The Chilly Climate Environment: What's happening outside the Classroom?

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Abstract
There is a plethora of research concerning the chilly climate for students within the classroom. However there is an absence of literature investigating this phenomenon within distance education. This exploratory research draws from the theories of role strain, academic performance and coping and integrates these theoretical paradigms into the chilly climate, to develop a framework to conceptualise this phenomenon for distance education students. In addition, this paper theorises that women within distance education experience role strain and incorporates the actors for role strain into the chilly climate. The theory saturating the chilly climate is that women are disadvantaged through the lived experience of this phenomenon. Conversely, this research proposes that the independent variable to the overall GPA for women within distance education is the coping strategy chosen by the student. The quantitative analysis indicates that women are outperforming men in GPAs above a credit average. In addition, women studying internally are outperforming their distance education counterparts. This paper intimates that the chilly climate is more complex for women within distance education and it is proposed that Higher Education Institutions recognise that this phenomenon exists and implement marketing strategies that are designed to dissipate the chilly climate environment.

Introduction
Approximately 20% of Higher Education students within Australia are external and multi-modal enrolments (Department of Education, Science and Training, 2004). From 1991 to 2001 external enrolments increased by 97% with 57% of external enrolments being women (Australian Bureau of Statistics, 2003). The highest concentration of students enrolled in higher education are management and commerce students enrolled in a Bachelor's degree (DEST, 2004). The chilly climate environment construct discusses women as disadvantaged learners within the classroom environment (Sandler, 2004). With such a sharp increase in external enrolments, it is important to explore if women are experiencing this phenomenon outside of a classroom environment. Pascarrella et.al's (1997) research indicates that higher achieving women may be more sensitive to experiencing the chilly climate than women with a lower ability. However, this paper proposes that the correlation is that higher achieving women are aware of the chilly climate environment and adopt flexible and versatile coping responses and women who appear to have lower ability adopt rigid and passive coping responses, in response to this disadvantageous environment. In this initial study, a quantitative analysis of the overall GPAs (Grade Point Averages) of graduates of the Bachelor of Business program, in a regional Australian University, was conducted to explore gender based performance of distance education students. The findings indicate that although women experience a chilly climate, they have higher accumulative GPAs than men. This contributes to the chilly climate theory by suggesting that the chilly climate is more complex for women within distance education and that the GPA is not an absolute measure that women are disadvantaged by this environment and that role strain and coping styles are variables to the GPA and the coping style is a response to this environment.

Literature Review
The chilly climate environment is posited as a phenomenon experienced by women within a classroom environment. This construct is deemed to be the result of an accumulation of micro-inequalities and discrimination experienced within the classroom, with the major implication being that women are disadvantaged within an academic environment (Crombie, Pyke, Silverthorn, Jones & Piccinin, 2003). The original research proposing this construct, conducted by Sadler in 1982 supported Sadker's empirical research into gender diversity within school aged children (Sadker, 2004; Sandler, 2004).

The framework that underpins this phenomenon involves three sets of actors; male peers, the Faculty and the female students (Sandler & Hall, 1986). The interactions between the three sets of actors cause disparity within this pluralistic framework and result in gender inequality within the classroom (Salter, 2003). Interactions exist at four levels: Faculty-student interactions, male-female peer interactions, the Faculty's commitment to monitoring gender diversity within the classroom and the Faculty-male peer interaction when gender bias is induced by the male peer within the classroom (Allen & Madden, 2003).

The argument that Faculty interactions are the cause or inadvertently contribute to the chilly climate environment (Sandler, Silverberg & Hall, 1996) has sparked a debate within the literature (Allan & Madden, 2003; Drew & Work, 1998; Canada & Pringle, 1995) Classroom biases within the Faculty include; lecturer's giving more attention to men, focusing on the woman's appearance rather then her academic work, attributing the achievements of women to outside factors, rather than their abilities, the coursework materials using male specific language to describe situations and teaching and assessment methods being constructed to the male learning style (Allan & Madden, 2003; Brady & Eisler, 1999; Riordon, 1994). Classroom biases with the student peer group include; men sitting at the front of the class more, men dominating conversation within the classroom and having longer speaking time, men assuming that their women counterparts cannot (or should not) participate, if what is being undertaken is presumed masculine, i.e lifting heavy objects, sexual over-tones used to embarrass or ridicule women within the group (Allan & Madden, 2003).

Research based on the chilly climate environment indicates that women may be feeling less confident about their abilities, more devalued, and less acknowledged than their male counterparts (Pennsylvania State University, 2004). This experience also dampens career aspirations and results in women avoiding certain classes, which further disadvantages women students. Conversely, Riordon (1994) acknowledges that women from co-educational universities are more likely to pursue post-graduate education, than women attending a single sex university.

Rationale for Study

Whilst there is a plethora of literature relating to the chilly classroom environment for internal students, research appears to be absent regarding the chilly climate in relation to external or flexible delivery students. External or flexible delivery students are termed 'distance learners', within the literature. Distance education is described as enrolling in a school or University; however the student receives the instruction from a remote site. Distance education may be the only alternative or access to higher education for students who have imposing environmental factors such as work, disability, childcare or geographic constraints (Queensland Tertiary Admissions Centre, 2004).

However, the abundant literature surrounding distance education is mainly concentrated in the area of on-line or other forms of electronic media as the communication tool. The distance education students within the sample, however, mainly have lived experiences with what Phipps and Meritotis (1999, p.33) term as 'other technology', which account for only 9% of communication media used in their analysis of distance education literature. The main source of distance learning materials are written courseware materials in compact disc format, or in printed book form. These materials consist of a course profile, study guide and literature relating to the course (Division of Teaching and Learning Services information guide, 2004). A small number of courses within the Bachelor of Business program at Central Queensland University use interactive web-based learning tools, such as WebCT and 'Blackboard." Blackboard enables students to access on-line materials including assessment and also enables the student to participate in the 'virtual classroom', similar to an internet chat room (CQU, 2004).

Phipps and Merisotis (1999) also stipulate that there has only been a modicum of research conducted in the area of undergraduate Business degrees. The majority of research has been conducted in the areas of humanities, social sciences and mathematics/science. Only 20% of research into distance education has been conducted using undergraduate Business students as the sample. To highlight the relevance of this study, it is critical to discuss the correlation between the chilly climate literature, distance education and geographic location. There is an absence of literature specific to the chilly climate environment experienced by women undertaking distance education. In addition, the majority of research for the chilly climate has been conducted within Canada and the U.S.A. A limited amount of research has been conducted within Australia. Significant amounts of the previous research studies conducted are primarily feminist studies of women within Academia. There appears to be an absence of literature pertaining to the chilly climate for students within Australian Universities. Literature regarding gender diversity for students, within Australia is mainly focused within the discipline of engineering (Mills & Ayre, 2003; Burrowes, 2001; Lewis & Copeland, 1998; Goodell, 1998; Copeland, 1995).

A considerable amount of research has been conducted on Faculty-student interactions and male student-female student interactions (Crombie et al, 2003; Salter, 2003; Drew & Work, 1998). However, research relating to distance education students and the overall performance or overall GPAs are absent in some areas of the chilly climate environment literature. Student performance is evident however in similar studies in relation to gender differences in teaching and learning styles (Lemire, 2002; Keri, 2002; Durden & Ellis, 1995; Romer, 1993; Brooks & Rebata, 1991) and research into women's universities and co-education (Riordan, 1994).

Distance Education and the Chilly Climate Environment
Phipps & Merisotis (1999) propose that one of the inadequacies of distance education research is that there is a lack of theoretical and conceptual frameworks. In addition to the chilly climate environment literature, this paper draws from three other areas to develop the conceptual framework supporting the paper and to discuss female distance education students within the chilly climate environment; role strain, academic performance and coping. Role strain is defined as "perceived difficulty in meeting role demands on three separate levels" incorporating role conflict (simultaneous, but incompatible demands), role overload (inadequate time to meet multiple demands) and contagion (attention focused on one role while actively performing another) (Goode, 1960 cited in Darab p.3, 2004).

Home's (1998) research into role conflict, role overload and contagion purports that multiple role strain can be mitigated by strong social support from three areas, friends and family, spouse and the workplace. Family and friends are deemed to be the primary support; spousal support is primarily affective support (listening and encouragement), however, this support may diminish as study needs increase (Smith, 1991 cited in Home, 1998) and workplaces are becoming more flexible in terms of support (Patrickson & Hartmann, 2001). However, it is acknowledged that this is more to encourage work production, rather than to support workers undertaking study. Home (1998) also postulates that distance education is a tangible support for multiple role women and relieves role conflict. However, distance education did not alleviate all factors for role strain. Conversely, this paper proposes that interactions with these three actors could actually aggravate role strain and that these interactions contribute to the chilly climate environment.

Academic performance literature is comprised of a variety of themes, the dominant ones being; learning styles, student attrition and analyses of academic and non-academic issues affecting performance. This paper pays particular attention to the non-academic issues; in particular, relationships, social support, work and adjustment (Darab, 2004; Alderton & Muller, 2000; Home, 1998; Cantrell & Mulhearn, 1997).

Vivekanandas' (2001) thesis on coping styles and student performance provides the theoretical paradigm for the conceptual framework supporting this paper. Vivekanandas' thesis posits that most high performers are women and that most high performers use problem-focused and relationship focused coping to deal with multiple stressors. Most poor performers are men and most poor performers use distance-avoidance coping and emotion-focused coping to deal with multiple stressors. Whilst this thesis does not analyse gender bias or discrimination as a variable in academic performance, the qualitative data reflects in a number of areas that gender bias is evident. The chilly climate questionnaire (Sandler, 2004) highlights 'not taking women as seriously as men' and 'expecting women to behave in stereotyped ways', as indicators of experiencing the chilly climate environment. This can be identified in the following excerpts from Vivekanandas' (2001) thesis:

Spouse
"My husband…put more and more obstacles in the path of my study…as I became stronger, he became angrier. By second semester I was deeply depressed." (p.220)

Family & Friends
"My parents were not supportive. I think they thought that I was too old and too stupid. My Father had the impression I stayed home all day and did nothing." (p.215)

Work
"When I arrived, I was met with a hostile reception. I was told that they hated 'trainees, engineers and women.' Well I was all three rolled into one. I'd get bagged about things like not having the strength to loosen bolts that were too tight." (p.207)
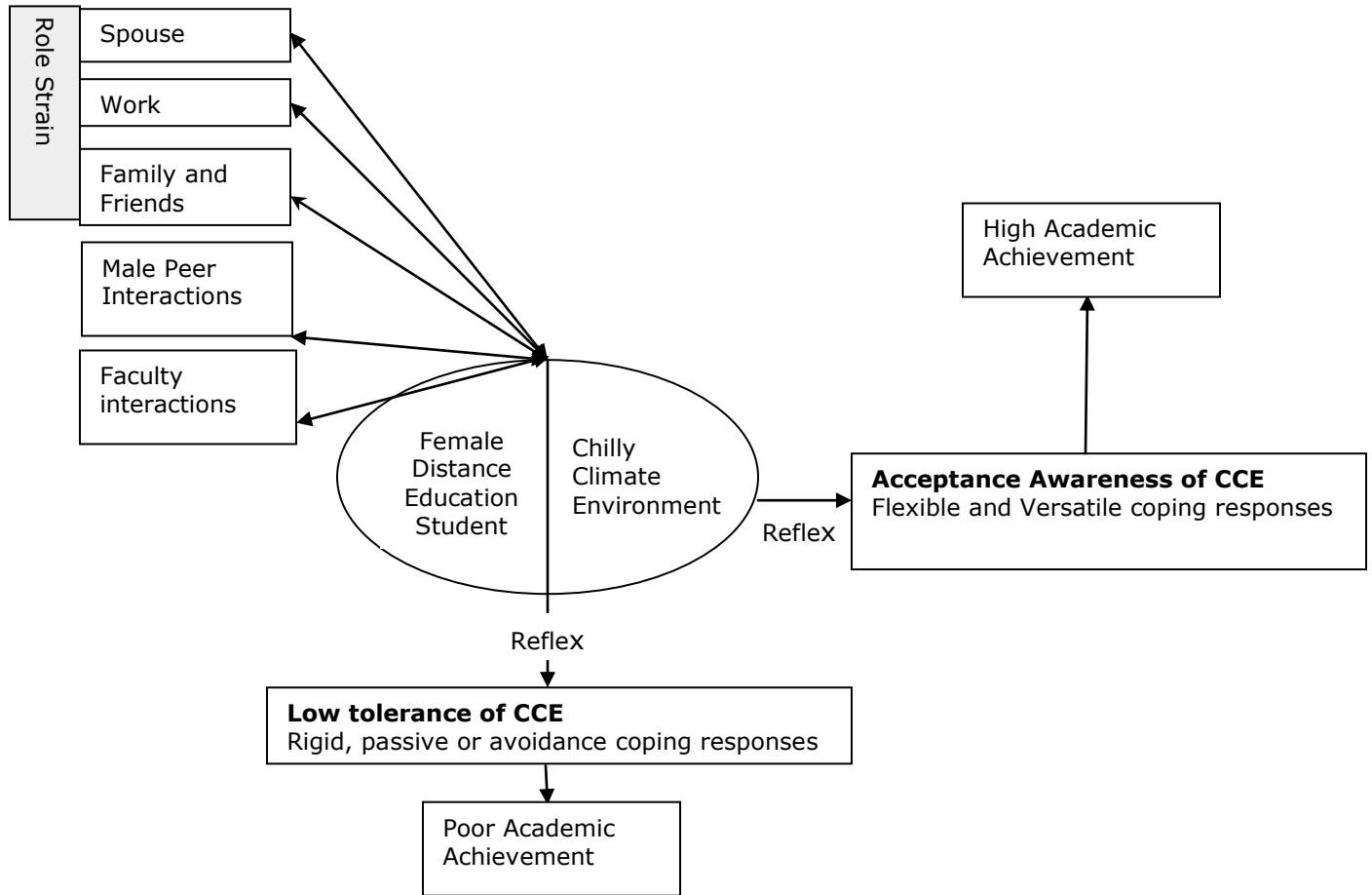
Research Questions
The conceptual framework generates a number of research questions; however, this paper is the first in a series of papers discussing distance education students and the chilly climate environment and will only focus on raw academic achievement through the exploration of the following research questions.

RQ1. Are women outperforming men in the Bachelor of Business Program at Central Queensland University?
RQ2. Are female distance education students outperforming male distance education students in the Bachelor of Business Program at Central Queensland University?
RQ3. Are female internal students outperforming male internal students in the Bachelor of Business Program at Central Queensland University?
RQ4. Is there a significant difference in the overall academic performance between internal students and distance education students in the Bachelor of Business Program at Central Queensland University?

Conceptual Framework

The conceptual framework incorporates theory and actors relevant to role strain (Home, 1998; Darab, 2004) into the chilly climate environment (Sandler, 2004) and hypothesises that the coping style (Vivekanandas, 2001) is the determining factor for the distance education students' (Phipps & Merisotis, 1999) overall academic achievement (Vivekanandas, 2001).

Role Strain

Spouse

Work

Family and Friends

Male Peer Interactions

Faculty interactions

Female Distance Education Student

Chilly Climate Environment

High Academic Achievement

Acceptance Awareness of CCE
Flexible and Versatile coping responses

Reflex

Reflex

Low tolerance of CCE
Rigid, passive or avoidance coping responses

Poor Academic Achievement

Source: Bovingdon and Bretherton, 2005. This framework has been developed for this research incorporating works by Sandler, 2004; Darab, 2004; Vivekanandas, 2001; Phipps and Merisotis, 1999 and Home, 1998).

Methodology

Phipps and Merisotis' (1999) analysis of distance education literature states that a major gap in the research, within the area of distance education, is that previous studies are dedicated mainly to single courses and research needs to be conducted to examine the effectiveness of the entire academic program via distance education. This study was conducted using data detailing the overall grade point average of students who have completed the Bachelor of Business Program within Central Queensland University, over the previous three years. Central Queensland University uses a 7 point GPA score.

High Distinction	Distinction	Credit	Pass	Pass Conceded	Pass Terminal	Fail
7	6	5	4	3	2	0

Central Queensland University, is a regional University, comprised of five Faculties, an Institute of Sustainable Regional Development and five research centres. The main campus is in Rockhampton, with regional campuses in Mackay, Gladstone, Bundaberg, Emerald, and Noosa. Central Queensland University has international campuses in Brisbane, Gold Coast, Sydney and Melbourne, together with offshore campuses in Suva, Fiji, Hong Kong, Singapore and Chengdu (CQU, 2005).

The chilly climate environment hypothesis has created interest and research into this area for over two decades, with either researchers supporting the chilly climate environment or that gender bias within post-secondary education exists (Allan & Madden, 2003; Smith, 1998; Sandler, Silverberg & Hall, 1996) or challenging the hypothesis (Salter, 2003; Brady & Eisler, 1999; Drew & Work, 1998). However, although much research has been conducted on Faculty-student interactions and male student-female student interactions, different methodologies used have indicated a variance to the outcomes of the studies.

Researchers who have used quantitative methods have found less variances between men and women within their analyses. Qualitative studies show a higher instance of the existence of the chilly classroom environment. Allen & Madden's (2003) comparative study of quantitative and qualitative methodologies used within the literature supports this. This research highlights that the incorporation of qualitative methodologies, particularly focus groups, strengthen research using quantitative methods. The researchers infer that focus groups incorporate a conversation style and set a social setting that enables women to share stories that they may have previously thought irrelevant and may have not considered when responding to the quantitative survey instrument. However, this particular research is an exploratory study (Zikmund, 2000) into performance outcomes of external students within a Bachelor of Business Program. As no participant interaction is required, it is proposed that the data set will be analysed quantitatively.

The original data set comprises 2509 Bachelor of Business students who have completed the program over the previous three years. GPA anomalies (for instance a 0.00 GPA due to a change of program) and all international students were removed from the database. The remaining participants within the dataset consisted of 787 Australian resident (domestic) students. The dataset was then split into 449 internal and 338 distance education students. The distance education students were then separated by gender, comprising 124 men and 214 women. The average ages of the distance education student are: men 32.85 years and 34.2 years for women. The average ages for internal students are: men 26.64 years and 27.17 years for women.

Findings

The results were analysed for the total GPA's of 5.0 and above and 4.0 and below. 5.0 and above sets the parameter for high academic achievement, as an accumulative GPA of 5.0 or above enables the student to enrol in the Bachelor of Business (Honours) program.

GPA		7.0	6.0-6.9	5.0-5.9	4.0-4.9	3.0-3.9	2.0-2.9	0.0-1.9
Women	N=512	1	103	208	128	54	19	0
%		0.20%	20.12%	40.63%	25.00%	10.55%	3.71%	0.00%
Men	N=275	0	45	90	79	43	14	4
%		0.00%	16.36%	32.73%	28.73%	15.64%	5.09%	1.45%
Variance		0.20%	3.75%	7.90%	-3.73%	-5.09%	-1.38%	-1.45%

Table 1. Overall GPA for Australian Resident/Domestic Students by gender.

Table 1 indicates that women are outperforming men overall with women scoring higher in all GPA scores above a credit average (5.0).

GPA		7.0	6.0-6.9	5.0-5.9	4.0-4.9	3.0-3.9	2.0-2.9	0.0-1.9
Women	N=214	0	29	87	52	33	13	0
%		0.00%	13.55%	40.65%	24.30%	15.42%	6.07%	0.00%
Men	N=124	0	17	39	29	28	7	4
%		0.00%	13.71%	31.45%	23.39%	22.58%	5.65%	3.23%
Variance		0.00%	-0.16%	9.20%	0.91%	-7.16%	0.43%	-3.23%

Table 2. Overall GPA for distance education students by gender.

Table 2 examined distance education students only. Although men have scored slightly higher in the 6.0 – 6.9 bracket, women are still outperforming men by 10% in the total of GPA scores above a credit average. Men have scored 9% higher than women in the total of GPA scores of a pass average (4.0) or below.

GPA		7.0	6.0-6.9	5.0-5.9	4.0-4.9	3.0-3.9	2.0-2.9	0.0-1.9
Women	N=298	1	73	121	76	21	6	0
%		0.34%	24.50%	40.60%	25.50%	7.05%	2.01%	0.00%
Men	N=151	0	28	51	50	15	7	0
%		0.00%	18.54%	33.77%	33.11%	9.93%	4.64%	0.00%
Variance		0.34%	5.95%	6.83%	-7.61%	-2.89%	-2.62%	0.00%

Table 3. Overall GPA for internal students by gender

Internal students show an even higher variance indicating that women are performing 13% higher than men in GPA scores above a credit average and men performing 17% higher in GPA scores of a pass average or below.

GPA		7.0	6.0-6.9	5.0-5.9	4.0-4.9	3.0-3.9	2.0-2.9	0.0-1.9
Women Internal	N=298	1	73	121	76	21	6	0
%		0.34%	24.50%	40.60%	25.50%	7.05%	2.01%	0.00%
Women Distance	N=214	0	29	87	52	33	13	0
%		0.00%	13.55%	40.65%	24.30%	15.42%	6.07%	0.00%
Variance		0.34%	10.95%	-0.05%	1.20%	-8.37%	-4.06%	0.00%

Table 4. Comparison between female internal and distance education students.

GPA		7.0	6.0-6.9	5.0-5.9	4.0-4.9	3.0-3.9	2.0-2.9	0.0-1.9
Men Internal	N=151	0	28	51	50	15	7	0
%		0.00%	18.54%	33.77%	33.11%	9.93%	4.64%	0.00%
Men Distance	N=124	0	17	39	29	28	7	4
%		0.00%	13.71%	31.45%	23.39%	22.58%	5.65%	3.23%
Variance		0.00%	4.83%	2.32%	9.72%	-12.65%	-1.01%	-3.23%

Table 5. Comparison between male internal and distance education students.

However, in comparison, Tables 4 and 5, indicate only a slight variance between modes of enrolment. For women, the variances for the total GPA scores for 5.0 and above and 4.9 and below are 11.24% and -11.23% respectively indicating a .01 variance. Similarly with men the variances for the total GPA scores of 5.0 and above and 4.9 and below are 7.15% and -7.17% respectively indicating a -.02 variance. However, the findings that support the hypothesis that role strain adds to the chilly climate environment is that there is a higher variance between female internal and distance students than men in both groupings. Particularly in the higher grouping of distinction (6.0) or above, female internal students are achieving 11.3% higher than their distance education counterparts, with one internal student achieving an accumulative GPA of 7.0. This also correlates with Pascarella et al's (1997) findings as discussed below. In contrast, male internal students are only achieving 4.8% higher than their distance education counterparts in the grouping of distinction or above.

Discussion
The hypothesis that role strain adds to the chilly climate for female distance education students can be correlated to table 4 which indicates that internal female students are outperforming their distance education counterparts. In addition, Pascarella et al's (1997, p111) research postulates that '*women who perceive a chilly climate were more likely to have higher scores on academic and social integration measures'* As the data analysis indicates, women are outperforming men in accumulative GPA's of a credit average and above. This also supports the hypothesis that the GPA is not an indicator that women are disadvantaged by the chilly climate, but simply that the chilly climate exists for women and that as educators, institutions need to be aware of this reality and dissipate this environment by promoting and marketing real strategies and support for women in higher education. The conceptual framework hypothesises that women studying via distance education, experience the chilly climate and also incorporates the additional actors within the framework of role strain into this environment. In addition, it is also hypothesised that it is the coping style that is the variable for the student's overall GPA. It is proposed that higher education institutions implement marketing strategies that target holistic supports and education that enable more women to adopt flexible and versatile coping strategies in response to this disadvantageous environment.

The phenomenon of the chilly classroom environment is central to women's experiences within the social constructs of the classroom setting. This social experience involves the interactions between male peers and the Faculty as the main instigators of the chilly climate experience. However, women who are studying externally would experience a range of influences within their environment. One variable that is not cited within the literature is the interaction with other women as a variable to the chilly climate, which results in disadvantaged learning. In accordance with the social constructivism of male privilege (Allan & Madden, 2003) other women would be socially constructed within a male dominated society and these women may have socially constructed male privilege ideologies that would be communicated during interactions with women studying via distance education and would impact on the chilly climate environment. Therefore, interactions with other women as actors within the framework for role strain should also be considered as a possible variable.

Conclusions and Recommendations
Orientation for distance education students should comprise of literature that not only focuses on the student's introduction to study and the campus, but should include literature developed for family, friends and colleagues to read, so they may develop an understanding of the constraints that may position the female distance education student in the chilly climate environment. Additionally, support services on campus should be frequently advertised promoting preventative measures as well as post-crisis treatment. It is recommended that support services issue pamphlets highlighting the services that can be offered to alleviate role strain. In addition to services provided on campus, the institution should create relationships with various community services and develop a web-based community services directory detailing community support such as childcare, housekeeping and other holistic approaches like self-esteem, health care and relaxation.

As paying higher education customers, the relationship between distance education students and the university should be one of respect and trust.   Policies should reflect an open commitment to understanding the needs of women experiencing a chilly climate environment, including role strain. Continuous feedback, using focus groups, should be sought, to ascertain the real impact that policies are having on women distance education students.   An annual report should be published to highlight the progress that the University is making in terms of gender equity.

The ABS (2002) reports that in the year 2000, 42% of women who were working full time were also studying. Furthermore, almost three quarters of women within the study were working part time and studying part-time and almost half of these women had dependent children. However, TAFE (Technical and Further Education) and other institutions attract approximately 65% of students who are working full-time and part time. Industry can be a steady source of students for Universities. Pascarella et al's (1997, p109) research posits that '*women experienced an acute decline in their estimates of their own intelligence in comparison with that of their peers.'*   Therefore, women may be enrolling in TAFE and other institutions and obtaining lower qualifications. It is recommended that Universities create relationships with industry and their local regional development centres, to promote the advantages of higher education to women within industry and provide educational materials and promotional speakers to industries pertinent to sustainable development within the local area.

Limitations and Further Research
The sample has been derived from one program within one Faculty within one regional University, and it cannot be assumed that the findings would be consistent with other larger metropolitan universities, within Australia, or overseas. The study was an exploratory analysis and no feedback from individual students has been gathered to analyse whether the performance outcome of the student equates to either being disadvantaged in an academic environment by the micro-inequalities that underpin the hypothesis. The research findings indicating the variances between female distance education and internal students have only been supported by a limited amount of qualitative data from Vivekanandas' (2001) research to support the hypothesis that role strain contributes to the chilly climate environment. Further research is proposed into the linkages between role strain and the chilly climate environment.

It is proposed that further research be conducted utilising qualitative methodology to further explore the conceptual framework and hypotheses.   Further insight can be provided by exploring implications regarding the proposed actors and variables to determine if women studying externally experience the phenomenon of the chilly climate outside the classroom setting and if the coping style adopted is the variable for academic performance.

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