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Keywords

glass, ceiling, beliefs, women, related, success, career

Disciplines

Arts and Humanities | Life Sciences | Medicine and Health Sciences | Social and Behavioral Sciences

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Purpose – The purpose of this study is to test the concurrent criterion validity of a new measure, the Career Pathways Survey (CPS) by exploring how women's glass ceiling beliefs are related to five major indicators of subjective career success: career satisfaction, happiness, psychological wellbeing, physical health and work engagement (WE).

Design/methodology/approach – Data from a cross-sectional study of 258 women working in Australian organizations were analyzed. The participants completed the CPS and measures of subjective career success. The CPS assesses four sets of beliefs about glass ceilings: Denial, Resilience, Acceptance and Resignation.

Findings – Regression analyses showed Denial was positively associated with career satisfaction and WE; Resignation was negatively related to happiness and both emotional and physical wellbeing; Resilience had positive relationships with happiness and WE; Acceptance was negatively related to WE. Our findings provide support for our hypotheses and the concurrent validity of the CPS.

Research limitations/implications - Given the study uses a cross-sectional design, causal directions found between variables are inferences. Further research with longitudinal and experimental studies is needed to provide support for these inferences.

Practical implications - Training programs to analyze glass ceiling beliefs after testing with the CPS may be a beneficial strategy to help women identify reasons for their career goals. Feedback from CPS testing might facilitate greater awareness of the causes of women's subjective success in organizations.

Originality/value - We are the first to shed light on the connections between these success variables and women's beliefs about glass ceilings.

Keywords - Glass ceiling beliefs, Career satisfaction, Wellbeing, Work engagement, Australia.

Paper type - Research paper

Introduction

The obstacles that lead to the under-representation of women in leadership and upper level management positions are commonly described in scholarly works and the media as glass ceilings (Barreto *et al.*, 2009; McLeod, 2008; Weyer, 2007). There is a strong need for ongoing investigations into the causes and consequences of glass ceilings, especially in corporate organizations. Catalyst, an American organization that focuses on women's issues, predicted it will take 73 years to reach parity with men in the boardrooms of the top 500 companies in the US (Catalyst, 2007). Furthermore, the UK Equal Opportunity Commission calculated it would take 65 years for women to achieve equality with men as directors of Britain's top 100 companies (Thomson *et al.*, 2008).

The Career Pathways Survey (CPS; Smith *et al.*, 2012b) is a multi-factorial instrument which quantitatively assesses four sets of beliefs about glass ceilings: Denial, Resilience, Acceptance and Resignation. We identified these four groups after a review of the literature on women's career advancement, and in particular, the extensive research reported by Eagly and Carli (2007). The CPS was constructed with items related to the four groups of beliefs about glass ceilings and all items have been reported in the literature (Smith *et al.*, 2012b). In addition, these dimensions were supported by exploratory factor analysis of data collected from two samples of women ($N = 243$ and $N = 307$). Both studies found each factor has

satisfactory internal consistency with Cronbach alphas ranging from 0.70 to 0.81 (Smith *et al.*, 2012b). It is necessary to note that in this study we use belief, attitude and opinion interchangeably. This approach has been adopted in accordance with analysis provided by Reber's (1985) dictionary of psychology.

The CPS provides scores for four groups of beliefs about glass ceilings. Denial is defined as the belief that men and women face the same issues and problems in seeking leadership. Examples of items in the CPS assessing Denial are: 'Women have reached the top in all areas of business and politics', 'Women starting careers today will face sexist barriers' (reverse scored). Resilience is defined as the belief that women are able to break glass ceilings. Examples of this factor are: 'The more women seek senior positions, the easier it will be for those who follow', 'Women are capable of making critical leadership decisions'. Resignation is the belief that women suffer many more negative consequences than men when pursuing career advancement and thus, there are overwhelming reasons for women not attempting to break glass ceilings. Two CPS items measuring this factor are: 'Women are more likely to be hurt than men when they take big risks necessary for corporate success', 'Jealousy from co-workers prevents women from seeking promotions'. Acceptance is the belief that women prefer other life goals, such as family involvement, over developing a career. Therefore, Acceptance is summed up as a pro-family/anti-career advancement set of beliefs. Examples of items in the CPS assessing acceptance are: 'Women reject the need to work incredibly long hours', 'Women are less concerned about promotions than men are'.

The aim of the present study was to collect evidence for the concurrent criterion validity of the CPS by investigating the relationships between women's glass ceiling beliefs and a range of important indicators of subjective career success (career satisfaction, happiness, psychological wellbeing, physical wellbeing and work engagement). Extensive reviews by Lyubomirsky *et al.* (2005) and Fisher (2010) give strong support for the organizational benefits to be gained by the rapidly growing research into subjective (or intrinsic) success. Career satisfaction was included in the current study as it is the major indicator of subjective career success (Ng *et al.*, 2005; Orser and Leck, 2010). However, other studies have also emphasised the roles of common indicators such as happiness, emotional wellbeing and physical health (e.g., Fisher, 2010; Judge and Hurst, 2008; Lyubomirsky *et al.*, 2005; Wright *et al.*, 2007). Moreover, these four constructs have been found to be related to work performance (Fisher, 2010; Judge and Hurst, 2008; Wright and Cropanzano, 2000). To obtain a clear and broad investigation of subjective career success, all four constructs were therefore selected as dependent variables. Further, work engagement was chosen as one of the subjective career success variables in this study as it has become a major concept in occupational health psychology (Bakker *et al.*, 2008). Having an engaged workforce is consistently rated by human resource managers as a priority for organizations (Chughtai and Buckley, 2011). Described as the opposite of burnout, engagement is a fulfilling work-related state of mind, characterized by the positive components of *vigour* (energetic, persistent, resilient), *dedication* (enthusiastic, proud) and *absorption* (fully concentrated, engrossed) (Bakker and Demerouti, 2008). Increasing work engagement of both staff and management could result in large economic benefits for organizations. (Gallup Consulting, 2009; Saks, 2006).

In our previous exploratory investigation of the CPS, the findings of two studies supported the hypothesized four-factor structure (Smith *et al.*, 2012b). Several studies have examined relationships between the career levels of women with subjective success indicators (e.g., Armstrong-Stassen and Cameron, 2005; Burke *et al.*, 2006; Carr, 1997; Clark, 1997; Orser and Leck, 2010). Importantly, we are the first to examine the connections between

subjective career success and women's attitudes towards glass ceilings. Because this study is based on cross-sectional data, we will not be able confirm causal directions. Instead, we are searching for significant relationships with glass ceiling beliefs, and such findings will guide follow-up longitudinal and experimental studies.

Theoretical background and hypotheses

We propose that glass ceiling beliefs can lift or diminish desires to be promoted. These beliefs may lead to career pathway choices and long-lasting behaviors within organizations. These predictions are in line with Beck's (1976) proposals about the important roles played by attitudes and beliefs. In his influential book on cognitive behavior therapy, Beck (1976) argued attitudes form the basis for expectancies and self-instructions to achieve our goals. The important role of beliefs in forming short-term and long-term behaviour (both positive and negative) has become a keystone of cognitive psychology and cognitive behavior therapy (Hawton *et al.*, 1989). Further, work beliefs predict goal striving and wellbeing (Sheldon and Cooper, 2008). Consequently, we posit that glass ceiling beliefs may affect a range of wellbeing and performance variables.

The theoretical underpinnings of the CPS are based on a framework of optimism and pessimism toward the likelihood of women being promoted to leadership and upper management positions. The formulation of hypotheses in this study is linked to two models of optimism. We have incorporated Scheier and Carver's (1985) model of dispositional optimism with the explanatory style model of optimism (Peterson and Seligman, 1984; Seligman, 1991). Dispositional optimism is defined as a stable expectancy that good things will happen in life (Scheier and Carver, 1992). Scheier *et al.*, (1986) explored the connections between optimism and ways of coping with negative situations. They found optimism was associated with acceptance and problem-focused coping, i.e., resilience, while pessimism was positively related with resignation, i.e., giving up (Scheier and Carver, 1992). There is considerable evidence that dispositional optimism influences psychological and physical wellbeing (Augusto-Landa *et al.*, 2011; Scheier *et al.*, 1994).

In a different approach to optimism, Seligman and many researchers have operationalized optimism as a stable style of explaining negative events. In short, an optimistic explanatory style is the tendency to explain problems with specific, temporary and external causes. Conversely, a person with a pessimistic explanatory style is likely to cite global (non-specific), long-lasting and internal causes for negative situations (Seligman *et al.*, 1995). Extensive research has found that explanatory style optimism has long-term positive effects on mental and physical health (Peterson *et al.*, 1988; Peterson and Steen, 2009), as well as success in business, working in organizations and job satisfaction (Proudfoot *et al.*, 2009; Seligman, 1991; Seligman and Schulman 1986; Welbourne *et al.*, 2007). Optimism, whether it is a positive outlook or an explanation for a negative situation, leads to positive emotions, motivation and a commitment to achieve work-related goals (Luthans *et al.*, 2007). In sum, extensive empirical evidence has been found by many researchers that optimistic (and pessimistic) thoughts strongly influence the development of subjective success constructs such as career satisfaction (Luthans *et al.* 2007), happiness, emotional and physical wellbeing (Augusto-Landa *et al.*, 2011; Scheier and Carver 1992) and work engagement (Bakker *et al.*, 2008; Gallop Consulting, 2009).

The two theories of optimism, the dispositional model (Scheier and Carver, 1992) and the explanatory style model (Seligman, 1991), plus the above mentioned findings on subjective success, provided the basis of the following conceptualization of women's beliefs about glass ceilings. We propose a dichotomy for the CPS factors. First, Resilience and Denial

are optimistic as they share the view that women can reach the top levels of organizations. Second, Resignation and Acceptance involve pessimism as they both imply the gender imbalance in leadership is not likely to change because most women do not have leadership goals in the workplace. Consequently, we suggest glass ceiling beliefs can be antecedents for the above range of subjective success variables that have been shown to be affected by optimistic (and pessimistic) thoughts. Further, we assume the mechanism that links glass ceiling beliefs with subjective success is the same as that proposed by Seligman (1991), Scheier and Carver (1985) and Luthans *et al.* (2007) for optimism/pessimism influencing subjective success. Thus, optimistic thoughts and beliefs about chances of women's career advancement (Resilience and Denial) are likely to lead to positive emotions and actions toward seeking promotions. In contrast, pessimistic thoughts (Acceptance and Resignation) are likely to lead to negative emotions and actions toward promotion.

The 38 items of the CPS represent beliefs about a wide variety of variables that considerable research has shown to be linked to women's career advancement (Barreto *et al.*, 2009; Eagly and Carli, 2007; Powell, 2012). For example, the CPS items refer to issues such as role models, lack of promotion opportunities for women, sexist barriers in organizations, successful organizations wanting talented women leaders, work-family compromises, benefits of higher education, networking, jealousy from female colleagues after promotions, support from mentors and sexual harassment. All items are either positive (optimistic) or negative (pessimistic) outlooks/explanations for breaking glass ceilings.

Research findings have shown that resilience results from an optimistic explanatory style (Seligman, 2011; Seligman *et al.*, 1995). In addition, Luthans *et al.* (2007) highlight the connection between resilience and both dispositional and explanatory style optimism in predicting work performance and satisfaction. Thus, the CPS factor of Resilience represents an optimistic set of beliefs about breaking glass ceilings as it involves positive thinking and aspirational thoughts that enhance the chances of career advancement and success within an organization (Seligman, 1991). Resilience beliefs about glass ceilings are likely to be linked to a positive outlook toward the workplace and the high optimism involved in Resilience is likely to result in it being positively related to WE. Moreover, WE is operationalized into three components, one of which, vigour is described as being linked to resilience (Bakker and Demerouti, 2008). Therefore, we hypothesize:

H1. Resilience will be positively related to career satisfaction (*H1a*), happiness (*H1b*), emotional wellbeing (*H1c*), physical wellbeing (*H1d*) and work engagement (*H1e*).

With respect to Denial, Wrigley (2002) argued that some women do not acknowledge glass ceilings to avoid tension. By doing so, they could help maintain career satisfaction and wellbeing. It is also possible that women, like men, can be simply unaware of obstacles that form a glass ceiling for women. As Denial is also an optimistic construct, (possibly less optimistic than Resilience), it will also be positively related to WE. Accordingly, it is expected:

H2. Denial will have positive relationships with career satisfaction (*H2a*), happiness (*H2b*), emotional wellbeing (*H2c*), physical wellbeing (*H2d*) and work engagement (*H2e*).

In this study, Acceptance is a pessimistic set of beliefs about women achieving leadership positions, and it follows that Acceptance would not lead to seeking promotions in

organizations. However, Acceptance also involves a positive optimistic outlook toward life balance and family life. Thus, we suggest Acceptance will be associated with positive emotions and actions at home and away from work. This will result in a positive relationship between Acceptance and happiness, psychological wellbeing and physical health. However, Acceptance is a negative way of looking at gender inequality in workplaces and thus we expect it will be negatively related to career satisfaction and WE. This should not be seen as a contradiction but a natural consequence. Beck (1976) posits that the same set of thoughts can lead to opposing motivations in pursuing markedly different goals, for example in this study, achieving promotions versus maintaining a healthy life balance. An extensive review of cognitive therapy carried out by Hawton *et al.* (1989) supports this argument. Hence, it is proposed:

H3. Acceptance will be negatively related to career satisfaction (*H3a*), positively related to happiness (*H3b*), emotional wellbeing (*H3c*), physical wellbeing (*H3d*), plus negatively related to work engagement (*H3e*).

We also propose that Resignation attitudes towards glass ceilings represent a pessimistic outlook and would be negatively related to career satisfaction, happiness, psychological wellbeing, physical wellbeing and WE. When women have Resignation beliefs about glass ceilings, they see little hope of work conditions changing. They can either remain dissatisfied and unhappy working in an organization, or can leave and join the large numbers of women who have become self-employed (Walker and Webster, 2006). In our four factor conceptualization of glass ceiling beliefs, Resignation is the most pessimistic outlook toward women being promoted. Therefore, we suggest:

H4. Resignation will be negatively related to career satisfaction (*H4a*), happiness (*H4b*), emotional wellbeing (*H4c*), physical wellbeing (*H4d*) and work engagement (*H4e*).

The overall empirical approach to the present study is depicted in Figure 1.

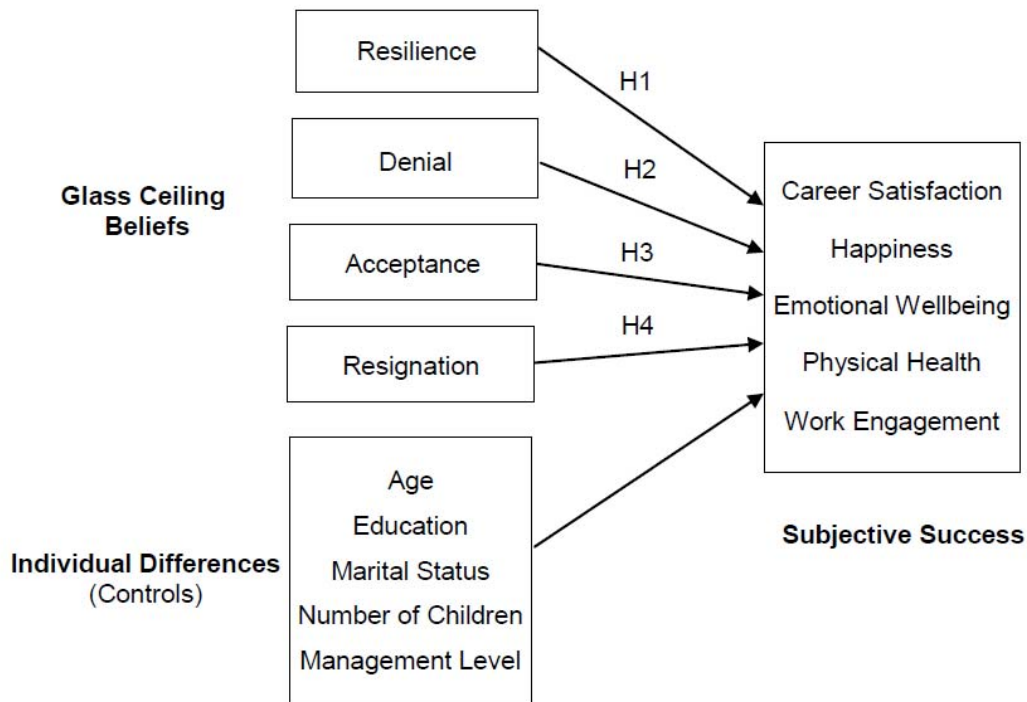


Figure 1. Research model for study

Method

Participants and procedure

Two hundred and fifty eight women working in a variety of Australian organizations completed an online questionnaire in the six month period that the contact website was kept open. The majority of respondents lived in urban areas (76.7%), were under 41 years old (59.7%), had completed university (65.6%), were married or in a relationship (67.9%) and had no children (53.5%). Most participants had been in their present career for up to 10 years (63.2%), occupied staff positions (53.1%) and worked 31-40 hours per week (65.9%). A total of 34.4% worked in middle or top management.

The ethics protocol was reviewed and approved by the University's Human Research Ethics Committee. Several women's networks plus 20 human resource managers were approached and asked to forward an email to female colleagues, staff and friends. This snowball sampling technique is frequently used to obtain data from a variety of organizations (Eddleston *et al.*, 2006). The email contained an Information Sheet for the study and a link to a secure website that enabled the anonymous submission of responses to the questionnaire. It was decided to use an online survey to allow easy access for prospective participants and thus obtain a larger and broader sample than was likely with a hard copy of the survey.

Measures

Demographics. Five demographic variables were included as covariates in our analyses as they are considered to be important for research into subjective career success of women (Orser and Leck, 2010; Valcour and Ladge, 2008): age, education, marital status, number of

children and management level. The response scales were: Age (1 = 18-20 to 7 = 70+), Education (1 = Primary/elementary school to 8 = PhD), Marital status (1 = single, 2 = married, 3 = with partner), Number of children (1 = 0 to 8 = 6+), Management level (1 = staff member, 2 = supervisor, 3 = middle management, 4 = top management)

Glass ceiling beliefs. The CPS is a measure of women's beliefs about glass ceilings and has satisfactory psychometric properties (Smith *et al.*, 2012b). In this study the Cronbach alphas were satisfactory ranging from 0.70 to .81. The CPS assesses levels of Denial (10 items), Resignation (10 items), Resilience (11 items) and Acceptance (7 items) towards glass ceilings. Women rate their level of agreement with 38 statements on a scale from 1 (strongly disagree) to 7 (strongly agree). Individual factor scores are calculated by the mean score of the relevant items. Seven items are reverse scored. Examples of items from the four factors are: 'Women and men have to overcome the same problems at the workplace' (Denial), 'Being in the limelight creates many problems for women' (Resignation), 'Women have the strength to overcome discrimination' (Resilience), 'Motherhood is more important to most women than career development' (Acceptance).

Work engagement. The 9-item version of the Utrecht Work Engagement Scale (UWES-9; Schaufeli *et al.*, 2006) was used in this study as it measures three closely related workplace engagement factors: *vigour*, *dedication* and *absorption*. Due to the high correlations between these factors, Seppala *et al.* (2009) recommend WE be considered as a one-dimensional construct when research is examining WE in general. Therefore, in the current study WE was measured as a single variable. Sample items are "I am enthusiastic about my job" and "When I get up in the morning, I feel like going to work". All items were rated on a scale ranging from 0 = "Never" to 6 = "Always". The strong psychometric properties of the UWES-9 were shown in a study ($N = 9,404$, 65% female) of health care workers, young/experienced managers, teachers/education administrators and dentists (Seppala *et al.*, 2009). In the present study, the alpha coefficient for the 9 items was .92.

Happiness. Happiness was assessed with Subjective Happiness Scale (Lyubomirsky and Lepper, 1999). Respondents provided ratings for four items such as "In general, how happy do you consider yourself?" Seven-point Likert scales were used with anchors such as, 1 = "Not a very happy person" to 7 = "A very happy person". One item was reverse scored. The happiness measure yielded a Cronbach alpha of .89 in this research.

Psychological and physical wellbeing. The three items measuring psychological (emotional) health and three items for physical health were adapted from the SF-12 Health Survey (Ware *et al.*, 1996). A sample item measuring psychological wellbeing is "In the last 4 weeks, have your emotional problems interfered with your work activities?" A sample item measuring physical wellbeing is "In the last 4 weeks, have your physical problems interfered with your social activities?" Each item had a five-point response scale ranging from 1 = "None of the time" to 5 = "All the time". The internal reliabilities of the measures of psychological wellbeing measure (.77) and physical health (.78) were both satisfactory in this study.

Career satisfaction. The Career Satisfaction Scale (Greenhaus *et al.*, 1990) measured career satisfaction. This 5-item measure (e.g., "I am satisfied with the success I have achieved in my career"). has a 5-point response scale ranging from 1 = "Strongly disagree" to 5 = "Strongly agree". It has been used in over 240 studies (Hofmans *et al.*, 2008) and has a high internal reliability. The Cronbach alpha in the present study was .91.

Data Analysis

Hypotheses were tested with correlations and a series of five hierarchical regression analyses. All data were analysed using SPSS Version 17.0. The sample size of 258 used for each

regression provided a good ratio between the number of predictor variables and number of subjects (1:28). It is recommended that the number of subjects in a regression should be at least 50 plus eight times the number of predictor variables (Tabachnick and Fidell, 2007). Thus, the present study required a minimum of 122 subjects.

In order to carry out regression analyses, it is recommended that categorical variables be recoded into dichotomous variables (Allen and Bennett, 2010; Field, 2005). Therefore, age was recoded 1 = 40 years and under, 2 = over 40 years; education was coded 1 = no university degree, 2 = university degree or higher; marital status was coded 1 = single, 2 = married/relationship; number of children was coded 0 = no children, 1 = has children; management level was coded 1 = staff/supervisor, 2 = middle/top management.

In each of the regressions, step 1 shows the relationship with age and education. The family variables of marital status and number of children are introduced on step 2. Management level is added to the model on step 3. Resilience, Denial, Acceptance and Resignation are added on the fourth step to test *H1* to *H4*.

Results

Table 1 presents the descriptive statistics and intercorrelations of glass ceiling beliefs with five indicators of subjective success. Several correlations in Table 1 are consistent with the predicted relationships. For Resilience, there was only support for *H1e* as there was a significant correlation with WE. *H2* (*a, b, c, e*) receive support as Denial showed significant positive correlations with career satisfaction, happiness, emotional health and WE. However, *H2d* was not supported as Denial was not related to physical wellbeing. There was no support for *H3* as Acceptance showed no significant relationships with any of the subjective success variables. As predicted by *H4* (*a, b, c, d*), Resignation was negatively related to career satisfaction, happiness, emotional wellbeing and physical health. *H4e* was not supported with Resignation not related to WE.

Table 1. Means, standard deviations, alpha reliabilities and intercorrelations

Variable	M	SD	1	2	3	4	5	6	7	8	9
1. Denial	3.55	1.04	(.81)								
2. Resilience	5.59	0.66	.16	(.70)							
3. Resignation	3.82	0.81	-.32**	.08	(.71)						
4. Acceptance	3.31	0.95	.07	.19**	.37**	(.72)					
5. Career satisfaction	3.58	0.93	.27**	.14*	-.13*	.02	(.91)				
6. Happiness	5.49	1.17	.19**	.11	-.20**	-.08	.24*	(.89)			
7. Psychological health	4.24	0.68	.18**	.00	-.27**	-.16	.20**	.53**	(.77)		
8. Physical health	4.05	0.77	.10	.06	-.16*	.04	.16*	.31**	.48**	(.78)	
9. Work engagement	5.31	0.99	.15*	.14*	-.08	-.10	.42**	.38**	.28**	.21**	(.92)

Notes. $N = 258$. * $p < .05$; ** $p < .01$. Coefficient alpha reliability estimates are listed on the diagonal in parentheses

The results of the regression analyses are presented in Table 2. *H1b* was supported as Resilience has a positive association with happiness. Resilience (with Resignation) accounted for 7% variance of happiness. There was support for *H1e* as Resilience showed a positive relationship with WE. Denial was positively related to career satisfaction accounting for 10% variance. This finding supported *H2a*. Denial also played a role in predicting 7% of the variance in WE, thereby supporting *H2e*. There was support for *H3e* as Acceptance was negatively related to WE. Resignation was negatively related to happiness and both emotional (9% variance) and physical wellbeing (5% variance), thus supporting *H4 (a, b, c, d)*. However, there was no significant relationship between Resignation and WE.

The regression analyses found the following relationships with controls: management level accounted for 6% variance in career satisfaction, 3% variance of WE and only 1% variance in happiness; marital status and number of children were predictors of emotional wellbeing (1% variance) and physical wellbeing (2% variance); age was positively related to WE (2% variance).

Table 2. Hierarchical regression results predicting various indicators of subjective success in working women ($N = 258$)

Predictor variable	Career Satisfaction				Happiness				Emotional Wellbeing				Physical Wellbeing				Work Engagement			
	<i>B</i>	<i>SE_B</i>	β	<i>R</i> ²	<i>B</i>	<i>SE_B</i>	β	<i>R</i> ²	<i>B</i>	<i>SE_B</i>	β	<i>R</i> ²	<i>B</i>	<i>SE_B</i>	β	<i>R</i> ²	<i>B</i>	<i>SE_B</i>	β	
Step 1																				
Constant	.89	.65			5.80	.85			5.05	.49			4.14	.58			3.35	.72		
Age	.09	.13	.05		.00	.16	.00	.01	.08	.09	.06	.00	.07	.11	.04	.00	.31	.14	.16*	
Education	.09	.12	.05	.00	-.15	.15	-.06	.01	-.03	.09	-.02	.00	-.02	.10	-.01	.00	-.12	.13	-.05	
.02																				
Step 2																				
Marital status	.13	.06	-.10		-.15	.16	-.06	.02	.13	.06	-.10	.01	.13	.11	-.10	.02	-.12	.14	-.06	
No. of children	-.17	.05	.09	.01	-.07	.17	-.03	.02	-.17	.05	.09	.01	.13	.11	.09	.02	.10	.14	.05	
.02																				
Step 3																				
Management lvl	.53	.12	.27***	.07***	-.34	.15	-.14*	.03	.53	.12	.27	.01	-.14	.10	-.09	.02	.30	.13	.13*	
.05**																				
Step 4																				
Resilience	.09	.09	.07		.25	.11	.14*		.03	.06	.03		.06	.07	.06		.22	.08	.15*	
Denial	.27	.06	.30***		.11	.08	.10		.07	.04	.11		.11	.05	.01		.18	.10	.19**	
Acceptance	.03	.07	.03		-.06	.09	-.05		-.06	.05	-.09		.04	.06	.05		.03	.07	-.16*	
Resignation	-.01	.08	-.01	.17***	-.24	.10	-.17*	.10**	-.20	.11	-.25**	.10***	-.21	.07	-.21**	.07*	-.16	.09	.02	
.12**																				

Note. * $p < .05$; ** $p < .01$; *** $p < .001$.

Discussion

This study is the first to shed light on the connections between subjective career success and women's beliefs about glass ceilings. Thus, we achieved the aim of the study by finding evidence for the concurrent criterion validity of the CPS. Our results supported hypotheses based on the 4-factor structure of women's glass ceiling beliefs which is measured by the CPS.

Clearly, we cannot confidently infer any cause-and-effect relationships due to the use of cross-sectional data. However, the findings from our series of hierarchical regressions suggest the four glass ceiling factors may be antecedents for subject success. If the direction of influence is supported by longitudinal and experimental studies, there could be important consequences for organizations and their female workers. The relationships found in this study provide hints for lifting the subjective success of women working in organizations. This could lead to major benefits for organizations as many studies have shown that work performance is lifted by increases in the five indicators of subjective career success that were measured in this study, i.e., career satisfaction and happiness (Fisher, 2010; Lyubomirsky *et al.*, 2005), emotional wellbeing (Wright and Cropanzano, 2000; Wright *et al.*, 2007), physical health (Judge and Hurst, 2008) and work engagement (Bakker *et al.*, 2008; Gallop Consulting, 2009).

A range of findings from regression and correlational analyses supported the four groups of hypotheses proposed for this study. The study found significant relationships between each of the glass ceiling factors and the subjective success constructs. However, there was only partial support for the four sets of hypotheses as several predicted relationships were not found. This might be due to a difference in strength of relationships between glass ceiling beliefs and outcomes. We had suggested in our description of the theoretical framework of glass ceiling beliefs, that Resilience represented the most optimistic of the glass ceiling beliefs and Denial was less optimistic than Resilience. It is clear from our conceptualization of Resignation that it contains the most pessimistic beliefs, with Acceptance being less pessimistic. Consequently, Resilience should have shown the strongest positive relationships with subjective success, and Resignation should have shown the strongest negative relationships. Inspection of the findings of the regression analyses (Table 2) indicates this proposed hierarchy of optimism is not fully supported. Resilience only had small (but significant) coefficients in predicting happiness and WE. In contrast, Denial was the strongest predictor of career satisfaction and WE. However, Resignation was the only significant predictor of emotional and physical wellbeing. As expected, these relationships were negative. Acceptance also showed a predicted negative relationship with WE. In sum, findings from the regression analyses suggest Denial has the strongest positive association with subjective success and Resignation has the most negative associations. The theoretical uncertainty behind these findings warrants further investigation.

There are several theoretical and future research implications of the findings from this study. Our search of the literature on the career advancement and subjective career success of women found no theoretical models that incorporate the construct of glass ceiling attitudes. Therefore, we considered Denial, Acceptance, Resilience and Resignation as expressions of optimism or pessimism. Our findings suggest optimistic (and pessimistic) thoughts that women have about being promoted in organizations are positively (and negatively) related to a range of success constructs. This is an important contribution to the literature on optimism, both dispositional and explanatory style, as it provides evidence about connections with optimism from a domain not previously investigated. Further, this domain-specific evidence gives new support to the theoretical link between positive/negative thoughts and positive/negative behaviour which is at the basis of cognitive behavior therapy (Beck 1976). Most importantly, the findings also suggest theories explaining the wellbeing of working

women should consider the multiple connections with women's attitudes towards glass ceilings.

We recommend that more research is needed to clarify the relationships between glass ceiling beliefs and optimism/pessimism in everyday life. Therefore, we suggest future research into glass ceiling beliefs also incorporate measures such as the revised Life Orientation Test (LOT-R; Scheier, *et al.*, 1994) to assess dispositional optimism and the Attributional Style Questionnaire (Peterson *et al.*, 1982) to measure explanatory style optimism. In addition, future studies using the CPS could incorporate testing with the Workplace Explanations Survey (Smith *et al.*, 2012a) which has been developed specifically to measure optimism for subjects working in organizations. The use of any of these measures will allow the concurrent validity of the CPS to be further tested.

Practical implications

Some suggestions about practical implications follow from our findings. Whilst they must be seen as speculations about glass ceiling beliefs influencing subjective success, the suggestions are supported by a comparison of the amounts of variance explained by glass ceiling factors versus the controls (age, education, marital status, number of children and management level). In each of the five regression analyses, glass ceiling beliefs accounted for more variance than the combined effect of the control variables.

Organizations might consider providing training programs to analyze glass ceiling beliefs after testing with the CPS. The CPS could be incorporated in recruitment testing and annual reviews. This may then be a beneficial strategy to help women identify reasons for their career goals. It would help support women seeking career advancement, and at the same time, encourage others who are reticent about promotions. In particular, those women who score high on Resignation could benefit from training and development courses that help them examine the validity of their negative thoughts about women seeking promotions. However, if it is found that an organization's structure and actions do indeed lead to Resignation, major changes will be needed before women in that organization can dismiss their negative beliefs.

Women who express an ambition to become part of upper management, could gain insights by analysing their levels of Resilience and Denial. High Acceptance scores could help identify women with little or no ambition to be promoted, yet would benefit from professional development whilst maintaining their level in the organization. Finally, feedback from CPS testing might also facilitate women gaining greater awareness of the possible causes for their subjective success in organizations.

Limitations and future research

Further validation studies of the CPS are necessary. It is recommended construct validity be investigated with confirmatory factor analysis, preferably involving cross-cultural studies to extend the ecological validity of the CPS. Convergent validity could be assessed by administering the CPS in combination with an instrument such as Women As Managers Scale (Terborg *et al.*, 1977) or the Managerial Attitudes Toward Women Executives Scale (Dubno *et al.*, 1979). Even though both of these measures are unidimensional, higher scores suggest negative beliefs about female managers.

Another limitation of this study was the reliance on self-reported data. Future research could include objective assessments of emotional and physical health, as well an important variable not measured in this study, work performance. This could be collected in anonymous reviews given by superiors and colleagues.

At present there is no empirical evidence to show that glass ceiling beliefs are stable

individual differences. If longitudinal studies provide evidence of the stability of glass ceilings beliefs, they might be considered as relevant as personality traits, an area that has been extensively examined for its role in subjective career success (Heller *et al.*, 2004; Judge *et al.*, 2002; Judge *et al.*, 2010). Research into the relationships between personality traits and glass ceilings attitudes would be a valuable addition to career success literature.

There are other limitations in the present study and these point to future research. First, a much larger sample of women at the top level of management is needed. Only 23 women from this category participated in the study. It is recommended that future research incorporate an important variable: career category. Major differences might be found in women's attitudes toward glass ceilings across areas such as heavy industry, finance, retail sales, education, government, health, social services and trades. Directions for future research also include longitudinal studies to determine whether glass ceiling beliefs are affected by changes in employers or careers.

Conclusions

It is predicted that glass ceilings will continue to be a problem facing women for at least 50 years. Progress toward gender parity in leadership in the last decade has been slow. Therefore, it is important to continue and broaden research into this inequality. The present study has played a role in expanding the literature on glass ceilings by providing insights into the relationships between women's glass ceiling beliefs and major indicators of subjective career success. We found further support for the psychometric properties of a new measure, the CPS. There are practical implications which could provide new directions for research into the causes and consequences of glass ceilings by looking at the roles of optimism and pessimism. Hopefully, this might help break glass ceilings and lead to greater representation of women in top levels of management. Finally, we found strong support for the measurement of glass ceiling beliefs with the CPS to be incorporated in future research.

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