alpha of only 0.59. When one cross-loading item was rejected, reliability for this factor lifted to 0.71; Denial was made of eight items yielding a reliability of 0.75; Acceptance contained 10 items with an internal consistency of 0.71. The overall reliability of the instrument was calculated to be 0.78. Table 1 provides descriptive statistics and the correlations between the mean responses for each factor. There is some evidence that the factors are correlated. However, there is no evidence of redundant factors and the factors appear to be independent.

Table 1. Means, standard deviations, alpha reliabilities and intercorrelations for Study 1 $N = 243$

Factor	M	SD	1	2	3	4
1. Denial	3.77	1.09	(.75)			
2. Resilience	2.42	.86	.08	(.71)		
3. Resignation	3.90	.51	.16*	.23**	(.79)	
4. Acceptance	4.19	.89	.19**	.17*	.10	(.71)

Notes. *$p < .05$; **$p < .01$. Coefficient alpha reliability estimates are listed on the diagonal in parentheses.

Study 2
Method
Participants
Women were contacted using the snowball sampling technique after the first author approached women's networks around Australia, as well as the human resource managers of large Australian organizations. Of the 307 women in Study 2, 92.8% lived in Australia/New Zealand; 84% worked in organizations; 52.1% occupied staff positions; 29.0% worked in middle or top management; 18% were self-employed; 81.4% were up to 50 years old; 68.7% were married or in a relationship; 50.5% had no children; 76.7% lived in urban localities; 64.5% had graduated from university.

Instrument
In study 2, the CPS contained six new items about glass ceilings that were generated after our ongoing research identified concepts that would have high face validity. The participants provided data on age, years in present career, career level, years in present career level, paid hours per week, residence (country), locality, marital status, number of children, and age of youngest child.

Procedure
Participants completed the questionnaire in the six month period that the contact website was kept open.

Results
The factor structure of the CPS was analysed using SPSS Version 17.0. Four factors were extracted by principal axis factoring and a promax rotation with Kaiser normalization. The four factors identified, in order of descending variance, were as follows: Denial contained 10 items with a Cronbach alpha of 0.81; Resignation had 10 items and a Cronbach alpha of 0.71; Resilience was made of 11 items yielding a reliability of 0.70; Acceptance contained 7 items with an internal consistency of 0.72. The four factors accounted for 35.23% variance. The decision to add six new items to the original 34-item CPS was supported as they had loadings ranging from .31 to .62. Two of the original 34 items failed to load on any the four factors using the loading criterion of 0.3 and

above. The items consequently rejected were: 'Unfair preferential treatment can be given to both women and men' (This item was expected to load on Denial factor); 'Women with high goals are not likely to achieve their work ambitions' (This was expected to load on Resignation). Table 2 lists the content and factor loadings of the 38 items which now make up the CPS.

Table 2. Factor loading for the 4-factor structure of the CPS in Study 2 ($N = 307$)

Item No.	Item content	Factor Loadings			
		1	2	3	4

Denial

30	Women starting careers today will face sexist barriers.	-.69			
9	Women and men have to overcome the same problems at the workplace.	.59			
39	It will take decades for women to reach equality with men in high level management positions.	-.59			
10	Even women with many skills and qualifications fail to be recognized for promotions.	-.58			
13	Women have reached the top in all areas of business and politics.	.56			
1	Women face no barriers to promotions in most organizations.	.55			
11	Women leaders are seldom given full credit for their successes.	-.52			
15	Women in senior positions face frequent putdowns of being too soft or too hard.	-.45			
7	Women who have a strong commitment to their careers can go right to the top.	.49			
4	Talented women are able to overcome sexist discrimination.	.39			

Resignation

36	Women executives are very uncomfortable when they have to criticise members of their teams.		.60		
26	Women leaders suffer more emotional pain than men when there is a crisis within their teams.		.53		
37	Being in the limelight creates many problems for women.		.49		
20	Women are more likely to be hurt than men when they take big risks necessary for corporate success.		.48		
31	Women believe they have to make too many compromises to gain highly paid positions.		.42		
8	Jealousy from co-workers prevents women from seeking promotions.		.40		
34	Even very successful women can quickly lose their confidence.		.40		
35	Women know that work does not provide the best source of happiness in life.		.34		
18	If women achieve promotions they might be accused of offering sexual favours.		.33		
5	Smart women avoid careers that involve intense competition with colleagues.		.32		

Resilience

38	The more women seek senior positions, the easier it will be for those who follow.			.60	
33	Higher education qualifications will help women overcome discrimination.			.51	
27	Women have the strength to overcome discrimination.			.50	
40	When women are given opportunities to lead they do effective jobs.			.47	
24	Daughters of successful mothers are inspired to overcome sexist hurdles.			.47	
6	Women are capable of making critical leadership decisions.			.41	
21	A supportive spouse/partner or close friend makes it easier for a woman to achieve success in her career.			.38	
32	Successful organizations seek and want to retain talented female staff.			.37	
16	The support of a mentor greatly increases the success of a woman in any organization.			.36	
25	Women's nurturing skills help them to be successful leaders.			.35	
3	Networking is a smart way for women to increase the chances of career success.			.31	

Acceptance

19	Women are just as ambitious in their careers as men.				-.76
12	Women have the same desire for power as men do.				-.62
23	Motherhood is more important to most women than career development.				.46
22	Women are less concerned about promotions than men are.				.44
2	Women prefer a balance life more than gaining highly paid careers.				.43
28	Women reject the need to work incredibly long hours.				.36
14	Women commonly reject career advancement as they are keener to maintain a role raising children.				.33

The descriptive statistics and intercorrelations of the factors are presented in Table 3. As found in Study 1, there is evidence of correlations between the factors. However, none reach very high correlations.

Table 3. Means, standard deviations, alpha reliabilities and intercorrelations for Study 2 $N = 307$

Factor	M	SD	1	2	3	4
Denial	3.49	1.03	(.81)			
Resilience	5.63	.65	.07	(.70)		
Resignation	3.86	.82	-.30**	.09	(.71)	
Acceptance	3.32	.96	.06	.17**	.38**	(.72)

Notes. *$p < .05$; **$p < .01$. Coefficient alpha reliability estimates are listed on the diagonal in parentheses.

Discussion
Our literature review had identified the need for a reliable measure of women's attitudes towards glass ceilings. Moreover, there is a need to provide more insights as the most commonly used measures in this area, the WAMS and MATWES, are unifactorial, only delivering single scores. The CPS provides greater feedback as it gives the scores for four separate factors. It allows a comparison of negative attitudes towards seeking promotions via Resignation and Acceptance scores. It also gives feedback on positive attitudes towards seeking promotion via Resilience and Denial scores. We believe this will give important feedback for researchers, organizations, and most importantly the women who complete the CPS. The four scores from the CPS can make them more aware of the reasons for seeking or rejecting career advancement.

We carried out two studies with women (N = 243 and N = 307), mostly from Australia, and the findings provided psychometric support for the CPS. Principal axis factoring confirmed the existence of four factors: Resilience, Acceptance, Resignation and Denial. These were the factors predicted by our theoretical model of glass ceilings attitudes. The results show that the initial version of the CPS and the revised 38-item CPS have good reliability levels. The 38-item measure is recommended as it contains more items with high face validity than the previous 34-item version.

The main theoretical contribution of the two studies is the support given for the existence of four groups of stereotypic thinking about glass ceilings. These groups of attitudes may represent state-like psychological constructs. There is a major practical implication as the CPS can be recommended for future quantitative research into the causes and consequences of glass ceilings. It is being used in our ongoing studies of the relationships between glass ceiling beliefs, work engagement, career satisfaction, wellbeing and the under-representation of women in leadership positions.

There are several limitations of the present research. However, each of these limitations provides a direction for future research. First, and of most concern, both our studies included only moderate numbers of respondents from top level management. Second, most of the participants were based in Australia and there is a need to carry out international comparisons across different countries. There

is also a strong need for longitudinal studies to assess the stability of glass ceiling beliefs over time, as well as when women change jobs and careers. Furthermore, the CPS could be used to determine if there are differences of women's glass ceiling beliefs across employment sectors, especially where women dominate (e.g., public relations and social services) and in male dominated careers (e.g., finance). Finally, further studies are needed to investigate the construct and concurrent validity of the CPS. We are planning to use the CPS in combination with measures of work engagement, occupational self-efficacy, explanatory style and hope.

There are a variety of other practical implications if organizations use the CPS to test their female staff. It could assist to clarify which employees and new recruits will appreciate and benefit from 'move-ahead' tasks, thereby supporting vertical development (i.e., promotion) and those who prefer 'stay-here' tasks, seeking horizontal development (for example, a personal assistant being offered training to learn another language, increasing her effectiveness communicating with the manager's clients).

Following a suggestion made by M. Davidson (personal communication, October 2, 2009), we also see the value of using the CPS to assess men's attitudes towards glass ceilings. The WAMS and MATWES were designed to assess the attitudes of both women and men. Male dominated organizations could be evaluated with the CPS to determine whether an anti-female culture exists. The CPS could be used to test the effectiveness of training programs designed to change sexist workplace cultures. Our ongoing research aims to help women be aware of the deeper attitudes and reasons why they have rejected any ideas of seeking promotion. Wrigley (2002) believes cognitive dissonance explains why some women might give superficial reasons to justify their decision not to pursue promotions. Women who gain high scores for Resignation and Acceptance would be suitable candidates for research interviews to ascertain the strength of their anti-career advancement beliefs.

Conclusions
The findings reported in this study support our proposal that women can have beliefs about glass ceilings based on four different groups of stereotypic thoughts: Denial, Resilience, Resignation and Acceptance. The measure we have developed, the CPS, allows quantitative assessment of these different attitudes. Possibly, the CPS will be able to identify gender differences in these attitudes towards glass ceilings. We hope that future research with the CPS will make a contribution to solving a problem that hurts all of us, women and men. This is made clear in the challenge from the US Labor Secretary in 1991 when she introduced the findings of the first ever government study into glass ceilings. She stated that glass ceilings disadvantage society as a whole as they effectively restrict leadership to only one-half of the population (US Department of Labor, 1991).

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