"I WON'T, I MIGHT, I AM"
UNDERGRADUATE WOMEN AND STAGES OF CHANGE FOR PARTICIPATION IN LEADERSHIP DEVELOPMENT ACTIVITIES

by

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ABSTRACT

The purpose of this study was to explore the applicability of the Transtheoretical (*Stages of Change*) Model to examine undergraduate women's intention to participate in leadership activities and to identify variables related to their differential participation. Use of the *Stages of Change* framework extends the examination of student leadership to those not yet involved in leadership activities and recognizes individual *intentions* for becoming involved, as opposed to only considering *actions*. Identifying variables associated with intention to take action in the near future may provide insight for programmatic activities to encourage and support involvement in leadership activities. This study incorporated two individual specific variables and one context variable, reported to influence women's choice of involvement: leadership self-efficacy, gender role orientation and perception of institutional climate. Demographic variables and previous experiences were also considered as potential contributors to *Stages of Change*.

A total of 684 female undergraduate students at a single public post-secondary institution in British Columbia completed a survey which included: *Stages of Change* algorithm, General Leadership Self-Efficacy Scale, BEM Sex Role Inventory-Short Form, Perception of Chilly Climate Scale and a demographic and experiences form.

Findings indicated that 73% of the respondents were in pre-action stages (*pre-contemplation*, *contemplation* and *preparation*) with 53.8% of those individuals intending to become involved in the near future. A positive correlation

($r = .175$, $p < .01$) was found between leadership self-efficacy and *Stages of Change* indicating that those in the action oriented stages (*action* and *maintenance*) possessed higher levels of leadership self-efficacy than those in non-action stages. Previous leadership education, post-secondary and high school experiences may play a mediating role on this relationship and are important considerations for practice. Gender role findings indicated that respondents with an Androgynous or Masculine gender role occupied the action stages at a higher percentage than those with a Feminine or Undifferentiated gender role. Of women considering involvement in the near future, the largest percentage was of the Feminine gender role. Although stage based findings for gender role were identified, it did not enter as a significant predictor in logistic regression. No significant stage based findings for Perception of Chilly Climate were established.

DEDICATION

For Céline & Alexandre
and the road that lies ahead for each of them

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"At times our own light goes out and is rekindled by a spark from another person. Each of us has cause to think with deep gratitude of those who have lighted the flame within us." (Albert Schweitzer)

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CHAPTER 1

INTRODUCTION

The past decade has seen a shift in thinking about leadership precipitated by the rapid pace of change in technology, globalization of the economy and the concomitant need for understanding and communicating with a variety of people world wide (Cherrey & Allen 2001; Faris & Outcalt, 2001; Rost, 1993). Many have argued that this new leadership paradigm, one Rost (1993) identified as "post-industrial", is necessary to embrace the nature of the changing environment, the requirement for continuous learning, collaboration and acceptance of diversity that living in a networked, knowledge era requires (Cherrey & Allen, 2001; Komives , Lucas & McMahon, 1998, 2007). In contrast to the traditional view of leadership as hierarchical, autocratic and transactional, the post-industrial view of leadership reflects a process orientation that relies on relationships and connection with others, interdependence, multidirectional flow of information and sharing of responsibility for leadership (Cherrey & Allen, 2001; Helgesen, 1990; Komives et al.; 1998, Rost, 1993). As such, this notion of leadership requires the participation of a greater number of people with an understanding of leadership and the skills to enact it. The post-industrial paradigm encompasses a variety of perspectives such as transformational (Bass, 1990; Burns, 1978), relational (Komives et al., 1998), servant (Greenleaf, 1977), learning community based (Senge, 1990), systemic (Allen & Cherrey, 2000) and sustainable (Hargreaves & Fink, 2006) among others. Although each perspective differs somewhat the concept of leadership as a relational, collaborative process to affect change is

common. The present study adopts the definition of relational leadership from Komives et al. (2007) emphasizing a view that leadership is a "relational, ethical process of people together attempting to accomplish positive change" (p.74).

Evidence from organizational studies lends support for the effectiveness of post-industrial leadership models. Development of individual capacity and organizational commitment (Barling, Weber & Kelloway, 1996), improved development of "followers" measured as self-efficacy, contributing extra effort and assuming a critical independent approach (Eden, Avolio & Shamir 2002), and improved organizational performance (Howell & Avolio, 1993) have been reported empirically.

Women and Leadership

Traditionally, feminine "ways of leading" reflect the relational nature of the post-industrial paradigm (Eagly, 2007; Eagly & Carli, 2003; Helgesen, 1990; Rogers, 1992). Studies of women in leadership have reported on the central role women assign to connections and relationships, sharing of power and information, encouraging participation and empowering others (Astin & Leland, 1991; Helgesen, 1990; Rogers, 1992; deCasal & Mulligan, 2004; Rosener, 1990). Regan and Brooks (1995) propose five feminist attributes essential to relational leadership. They identify collaboration, caring, courage, intuition and vision as elements grounded in women's experiences in leadership that are practiced "consciously and continuously" (p.19). While these qualities should not be considered inherently female characteristics they have been more commonly reported of women leaders. Developmental theorists echo the importance

women place on establishing and maintaining strong relationships and operating with an ethic of care as central components of identity building, guiding decisions and ways of knowing about themselves and the world (Belenky, Clinchy, Goldberger & Tarule, 1986; Gilligan, 1982; Josselson, 1987, 1996). If women, as a group, have been shown as possessing some of the attributes of leadership being sought within the post-industrial leadership paradigm and more leaders are required to effectively enact this form of leadership then it may be argued that it is particularly important that more women participate in leadership development opportunities to expand the pool of capable individuals and bring to bear their strengths for the benefit of all.

Although there is a match between women's ways of leading and what are recognized as effective models of leadership, women remain underrepresented in top level leadership roles. A 2005 Catalyst report indicates that while women make up approximately 50 percent of the labour force in Canada, they occupy only 36% of management positions and 22% of Senior Management positions, a decline over previous years (Catalyst, 2005). Why are women not advancing to top executive levels as quickly as might be expected given their percentage of the work force and relevant skills? Barriers that have been identified in the literature reflect three themes: organizational aspects, gender stereotypes and personal factors influencing the individual's choice to pursue leadership activities.

Organizational variables such as an inhospitable corporate culture, lack of mentorship and informal avenues of connection with superiors have been reported to limit women's knowledge of internal organizational politics (Schuck &

Liddle, 2004). These factors in addition to higher performance standards required of women have had a negative impact on their access to opportunities for advancement within a business context (Indvik, 2004; Ragins & Cotton, 1991; Scanlon, 1997).

Gender stereotypes have been reported as one possible barrier to women's attainment of leadership positions (Eagly & Karau, 2002). Stereotypes about women and men as ascribed based on their expected behaviour in gender-typical social functions influence views of women and men as they participate in a variety of roles, including leadership. An incongruity between the expressive, "communal" feminine role and task-oriented, "agentic" leader role creates a perception of women as less competent and capable as leaders due to the "lack of fit" between the position requirements and their individual attributes (Eagly & Karau, 2002; Heilman, 1983). These stereotypes have been demonstrated to influence both attainment of positions of leadership and evaluation of leaders (Sczesny, Bosak, Neff & Schyns, 2004). Sczesny et al. (2004) state that 'in the context of leadership of women, the violation of their traditional gender role results in the dilemma of either being "too feminine or too masculine"'(p. 633).

Additionally, lack of self-efficacy for leadership, a Feminine gender role orientation, a lack of skills, training and opportunities to practice leadership, and conflict with family and other responsibilities have been found to act as personal limiters to involvement in leadership (Mainiero, 1994; Kilian, Hukai & McCarty, 2005; Wellington, 2001). Women have been reported to avoid choosing careers in areas where they lack self-efficacy, including roles involving leadership

(Whiston, 1993). Possessing a Feminine gender role orientation has also been indicated as a factor influencing career aspirations where women with this orientation tend to avoid choosing fields traditionally viewed as masculine (Powell & Butterfield, 2003). If we are to enlarge the pool of women for leadership, how will we address developmental concerns to overcome barriers and/or encourage women to participate?

Colleges and Universities

Colleges and universities have traditionally played a role in the preparation of students for future roles in society, including leadership. Over the past two decades, leadership development programs have burgeoned in recognition of this responsibility (Endress, 2000). Current professional standards for college leadership programs advanced by the Council for Advancement of Standards in Higher Education (CAS) reflect the new paradigm of leadership suggesting that "leadership is an inherently relational process of working with others to accomplish a goal or promote change" (CAS, 2003, p 196) and espouse that "colleges need to develop not just better leaders, but more leaders" (CAS, 2003, p 196) who have the ability to participate as leaders once they have left college. Leadership experiences in college have been associated with gains in organizational skills and interpersonal competence (Cress, 2001; Kuh,1993), development of skills and abilities related to later career success (Pascarella & Terenzini, 2005), increased self-confidence and improved communication (Romano, 1990), improved social adjustment (Tomlinson-Clark, 1994), commitment to civic responsibility (Cress, 2001) and increased efficacy for

leadership (Komives, Longerbeam, Owen, Mainela and Osteen, 2006). The potential exists for women to build on their interpersonal strengths and gain leadership skills and abilities through involvement in campus activities in universities and colleges. In recognizing the congruence between feminine attributes, as reported in the literature, and the role of the leader within a relational paradigm, women need to be more prepared to engage in future leadership roles, to have the confidence to acknowledge the strengths that they bring within this paradigm and to recognize barriers that may still be present and exercise persistence in overcoming them. However, women must choose to become involved in these leadership development activities in order to receive the benefits that they present.

Choosing Involvement

Both "internal", individual and "external", environmental factors may play a role in motivating or limiting leadership involvement by college women. Internal factors that have been reported in the literature include: lack of confidence or self-efficacy (Boatwright & Egidio, 2003; Clark & Zehr, 1993), underestimation and undervaluing of abilities (Clark & Zehr, 1993), fear of negative evaluation (Boatwright & Egidio, 2003; Kezar & Moriarty, 2000; Leonard & Sigall, 1989) and possessing a Feminine gender role (Boatwright & Egidio, 2003). External reasons that may influence choice of involvement include a perception of the institutional climate as "chilly" for women (Hall & Sandler, 1982; Klenke, 1996) a lack of role models (Whitt, 1994) and beliefs about leadership as hierarchical and directive that are still common among college students (Komives, Owen,

Longerbeam, Mainela & Osteen, 2005; Vari, 2005; Washbush, 1998; Wielkiewicz, 2000). A strong argument could be made that if women do not believe that they are capable of leadership, if they perceive that leadership is not congruent with their role as women and if they perceive the institutional environment as uninviting they will be less likely to choose to be involved in leadership related activities. These three variables, self-efficacy, gender role and perception of institutional climate will be discussed further in relation to their potential to influence choice of involvement.

Self-Efficacy

Self-efficacy has been defined as "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments " (Bandura, 1997, p3). Bandura suggests that self-efficacy beliefs are domain specific and influence one's motivations, choice of action, amount of effort one will put into a task and the degree of perseverance in light of adversity. Four sources of information are proposed by Bandura (1997) to contribute to self-efficacy development: performance accomplishments, vicarious learning, emotional arousal and verbal persuasion. These sources of information contribute to beliefs in the area of concern by providing input related to success with past experiences, modeling/comparison with others, personal affective state and the influence of others' encouragement. How an individual evaluates information derived from these sources will influence the degree to which they contribute to gains or deficits in self-efficacy. Personal, social and situational variables, it is contended, will all contribute to the subjective interpretation of

sources of input and have an impact on self-efficacy (Bandura, 1997; McCormick, Tanguma,& Lopez-Forment, 2002).

Within the context of leadership, women have reported lower levels of leadership self-efficacy than men (McCormick et al., 2002; Schyns & Sanders, 2005) and a lack of available role models and leadership experiences to gain efficacy (Whitt, 1994). Furthermore, they are more likely to attribute success to external factors such as luck rather than to their own ability attenuating any potential gains in efficacy (Schyns & Sanders, 2005). As self-efficacy is related to choice of action, with individuals choosing to participate in activities that they hold higher degrees of self-efficacy for, it follows that individuals with lower leadership self-efficacy will avoid opportunities for participating whereas individuals with higher levels of leadership self-efficacy will choose to participate. It could be argued that if self-efficacy for leadership can be increased in women, participation in leadership related activities is more likely to increase.

Gender Role

Gender role has also contributed to explaining participation and interest in activities. As opposed to the biology of being male or female, gender role orientation refers to one's adherence to stereotypically masculine or feminine characteristics and behaviours (Bem, 1974). Eagly and Karau (2002) contend that gender roles are socially constructed as a consequence of shared beliefs about the attributes of men and women and expectations of their behaviour based on those beliefs. Eagly (1987) proposes that a majority of these beliefs pertain to communal and agentic characteristics attributed to women and men

respectively. Communal characteristics reflect a concern for the welfare of others. Individuals who have these attributes are described as being affectionate, helpful, kind and sensitive, while those possessing agentic attributes are described as being assertive, controlling and confident (Eagly & Karau, 2002). Bem (1974) suggests that an individual who strongly ascribes to a gender role is "motivated to keep his [/her] behaviour consistent with an internalized sex-role standard, a goal that he [/she] presumable accomplishes by suppressing any behaviour that might be considered undesirable or inappropriate for his [/her] sex" (p. 155). The desire to conform to a Feminine gender role has been shown to limit the number of career options that women will consider (Quimby & O'Brien, 2004) inhibit aspirations for leadership, a traditionally masculine activity (Boatwright & Egidio, 2003; Kreuzer, 1992), and have a negative influence on career self-efficacy (Maggard, 2006) and career achievement (Wong, Kettlewell & Sproule; 1985). It seems clear that if a woman possesses a Feminine gender role orientation, this may play a role in activity choices. It is unknown how gender role contributes to the differential participation of women in leadership development activities.

Perception of Institutional Climate

A third factor that may influence women's motivation to participate in leadership activities is the institutional environment. Research suggests that even though women make up more than half the undergraduate student population at most institutions they do not experience the college environment in the same way that male students do (Hall & Sandler, 1982; Janz & Pyke, 2000; Pascarella,

Whitt, Edison, Nora, Hagehorn, Yeager, & Terrenzini 1997; Whitt, Edison, Pascarella, Nora & Terenzini,1999). The disparity in experience reported may have a negative impact on women's achievement. Hall and Sandler (1982) first reported on the "chilly climate" perceived by women as limiting the full development of female students. Perception of a chilly institutional climate has been negatively related to cognitive development, career preparation (Pascarella, et al., 1997) writing and thinking skills, understanding science, and understanding the arts and humanities (Whitt et al., 1999). Additional evidence that women perceive the post-secondary environment as less supportive than men is supplied in a Canadian study by Janz and Pyke (2000). While these studies do not investigate the impact of climate on participation of women in activities such as leadership, it would be reasonable to suggest that perception of the institutional climate as uninviting would at least not encourage involvement.

Support for this view is found in studies of women's only colleges that provide an exceptionally encouraging and supportive environment for women. Studies of leadership development within these institutions report a higher level of involvement in leadership and campus activities and more growth in leadership skills and public speaking as compared to women from co-educational institutions (Astin, 1993; Kim & Alvarez, 1995; Smith, Wolf & Morrison 1995; Whitt, 1994). Success in developing effective leaders has been associated not only with the elimination of certain barriers to participation, but to creating a deliberately encouraging environment (Whitt, 1994). Factors which have been reported include, "taking women seriously", holding high expectations and

communicating these expectations regularly, providing mentoring and role modeling and providing multiple opportunities to practice leadership on a regular basis (Whitt, 1994, Tidball, Smith, Tidball & Wolf-Wendel, 1999).

It is relatively easy for women's colleges to specifically address the leadership needs of women as women's development is their mandate. The challenge for co-educational institutions is to approximate as best they can the same kind of support for women as they engage in the development of leadership. In recent years, some college and university programs have expanded to include institutes, workshops and seminars exclusively for the leadership development of college women (Miller & Kraus, 2004). Some examples include the University of Richmond in Virginia's WILL (Women Involved in Living and Learning) which integrates education and practical experience in a four year leadership program (Micas, 1991). Babson College's Centre for Women's Leadership offers a "co-curricular program that provides enhanced leadership development, networking, and mentoring opportunities to selected undergraduate and all graduate women" (Babson College, 2006). The multi-site "NEW Leadership Development Network" developed at Rutgers to "inspire, educate and empower a new generation of women leaders"(Patterson, 2004, p. 3), is aimed at increasing the representation of women at all levels of American politics. Additionally, the "NEW Leadership Development Network" holds a number of conferences, seminars, workshops and institutes exclusively for women annually in conjunction with existing student leadership programs. These programs have been found to be successful in enhancing the leadership

skills and abilities of women who participate (Micas, 1991). However Boatwright and Egidio (2003) query who attends these types of programs:

> ...if university programs intended to increase women's representation in leadership roles only appeal to women who already feel empowered enough to aspire to such roles, a significant portion of capable women who do not express leadership aspirations are being overlooked (p.667).

If co-educational colleges and universities are to foster the leadership development of a greater number and a broader range of students it is imperative to understand more about the population of women not currently participating at their institutions and what influences their choice to participate. Little is currently known about women students who are not yet participating as research on college student leadership to date has focused almost exclusively on students with a predisposition for leadership.

Transtheoretical Model

A framework that may prove useful for identifying students with different levels of motivation for involvement in leadership and serve as the basis for programmatic recommendations is the Transtheoretical Model (TTM) also known as the *Stages of Change* model developed by Prochaska (1979). This model of intentional behaviour change incorporates motivational, cognitive, social learning and relapse prevention theories (Cole, Harris & Field, 2004). It includes five stages and ten processes of change "characterized by different levels of awareness, motivations, concerns and intervention requirements" (Cole et al., 2004, p. 1424). The TTM has been applied primarily in therapeutic and health promotion settings (Perz, DiClemente, & Carbonari, 1996; Prochaska & Velicer, 1997; Prochaska & Norcross, 2001), but more recently it has been applied in

broader contexts as a general model of behavioural change. For example, change in individuals and organizations has been examined with use of the stages of change framework for behaviours such as such as health and safety appraisal, research transfer, learning motivation, debt reduction and continuous quality improvement (Barrett, 2005; Buckley, 2003; Cole, Harris, & Feild, 2004; Jing Jian Xiao, O'Neill, Prochaska, Kerbel, Brennan & Bristow, 2004; Levesque, Prochaska, Prochaska, Dewart, Hamby & Weeks, 2001). Theoretical foundations of the model can be found in the field of psychotherapy as a basis for assisting individuals to change problem behaviours (Prochaska, DiClemete & Norcross, 1992). Precursors to Prochaska's model include Horn and Waingrow's (1966) model for smoking behaviour change, Egan's (1975) three stage model for helping clients prepare for and achieve behavioural change, and a four stage psychotherapy model proposed by Cashdan (1973) that emphasizes stages and strategies for change.

Prochaska and DiClemente (1982) describe *pre-contemplation, contemplation, preparation, action* and *maintenance* as five stages of the model that reflect differences in individuals' readiness and motivation to change as they adopt new behaviours or eliminate problem behaviours. In regard to the present study, it can be argued that becoming involved in leadership activities represents the adoption of a new behaviour. The explication of the stages below includes examples of how participation in leadership activities may be represented within this model.

The *pre-contemplation* stage involves a lack of awareness or intention to change in the near future. For example a pre-contemplator would agree with statements such as "*I don't want to be a leader*". *Contemplation* involves an intention to change in the next six months, eg. *"I think I would like to take a leadership seminar".* The *preparation* stage is reflected in an individual intending to take action in the immediate future and perhaps already taking preliminary steps, for example making initial contact with a group coordinator. *Action* is characterized by specific overt change in behaviour. An individual in the *action* stage may be involved in a leadership development program or be starting to serve as an officer of a student club. *Maintenance* occurs following the action stage and refers to the continuation of the behaviour after six months for example, *I have just completed a leadership development program and am acting as a student orientation coordinator".*

Incorporating this stage based model into examinations of leadership development in college women would allow for a more sensitive examination of the factors associated with leadership involvement than a dichotomous leader/non-leader categorization. The TTM stage approach allows us to examine the influence of factors on individuals who do not yet display overt, behavioural leadership activity, ie. contemplators and preparers but who are most likely of the non-leaders to become involved. Programmatic interventions specifically targeted at these individuals would likely result in increasing the numbers of women involved in leadership activities.

While being able to identify students according to stages of motivation for leadership would in itself be helpful as noted above, a "major benefit of the stages-of-change approach to understanding motivation to undertake change, including [leadership], is that it identifies processes that are used in each stage to facilitate stage advancement" (Cole et al., 2004 p. 1424). Knowledge of the "covert and overt activities that people use to progress through the stages...provide important guides for...[development of] ...programs" (Velicer, Prochaska, Fava, Norman & Redding, 1998, p.6). In the health promotion and therapeutic fields, knowledge of these processes has been instructive for designing interventions appropriate to the client's stage of change. Perz et al. (1996) found that earlier stages of change (*pre-contemplation*, *contemplation* and *preparation*) benefit from experiential activities that focus on cognitive and affective change and later stages (*action* and *maintenance*) benefit more from emphasis on behavioural processes. As well, matching activities to the appropriate stage has been shown to increase the likelihood of successful behaviour change related to health or therapeutic matters (Prochaska et al., 1992).

Additional constructs underlying the TTM include decisional balance and self-efficacy. Decisional balance is based on Janis and Mann's (1977) model of how individuals weigh the pros and cons of a particular problem as they make decisions regarding action. Within the TTM a systematic pattern of the pros and cons that an individual perceives has been identified across a wide range of behaviours (Prochaska, Velicer, Rossi, Goldstein, Marcus, Rakowski, Fiore,

Harlow, Redding, Rosenbloom & Rossi, 1994). Generally, the pattern of pros and cons across *stages of change* shows the cons outweighing the pros in *pre-contemplation*. In the *contemplation* and *preparation* stages the contribution of pros to decision making increases while the cons remain the same or are reduced and in the *action* stage, the pros outweigh the cons. Understanding the relative contributions of pros and cons to decision making in relation to participation in leadership activities would assist practitioners in programmatic interventions that would specifically seek to increase the pros and decrease the cons to encourage movement across stages toward *action*.

The self-efficacy construct of the TTM is based on Bandura's self-efficacy theory as described earlier. Within the TTM, self-efficacy is found to increase across *stages of change* from low efficacy in *pre-contemplation* through to high efficacy during *action* in a variety of behaviours such as smoking cessation, fruit and vegetable consumption and adoption of safe sex practices (DiClemente, Prochaska & Gilbertini, 1985; Ma, Betts, Horacek, Gerogiou, & White, 2003; Redding and Rossi, 1999). Higher levels of self-efficacy have been related to persistence and avoidance of deterrent behaviours as individuals progress from *pre-contemplation* through to *action* (DiClemente et al. 1985). If the pattern of self-efficacy across *stages of change* for engagement in leadership related activities holds true, then interventions or strategies aimed at enhancing women's leadership self-efficacy should promote transition toward action in a greater number of college women.

Purpose of the Study

This study takes the position that there is a need to increase the pool of talented and capable women leaders and that colleges and universities should play a supporting role in this. It is important therefore for those involved in the development of women's leadership abilities to gain an understanding of factors influencing women's varying levels of participation in leadership related activities. As such, the purpose of this exploratory study is to examine the applicability of the Transtheoretical Model to college women's participation in leadership activities and factors influencing choice to participate in leadership. Two "internal", individual variables influencing leadership participation, self-efficacy for leadership and gender role, and one "external", contextual factor, perception of institutional climate will be investigated. Gaining insight into some of the factors influencing participation in leadership related activities at varying levels of motivation for involvement will provide practitioners specific content information for programmatic interventions to target particular stage of change for leadership enhancing the probability of program success.

Conceptual Framework

The following conceptual framework which draws together the major constructs of the study guided the investigation. Figure 1.1 includes a schematic representation of the framework utilized.

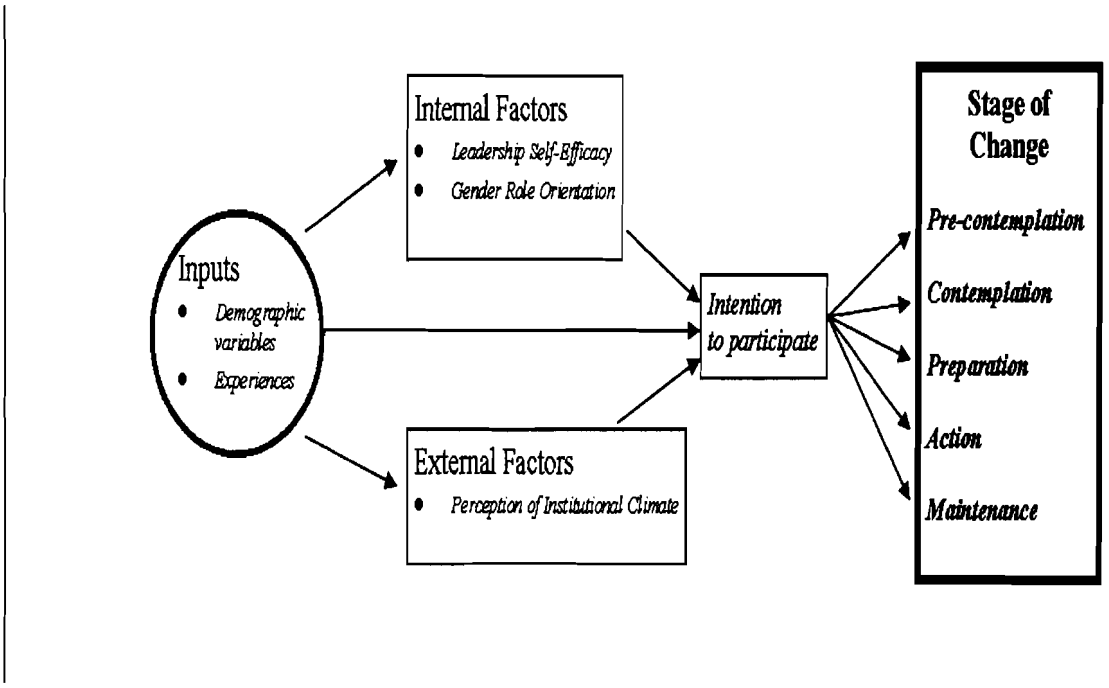

Figure 1.1. Conceptual framework for the study

The concepts forming the framework include:

- Female university students' intention to participate (particular Stage of Change) in leadership related activities is influenced by both internal and external factors.
- Internals factors that may influence choice of participation include, but are not limited to, their confidence in their ability (Leadership Self-Efficacy) and Gender Role orientation.
- An external factor that may play a role in a female student's intention to participate in campus activities is perception of the institutional climate.

In particular, if a student perceives the climate to be unsupportive or "chilly" she will be less likely to choose to participate in campus activities.

- Students arrive at university with a number of characteristics and experiences, and while at university they are differentially involved in activities, and programs of study, all of which may play a role in determining their intention to participate in leadership activities, either directly or indirectly through their influence on other factors.

Research Questions

The research questions to be explored in this study include the following:

1. Is there a relationship between female college students' stage of change for participation in leadership related activities and leadership self efficacy?
2. Is there a relationship between female college students' stage of change for participation in leadership related activities and gender role?
3. Is there a relationship between female college students' stage of change for participation in leadership related activities and perceived institutional climate?
4. Do leadership self-efficacy, gender role and perceived institutional climate together contribute to variance in stage of change for participation in leadership related activities?

5. Do background characteristics such as age, enrollment status or year of study and experiences such as program of study, previous leadership experience or leadership education, influence stage of change for participation in leadership related activities?

Significance of the Study

This study has both theoretical and practical significance. First, this study extends the examination of women's student leadership to non-participants. Boatwright and Egidio (2003) argue that we know very little about how to encourage college women to become involved in leadership yet if we are to increase the number of potential women leaders on college campuses and in the community we must learn more about those not yet participating.

Second, the researcher could not find any studies that utilize a *stages of change* approach to the study of college students and their motivation for involvement in leadership activity. The application of such a model to change in student motivation to participate in leadership and the subsequent development of appropriate process-oriented programs and/or services by a college or university has the potential to enhance the holistic development of the entire student population, not just those predisposed to leadership. Results of this study could provide information for practitioners as they seek to help students engage in leadership by enhancing the recruitment and development of emerging leaders.

Third, gaining an understanding of factors that influence women's participation in leadership activities at various *stages of change* provides insight

for curricular content, targeted recruitment strategies and creating positive environmental conditions to support and encourage involvement.

Finally, participation in this study may assist women students themselves as they reflect on their own aspirations for leadership and the conditions which support and encourage progression toward action.

Organization of the Study

This thesis is composed of five chapters. Chapter 1 provides an introduction to the study, outlines its purpose, conceptual framework, and research questions and identifies its significance. A review of the literature relevant to the study follows in Chapter 2. Areas reviewed include: relational leadership, women and leadership, student leadership, the Transtheoretical Model, leadership self-efficacy, gender role orientation and the university/college environment. Each section reviews relevant empirical literature and includes a thorough examination of the measurement instruments used in the study. Chapter 3 details the methods of the research including choice of methodology, research setting, participant selection, research instruments, and procedures used for data collection and statistical analyses. Results of the study are reported in Chapter 4. Descriptive statistics and inferential analyses are reported for the variables of the study and in response to the five research questions explored. The final chapter, Chapter 5, completes the study with a discussion of the results, conclusions and limitations and recommendations for future research.

CHAPTER 2

REVIEW OF THE LITERATURE

The purpose of a literature review is to position a study in the broader scholarly and historical context, to delimit the research problem, to seek new lines of inquiry and to provide insight for methodological decision making (Boote and Beile, 2005; Gall, Borg & Gall, 1996).

With this in mind, and to inform the research questions, the following review of literature was organized into three sections. First, to situate the study within the broader context of leadership, an overview of relational leadership theory, women's leadership and college student leadership was included. The second section focuses on literature related to the Transtheoretical Model (TTM) employed as a framework for this study. An examination of the main construct of the TTM, the *stages of change* identifying varying degrees of desire to participate in leadership activities was discussed. A third section considered research related to self-efficacy, gender role and environment as the factors of investigation in the current study and their potential effect on women's differential participation in leadership related activities.

This review considered research from the years 1980 to 2006, and earlier foundational studies as appropriate. This time period corresponds with the emergence of study on women's development and issues of gender in higher education, the shift in thinking about leadership from an "industrial" to a "post-industrial" paradigm, the growing emphasis on college student leadership and the evolution of the Transtheoretical Model.

To set the context for the literature review, the initial section incorporated theoretical perspectives of relational leadership. The remainder of the literature review included empirical studies only. Other criteria for inclusion in the literature reviewed were identified within each section. Collectively, this examination of the empirical literature provided the necessary support for examining the experiences of college women students as they contemplated participation in leadership related activities.

Relational Leadership

The evolution of thinking about leadership in the recent past is characterized by a shift in emphasis from top-down individual leader influence to a complex interaction of relational, process-oriented variables (Northouse, 2004). The changing nature of society has necessitated a shift in the way people think about and enact leadership. Globalization, the pace of change in information technology and increased complexity of knowledge and expertise requires that people work together to share information, solve problems and address mutual concerns (Cherrey & Allen 2001; Faris and Outcalt, 2001; Rost, 1993). The leader must therefore act to facilitate and model communication, collaboration and interaction, hold a respect for diversity, ethical action and care of individuals and empower others to participate in the process (Cherrey & Allen, 2001; Helgesen, 1990; Komives et al., 1998; Rost, 1993). Rost (1993) has identified this new paradigm of leadership as post-industrial, reflecting the influence of the changing society. The post-industrial paradigm values the participation of

individuals, connection to others, sharing of information and responsibility for leadership and involves an interdependent, process orientation.

Since the late 1970's, leadership scholars (Allen & Cherrey, 2000; Burns, 1978; Greenleaf, 1977) have advanced theories of leadership in keeping with the paradigm of relational, post-industrial leadership. While slightly different in conceptualization these theories hold in common the importance of ethics, social change and connection to others. The following table outlines the major theories of relational leadership advanced in recent years.

Table 2.1

Relational Leadership Theories

Author	Year	Theory	Summary
Greenleaf	1977	Servant leadership	Leaders role is to serve others, needs of followers are put before leaders own, once followers needs are met they are more able and likely to serve others.
Burns	1978	Transformational leadership	Leaders and followers elevate one another to higher levels of motivation and morality. Leadership is a collective, relational process that produces change.
Kouzes and Posner	1987	Best Practices	Effective leaders engage in five practices consistently; encouraging the heart, inspiring shared vision, enabling others to act, modeling the way and challenging the process.
Higher Education Research Institute (HERI)	1996	Social Change Model	Developed to encourage college students to participate in active citizenship. Everyone has the potential to be a leader. Involves development of self-awareness and adherence to individual, group and community values. Organized around the seven "c"s; consciousness of self, congruence, commitment, collaboration, common purpose, controversy with civility and citizenship.
Komives, Lucas and McMahon	1998	Relational leadership	Developed for college students, stresses the importance of leadership as inclusive, ethically based, collaborative. Empowers others to work towards purposeful accomplishment of a goal.
Allen and Cherrey	2000	Systemic Leadership	Leadership is a networked, constantly changing system of interrelated variables that influence one another. In order to make change happen, multiple individuals must influence the system intentionally in the same direction. Change can

			be triggered from anywhere in the system.
Senge	2000	Learning communities	Core dimensions – personal mastery, mental models, team learning, shared vision
Kezar	2000/ 2002	Pluralistic leadership	Views of leadership based on experiences, based on who (gender, race), what(roles), where (context)
Hargreaves & Fink	2006	Sustainable leadership	Dimensions of depth, length, breadth, justice, diversity, resourcefulness and conservation Addresses value, interdependence of life, brings about authentic improvement and achievement that lasts

Relational leadership encompasses the theories described in the table above. This notion of leadership as a collaborative process of two or more individuals attempting to create change suggests that everyone is capable of participating in leadership. Leadership within this paradigm becomes more accessible to a wider variety of individuals and necessitates the participation of more people with the relational skills, self-awareness and commitment to social change to enact it.

Women and Leadership

Some researchers suggest that women lead in a way that is congruent with the paradigm of relational leadership described above (Astin & Leland, 1991; Bass & Avolio, 1994). The following table (Table 2.2) outlines the reviewed literature related to women's leadership. Studies included were limited to empirical literature concerning the styles and characteristics of women in leadership to provide evidence for a match between women's mode of leadership and relational leadership. Discussion following the table includes results from studies reviewed and illustrates the connection between what has been characterized as "women's ways of leading" (Rosener, 1990) and relational leadership.

Table 2.2

Women's "Ways of Leading"

Author	Year	Type of Study	Participants and Context
Rosener	1990	Survey study	Number of participants is unknown, business context
Helgesen	1990	Qualitative	4 female business executives
Astin and Leland	1991	Qualitative	77 leaders educational institutions professional associations women's programs, scholars & researchers
Cantor & Bernay	1992	Qualitative	25 political leaders at local, state and federal levels
Bass & Avolio	1994	Quantitative-survey study	582 male, 219 female direct reports evaluated 150 male, 79 female managers
Regan & Brooks	1995	Qualitative	20 Educational leaders
Eagly & Johnson	1990	Meta-analysis	162 studies organizational context
Eagly, Johannesen-Schmidt & vanEgen	2003	Meta-analysis	45 studies, business context

Women's Ways of Leading

The investigations identified in Table 2.2 reveal a number of consistent findings that repeat the characteristics of relational leadership described earlier. Judy Rosener (1990) reported that women were more likely than men to use a transformational style of leadership and ascribe power to charisma, work record and personal contacts rather than to a formal position in an organization. Follow-up interviews with women who describe themselves as transformational, identified their preference for enacting interactive leadership which focuses on encouraging participation, sharing power and information, enhancing others self worth and energizing followers. While results of Rosener's study are often cited as reflecting the unique "ways women lead" the lack of detailed reporting of methodology, particularly for the follow up interviews, calls into question the reliability of the findings. Despite this, Rosener opens the door for further

exploration with the suggestion that women may have a way of leading which draws on the strength of their interpersonal and communication skills and their participatory nature.

In her book The Female Advantage: Women's Ways of Leadership, Helgesen (1990) lends support for the notion of a female way of leadership, echoing Rosener's (1990) proposition. A central concept arising from Helgesen's study is the notion of leadership as a "web of inclusion", a structural concept that places the leader at the center, much like a spiders' web. This structural arrangement allows flow of information amongst various strands of the web in different directions, as opposed to a hierarchical structure where information flows upwards, in one direction. Within this model the leader acts as a facilitator; group affiliation and work teams replace individual isolation and competition which allows for communication and collaboration across all levels; and an ecological focus places emphasis on a vision for society. To enact this form of leadership it was essential for the women in the study to lead with both vision and voice, to be true to themselves using voice as a "mode for manifesting internal truth" (p.230). Helgesen repeats the themes of collaboration, valuing of others and the sharing of information and ideas as described by Rosener (1990) and are valued in the relational leadership paradigm. Although rich data was derived from following the four women in this study as they conducted their daily business, findings are limited in terms of their generalizability.

Astin and Leland (1991) revealed a number of skills and strategies used by women leaders as they worked towards influencing social change. Like

Helgesen's study, Astin and Leland (1991) suggest that the leaders' role is realized through the practice of skills and strategies. The skills identified as essential include acting collaboratively, taking risks, using creativity and innovation, making good use of networks, being politically adept, working with and through people, using exceptional communication skills to engage others and spread their message and being self aware. Additionally, strategies women made use of to empower others were having clear values, listening to others, sharing power and being prepared. This retrospective account of female leaders and their actions reinforces findings that a core value of women leaders is to collaborate and empower others (Helgesen, 1990, Regan and Brooks, 1995).

Similar to Astin and Leland, Helen Regan and Gwen Brooks (1995) describe the experiences and learnings of three groups of women educational leaders over a twenty year period. Regan and Brooks argue that "relational leadership is a model that synthesizes the finer qualities of the masculinist and feminist perspectives and forms a new, stronger and more balanced practice of leadership" (p.18). The authors identify five feminist attributes that illustrate the leadership orientation of the women in their study: collaboration, caring, courage, vision and intuition. Collaboration involves not only the ability to work within a group and provide support to others, but also to accept the responsibility for creating an inclusive environment that fosters cooperation and values the contributions of all. The "web of inclusion" that Helgesen (1990) described also reflects the nature of connectedness described by Regan and Brooks (1995). The second attribute caring, reflects a general concern for others. It involves

moral action taken on behalf of others, placing the self in the position of others, and includes the ability to both give and receive. Regan and Brooks suggest that care is the "amniotic fluid in which all activities must be immersed" (p.29) as leadership is enacted. The notion of care as an attribute of women's leadership mirrors the commitment to a vision for society as described by Helgesen (1990) and orientation to social change proposed by Astin and Leland (1991). Courage, the third attribute identified, repeats the risk taking element already described by Astin and Leland (1991). The authors suggest that courage includes a variety of activities such as moving into unknown territory, trying new ideas in practice, being true to oneself and not compromising one's values. Intuition, the fourth attribute, is defined by Regan and Brooks as the "ability to give equal weight to experience and abstraction, mind and heart". They describe the importance of both intuition (heart) arrived at from experience and reason (mind) arrived at through the exercise of objective knowledge in the practice of relational leadership. This trust in intuition may be likened to leading with voice, or being true to oneself as described by Helgesen (1990) and working with self-awareness and clear values as described by Astin and Leland (1991). Finally, the attribute of vision as identified by Regan and Brooks refers to a process whereby the leader brings together and enables others towards the development of a common purpose. The authors see vision as a product of collaboration and care.

The "Leadership Equation" arose from a qualitative study by Cantor and Bernay (1992) of women elected into office at high federal, state or local offices. Cantor and Bernay (1992) conclude from their research that "Leadership =

Competent Self + Creative Aggression + WomanPower" (p.15). They echo some of the earlier characteristics identified by women leaders as essential to the successful enactment of leadership. Competent self according to Cantor and Bernay (1992) includes a knowledge of self that is unwavering, not influenced by situations, events or people and allows for risk taking. Creative aggression includes taking initiative, leading others and speaking out. They view creative aggression as a positive and constructive means to encourage growth. WomanPower is defined as "power used to make society a better place" (p.28) by advancing a specific agenda. Similar to the social action agenda of the women studied in Astin and Leland (1991) these political women were motivated by a desire to create social change. While the context of US politics is hierarchical, the women in this study lend support for a way of leading within structured boundaries that reflects the self trust and awareness, adherence to values, and courage and self confidence reported by women in other leadership settings (Astin & Leland, 1991; Helgesen, 1990; Regan & Brooks, 1995).

While the aforementioned studies provide evidence of "ways women lead", results were achieved with relatively small sample sizes which therefore make generalizability to women in general limited. Corroborating evidence is however provided in a robust meta-analysis with over 45 studies conducted by Eagly, Johannesen-Schmidt and van Engen (2003) comparing the leadership styles of men and women. Their findings indicated that women have a greater tendency to use a transformational leadership style which inspires followers, encourages them to develop their full potential and works toward a common goal or vision.

The transformational and participatory nature of women's leadership was also reported by Eagly and Johnson (1990) and Bass and Avolio (1994). Additionally, in the Eagly et al. (2003) meta-analysis women were more likely than men to demonstrate qualities that motivate respect and pride, show optimism and excitement for the future, seek out innovative and creative approaches to problem solving, and support the development and mentoring of followers.

The findings of these studies clearly show that women lead in a way that corresponds to the relational leadership paradigm. The characteristics highlighted above are common among the women leaders who participated in these studies, however Astin and Leland (1991) caution that such findings are gender related, not gender specific. Men may also possess and exercise the qualities required to enact relational leadership and women may exhibit characteristics related to a more directive leadership approach, however the issue here is one of degree; women are more often reported to use a relational style.

The studies reviewed provide a backdrop to the current study related to female college student leadership. Collectively, they provide the suggestion that there are particular skills and strategies that are more often employed by women leaders, in contrast to male leaders, in enacting relational leadership that can be targeted to assist in the leadership development of others. Astin and Leland (1991) suggest that their findings "argue for leadership education that involves active learning, the participation of future leaders in purposeful activities where they can test competencies, take risks, manifest values, and simultaneously

receive support, counsel and validation from more experienced leaders" (p.161). Regan and Brooks (1995) conclude that to assist women leaders in leadership, it is not enough to just identify feminist attributes as outlined in their study, but to pass on knowledge to other women through mentorship, modeling and teaching. This importance of women acting in a mentorship capacity to support the leadership development of other women of is repeated in the findings of Eagly et al. (2003).

Student Leadership

Colleges and universities have increasingly recognized a need to make intentional opportunities for leadership development available to all students. Courses, programs, and centres have been established to specifically attend to the need for broad-based leadership development. Empirical research related to college student leadership has grown rapidly over the past several years to inform practitioners in their work with students, to provide insight into the design and implementation of leadership programs and to advance the scholarship of student leadership. This research has been focused primarily on student leaders' practices and effectiveness, their experiences in leadership and the impact of college in general and leadership programs in particular, on the development of leadership skills and abilities. Investigations have included gender, ethnicity and other demographic and experiential variables as factors within the above areas of study. To inform the present study, the following section will provide an overview of research on student leadership in the three areas identified, and include an emphasis on women's experiences. Relevant findings related to non-leaders will

also be included. Studies reviewed were limited to post-secondary environments and do not include K-12 student leadership studies.

Student Leaders: Practices and Effectiveness

A number of studies have been conducted to investigate the leadership practices and effectiveness of student leaders. Table 2.3 outlines the studies include in this section of the review.

Table 2.3

Studies Concerning Practices and Effectiveness of Student Leaders

Author	Year	Type of Study	Participants and Context	Results
Posner and Brodsky	1992	Part I –Case study Part II-Survey	Part I: 4 outstanding student leaders-nationally nominated Part II-100 fraternity chapter presidents and officers	Part I-Verification of the applicability of conceptual framework previously identified with mangers to a student leadership context –resulted in modification of Leadership Practices Inventory to produce a student version- LPI-S Part II- presidents identified as effective by chapter officers reported engaging in five leadership practices associated with effective leadership more often than chapter presidents identified as less effective
Posner & Brodsky	1993	Survey	333 Resident Assistants at 6 public institutions	-Resident assistants assessed by their supervisors and constituents as most effective also reported engaging in the five practices of effective leadership most often
Posner & Brodsky	1994	Survey	239 Fraternity executive committee 389 Sorority executive committee	Repeated findings of first study (above) with fraternity -leaders reported as effective by committee members reported engaging in five practices most often -No difference in use of effective practices was found between men and women
Posner & Rosenberger	1997	Survey	78 Orientation Advisors and their group members at a small private university	Orientation advisors identified as most effective by group members also reported engaging in the five practices of effective leadership most often

Author	Year	Type of Study	Participants and Context	Results
Komives	1994	Survey	34 female students attending a student leaders' conference	-women identified their most developed leadership skill as Enabling others to Act -women were least skilled in leadership abilities that Challenge the process -most preferred achieving styles: direct style of doing things themselves followed by getting others to do what the leader feels is important

The studies reviewed above have utilized the Leadership Practices Inventory –Student version (LPI-S) to assess the prevalence of five categories of behaviours of effective leadership based on the "best practices model" of Kouzes and Posner (1987). Kouzes and Posner (1987) propose that effective leaders consistently engage in the following five leadership practices: *Challenging the Process, Inspiring Shared Vision, Enabling Others to Act, Modeling the Way and Encouraging the Heart.* Their model was originally developed in an investigation of organizational managers that asked them to reflect on the qualities and practices that they engaged in while they were performing at their "personal best" (Kouzes & Posner, 1987). Extension of their framework to the study of college student leaders has produced consistent findings across different types of leadership positions. Findings have indicated that the most effective leaders engage in each of the five leadership behaviours more frequently than those identified as less effective by their "followers". These results were reported in samples of fraternity and sorority presidents (Posner & Brodsky, 1992, 1994) in a study of effective resident assistants (Posner & Brodsky, 1993) and in a 1997 study of orientation advisors (Posner & Rosenberger, 1997). Komives (1994)

also utilized the LPI-S in a study with women student leaders attending a leadership conference. Rather than investigating use of practices as a measure of effectiveness, her study reported that women leaders were most developed in the leadership skill of *Enabling Others to Act* a finding consistent with the empowering approach of women leaders reported earlier (Astin & Leland, 1991; Helgesen, 1990; Regan & Brooks, 1995). A limitation of this approach to studying student leadership is the view of leadership as formal and positional and that effectiveness is the result of the practices of one person, the leader. While it provides one lens through which to view leadership, this perspective limits the number of potential leaders to the number of available positions and limits the ability to examine the contribution of others.The leadership practices within this model may not extend to informal leadership activities or situations and may not apply to those holding different ideas of leadership.

Student Leaders: Experiences

A number of qualitative studies have been conducted in an effort to arrive at an understanding of the leadership experiences of college students. Studies reviewed concerning the experiences of student leaders are summarized in Table 2.4 below. A discussion of relevant findings follows.

Table 2.4

Summary of Studies Concerning the Experiences of College Student Leaders

Author	Year	Type of Study	Participants and Context	Research Question/ Focus
Whitt	1994	Qualitative	200 students, staff, administration at 3 women's colleges 98 undergrad 36 faculty	How do women students lead? How do the students learn to lead? How do students describe their leadership experiences?

			48 administrators 18 alumnae	What are the implications of these students for co-ed institutions?
Romano	1996	Qualitative	15 female student leaders at three large universities	Characteristics and experiences of female presidents of campus-wide organizations -How women learned to be leaders, -how they led their organizations, -what their relationships with peers were like, -what they believed they learned from their leadership experiences
Shertzer & Shuh	2004	Qualitative	24 student leaders and 5 disengaged students at a large public university	-how did student leaders and disengaged students view leadership? -what constraining and empowering beliefs, if any, limited or promoted student involvement in leadership opportunities
Logue, Hutchens and Hector	2005	Qualitative-phenomenology	6 student leaders-2 male, 4 female at a large university	Describe the subjective experience of college students in leadership
Komives	2005	Qualitative-grounded theory	13 students who exhibited relational leadership	Develop an understanding of the processes an individual experiences in creating a leadership identity -included 3 components: a life narrative, experiences with leadership and working with others, changing view of leadership

The qualitative studies reviewed above revealed some common experiences of student leaders and some elements specific to women. These studies examined how leadership was described, enacted and learned, and what kinds of influences and skills supported leadership development. The results related to these themes will be discussed below with findings relevant to women noted where applicable.

Leadership was described by the student participants in the studies reviewed in relation to their own roles and ways of leading. The women in the

studies by Whitt (1994) and Romano (1996) echoed the ideas of women's leadership expressed earlier (Astin & Leland, 1991; Helgesen, 1990). Their leadership style was most commonly referred to as being relationship based, non-hierarchical, interactive, accessible, based on equality, consensus and being a team member. These descriptions of leadership stand in sharp contrast to those provided by the leaders studied by Shertzer and Shuh (2004). Their investigation revealed that leaders viewed leadership as an individual phenomenon related to the position that one held. As well, leaders required special skills or qualities to be successful and acted based on their internal motivations. This view of leadership reflects the more traditional approach to leadership as described earlier (Northhouse, 2004). Logue, Hutchens and Hector (2005) provided a more general account of how students viewed leadership than those described above indicating that leadership was a positive experience involving interpersonal, action oriented and organizational components. The contrast between these views of leadership may reflect differences between the students, institutions or gender studied or could reflect students' different stages of development in thinking about themselves as leaders as proposed by Komives et al. (2005). In examining how leadership identity is developed in students Komives et al., (2005) suggest that students' views of leadership change over time based on a number of developmental influences and interactions with leadership related experiences. Arising from a grounded theory investigation, the authors suggest that development of leadership identity involves six stages: *awareness, exploration/engagement, leader identified, leadership differentiated,*

generativity and *integration/synthesis.* The transition across stages represents a shift in thinking about leadership from a hierarchic, leader-centric view earlier in development to a collaborative, relational process oriented view later. Each stage transition is marked by a shift in thinking to a new view of leadership, "letting go of old ways of thinking and acting, and trying on new ways of being" (p. 608). Similar to an investigation of leadership practices and effectiveness, while these findings suggest what leaders do, they do not provide suggestions about how they came to achieve particular behaviours or ways of leading. Insight into what influences and conditions allow for learning and development of leadership as derived from these studies follows.

Whitt (1994) and Romano (1996) were particularly interested in how women came to learn about leading. Romano (1996), while investigating women leaders of organizations on large co-educational campuses found that the women in her study learned to be leaders mainly through trial and error and observation of and insight from other women leaders. They found that practicing their leadership skills in a variety of situations was more effective than formal "training" programs in learning about leadership. The women in Whitt's (1994) study echoed the need to have a number of opportunities to practice and derive insight from other female leaders as essential to learning, but also suggested that they learned through intentional development activities and encouragement of collaborative activity by peers and faculty. The sample for Whitt's (1994) study was chosen from three women's colleges. Women's colleges have been reported to provide an intentionally supportive atmosphere for women's development that

is distinct from co-educational campuses (Tidball et al., 1999) therefore the activities suggested by Whitt (1994) as encouraging learning may not be generalizable or experienced by women in other settings.

Influences on leadership development were also noted in a number of studies but were not directly identified as methods of learning to lead. Komives et al. (2005) identified four categories of developmental influences that were found to contribute to leadership development: adult influences, peer influences, meaningful involvement and reflective learning. Adults served different functions as individuals progressed in developing their leadership identity. Initially, they recognized and encouraged potential, maintained high expectations and created safe spaces to practice leadership and build confidence. In later stages of development continuing to act as role models and active mentors was important. The presence of strong female role models was also noted by Whitt (1994) and Romano (1996) as key developmental influences, while support and encouragement from other adults was reported by Shertzer and Shuh (2005). Creating and communicating high expectations and providing opportunities to practice suggested as instrumental by Komives et al. (2005) were also critical elements in the environments created to support female students in women's colleges (Whitt, 1994).

Peers were important in providing support, serving as role models and encouraging involvement (Komives et al., 2005). Romano (1996) also reported that peers were a source of support for female leaders and they encouraged them to become involved in student organizations. She also noted that

sometimes peers did not understand the complexity of the issues that leaders were dealing with which occasionally resulted in conflict. Working with peers as part of a team was also identified by students in the research of Logue et al. (2005) as a factor in motivating involvement. These findings are supported in the college impact literature (Astin, 1993; Pascarella & Terrenzini, 2005) where the importance of the developmental influence of peers on college students is identified.

Meaningful involvement in a variety of experiences contributed to clarifying personal values and interests, provided the opportunity for social integration and the development of skills (Komives et.al, 2005). This finding was also supported by the other studies reviewed (Whitt, 1994; Romano, 1996; Shertzer & Shuh, 2005). Komives et al. (2005) further suggested that it was essential that opportunities for structured learning and critical reflection be incorporated into leadership development experiences so that students could continue to enhance their self-awareness and make sense of their experiences within the context of leadership.

The qualitative investigations reviewed suggested that a number of skills and attributes were needed by leaders and gained by involvement in a leadership context. The skills that women described as having gained as a result of their leadership experiences included public speaking, interpersonal skills, conflict management, self-awareness and understanding the importance of motivation and of the working of bureaucracies (Romano, 1996). Additionally, Whitt (1994) reported gain in women's social and political awareness, critical thinking and

writing, communication and organizational abilities as a result of participation in leadership related activities. Similar skills were identified in the other studies reviewed (Komives, et al., 2005; Logue et al., 2005; Shertzer & Shuh, 2005). Additionally, gains in self-confidence and efficacy were reported by women (Whitt, 1994; Romano, 1996) and student leaders generally (Komives, et al., 2005; Logue et al., 2005; Shertzer & Shuh, 2005) as a result of participation in a leadership context.

These studies have provided key information about how leaders enact leadership and the significant influences associated with learning about leadership. Little insight however is provided into why students may or may not choose to become involved in leadership development activities. Shertzer and Shuh (2004) offer some indication of the reasons for involvement from their study with student leaders. The leaders suggested that they were motivated to work with people and make friends, to develop personally and help prepare for careers, to improve something or make change and to exercise power. As suggested earlier however, these students displayed traditional views of leadership and their motivations may differ from students not sharing this view. The exercise of power for example does not fit with a relational view of leadership that encourages empowerment of all individuals in collaborative activity (Rost, 1993).

A unique aspect of the study by Shertzer and Shuh (2004) is the inclusion of 5 "disengaged" students in their sample who were not student leaders. These students were able to contribute some additional thoughts related to factors

influencing the decision to become involved. Both the student leaders and non-leaders agreed that lack of capability and confidence were constraining beliefs held by those not involved in leadership activities. Student leaders and non-leaders however differed in their perceptions of support and opportunity for involvement. While student leaders felt that there were numerous opportunities for leadership involvement, the non-leaders felt both a lack of opportunities and a lack of support. The proposition that non-leaders do not perceive of the availability of activities or encouragement for involvement in the same way that leaders do is important in recognizing that there may be inherent differences between these two groups. While including the voice of non-leaders within this study attempted to balance the voice of the student leaders and provide a non-leader perspective, the small number of non-leaders (n=5) can be considered for interest only. However, as little is known about non-participants and what encourages or limits their involvement, these ideas provide a starting point for future research.

With all types of research, one should be aware of the limitations of the studies reviewed when interpreting the results. These qualitative studies have provided rich detail regarding the experiences of student leaders, yet they have involved small samples at a limited number of institutions. Caution should be exercised in generalizing results to different institutional settings and different leadership orientations. As well, the kind of organizations that students led may have played a role in the leadership experiences that were reflected in the results, different students in different organizations may have had different

leadership experiences. Two studies were conducted exclusively with women and therefore identified some gender based results. While the other investigations included women in their samples, particular insight into women's leadership development cannot be realized. Regardless, the commonalities identified in the collective summary lend strength to the individual findings and provide a direction for future research to paint a fuller picture of student engagement in the process of leadership.

Student Leadership: Outcomes of College

The final section related to student leadership includes research examining the relationship of various aspects of college experience with student development variables including aspects of leadership. Astin (1970) proposed a model of "college impact" that is utilized as a framework in many studies of student change. His Input-Environment-Output model (I-E-O) suggests that students arrive at college with a particular set of skills and circumstances (demographic, family, academic, social) known as *inputs*, are exposed to the college *environment* (people, programs, policies and experiences) and leave college with particular *outcomes* (characteristics, skills, attitudes, knowledge, values) (Pascarella & Terrenzini, 2005). Studies investigating the impact of college attempt to statistically control for inputs to identify relationships between particular college experiences and outcomes. Table 2.5 below includes studies reviewed related to college outcomes and leadership.

Table 2.5

Summary of Studies Related to College Outcomes and Leadership

Author	Year	Type of Study	Participants and Context	Results
Cooper, Healy & Simpson	1994	Survey-Longitudinal	256 students studied in first year and again in junior year-at a large public institution	Student Developmental Task and Lifestyle Inventory administered at two points in time-freshman and junior year Students who were members of student organizations versus non-members Differences over and above initial group differences reported-members higher in educational involvement, career planning, lifestyle planning, cultural participation and academic autonomy, -individuals who had taken on leadership roles showed growth over non-leaders on dimensions of developing purpose, educational involvement, career planning, lifestyle planning, cultural participation and life management
Martin	2000	Survey – Longitudinal	89 students at a small liberal arts college	-SDTLI and College Student Experiences Questionnaire-freshman and senior year -Participation in clubs and organizations was positively related to developing a sense of purpose, educational involvement, life management, cultural participation, career planning, educational autonomy and estimate of gains from college -contributed to variance in developing purpose, and sense of competence
Foubert & Grainger	2006	Survey-Longitudinal	307 students at a midsized public university	-SDTLI in sophomore and senior year -students involved in clubs and organizations had consistently higher scores on psychosocial outcomes than uninvolved students -students who joined or led organizations reported higher levels of development than those who had just attended a meeting

Author	Year	Type of Study	Participants and Context	Results
Kezar & Moriarty	2000	Survey-Longitudinal-secondary data analysis	9,731 students at 352 four year institutions 4,730 Caucasian males 4,437 Caucasian females 209 African American males 355 African American females	Cooperative Institutional Research Program (CIRP) data -both groups of men rated themselves higher on leadership ability than women of either race -men also reported themselves as higher on all leadership related variables except writing -Caucasian women reported lowest levels of social self-confidence of all groups -women (both races) reported smallest area of change on leadership ability -Caucasian women-strongest predictor of self-rating of leadership ability was participation in a leadership class, also, active involvement in student organizations, being elected to student office, volunteer work, sorority member, intramural sports and socializing with someone from another ethnic group -experiences related to development of leadership skills but not ability, for Caucasian women- development of public speaking, social self-confidence and ability to influence others
Cress, Astin & Zimmerman-Oster	2001	Survey-Longitudinal, primary and secondary data analysis	425 leadership program participants 450 non program participants from 10 institutions who had received funding for leadership program development	CIRP data -program participants reported positive growth and change on outcomes identified as part of leadership program -gains in skills, values and cognitive understanding of leadership -program participants differed significantly from non-participants on development of social and personal values, leadership ability and skills, civic responsibility, multicultural awareness community orientation and leadership understanding and commitment -volunteering, participating in group projects and internship programs also contributed

Author	Year	Type of Study	Participants and Context	Results
				significantly to growth in developmental areas independent of participation in leadership programs -no differences by gender were found

The five studies of college impact reviewed are longitudinal in nature and therefore indicate change in student outcomes over time. The studies by Martin (2000) and Foubert and Grainger (2006) although not related to student leadership specifically, concern involvement in clubs and organizations. These studies are included as they relate to the current study's conception of leadership as relational and process oriented, involving participants in informal as well as formal roles. Cooper, Healy and Simpson (1994) investigated the differences in developmental outcomes between students who varied in their membership status in student organizations. Students who reported membership in student organizations identified greater gains in level of educational involvement, career planning, lifestyle planning, cultural participation and academic autonomy than non-members. Similar results were also reported by Martin (2000) on overall developmental outcomes and by Foubert and Grainger (2006) on psychosocial outcomes. Additionally, Cooper et al., (1994) compared individuals who had taken on leadership roles within organizations with non-leaders. The leaders reported greater gains on the variables developing purpose, educational involvement, career planning, lifestyle planning, cultural participation and life management as compared to non-leaders. There was no comparison made amongst all three groups, non-members, members and leaders which would

have allowed a more sensitive differentiation of the relationship between involvement and gains in developmental areas. As well, although the authors indicated that data related to usage of program and services and activities were recorded no data were provided in the report. Information related to the kinds of activities that may have resulted in the differences shown would have allowed for further insight.

Some limitations of this and other longitudinal studies reviewed should be mentioned. These studies are correlational in nature and therefore cause and effect cannot be assumed. The instrument utilized in this study, similar to that used in the other longitudinal studies reviewed, asks students to self-report behaviours, attitudes and opinions. The nature of the data is such that perceptions of these variables may be quite different than reality. Martin (2000) calls into questions the stability of this kind of data over time, whereby an individual may re-define the behaviours and attitudes measured at one point in time resulting in differences that are not a result of development but of re-interpretation of the measure. A final caution which should be identified is that students who persist over time and are available and willing to respond to both the initial and final versions of the survey, may differ from students who are no longer in school, who change institutions or who are not willing to complete the second instrument, causing potential bias in the results. Despite the limitations noted, these data, based on large numbers of students, do suggest that members of student clubs and organizations and their leaders may benefit from their involvement while in college. If these benefits can be realized then

participation in campus activities should be encouraged and supported by colleges and universities. Research identifying the kinds of organizations and activities that show the most significant relationships with desired outcomes would provide additional information to benefit practitioners as they assist students in engaging in the campus community.

Cress, Astin and Zimmerman-Oster (2001) specifically examined the developmental outcomes of students involved in leadership education and training programs. Their longitudinal study revealed that students who had participated in leadership training programs in college reported growth in social and personal values, leadership ability and skills, civic responsibility, multicultural awareness, community orientation and leadership understanding and commitment. These changes were significantly greater than those reported by non-participants while controlling for college entrance differences. Additionally, independent of participation in leadership training, individuals who were involved in volunteer work, group projects and internships also reported growth in several developmental areas including leadership. Gender was not found as a predictor of developmental outcomes for leadership program participants, suggesting that men and women students were "equally likely to report development in leadership capabilities and their associated skills" (p.22) as a result of their participation. The results are promising for practitioners involved in developing student leadership programs and activities as they suggest that participation in such programs do relate to the intended outcomes. The limitations discussed

above related to the nature of these longitudinal studies should be noted for this study as well.

A large scale investigation by Kezar and Moriarty (2000) examined the differential gains reported by women and African American students. Related to the current research, women, regardless of race were reported to rate themselves lower than men on leadership ability and on all leadership related skills except for writing. Change in leadership ability was the smallest area of gain reported by women over the four year period of the study. An examination of predictors that were associated with self-reported leadership ability showed participation in a leadership class, as the strongest predictor for Caucasian women. Other predictors included: involvement in student organizations, election to student office, volunteer work, being a sorority member, intramural sports and socializing with someone from another ethnic group. Kezar and Moriarty (2000) provide a broad view of student perceptions of development of leadership ability and skills with a particular insight into women and minority students. The large multi-institutional sample allows for greater ability to generalize findings. A challenge however, with examining a particular topic from a database designed for overall measures of college achievement, is that it is difficult to pinpoint what particular aspects of programs relate to the outcomes discussed or to compare across programs and institutions. The research by Cress et al. (2001) highlights this difficulty of examining particular student experiences, suggesting that "we do not know for instance, the degree or level of involvement for each student in each leadership program. Instead the focus had to be limited to statistical analysis of

educational outcomes between those students who did and did not participate" (p.24). In the case of the study reviewed, differences in outcomes were examined between men and women, Caucasian and African American. It is unclear what differences may exist within gender in relationship to participation and non-participation in leadership programs or activities, and whether varying levels of involvement matter. Given the non-significant gender findings for participants in leadership programs identified by Cress et al. (2001) above, one may predict greater gains in developmental outcomes in relationship to participation for women who participate in leadership programs and in student organizations versus those who do not. Further research is required to examine the nature of women's involvement on college campuses to provide a clearer picture of the factors that make a difference for their development.

The correlation studies in this section suggest the possible advantages for students who participate in student organizations in general, and in leadership activities in particular. Additionally, the differential gains of women are reported (Kezar & Moriarty, 2000). The following section provides a framework for addressing the differential involvement of students in programs or activities to shed light on how we may engage students who are non-participants in activities on college campuses.

The Transtheoretical Model

Background: Stages of Change

The Transtheoretical Model (TTM) otherwise known as the *stages of change* developed by Prochaska (1979) is a model of intentional behaviour

change. Five stages form the central organizing construct of the TTM as discussed in Chapter 1 of this document and represent varying levels of readiness to adopt change in behaviour (Prochaska & Velicer, 1997). To review, the stages of *pre-contemplation, contemplation, preparation, action* and *maintenance* are distinguished by differences in intention to change behaviour within a given time frame, generally six months. The *pre-contemplation* stage involves a lack of intention to change in the near future. C*ontemplation* involves an intention to change in the next six months. In *preparation,* individuals intend to take action in the immediate future and perhaps have already taken preliminary steps to change. *Action* is characterized by specific overt change in behaviour that has been maintained for less than six months. Finally, *maintenance* occurs following the *action* stage and refers to the continuation of the behaviour after six months.

The model was originally conceived to explain how individuals change their behaviour either on their own, or with the assistance of an expert. Prochaska and Norcross (2001) state that "[they] set out to construct a model...that can draw from the entire spectrum of the major psychotherapies—hence the name *transtheoretical*" (p.516). The authors suggest that the goal of the TTM is to create a higher order theory of psychotherapy that integrates the unique aspects of different theories while preserving the unity of psychotherapy systems (Prochaska & Norcross, 2001).

The *stages of change* aspect of the model reflect the earlier stage based conceptions of Horn and Waingrow (1966), Cashdan (1973) and Egan (1975).

Horn and Waingrow (1966) proposed a model of change in behaviour for smoking that included four dimensions: motivation for change, perception of threat, development of alternative psychological mechanisms and factors facilitating and inhibiting change. These four dimensions were proposed separately as contributing to an individuals' attempted behaviour change.

Both Cashdan (1973) and Egan (1975) proposed developmental, stage based conceptualizations of behaviour change. Cashdan (1973) draws together a series of common elements amongst the psychotherapies to provide guidance for practitioners in their work with clients who are attempting to change behaviour. Cashdan proposes a "process" framework for conceptualizing psychotherapy that when applied broadly across a variety of therapy modes forms a "theory of therapy in operational terms" (Cashdan, 1973, p4). He suggests that the "process" reflects a set of "stages" and that the stages are constituted by particular therapist activities coupled with behavioural shifts in a client. While Cashdan suggests that stages may vary in number and characteristics depending on the particular system of therapy, a set of three invariant principles must be maintained. These principles are *continuity, ordinality* and *non-exclusion*. *Continuity* relates to the behavioural change of the client in that the output behaviour that signals the transition from one stage to the next becomes the input behaviour for the subsequent stage. The principle of *ordinality* suggests that the order of the stages is fixed while *non-exclusion* requires that no stage is omitted in the change process (Cashdan, 1973).

Egan (1975) also proposes a developmental model specifically to assist "helping" professionals in their work with clients who are changing their behaviour. Based on social influence theory, learning theory and systematic skills training, Egan created a 3 stage model incorporating the concept of preparing to change early on (both cognitively and affectively) to facilitate later action (behaviour) toward change. Tasks to be achieved by the client during each stage and prior to stage transition, and for the therapist in assisting the client were outlined.

The TTM integrates the motivation for change proposed by Horn and Waingrow (1966), the stage based principles identified by Cashdan (1973) and the concept of preparing for action (Egan, 1975) into the stage framework of the TTM. The original *stages of change* emerged from an empirical study examining the processes that subjects used to quit smoking (DiClemente & Prochaska, 1982). The subjects themselves described the stages that they went through when quitting smoking. These stages included: 1) thinking about quitting, 2) becoming determined to quit, 3) actively modifying habits and/or environment and 4) maintaining their new non-smoking status. The stage of *pre-contemplation* was added by the authors to represent an individual's unwillingness or lack of awareness. Elucidation of the stages and validation of the stage framework was accomplished through empirical studies (DiClemente & Prochaska, 1982, Prochaska & DiClemente, 1983). Further to the explication of the *stages of change*, three additional constructs were incorporated into the overall TTM: processes of change, decisional balance, and self-efficacy. The combination of

these four constructs is an important feature of the TTM as Prochaska and Velicer (1997) explain that "no single theory can account for all of the complexities of behaviour change. Therefore, a more comprehensive model will most likely emerge from an integration across major theories" (p. 41). The additional three constructs are described briefly below.

Processes of Change

Ten *processes of change* reflecting the cognitive, affective and behavioural activities that people use as they change their behaviour were identified in a comparative analysis of 18 different change theories and over 300 outcome studies (Prochaska, 1979). Investigations of the *processes of change* identified by Prochaska (1979) have shown an integration of the processes with the *stages of change*. Findings have indicated that particular processes are used in particular stages to promote stage advancement (Perz et al., 1996).

Decisional Balance

Decisional balance is based on Janis and Mann's (1977) decision making model, and is integrated into the TTM as a construct providing explanatory value for behaviour change. A consistent pattern of pros and cons has been reported across stages (Prochaska et al., 1994) as individuals weigh the advantages and disadvantages of a decision to adopt a new behaviour or change a problem behaviour.

Self-Efficacy

Self-efficacy, as identified by Bandura (1982), is incorporated into the TTM as a final construct explaining how individuals move through the *stages of*

change. Self-efficacy for achieving the behaviour change has been found to increase with stage advancement. While the processes of change and decisional balance are beyond the scope of the current investigation, the concept of self-efficacy as it applies to the TTM and as a variable of the study is explored in greater detail in a subsequent section.

Stages of Change: Research

Substantial use of the TTM has been found in therapeutic and health promotion fields, but until recently there has been little empirical evidence of the model's application outside of these settings. To date only a few studies related to either college students or leadership development have incorporated the TTM. Research to be reviewed will focus on findings related to the *stages of change* in particular and to their applicability to behaviours beyond smoking and health promotion settings.

The TTM proposes that behavioural change is a dynamic, cyclic process occurring over time and may include frequent relapses or cycling back to earlier stages as new behaviours are adopted. The stages of the TTM represent the temporal dimension of the overall model indicating progression across stages over time as people change their intentions to adopt a new behaviour or to eliminate a problem behaviour. The five stages that compose the model are reported below in Table 2.6 along with the intention to change and time period associated with each stage (Prochaska, DiClemente and Norcross, 1992).

Table 2.6

Stage of Change, Intention and Duration

Stage of Change	**Intention**	**Duration**
Pre-contemplation	No intention to change	Next 6 months
Contemplation	Considering changing	Next 6 months
Preparation	Intending to change	Next 1 month
Action	Overt behavioural change	1day to 6 months
Maintenance	Continuing behaviour change	+6 months

The *stages of change* have been the most widely studied aspect of the TTM. Acquiring an understanding of the *stages of change* for a given behaviour and stage distribution within a population provides key information for planning programs and interventions that are appropriate to the state of readiness, enhancing the opportunity for success (Velicer et al., 1995). As a basis for future comparison, stage distribution provides a reference point for assessment of program outcomes and/or impact of particular policy changes (Laforge, Velicer, Richmond & Owen, 1999). Further, *stages of change* is used as a framework to integrate other constructs, such as self-efficacy and processes of change in explaining and fostering behavioural change (Prochaska & Velicer, 1997).

Table 2.7 includes an overview of the studies reviewed in relation to *stages of change*. The empirical studies selected for review in this section include those primarily focused on the *stages of change* construct. Studies including the current five stage structure were chosen to inform the design of the present study. Additionally, studies were chosen to provide a range of behaviours, including non-health behaviours.

Table 2.7

Summary of Stages of Change Studies Reviewed

Author	Year	Type of Study	Behaviour	Participants & Context	Stage Results
Fava , Velicer, & Prochaska	1995	Survey	Smoking	4,295 adult smokers (18-75yrs) Rhode Island	Pre-C* 42.1%, C 40.3%, Pr 17.6%, since dealing with current smoker, no Action or Maintenance stage reported
Velicer , Fava, Prochaska, Abrams, Emmons & Pierce	1995	Survey	Smoking	3-samples Rhode Island sample (Fava et al., 1995), California sample – 9,534 adult smokers, Worksite sample-114 worksites 4,785 adult smokers	RI sample (as above) CA sample: Pre-C 37.2%, C 46.7%, Pr 16.1% Worksite: Pre-C 41.1%, C 38.7%, Pr 20.1% -almost 80% in first two stages in all three samples-unprepared for action
Pallonen, Fava, Salonen, & Prochaska	1992	Survey	Smoking	529 Finnish men smokers	Current smokers only, therefore no action or maintenance stages Pre-C 57.6%, C 29.4%, Pr 13%
Etter, Perneger & Rochi	1997	Survey	Smoking	Sample 1- 742 Geneva Switzerland residents ages 18-70, 148 smokers Sample 2- 2,270 university students (82%), faculty (12%) and admin (6%) in Geneva, Switerland, 616 smokers	Sample 1(residents) Pre-C 73.6%, C 22.3%, Pr 4.1% Sample 2 (university) Pre-C 71.9%, C 20.3%, Pr 7.8%
Marcus & Owen	1992	Survey	Exercise	Study 1-1093 employees at four Rhode Island worksites- 52% female Study 2-801 employees at a worksite in Australia-12% female	Study 1- Pre-C 30.8%, C 28.8%, Pr 13.2%, A 13.2%, M 19.2% Study 2-Pre-C 7.2%, C 35.9%, Pr 25.4%, A 6.8% , M 24.7%

Author	Year	Type of Study	Behaviour	Participants & Context	Stage Results
Bull, Eyler, King and Brownson	2001	Survey	Exercise & Physical Activity	Minority women aged 40 and older, national USA sample, control group of white women of same age group also collected 745 Black, 738 American Indians, 660 Hispanic, 769 White	Total Sample-readiness for Exercise Pre-C 23.6%, C 16.4%, Pr 4.7%, A 6.3%, M 49% Total Sample for readiness for Physical Activity Pre-C 9.2%, C 4.8%, Pr 4.4%, A 2.3%, M 79.3% Significant ethnic group differences were identified Cross-validation with activity history showed some discrepancies in appropriate staging
Sarkin , Johnson, Prochaska & Prochaska	2001	Survey	Exercise	670 healthy overweight adults, US population-assessing moderate exercise-cross validation of self-reported stage of change with report of leisure time exercise activity	Pre-C 22.6%, C 22.5%, Pr 15.1%, A 14.4%, M 25.4% Participants in Action and Maintenance reported significantly more sessions of strenuous exercise, Pre-C significantly less than all other stages on moderate exercise measure
Tai-Seale	2003	Survey	Physical activity	418 adults in Midwest US, median age 44, 66% female Identified triggers and barriers to physical activity	Pre-C 47%, C 16%, Pr 11%, A 5%, M 21% compared with a US estimate
Tucker, Snelling & Adams	2002	Survey	Calcium intake	344 college age female students age 18-24 Measures of daily calcium intake used to validate stages	Pre-C 26.5%, C/Pr 33.1%, A/M 40.4%, comparison of self-report calcium intake with stage of change confirmed accurate staging of individuals
Rapley & Coulson	2005	Survey	Fruit & vegetable consumption	501 females aged 11-16, regarding stage of change for daily consumption of fruits and vegetables	Pre-C 16.4%, C 38.5%, Pr 11.8%, A 13.4%, M 20%

Author	Year	Type of Study	Behaviour	Participants & Context	Stage Results
Harlow, Prochaska, Redding, Rossi, Velicer, Snow, Galavotti, O'Reilly & Rhodes	1999	Survey	Condom use	345 US individuals at high risk for HIV and who engaged in a wide range of condom use Age 15-62, mean 32, 58% male	Pre-C 36%, C 15%, Pr 7%, A 7%, M 35%
Laforge, Velicer, Richmond and Owen	1999	Survey	5 health behaviours: Exercise, avoiding high fat diets, reducing stress, losing weight, smoking	5 samples, 2 from USA, 3 from Australia US1-19,242 HMO members over age 18 USA 2- 508 adults randomly sampled AUS 1- 691 adult postal workers age 18-61 AUS 2-853 police, ages 18-61 AUS 3- 2,439 randomly sampled adults, age 18-69 Staging algorithm used same items in all samples	Smoking USA 1- Pre-C 19.2%, C 17.2%, Pr 8.9%, A 4.9%, M 49.8% USA 2- Pre-C 20.2%, C 11.1%, Pr 6.9%, A 5.3%, M 56.5% AUS 1- Pre-C 27.6%, C 19%, Pr 7%, A 4.1%, M 42.2% AUS 2- Pre-C 24%, C 23.8%, Pr 8.5%, A 9.1%, M 34.6% AUS 3- Pre-C 23.8%, C 15.8%, Pr 3.6%, A 4%, M 52.7 Exercise USA 1- Pre-C 18.4%, C 13.5%, Pr 18%, A 10.6%, M 39.5% USA 2- Pre-C 14.5%, C 8.5%, Pr 21.6%, A 7.9%, M 47.4% AUS 1- Pre-C 19.1%, C 17.4%, Pr 12.8%, A 10.3%, M 40.4% AUS 2- Pre-C 12%, C 18.8%, Pr 13.2%, A 10.6%, M 45.4% AUS 3- Pre-C 23.9%, C 13.2%, Pr 7.3%, A 7.1%, M 48.5% *only results from smoking and regular exercise reported
Levesque, Prochaska	1999	Case study Survey	Collaborative Service Delivery	31 individuals across 4 university departments	Pre-C 23%, C 13%, Pr 0%, A 13%, M

Author	Year	Type of Study	Behaviour	Participants & Context	Stage Results
& Prochaska					50% No departmental differences in stage distribution, were differences between staff and administrators 100% of administrators were in Maintenance vs 35% of staff
Prochaska, Prochaska & Levesque.	2001	Survey	Continuous quality improvement in health care	229 Veteran's Health Administration clinical, support staff and administrators representing 120 VA hospitals Individuals responded to a staging algorithm assessed their perception of their hospital's stage of change for facilitating clinician involvement in the Continuous Quality Improvement initiative	Pre-C 8.3%, C16.6%, Pr 6.6%, A 12.1%, M 56.6% Reports of stage of change were found to be related to an individual's professional role, direct care providers (eg. Medical and nursing staff) were more likely to report that their hospital had no intention of facilitating involvement of clinicians (ie. Pre-C) than were administrators
Cole , Harris & Feild	2004	Survey	Learning motivation	Sample 1-285 university business students, 59% male, mean age 22 Sample 2-173 students Sample 3-207 university students	Samples 1 & 2 were utilized in the development of a continuous stage of change measure Sample 3 was used for hypothesis testing Maintenance stage was not measured -Individuals showed a peaked profile indicating their membership in one stage of change. Frequency counts for stage of change were not provided. -Stage of change was related to particular behaviours, eg. Pre-C students did not

Author	Year	Type of Study	Behaviour	Participants & Context	Stage Results
					attend class as often, Action stage students performed better on exams. -Stage of change explained an average of 7% of the variance in four learning criteria beyond control
Harris& Cole	2006	Survey	Motivation to learn in a leadership development context	82 supervisors, managers and project managers in a manufacturing division of a multinational corporation Participants were taking part in a leadership development program instituted by the company Only stages of Pre-C, C & A were measured	No frequency counts of stage distribution were provided. Relationships between *stage of change* (SOC) and attitudinal variables were hypothesized SOC was correlated with readiness to change (Pre-C, r=-.60; C, r =.70; A, r=.28 all at p,.01) Action stage was associated with learning orientation Pre-C and C were associated with perceived organizational support and affective organizational commitment Pre-C negatively correlated with perceived developmental need Pre-C negatively associated with perceptions of module content and instruction
Bockian, Glenwich &	2005	Survey	Jewish Conversion	141 adults (20-45 yrs) 68% female	Staging algorithm Pre-C 14%, C 17%,

Author	Year	Type of Study	Behaviour	Participants & Context	Stage Results
Bernstein				Participants were referred from conversion group leaders, Rabbis and volunteered in response to advertisements	Pr 11%, A 26%, M 32% Relation between Staging algorithm and continuous staging measure was supported except for some lack of differentiation between Pr and A stages

*Pre-C=Precontemplation, C=Contemplation, Pr=Preparation, A=Action, M=Maintenance

Insight derived from the reviewed studies include the following points:

- Individuals vary on intention to adopt/eliminate behaviours,
- Complex behaviours require clear definitions to stage accurately,
- Stage of change can help predict behavioural outcomes,
- Methodological considerations.

Distribution Across Stages of Change

The *stages of change* construct of the TTM recognizes that individuals vary in their intention to change a particular target behaviour. The distribution of respondents into the *stages of change* in the studies reviewed above reflects these between subject differences across a wide variety of behaviours. While Prochaska and Velicer (1997) claim that a "rule of thumb for at risk populations" (p.38) is that the pre-action stages of *pre-contemplation*, *contemplation* and *preparation* will display a population distribution of 40%, 40% and 20% respectively, the studies reviewed above do not reflect that a general statement can be made about stage distribution across, or even within behaviours. It appears that stage distribution is both behaviour and context specific. For

example, studies related to smoking cessation by Fava et al. (1995) and Velicer et al. (1995) both show the "rule of thumb" distribution that Prochaska and Velicer (1997) refer to, however, two European smoking cessation studies reflect a much higher percentage in *pre-contemplation* and lower in both *contemplation* and *preparation* stages (Etter et al., 1997, Pallonen et al., 1992). The staging measures used in the European studies were the same as those in the two US studies reported. Additionally, no other behaviours among those reviewed repeated the general rule as described above. What is clear however is that a wide range of ages, ethnicities, cultural contexts and behaviours could be accommodated by the *stages of change* aspect of the TTM. As well, for all of the behaviours reviewed, a significant percentage of the population of investigation was in a stage that precedes an action orientation, ie. *pre-contemplation*, *contemplation* and *preparation*. As Prochaska, DiClemente and Norcross (1992) point out, many programs and/or interventions that are focused on behaviours and activities relevant to those actively trying to change a behaviour will miss a substantial portion of the population that are not yet ready for such interventions. This would also be true of individuals not yet prepared to take action to become involved in leadership related activities.

The stage concept is appealing in its ability to differentiate readiness for change through the stages from *pre-contemplation* through to *maintenance* as it allows for increased sensitivity in recognizing small differences in both intention and action relevant to a particular behavioural change. Approaches that only identify behavioural dichotomies for example, smoker/non-smoker,

exerciser/non-exerciser and in the case of the present study leader/non-leader, neglect unobservable cognitive and affective changes that individuals make as they progress (or not) toward a point where behavioural change is achieved. Buckley, Goering, Parikh, Butterill and Foo (2003), using the TTM in a study of the adoption of a research transfer training program, highlight this advantage of the TTM stage model to detect changes in cognition that precede overt behavioural change. Pre- and post-course measures were recorded regarding *stages of change* in participants' attitudes, intentions and actions with respect to research transfer practice. Findings identified stage changes reflecting alterations in attitudes and intentions during early TTM stages without demonstrating overt change in behaviour. The authors noted that use of the *stages of change* format in evaluation of the program allowed them to discern alterations in the thought processes of learners that would not have been detected if only assessing change in practice. Usefulness of the awareness of cognitive change for future programme planning, and as a pre-assessment of learner needs to allow customizing of course delivery were noted as potential benefits by the authors.

One criticism of the *stages of change* framework that should be noted is that the time periods associated with intention to change behaviour are arbitrary (West, 2005). DiClemente (2005) however suggests that "making a concept operational so that one can assess the phenomenon is always arbitrary, and simply an attempt to create a dividing line that could be useful in isolating a concept or construct" (p.1046). The time period provides a measure by which people can conceivably consider their intention to change behaviour and

incorporated follow up timelines presented in studies of smoking cessation (Prochaska & DiClemente, 1982; Prochaska & DiClemente, 1983).

Stage Assignment

If programmatic interventions and the integration of the other TTM constructs of *processes of change*, *decisional balance* and *self-efficacy* are based on stage, then accurate stage assignment is critical. In order to stage complex or ambiguous behaviours a clear definition of the behaviour is essential. Additionally, the inclusion of a clear definition of the behaviour in question is important in order to compare findings amongst similar behaviours. Exercise is one example of a complex behaviour to which the TTM has been applied. Exercise can be defined as mild, moderate or vigorous. It can include many different types of activities conducted over seven or fewer days per week for varying amounts of time. Without a clear definition of "exercise" an individual may be incorrectly staged based on his/her own interpretation of the term which may significantly different from the intended measure. The study reviewed above by Bull, Eyler, King and Brownson (2001) include two stage of change measures, one for exercise and one for physical activity each involving a definition with examples of the kinds of activities (times/week & duration) that are included under each scale so that the respondent could be clear about how to stage herself. The results indicated different staging classifications for each of the categories suggesting that individuals were able to distinguish what constituted exercise and what constituted physical activity. Sarkin, Johnson, Prochaska and Prochaska (2001) similarly provided a clear definition of exercise yet different

frequencies and durations were used. Marcus and Owen (1992) fail to provide a precise definition which may result in incorrect staging and therefore influence any recommendations arising from their study. Comparison across studies is difficult as different definitions of exercise/physical activity are used. This is equally problematic in dietary studies (Rapley & Coulson, 2005; Tucker, Snelling & Adams, 2002). With regard to this study, as leadership is a complex activity involving a variety of different behaviours and attitudes and involvement in activities developing those skills and abilities is diverse, it is critical that a clear definition be utilized in the staging of this behaviour. (See Chapter 3 for detail regarding staging for the present study)

Of particular relevance to this study is the research of Cole et al. (2004) related to learning motivation in university students and Harris and Cole (2006) concerned with motivation to learn in a leadership development context included in Table 2.7 above. These studies are of interest not only because they apply the *stages of change* to a non-health behaviour, but also for their application of the framework in the cognitive domain of learning. Cole et al. (2004) suggest that applying the stage based approach to learning motivation acknowledges that "one is not always conscious of a learning opportunity or need" (p.1423) and the *stages of change* take into account that one can progress from a state of unawareness through to active learning as one's thought processes and intentions change. The studies conducted by Cole et al. (2004) and Harris and Cole (2006) utilized a continuous measure to stage individuals into one of four stages, the *maintenance* stage was not measured in either study as in both

cases it was not perceived to be relevant to the particular situation. Cole et al. (2004) revealed that individuals could be staged and their progress tracked over time with use of the scale developed for their study. Also, individuals who showed progression from a non-action stage to the *action* stage showed improvement in their performance (measured as exam averages). Further, the stage of change measure explained variance in four learning criteria (exam average, help seeking-rating, class attendance and class satisfaction) over and above control variables.The small, non-random sample drawn from a single institution limits the generalizability of the study, however the findings provide a basis on which to further investigate the *stages of change* in learning environments.The findings of Cole et al. (2004) provide support for use of the *stages of change* framework with a non-health behaviour such as involvement in leadership related activities. Further, the investigation of relationship amongst variables providing potential explanatory value for stage of change, as is pursued in the current study, is also endorsed.

Research applications of the *stages of change* framework have revealed a methodological commonality and an inherent difficulty. As noted in the studies reviewed in Table 2.7 a survey method was the primary means of investigation. Survey investigations are a method of obtaining information from a large number of individuals (Gall, Borg & Gall, 1996) as was the case in most of the studies above. Survey instruments are designed to have the participant complete the responses, therefore the nature of the data arising from these studies is self-report. The self-report method assumes that individuals will answer honestly and

that they have the knowledge required to answer accurately. Providing a clear definition of the activity in the staging algorithm will assist respondents in accurate answering. Anonymity in responding and voluntary participation create the conditions in which individuals are more likely to respond honestly (Brener, Billy & Grady, 2003). As the *stages of change* are interested in the intentions of individuals to change their behaviour an objective alternative to self-report is not available.

Measuring Stages of Change

Two different self-report methods are used to ascertain an individual's stage of change for a given behaviour: a staging algorithm or a continuous measure. According to Reed, Velicer, Prochaska, Rossi and Marcus (1997) "an algorithm is a short measure that categorizes a subject into a single discrete stage" (p. 57) based on response to a question or questions related to intention to change behaviour. A continuous measure however utilizes a questionnaire format, generally with several questions related to each stage of change to create a profile of behaviour change (McConnaughy, DiClemente, Prochaska & Velicer, 1989).

Algorithm Method

The algorithm method of determining stage of change has been utilized in studies related to a number of behaviours. Table 2.8 indicates studies reviewed utilizing this method.

Table 2.8

Summary of Stages of Change Studies Using Algorithms to Stage.

Author	Year	Behaviour	Population
Nigg & Courneya	1998	Exercise	819 Adolescents
Harlow et.al.	1999	Condom use	345 Ages 15-62
Bull et.al.	2000	Exercise	2912 women ethnically diverse
Sarkin et al.	2001	Exercise	670 overweight population
Suminski & Petosa	2002	Exercise	3099 college students ethnically diverse
Ma et al.	2003	Fruit and vegetable intake	1545 age 18-24 years
Prochaska et.al.	2004	Smoking	4653 smokers mean age 40
Jing Jian Xiao et al.	2004	Debt reduction	520 participants various ages
Wee, Davis & Phillips	2004	Weight control	366 participants various ages
Verheijden et al.	2004	Fat consumption	143 patients, elevated cardiovascular risk, age 40-70
Prochaska et al.	2005	Smoking, healthy eating, sunscreen use, regular mammogram	5407 patients, mean age 44.7
Bockian, Glenwick & Bernstein	2005	Jewish conversion	141 age 20-45
Shirazi et al.	2006	Calcium consumption	116 Iranian women

All studies reported above using an algorithm for staging identified participants in each of the five stages of the TTM except for the study by Jing Jian Xiao, O'Neil, Prochaska, Kerbel, Brennan and Bristow (2004) related to debt reduction. Jing Jian Xiao et al. (2004) chose to focus on only two categories: action (achieving their goal) and pre-action (not achieving their goal). Bockian, Glenwick and Berstein (2005) utilized both a staging algorithm and a continuous measure in their study of *stages of change* for Jewish conversion. Both methods yielded the same stage categorization for participants. Implications of this finding suggest that application of either method of staging of individuals is appropriate.

As previously stated, a continuous measure utilizes a questionnaire format creating a profile of behaviour change (McConnaughy et al. 1989). The original stage of change questionnaire was developed by McConnaughy, Prochaska & Velicer (1983) and utilizes a 32 item scale, eight items for each of four *stages of*

change. Individuals are assigned to *pre-contemplation*, *contemplation*, *action* and *maintenance* stages as a result of the stage with the highest score achieved (McConnaughy et al., 1983, 1989). Initially, *preparation* was not included as a separate stage within this measure and many studies utilizing a Stages of Change Questionnaire based on the original work by McConnaughy et al.'s scale (1983, 1989) do not include the *preparation* stage (Prochaska et al., 1992, Brogan, Prochaska & Prochaska, 1999; Harris & Cole, 2006, Mannock, Levesque & Prochaska, 2002, Prochaska et al., 1992). DiClemente, Prochaska, Fairhurst, Velicer, Velasquez & Rossi (1991) however noted the importance of including *preparation* in measures of *stages of change* as it "seems better able to capture the readiness for action" (p.301) than *contemplation* alone.

In relation to the current study, the *preparation* stage is recognized as significant in that women within this stage are most likely to become involved in leadership related activities and determining factors that may influence their movement towards action is important to understand how to encourage and support their potential involvement. Additionally, as either method of staging appears to be appropriate (Bockian et al., 2005) the short algorithm approach provides the advantage of brevity and clarity in responding. In the current study an algorithm was therefore used to stage individuals into one of the five categories.

Factors Influencing Involvement

Self Efficacy

Bandura (1997) defines perceived self-efficacy as "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (p.3). He suggests that efficacy beliefs are domain specific and are a major determinant of action. If people do not believe that they can produce a desired outcome through action, they will have little incentive to act. Further, he suggests that belief in one's ability to produce a desired effect plays a stronger role in affect and motivation to action than actual ability to perform a task. Self-efficacy has been shown to influence the choice of activities people engage in, their persistence and effort in activities, the self-hindering or self-aiding response to their own thoughts, their ability to cope with adversity, and the level of accomplishment realized (Bandura, 1997). Four sources of information contribute to one's beliefs in their capabilities to perform in a specific task domain. Enactive mastery, vicarious experiences, verbal persuasion and affective states each provide an individual with information relative to their perceived abilities within a specific area.

Enactive mastery, also referred to as performance accomplishments, relates to information provided by past experiences on a given task. Successful task achievements tend to raise one's efficacy beliefs, while failures tend to lower one's efficacy beliefs (Bandura, 1997).

Vicarious experiences, or modeling, provide a second source of information in the formation of efficacy beliefs. As individuals do not always have

a sufficient set of previous experiences from which to gauge their performance, observation of and comparison with others provides a means for estimating one's own ability. The strength of influence of a model's performance on the self-efficacy of an individual who is observing is related to the similarity between the model and the observer. The more similar the model is to the observer, the greater the impact of successes or failures on the efficacy beliefs of the observer (Bandura, 1997).

A third source of information influencing efficacy beliefs is verbal persuasion. Verbal persuasion involves the effect of significant others' expressions of faith or doubt in an individual's ability to perform a given task. Conveying faith in one's ability has a positive effect on efficacy whereas doubtful expressions produce the opposite results (Bandura, 1997).

Physiological and affective states provide additional information related to one's capability of performing tasks. The body's state of arousal influences performance, ability to cope with stress and emotional response. An individuals' ability to recognize and respond appropriately to the level of arousal for given tasks contributes to a higher level of task self-efficacy. Inability to control the level of arousal negatively influences task self-efficacy (Bandura, 1997).

The influence that these sources of information will have on self-efficacy depends on how an individual evaluates the information arising from these sources. The "ability to discern, weight and integrate relative sources of efficacy information" depends on an individuals' self-appraisal skills, knowledge of their own capabilities and the task demands and the cognitive skills available for

processing the information (Bandura, 1997, p. 115). Personal, social and situational variables are believed to contribute to how experiences are interpreted (Bandura, 1997).

Self-efficacy and TTM

The Transtheoretical Model proposes that the level of self-efficacy for changing a target behaviour is related to the stage of change for that behaviour (DiClemente, Prochaska & Gilbertini, 1985). A summary of the TTM studies reviewed that incorporated measures of self-efficacy is included in Table 2.9.

Table 2.9

Summary of Studies Examining Transtheoretical Model and Self-Efficacy

Author	Year	Type of Study	Behaviour	Participants & Context	Stage Results
DiClemente et al.	1985	Survey-Longitudinal	Smoking	957 volunteers from Rhode Island and Texas	-SE increased across stages of change in cross-sectional analyses -SE increased from initial assessment to post assessment for individuals who showed stage transition across time
Prochaska et al.	1991	Survey	Smoking	960 Adult volunteers from Rhode Island and Texas	-SE* increased linearly across stages of change
Marcus & Owen	1992	Survey	Exercise	Study 1-1093 employees at four Rhode Island worksites- 52% female Study 2-801 employees at a worksite in Australia-12% female	Study 1- SE differentiated stages $F(4, 970) = 115.84, p < .001$ Study 2- SE differentiated stages $F(4, 757) = 40.38, p < .001$
Wyse et al.	1995	Survey	Exercise	244 British young adults aged 16-21,	SE increased across stages of

Author	Year	Type of Study	Behaviour	Participants & Context	Stage Results
				101 males, 143 females	change F(2,244) = 26.4, p<.001
Sarkin et al.	2001	Survey	Exercise	670 healthy overweight adults, US population-assessing moderate exercise-cross validation of self-reported stage of change with report of leisure time exercise activity	SE differentiated stages F(4, 631)=25.8, p<.001
Tucker et al.	2002	Survey	Calcium intake	344 college age female students age 18-24 Measures of daily calcium intake used to validate stages	Action/Maintenance stages were significantly higher in SE than pre action F (2, 344) =2.4, p<.001
Rapley & Coulson	2005	Survey	Fruit & vegetable consumption	501 females aged 11-16, regarding stage of change for daily consumption of fruits and vegetables	SE increased across stages of change F (4,493) =36.84, p<.001
Shirazi, Niknami, Wallace, Hidarnia, Rahimi & Fahihzadeh	2006	Randomized controlled study	Calcium consumption	61 women in an experimental intervention program group 55 women in the control group All participants 40-65 years of age from Shiraz, Iran	A 12 week stage based tailored nutrition intervention resulted in increased self-efficacy with stage progression which was significantly different than the control group F(1,59)= 35.94, p<.0005
Prochaska, Paiva, Padula, Prochaska, Montgomery, Hageman, et al.	2005	Survey	Emotional readiness for adoption of a child	217 prospective adoptive parents in the	SE increased across stages of change F (3, 214) =2.91, p<.05

*SE = Self-efficacy

In all of the studies reviewed, self-efficacy for achieving the target behaviour increased across *stages of change*. The lowest levels of self-efficacy

were found in pre-contemplators, with increasing efficacy realized as transition across the stages from *pre-contemplation* through to *maintenance* took place. The majority of these studies were cross-sectional in nature and therefore do not provide evidence of change over time, only differences in levels of efficacy. The longitudinal study by DiClemente et al. (1985) and experimental investigation of a stage based intervention by Shirazi, Niknami, Wallace, Hidarnia, Rahimi and Faghihzadeh (2006) do however provide evidence that as one progresses across stages, self-efficacy for that behaviour increases accordingly. Despite a wide variety of behaviours examined and measures of efficacy incorporated, the combination of these results with the overwhelming agreement in the cross-sectional studies lend considerable support for the relationship between *stages of change* and self-efficacy.

An important implication of these stage based findings is the potential to assist individuals in achieving higher *stages of change* by creating the conditions to raise self-efficacy for the target behaviour. Programs and interventions that are designed to encourage behaviour change across the stages, should include experiences that are targeted at increasing domain specific self-efficacy.

As self-efficacy was found to predict stage of change in the behaviours reported above, related to the current study one would predict that those with higher levels of self-efficacy for leadership would be represented in the *action* and *maintenance* stages. The following section considers self-efficacy research related to leadership.

Self-efficacy and Leadership

Self-efficacy theory has been applied in a wide variety of fields but, as defined by Bandura (1997) is domain specific therefore the following section is limited to empirical studies involving leadership self-efficacy. The studies included were chosen based on reference to leadership self-efficacy in the abstract of the article. Also included are three related studies involving similar efficacy measures for leaders/leadership. Gender observations will be included where examined. Table 2.10 below summarizes the studies reviewed.

Table 2.10

Summary of Leadership Self-Efficacy Studies

Author	Year	Type of Study	Population & Context	Results
Singer	1989	Quantitative-survey study	142 undergraduate male students, psychology, business and Accounting- Britain	-groups divided into high and low leadership aspirations -high aspirations group significantly higher on all three measure of self-efficacy-effectiveness, ability-match and ease of success -High Asp. Group identified requirements of leadership as internal
Tsui	1998	Quantitative-correlational-secondary data	941 business management early career individuals, male & female	-men higher levels of leadership self-confidence than women -leadership self-confidence one of determinants of income

Author	Year	Type of Study	Population & Context	Results
Chemers, Watson and May	2000	Quantitative two part Part 1-self-report survey and instructor ratings Part 2-performance evaluations	96 junior year ROTC cadets -sample included 15 female cadets	-Cadets with higher LSE* were rated as having more potential for leadership by professors -LSE related to performance in leadership simulation ratings by peers and superiors
Dickerson & Taylor	2000	Quantitative-experimental	81 female psychology and business students	-higher Task specific self-efficacy (TSSE) for leadership task predicted choice of leader role and interest in leader role -lower TSSE self-select out of leader role in favour of follower role
McCormick, Tanguma & Sohn	2002	Quantitative-survey study	223 psychology students 57% female	-LSE related to leadership attempts –higher LSE → more attempts at leadership -# leadership experiences related to LSE – more experiences → LSE -men reported higher LSE than women despite the same number of experiences
Paglis & Green	2002	Quantitative –survey	113 managers-commercial real estate 37-managers industrial chemicals firm 415 direct reports-affiliation not reported	-high LSE resulted in more leadership attempts
Hoyt, Murphy,	2003	Quantitative-experimental-2	Part 1-117 students	-leaders high in

Author	Year	Type of Study	Population & Context	Results
Halverson & Watson		part	Part 2-216 students	LSE higher levels self-and collective efficacy for a leadership task, lower levels of anxiety -LSE→Collective E →group performance
McCormick, Tanguma & Sohn	2003	Quantitative-survey	404 undergraduates 53% female	-men reported higher LSE than women -LSE predicted leadership attempts, higher LSE more attempts at leadership -LSE related to # previous experiences -sex role identity rather than biological sex played a role in number of leadership development activities students engaged in – masculine gender role, greater # activities
Kane & Baltes	1998	Quantitative-correlational	40 male, 58 female psychology students-group leaders	-number of self-efficacy dimensions measured, -general LSE, related to # leadership roles sought and # leadership experiences
Kane et al.	2002	Quantitative- experimental	83 group leaders- psychology students-35 male, 48 female Lead a group in a manufacturing game scenario	-women reported lower LSE -general LSE shaped task specific SE even after controlling for previous experience

Author	Year	Type of Study	Population & Context	Results
				-LSE positively related to leaders goals and strategies -a weak correlation with leader's use of particular behaviours was noted
Schyns & Sanders	2005	Quantitative-survey study	58 leaders, 113 followers, business management context	-positive relationship between transformational leadership and occupational self-efficacy, for men, but not women

*LSE = Leadership Self-Efficacy

Self-efficacy is reported to influence an individual's course of action and persistence (Bandura, 1997). The studies reviewed above reflect this influence as individuals with higher levels of leadership self-efficacy were reported to aspire to (Singer, 1989), or choose (Dickerson & Taylor, 2000), a leadership role and to engage in more attempts at leadership roles than those with lower leadership self-efficacy (Kane & Baltes, 1998, McCormick et al., 2002, McCormick et al., 2003, Paglis & Green, 2002). Individuals with a higher degree of leadership self-efficacy will persist in the face of adversity, perceive failure as external, and will therefore continue to attempt to lead more often than someone with lower self-efficacy (Bandura, 1997). A limitation of the findings of Kane and Baltes (1998), Kane, Zaccaro, Tremble, and Masuda (2002) and McCormick et al., (2002, 2003) is that these studies utilized a single self-report item to indicate the frequency of leadership attempts. Leadership is a complex activity with a variety of interpretations (Northouse, 2004). If individuals participating in the study were unclear about what constituted a leadership attempt, the results may

not accurately reflect the level of activity. Paglis and Green (2002) utilized an 8 item scale identifying specific behaviours that leaders engaged in as they attempted to lead. In this study, subordinates rated their managers relative to the frequency of their managers' attempts on each of the behaviours. While clarifying the act of attempting to lead, a difficulty in the aforementioned studies is that, the method of subordinate questioning does not allow for unobservable activities that leaders themselves may constitute as attempts to lead, the success or failure of which has the potential to influence their self-perceived efficacy.

The studies reviewed lend support for the application of Bandura's (1997) self-efficacy theory to the domain of leadership. As performance accomplishments are one of the strongest sources of input contributing to the development of self-efficacy (Bandura, 1997), it would be predicted that leadership self-efficacy would be higher in individuals with a greater number of successful leadership experiences. While *success* of leadership experiences was not reported in these studies, findings indicated that a greater *number* of leadership experiences did indeed relate to higher leadership self-efficacy (Kane & Baltes, 1998, Kane et al., 2002, McCormick et al., 2002, McCormick et al., 2003). Studies by Chemers, Watson and May (2000) and Hoyt, Murphy, Halverson and Watson (2003) reported a relationship between leadership self-efficacy and successful performance on a leadership simulation task and group task respectively. Generalizing to other studies is however limited due to the specific contexts of the task investigated.

Investigations reporting gender differences showed that men exhibited higher levels of leadership self-efficacy than women (Kane et al., 2002, McCormick et al., 2002, McCormick et al., 2003, Schyns & Sanders, 2005, Tsui, 1998). While gender was included as a descriptive variable in the study by Chemers et al. (2000), results related to leadership self-efficacy were not reported. In Kane and Baltes' (1998) study, gender is included as a variable and a negative relationship with general leadership self-efficacy is reported, however they do not discuss these results or identify if the influence is related to being male or female. One would predict that a negative relationship would be reported for women based on the findings of other studies noted above, however these findings were not included. Paglis and Green (2002) do not report any gender data in their study.

Despite the lower self-efficacy reported by women, no gender differences in the number of leadership experiences were found by McCormick, et al. (2002, 2003) as might be expected according to self-efficacy theory. The authors offer the explanation that "while the number of leadership role experiences can affect the efficacy estimate, how the individual subjectively interprets the information also matters" (McCormick et al. 2002, p.44). Some studies indicate that women do not attribute their success to their own ability (Rosenthal, Guest & Peccei, 1996; Schyns & Sanders, 2005) but to external variables such as luck (Deaux & Farris, 1977) which will attenuate gains in efficacy from a successful experience. Additional findings of McCormick et al. (2003) show that gender role orientation, ie. identifying with masculine or feminine personality characteristics, is more

explanatory of differences in efficacy than gender alone. Their results showed that "the more masculine-type behaviours a person incorporated into their self-concept, the greater number of leadership-related developmental activities engaged in, and the more...experiences a person had encountered, the greater was his or her leadership self-efficacy." (p. 12). These findings related to the significance of gender role as opposed to gender are echoed in studies of leader emergence (Eagly & Karau, 1991; Gershenoff & Foti, 2003) and leadership aspirations (Boatwright & Egidio, 2003; Kreuzer, 1992) and will be discussed in the next section regarding gender role.

Self-efficacy was reported above to relate to the number of leadership attempts (McCormick et al., 2002; Paglis and Green, 2002) an individual will make as well as to the choice of involvement in a leadership role (Dickerson & Taylor, 2000). Results demonstrating that men reported higher levels of self-efficacy than women would suggest that women will not choose to engage in leadership related activities, however evidence supporting such a suggestion is unclear. The current study aims to further investigate the role of leadership self-efficacy and participation of college women in leadership related activities to contribute to an understanding of the nature of this relationship. Extending this examination to include the stage framework of the TTM and its reported relationship with self-efficacy provides an additional avenue of scrutiny.

Measuring Leadership Self-efficacy

Bandura (1997) stated that "in developing efficacy scales, researchers must draw on conceptual analysis and expert knowledge of what it takes to

succeed in a given pursuit" (p. 43). Scale items should therefore reflect the particular behaviours or activities that have been identified to contribute to successful performance in a particular domain. Bandura (1997) further suggests that scales constructed to measure the strength of self-efficacy beliefs should represent a full range of confidence levels from 0-100% and include a number of intervals to measure these levels allowing for the ability to differentiate individuals with varying efficacy beliefs. Bandura (1997) also suggests calculation of an average score for scale items to indicate the strength of perceived efficacy. As validity "relies heavily on construct validation...measures gain validity from demonstrated success in predicting the effects specified by social cognitive theory in which the factor is embedded" (Bandura, 1997, p.45). The predicted effects are realized in thoughts, affects, actions and motivations within the given domain. With these aspects of scale construction in the area of self-efficacy noted the following measures were reviewed.

Chemers et al. (2000) created a two part scale to measure leadership self-efficacy. The initial part of the scale was created to reflect dimensions of the Army Leadership Assessment Program and included 16 specific leadership skills used for the evaluation of leadership skills among officers. Answers are indicated on a 9 point Likert-type scale. The second part of their scale was more representative of general leadership abilities and included 8 items related to an individual's perceived ability to lead a group. Responses on the second scale were scored on a 5 point Likert-type scale. These scales followed the guidelines as proposed by Bandura (1997). The military context of leadership as employed

in the study by Chemers et al. (2000) may not be generalizable to other perspectives of leadership. While utilizing undergraduate students in ROTC programs, the command and control style of military leadership is not reflective of the more relational and participative styles of leadership currently being advanced (Rost, 1993).

Paglis and Green (2002) identified three separate dimensions of measurement in their Leadership Self-Efficacy scale to examine managers' perceptions of their capabilities to accomplish leadership tasks with their work groups. Four items were created for each of the three following areas: 1. setting direction for where the work group should be headed, 2. gaining followers' commitment to change goals, and 3. overcoming obstacles standing in the way of meeting changing objectives. The scale created for this study established the three factor structure of the scale, reliability of the each of the three dimensions with coefficient alphas of 0.86, 0.92, 0.86 respectively, and construct validity. Although the leadership self-efficacy scale developed by Paglis and Green (2002) appears to be a valid and reliable scale for measuring leadership self-efficacy within the specific managerial context it was developed for, its application to other environments is limited. The specific managerial activities of direction setting for a work unit, developing plans to lead change, and unit problem solving may be unfamiliar to individuals without management and/or business experience and will therefore not be explored for the current study.

Singer, (1989), Tsui, (1998) and Dickerson and Taylor (2000) all employed a single item measure for leadership self-efficacy. As leadership is a complex

task and is defined in many different ways (Bass 1990), it is possible that participants bring to bear their own conceptions of leadership which differ from the intent of the study. Bandura (1997) suggested that single item measures "not only yield a restricted range of score, but also fail to differentiate between individuals who differ in beliefs of personal efficacy" (p. 44).

The scale chosen to measure leadership self-efficacy for the current study was developed by Kane and Baltes (1998) to reflect an individuals' perceived capability to work with a group. The scale was developed for undergraduate students who have limited formal leadership experience and identifies leadership tasks and behaviours in line with a more process oriented approach to leadership. In keeping with the development of efficacy scales as suggested by Bandura (1997) above, items for the General Leadership Efficacy Scale were developed from leadership theory reflecting the behavioural and task requirements of a leader when working with groups (Kane et al. 2002).These items reflect the functions that leaders engage in as they work with groups related to directing, monitoring, contributing to team viability and motivating others (Kane et al. 2002).This measure utilizes an eight item scale reflecting skills, strategies and behaviours involved in group leadership and a ninth item reflecting overall confidence. As in other scales of self efficacy, responses indicate a level of confidence between zero and 100% in ability to perform the task described (Bandura, 1997) and are indicated on a seven point Likert-type scale. Cronbach's alpha, α =.95 indicated high reliability of the scale (Kane & Baltes, 1998). The high internal consistency of the scale was repeated in a study

by McCormick et al., (2002), Cronbach's alpha, α=.90 and while utilized in three other studies (Kane et al., 2002; Maggard, 2005; McCormick et al., 2003) reliability data was not reported.

Support for the construct validity of the GLSE scale is found in the results of studies utilizing this measure. Self-efficacy is developed through four sources of information as described above. One of the most potent contributors to the development of self-efficacy is past performance (Bandura, 1982). It would be predicted therefore that individuals with more past experience in the domain being investigated would report higher levels of self-efficacy. This prediction was supported with use of the GLSE scale in studies by Kane and Baltes (1998) and two studies by McCormick et al. (2002, 2003). Additionally, the self-efficacy construct proposes that individuals with self-perceived efficacy in a particular area will choose to become involved in activities and will persist in those activities. Kane and Baltes (1998) reported that individuals with higher levels of self-efficacy sought leadership roles more often than those with lower levels of efficacy, ie. they chose to become involved. McCormick et al. (2002, 2003) produced similar findings related to the number of leadership attempts one would make. Those with more leadership attempts, which would reflect both choosing and persistence in the activity, had higher levels of leadership self-efficacy as measured by the GLSE scale. While investigation of a broader range of self-efficacy predictions is warranted, the initial positive findings provide a foundation for further examination.

Gender Role

Gender role theory (Eagly & Chrvala, 1986) proposes that individuals are socialized to develop expectations for themselves and others based on what constitutes acceptable behaviour for both women and men. Many beliefs about the characteristics representative of the two genders are organized around the communal and agentic attributes ascribed to women and men respectively (Eagly & Karau, 2002). Women, based on this perspective, are believed to exhibit qualities such as affection, nurturance, kindness, and sensitivity whereas men are believed to possess such characteristics as aggressiveness, competitiveness, ambition and confidence (Eagly & Karau, 2002). Women and men are expected to behave in accordance with socially prescribed gender in the execution of various roles.

Individuals, it is argued, have developed their own internalized gender role as a result of the influences of parents, media, peers and schools (Kreuzer, 1992). Street, Kimmel and Kromrey (1996) define this internalized gender role as an "individuals's psychological and personality traits independent of her or his biological sex" (p. 615). Bem (1974) was the first to suggest that such traits of masculinity and femininity are organized along two independent dimensions so that an individual could possess both high masculinity and high femininity, otherwise referred to as "psychological androgyny" (Bem, 1974, p.155). Women could therefore be characterized as masculine and men could be feminine based on their personality characteristics. Some researchers suggest that when investigating characteristics of men and women, *gender role* is what matters, not gender (McCormick et al., 2003).To inform the current study, the following

section will explore the notion of gender role orientation as it relates to leadership. Studies included in this section were limited to investigations related to leadership that included measurement of gender role orientation as opposed to gender (sex) differences.

Gender Role and Leadership

The literature related to gender role and leadership may be grouped into three themes: leadership aspirations, leader emergence and career and experience related variables.These three themes will be explored in more detail through the studies reviewed. As in previous sections a table (Table 2.11) outlining studies reviewed will be presented followed by discussion of results and measurement of the gender role construct.

Table 2.11

Reviewed Literature Related to Gender Role and Leadership

Author	Year	Type of Study	Population & Context	Results
		LEADERSHIP ASPIRATIONS		
Powell and Butterfield	1981	Quantitative-survey	1123 undergraduates, 65% male 329 graduate students, 70% male All business students	Masculinity and femininity scores explained twice as much variance in aspirations for leadership than biological sex The presence or absence of masculine role had a greater effect on aspirations to top management
Kreuzer	1992	Quantitative- survey	310 senior students in elementary education and business 63% female	-gender typing of career and leader roles -aspirations influenced by gender, women lower aspirations

Author	Year	Type of Study	Population & Context	Results
				for leadership, expectations for career than men -gender role information was inconclusive
Powell and Butterfield	2003	Quantitative-replication of 1981 study	206 undergraduates, 57% male 141 graduate students, 56% male	High masculinity associated with top leadership aspirations, Gender difference in aspirations to leadership did not decrease over time-men still aspired to top positions more than women
Boatwright and Egidio	2003	Quantitative-survey	213 undergraduate women	Gender role (masculine), high connectedness needs, high self-esteem and low fear of negative evaluation related to leadership aspirations
		LEADER EMERGENCE		
Goktepe and Schneier	1989	Quantitative-Experimental	122 business students, 62 men, 60 women	Masculine gender role related to leader emergence-interpersonal attractiveness was also a factor in leader emergence
Kent & Moss	1994	Quantitative- post-intervention measures	122 business students-upper level	Androgynous and masculine gender role subjects were most likely to emerge as leaders
Kolb	1999	Quantitative-Experimental	123 undergraduate students 64 women, 59 men from business and liberal arts	Masculinity related to leader emergence Leadership attitude, experience and self-confidence were also significantly related to leader emergence
Gershenoff &	2003	Quantitative-	200 female undergraduate	Masculine-

Author	Year	Type of Study	Population & Context	Results
Foti		Quasi-experimental	students 3 categories: masculine-intelligent, feminine-intelligent, mixed pattern (all other patterns) result of scoring on gender role and intelligence test	intelligent and androgynous-intelligent emerged more often as leaders than feminine-intelligent or mixed pattern individuals in an initiating-structure task -consensus building task, feminine-intelligent did not emerge as leaders
		CAREER & Experience RELATED		
Wong, Kettlewell & Sproule	1985	Quantitative-survey	66 working women-organizational context	Masculinity and educational level were predictors of career achievement feminine role related to lower career achievement, attributed performance less to ability and effort
Fagenson	1990	Quantitative-survey	246 upper and lower level men and women in a management development office in the health care industry	Masculine attributes related to individuals' level in organization, upper level men & women-more masculine characteristics than lower level -feminine attributes related to gender, women more feminine than men
McCormick, Tanguma & Sohn	2003	Quantitative-survey	404 undergraduates 53% female	-sex role identity rather than biological sex played a role in number of leadership development

Author	Year	Type of Study	Population & Context	Results
				activities students engaged in – masculine gender role, greater # activities
Maggard	2005	Quantitative- survey	394 community college undergraduate females	-masculine gender role related to ↑ leadership and career self-efficacy

Gender Role and Leadership Aspirations

Studies of gender role and leadership aspirations consistently report that individuals higher in masculinity or lower in femininity, aspire to leadership positions more often than others (Boatwright & Egidio, 2003; Powell & Butterfield, 1981; Powell & Butterfield, 2003). Powell and Butterfield (1981, 2003) suggested that gender role as measured with the Bem Sex Role Inventory (BSRI), explained twice as much variance in aspirations for leadership as biological sex and therefore should be included as a variable in studies examining sex differences. Since leadership has traditionally been identified as a male activity (Schein, 2001) it follows that those with a Masculine orientation would see themselves as possessing the qualities necessary to perform in a leadership environment and would be more likely to aspire to such roles.

Kreuzer (1992) identified that although women held significantly lower aspirations for leadership roles and lower career expectations as compared to the men in her study, findings related to gender role orientation were inconclusive. Gender role orientation was defined in her study as a predisposition toward contemporary or traditional attitudes about men and women. As the instrument utilized to measure gender role orientation was significantly different

than that used in other studies it may not reflect the same sex-role construct. The scale utilized by Kreuzer (1992) included ten items related to women's and men's roles in work and leadership with two items related to the distribution of work in a marriage and women's role as mothers. It is possible that attitudes about women and men and their working roles obscure the more global orientation of femininity and masculinity that are captured in instruments such as the BSRI discussed above.

The consistency of the results related to leadership aspirations should be interpreted with some caution due to the relatively homogenous nature of the population included in the studies. All studies reviewed in this section included students as the population of investigation. While students are in the process of planning their careers and considering the variety of options open to them, a population that included working individuals who may have a broader understanding of the context in which leadership takes place may have produced different results. Further, it has been reported that some undergraduate students, especially those in the early stages of leadership development, have a traditional understanding of leadership that reflects the more directive style of leadership commonly reported of men (Komives et al., 2006; Schein, 2001; Washbush, 1998). These students may not have experienced a more "feminine", relational approach to leadership with a better fit for "feminine" gender role orientation and as a result not considered leadership as an option.

Additional caution should be exercised in generalizing findings due to the small sample sizes (Boatwright & Egidio, 2003; Kreuzer, 1992; Powell &

Butterfield, 2003), self-report nature of the data, and limited number of institutions of study.

Gender Role and Leader Emergence.

A second theme concerning gender role and leadership incorporates examinations of the emergence of leaders from groups in the process of completing a task or tasks. A number of studies have examined both group and self-perceptions of individuals who take on a leadership role in an initially leaderless group. All of the studies reviewed indicated that individuals with a Masculine or an Androgynous gender role emerged as leaders more often than individuals with either Feminine or Undifferentiated gender roles. Biological sex was not found to be a predictor of leader emergence. (Gershenoff & Foti, 2003; Goktepe & Schneier,1989; Kent & Moss, 1994; Kolb, 1999). This finding held true for all-female (Gershenoff & Foti, 2003) and mixed gender groups and was independent of the type of task being accomplished (gender typed, or neutral). The studies reviewed utilized different methods for group selection and composition as well as different tasks and measures of leader emergence so it is difficult to draw direct comparisons amongst them, however the consistency of the results is noticeable despite the differences in method. As these studies were conducted in artificial situations set up to determine leader emergence, it is difficult to determine if results would hold true in a more natural setting. The homogeneity of the samples used in the studies presented in this section introduce similar problems with generalizability as referred to in relation to leadership aspirations above.

An additional limitation of the findings of the studies in this section is revealed in the results of the study conducted by Kolb (1999). Although Kolb (1999) found that masculinity was significantly related to leader emergence she also demonstrated that previous leadership experiences accounted for most of the variance in leader emergence. Previous experiences are reported to have a significant influence on self-efficacy (Bandura, 1997) and subsequently influence persistence in an activity. One would therefore predict that previous leadership experiences would influence the attempts at leadership such as in a group task as described in these studies. McCormick et al. (2003) support this notion. While Kolb (1999) provided limited information about the leadership experience scale and no reliability or validity data it causes caution in the interpretation of other studies above that do not include any measure of previous experience.

Gender Role and Career and Experiences Variables

The third theme related to gender role and leadership includes studies examining career and experiences variables. Wong et al. (1985) investigated the relation between gender role orientation and career achievement in a sample of working women. Findings indicated that women classified as Feminine achieved less in their careers and attributed successful performance less to ability and effort. Additionally, these women had parents with lower educational expectations of them than women reported as Masculine. Career achievement was measured as a result of independent judgments of four community members who were asked to take into account career history, education, past achievements, present occupation and income. Results showed that most of the

women rated as high achievers held traditionally masculine jobs in fields of business, accounting, medicine, law and higher education. It seems that measuring career achievement against a masculine standard of success may confound the findings reported and should be considered a caution in interpreting the results.

Similar results related to career achievement and gender role as measured with the Personal Attributes Questionnaire were obtained by Fagenson (1990). Individuals who achieved upper level positions within an organizational context were shown to possess more masculine characteristics than those in lower level positions. Control for the effects of age, educational level and organization and job tenure provided strength for the findings reported.

The two final studies reviewed in this section involved samples of undergraduate students. McCormick et al. (2003) studied the influence of gender role on engagement in leadership development activities. Results identified that individuals categorized as Masculine were involved in a greater number of leadership activities and reported higher levels of leadership self-efficacy than those with a Feminine gender role. Maggard (2005) while investigating a number of variables related to gender role in female community college students, also identified a positive relationship between possessing a Masculine gender role and leadership and career self-efficacy.

Findings of the studies reported in this section lend support for the enhanced career achievement or potential for achievement of individuals adhering to a Masculine or Androgynous gender role. It is unclear whether

women possessing Feminine and/or Undifferentiated gender roles are choosing not to participate to the same extent as those with Masculine and/or Androgynous orientations or whether they have not had the same opportunities, encouragement or confidence to take on or aspire to leadership roles. The current study examined whether gender role is a factor related to the intentions of women to participate in leadership related activities and how this might serve to inform future study and potential interventions. The following section explores methods for measuring gender role orientation.

Measuring Gender Role

An overview of measures designed to determine gender role orientation is provided along with a detailed discussion of the Bem Sex Role Inventory, the instrument chosen for use in the current research.

The Personal Attributes Questionnaire (PAQ) (Spence & Helmreich, 1978) characterizes masculinity and femininity as independent dimensions. The items contained in the PAQ are based on stereotypical traits of men and women. Respondents self-report the degree to which they have each of eight characteristics on a feminine and on a masculine scale. The scale is less widely used than the BSRI as a measure of masculinity and femininity and in a study by Lubinski, Tellegen and Butcher (1983) was found to be "empirically interchangeable" with the BSRI.

A second instrument used in determining perceptions of gender role is the Sex Role Trait Inventory (SRTI) developed by Street and Meek (Street et al. 1995). Similar to the BSRI, the SRTI measures gender role traits. Rather than

distinguishing dimensions of masculinity and femininity or a combination of the two, the SRTI identifies five "conceptual objects": Ideal Man, Ideal Woman, Most Men, Most Women and Self. The inventory was initially developed to examine perceptions of gender role by having students indicate how *characteristic* traits were for each of the object categories as opposed to how they *valued* the traits for each object. Similar to the BSRI, this scale incorporates a list of traits that participants are asked to rate as describing women and men. While this scale provides the opportunity to gain an understanding of perceptions of gender role beyond the self, its applicability is unclear.

The Bem Sex Role Inventory (BSRI) is a widely used inventory to measure masculinity and femininity as independent dimensions (Bem, 1974). As a result it is possible for individuals to score high in masculinity and femininity resulting in what Bem (1974) refers to as psychological androgyny. Both a long and a short form of the instrument categorize individuals as Masculine, Feminine, Androgynous or Undifferentiated (Bem, 1981) as a result of scoring on a self-report questionnaire related to personality characteristics. Studies reported above with the exception of Kreuzer (1992) and Fagenson (1990) utilize the BSRI to determine gender role. The BSRI was used in the current study as a result of the applicability to the population of study, the focus on the personal characteristics of the respondents and the ability to offer some comparisons with previous studies on similar topics. Details of the scale development are presented below.

The theoretical foundation for the BSRI arose from personality theory. The original work was derived from the desire to explain why a person's behaviour may show consistency, particularly related to their sex (Bem, 1981). The scale was developed from two theoretical assumptions. First, American culture has grouped individual attributes into two categories considered to be characteristic of being male and female and that these cultural attributions are well known by all members of the culture. Second, individuals vary to the extent with which they use the cultural definitions as standards of femininity and masculinity in evaluating their own behaviour (Bem, 1981). Bem (1981) suggested that a sex-typed individual is highly aware of the cultural definitions and adjusts his/her behaviour according to the idealized image of his/her sex while an Androgynous individual is less likely to monitor behaviour according to these standards.

The scale itself was originally constructed in 1974. Preliminary items were selected to represent personality characteristics that were feminine and masculine in nature, defined as being more desirable for one sex than the other. Two hundred (200) items formed the initial list which was distributed to two samples (n=100) of undergraduate students at Stanford University. Half of the students were male and half were female. Respondents were asked to rate the desirability of all personality characteristics for a man, or for a woman. Items from the original list were selected for inclusion in the final scale if they were rated by both males and females in both samples as significantly more desirable for male/female. The final scale included 20 items reflecting a Masculine orientation,

20 items reflecting a Feminine orientation and 20 gender-neutral (filler) items. To test the psychometric properties of the scale, the BSRI was administered to two different samples of college students at two institutions, 444 male and 279 female students at Stanford University and 117 male and 77 female students at Foothill Junior College. Participants answered how well each of the 60 scale characteristics described him/herself on a 7 point Likert scale ranging from 1 (never or almost never true) to 7 (always or almost always true). Internal consistencies of the inventory were (masculinity α = 0.86 and 0.86, and femininity α =0.80 and 0.82) for each of the institutions respectively. A further administration of the scale four weeks following the initial tests to determine test-retest reliability reported a high degree of reliability with Pearson product moment correlations (masculinity r = 0.90 and femininity r = 0.90).

The long form of the scale as discussed has been criticized for its lack of convincing evidence for the validity of the scale (Lippa, 2006; Payne, 2006) and failure to be factorially pure. A two factor exploratory analysis refined the scale and resulted in the short form of the BSRI, a 30 item questionnaire. Additional factor analysis and item-total-score correlations were used to reduce the total number of items. The results of the revision revealed two distinct measures, "assertiveness-dominance" or "instrumentality" (masculine) and "nurturance-interpersonal warmth" or "expressiveness" (feminine). As a result of the refinement of the scale, the short form of the BSRI is purported to be psychometrically superior to the long form addressing the noted criticisms (Lippa, 2006; Payne, 2006) and was chosen for this study.

Perceptions of Institutional Climate

Although women are increasingly attending post-secondary institutions and constitute more than half of the number of students graduating from colleges and universities each year, Davis, Crawford and Sebrechts (1999) argue that the "myth of coeducation pretends that numerical access to higher education gives women and men the *same* education" (p. 5) resulting in equity in learning and achievement. Researchers however suggest that women do not experience the post-secondary educational environment in the same way that men do which may result in negative outcomes for women (Hall & Sandler; 1982; Janz & Pyke, 2000; Pascarella et al., 1997; Whitt et al., 1999). The following section reviews aspects of the environment that may influence differential participation by female students both in and out of class. The studies reviewed are divided into two sections. The first section examines the "chilly climate" literature as it relates to women's negative perceptions of the campus environment. The second section examines environments supportive of female students.

The "Chilly Climate"

Hall and Sandler (1982) first described the "chilly climate" for women in a report published by the Project on the Status and Education of Women of the Association of American Colleges. Their report pointed to the differential treatment of women in the classroom indicating overt examples of the chilly climate including: discouraging women's participation; preventing students from seeking help outside of class; causing students to drop classes or switch majors; making comments about women's physical appearance; and making direct sexual overtures. Less obvious behaviours were also reported such as making

less eye contact with women; nodding and gesturing more often in response to men's comments; using a patronizing tone with women; appearing more attentive to male students; and giving male students more detailed instruction on assignments. Hall and Sandler (1982) suggested that such treatment, both overt and covert, leads to women's loss of confidence in their abilities and limits their capacity for full intellectual development and professional success. A criticism of Hall and Sandler's (1982) report is that no data were collected and that much of the evidence that they provided was anecdotal in nature. This report and the follow up report referred to below are included here despite their methodological flaws as they form the foundation for further empirical studies investigating the impact of the environment on the experiences of women in post-secondary institutions.

Two years later Hall and Sandler (1984) expanded their concept of the "chilly climate" for women to extend to other aspects of the campus beyond the classroom. The report indicates that interactions of women with other students and staff, their experiences with support services such as financial aid and academic advising, campus employment, internships, campus safety, athletics, student government and leadership may all contribute to a campus climate that is less than accepting and supportive of women. Again, no data were collected in the production of the report.

Empirical research investigating the "chilly climate" originally reported by Hall and Sandler (1982) provides support for the differential experiences of men and women and the potentially detrimental effect of the college environment on

women's achievement. Table 2.12 outlines the empirical studies reviewed related to the institutional climate. Studies were limited to the "chilly climate" as defined by Hall and Sandler as this concept encompasses the range of in and out of class experiences that represent the environmental influence in its entirety.

Table 2.12

Summary of Studies Related to Perceptions of Institutional Climate

Author	Year	Type of Study	Population & Context	Results
		Support Chilly Climate		
Ossana, Helms & Leonard	1992	Quantitative	659 female university students years 1-4	Year in school was related to perception of bias, more advanced years were less likely to perceive gender bias A negative relationship between perception of climate and self-esteem was reported
Fischer& Good	1994	Quantitative	635 undergraduates, 394 women, 241 men, mostly third and fourth year	Examined four factors related to perception of environment -Women detected greater sex bias and discrimination than men, -No differences were reported on two of the other factors (indifference and harassment) -Men detected greater indifference than women -Measures of self-esteem were related to perceptions of climate for the entire sample, but not for women alone
Pascarella et al.	1997	Quantitative	3840 first year students 23 institutions- 2 and 4 year colleges	2 year colleges -students perceptions of climate significantly related to negative outcomes on cognitive development and self-reported gains in career preparation. 4 year colleges- a negative association with self-reported career preparation

Whitt et al.	1999	Quantitative	Follow up of Pascarella study above Same students in second and third year	2 year colleges- 2nd year women –perceptions of chilly climate negatively linked to self-reported gains in writing and thinking skills, understanding science, and understanding the arts and humanities 4 year colleges-2nd year women and 3rd year women at both institutional types - perceptions of chilly climate same negative relationship reported for 2 year colleges AND negative association for self-reported preparation for career.
Janz & Pyke	2000	Quantitative survey study	Study 1-202 graduate (58%)and undergraduate students (41%) at a Canadian university, 153 female, 39 male Study 2-327 graduate (12%)and undergraduate (88%)students at the same Canadian university, 269 females, 57 males	Study 1- Scale development yielded five factors related to perceptions of climate: climate students hear about, sexist treatment, climate students experience personally, classroom climate and safety; females perceived climate to be chillier than males Study 2: validation of survey Perceived Chilly Climate Scale (PCCS), females perceive the climate to be chillier than males. Students who described themselves as feminists, those who had enrolled in a women's studies course, minority students and those who had been in school longer also reported the perception of a chillier climate
		Refute Chilly Climate		
Heller, Puff & Mills	1985	Quantitative survey study	429 undergraduates-4 year levels (216 female, 213 male)-psych., economics and classics 127 freshmen 152 sophmores 85 juniors 65 seniors	Survey re: classroom climate-faculty behaviours, student's confidence, type of questioning, student's perceptions of self and education- No differences between men and women reported in any faculty behaviours
Constantinople et al.	1988	Quantitative-observational	Observations of 48 different classes from a single institution Classes included natural	Support males more active classroom participants than females Stronger effects related to sex

			sciences, social sciences and arts at 100 and 200 level	of the instructor, class size may play a factor No sex of instructor/sex of student interaction Division in curriculum consistently influences participation both male and females
Crawford & McLeod	1990	Quantitative survey study	Study 1-627 undergraduates 1st, 2nd and 3rd year-state university Study 2-761 students at a small liberal arts college	Measure of climate of one class -class size was a variable related to participation -climate better in small classes -instructor gender but not student gender was a factor influencing climate -participation influenced by gender –women less verbally engaged -men reported that teachers responded more positively to their questions
Drew & Work	1998	Quantitative-secondary data analysis	15,960 student records from the College Student Experience Questionnaire	Females reported more classroom interaction with faculty, more positively viewed relationships with faculty and other students, less after class interaction with faculty than men

Refuting Presence of the "Chilly Climate"

The reports of Hall and Sandler (1982, 1984) provided the impetus for empirical investigations to test the presence of the "chilly climate" for women in post-secondary environments. Evidence both for and against the presence of a "chilly climate" was found. There is some difficulty in comparing the studies presented as they employed different operational definitions of the "chilly climate" concept. Some studies were designed to investigate the classroom environment only while others included a more comprehensive approach. Some studies which focused on specific aspects of the classroom environment reported that there was little empirical evidence to support the notion of a "chilly climate" as proposed by Hall and Sandler (1982, 1984). Faculty behaviours and questioning

(Heller, Puff & Mills, 1985), differences in classroom participation and faculty behaviours (Constantinople, Cornelius & Gray, 1988), gender based differences in classroom perceptions (Drew & Work, 1998) and student-faculty interactions in the classroom (Crawford and McLeod, 1990) were among the classroom activities examined. Heller, Puff and Mills (1985) reported that there was no difference in faculty behaviours toward male and female students and no differences in self-confidence between the genders. Similarly, few differences in sex-related faculty behaviours were noted by Constantinople et al., (1988).

Gender differences in classroom participation, with men showing more participation than women were found (Crawford and MacLeod, 1990; Constantinople et al., 1988). Crawford and MacLeod (1990) reported that these differences were unrelated to perceptions of classroom climate while Constantinople et al. (1988) suggested that this finding was "by no means pervasive or robust" (p. 547). Contrary participation findings were reported by Drew and Work (1998) who noted higher levels of interactions by females as opposed to males in a study of classroom interactions.

Several limitations should be noted related to the findings outlined which may restrict the conclusions that may be formed. First, these studies were only concerned with overt classroom activities. In addition to activity that happens in classrooms, Hall and Sandler (1984) identified that several out-of-class factors contribute to the overall chilly climate and by neglecting the inclusion of the campus environment in the studies reviewed above, a complete picture of the overall climate is not presented.

Second, the validity of the measures used to assess climate is questionable. Two of the measures used to assess climate do not include any validity or reliability data and therefore the quality of the instruments cannot be determined (Crawford & McLeod, 1990; Heller, Puff & Mills, 1985). Drew and Work (1998) utilized previously collected data from the College Student Experiences questionnaire not designed to assess chilly climate and while including some related experiences, it does not include other experiences such as sexual harassment, and gender discrimination essential to the assessment of a chilly climate.

College type may have contributed to bias in the study by Heller et al. (1985) and Constantinople et al. (1988). The study by Heller et al. (1985) was conducted at a "highly selective liberal arts institution with strong pre-professional programs" (Heller et al., 1985, p.459).The participants choosing to attend this institution may not be representative of female students at other kinds of institutions. No demographic or achievement data were available as comparators with students at other institutions to be able to interpret this possibility. Constantinople et al. (1988) carried out their research at Vassar College, a former women's college. Women's colleges have traditionally created intentionally supportive environments for female students (Tidball et al., 1999) and therefore would likely not reflect the same kinds of conditions thought to be found at a more traditional co-educational institution.

Supporting Presence of the "Chilly Climate"

Support for the presence and effect of the college environment on women's achievement has also been empirically studied. Pascarella et al. (1997) and Janz and Pyke (2000) reported women's overall perceptions of the campus environment as significantly chillier than men. Fischer and Good (1994), in an assessment of the institutional climate, indicated a greater perception of sex bias and discrimination for women as opposed to men. Further examination of the impact of a biased campus environment on the cognitive development of women (Pascarella et al., 1997, and Whitt, et al., 1999) and the negative relationship with self-esteem (Ossana, Helms & Leonard, 1992) provide some evidence for the effect of such an environment on outcomes for women as proposed by Hall and Sandler (1982, 1984).

Pascarella et al. (1997) and Whitt et al. (1999) in their longitudinal examination of students through three years of university, provide convincing evidence of the effects of climate over time on the self-reported gains in cognitive development of female students. Perceptions of the campus climate as chillier resulted in significantly lower reported gains in career preparation over the first year of college or university. Negative outcomes on objective standardized measures of cognitive development were also reported in the 2 year college sample (Pascarella et al., 1997). As students progressed into second and third years, women who perceived the climate as chillier identified lower gains in self-reported cognitive development in 3 of 5 measures (2 year college students) and 4 out of 5 measures (4 year university students) (Whitt et al., 1999). These

results suggest an increasingly negative influence of climate on academic outcomes as female students progress through their post-secondary education.

Ossana et al. (1992) while investigating "womanist" attitudes, previously identified by Helms, (1990), gender bias and self-esteem in college women showed a negative relationship between perceptions of climate and self-esteem. While causation cannot be assumed the negative relationship lends support for the assertions of Hall and Sandler (1982).

As previously indicated, it is difficult to compare across studies due to the different measures reported. Janz and Pyke (2000), Ossana et al. (1992) and Fischer and Good (1994) utilize comprehensive measures of climate including perceptions of the environment as a whole, in and out of class. Pascarella et al. (1997) and Whitt et al. (1999) incorporate both in-class and more general perceptions of the climate however, not to the same extent as the other measures employed.

The reviewed climate related studies do not directly report on the relationship of climate to the differential participation of women on campus, which is a concern in the present study. It is unclear how perceptions of climate may relate to participation. Gender differences in classroom participation were noted in some of the studies reviewed above, however only differences between males and females were indicated. Examinations of within gender differences may have provided further insight into a potential relationship between climate and participation. The within gender differences in perceptions of sex bias and self-

esteem reported by Ossana et al. (1992) suggests that within gender examination of climate in relation to other variables is warranted.

Measuring Perceptions of Institutional Climate

Perceptions of "chilly climate" have been assessed by a number of different methods as reviewed in the studies above. Generally, survey methods have been utilized to assess student perceptions of climate. Students are requested to respond to a number of items related to their experiences in the classroom and on campus. Constantinople et al. (1988) provided the only exception to the studies reviewed in their observational study of classroom interactions. As noted, some studies limited investigation to the classroom only and the studies by Pascarella et al. (1997) and Whitt et al., (1999) although including a more general assessment of climate was also limited in scope. To date the most comprehensive scale assessing all aspects of the campus environment as identified by Hall and Sandler (1982, 1984) and relevant to the Canadian sample of the current study, is the Perceptions of Chilly Climate Scale (PCCS) (Janz & Pyke, 2000). This scale was therefore chosen for use in the current study and will be discussed in detail below.

The Perceptions of Chilly Climate Scale (PCCS) (Janz & Pyke, 2000) was constructed to assess university student perceptions of the academic climate at a Canadian university. The "chilly climate" identified by Hall and Sandler (1982) which describes the "subtle ways women are treated differently - ways that communicate to women that they are not quite first-class citizens in the academic

community (Hall & Sandler, 1986, p. 1) served as the basis for the creation of the PCCS. A two part study was utilized in the creation and validation of the PCCS.

In study 1, the 123-item Preliminary Perceived Chilly Climate Scale (PPCCS) was generated by a theoretical approach that involved defining chilly climate based on the literature and creating items to represent the definition. Items were incorporated to represent the full range of factors associated with climate and included: mentoring, curriculum, informal activities, peer interactions, safety, sexist behaviour and sexual harassment in and out of class. Additionally, questions included arose from various scales intended to assess related constructs such as sexual harassment, to assess chilly climate directly, and from research in progress. An equal number of items to cover each component were utilized. Half of the scale items were keyed negatively and half positively. To test the construct validity, a number of hypotheses were presented based on the empirical literature. Following collection of the questionnaire responses the scale was refined through the process of item correlation, factor analysis and examination of Cronbach's alpha. Items that correlated a minimum of r=.3 with the total score were kept. Initial administration of the scale resulted in the identification of five factors: a) climate students hear about, b) sexist treatment, c) climate students experience personally, d), classroom climate and e) safety. Analysis of individual items with the goal of achieving internal consistency of greater than 0.7 resulted in the deletion of a number of items. The final version of the scale known as the Perceived Chilly Climate Scale (PCCS) consisted of 28

items, with a Cronbach's alpha of 0.92. Hypotheses to affirm content validity in the first study were supported.

In order to investigate the reliability and validity of the scale further, a second study was conducted with the final version PCCS. To address issues of validity, two additional scales were included in the study. As the PCCS incorporates sensitive issues, the potential exists that participants may respond with socially desirable answers rather than their actual perceptions or beliefs (Fowler, 2002). If the scale is valid, it should not reflect socially desirable answering. To examine this possibility, the short form of the Marlowe-Crowne Social Desirability Scale (Reynolds, 1982) was used to test the relationship with the PCCS. Secondly, a test of construct validity involved the administration of a measure that is theoretically related to the chilly climate. If the scale is valid there should be a relationship between two scales with similar conceptual bases. The Dean Alienation Scale (Dean, 1961) was incorporated for this purpose. Results of the second study repeated the high reliability of the scale items ($\alpha = 0.90$) and the five factor loadings for the items. As predicted, no significant relationship was found with the between the PCCS and the Marlowe-Crowne Social Desirability Scale whereas students perceptions of a chilly climate were significantly correlated with feelings of alienation as measured by the Alienation Scale. In both studies predicted relationships between perceptions of chilly climate and gender, length of time in school and minority group were supported, providing further support for construct validity. The five factor structure identified in study 1 was also replicated.

Chapter Summary

The review of literature suggests that women lead in a way that is congruent with the relational style of leadership currently being advanced as an effective mode of working with people. As women are currently underrepresented in leadership roles and more leaders are required to participate in this process, encouraging their involvement in leadership activities is essential.

Colleges and universities have been increasingly involved in leadership development initiatives as a result of the demonstrated benefits of active involvement on developmental outcomes and in their role to prepare students for future careers and service as citizens in the community. In order for women to derive the benefits of participation however, they must choose to be involved.

A number of factors have been identified as influencing women's choice to participate in a variety of activities: leadership self-efficacy, gender role and perception of the campus climate were investigated in relation to the current study. It is unclear how these factors influence women's differential participation and intention to participate in leadership related activities on college campuses as little is known about women who are currently non-participants. In order to be able to provide appropriate programmatic interventions to encourage participation of a wider variety of female students, more information is required about those women who are not currently participating. A framework that allows for the differential identification of individuals based on intentions and subsequently provides processes which may guide programmatic decision making is the Transtheoretical Model of behaviour change, otherwise known as *stages of change*. As the engagement of individuals in a new behaviour, namely

student leadership activities, may be viewed as adopting a new behaviour, this model was explored further for its applicability in the study of student leadership.

The following chapter includes the methodology used to investigate the relationship between women's *stage of change* for participation in leadership related activities and the other variables of study: leadership self-efficacy, gender role, perception of institutional climate and a number of demographic and experiences variables.

CHAPTER 3

METHODOLOGY

This study is an investigation of the relationship between leadership self-efficacy, perceived institutional climate, gender role and demographic and experiences variables with women college students' *stages of change* for participation in leadership related activities at a single institution in British Columbia. The use of three pre-existing instruments and one researcher designed instrument resulted in the data that was used for the analysis of the relationship amongst the variables of the study. The following section outlines the choice of research methodology and specific procedures that were followed in conducting the study.

Choice of Methodology

Research in education according to Shulman (1981) is a "family of methods which share the characteristics of disciplined inquiry ...[whereby] data, arguments and reasoning [are] capable of withstanding careful scrutiny by another member of the scientific community" (p. 5,6). Disciplined inquiry therefore requires a clear presentation of methods, control for sources of error, and delineation of arguments and conclusions being proposed. The nature of inquiry varies among scientific disciplines as a result of the kinds of questions posed, the manner in which content is defined and organized and the principles of investigation and verification of knowledge which are applied in a particular field (Shulman, 1981). Education as a field of study has borrowed the traditions of a variety of disciplines such a psychology, sociology and anthropology, and

has adapted them to the investigation of educational problems. As such, multiple methods of inquiry have commonly been employed.

Recent scholars of educational research have called for a pluralistic approach to educational research that embraces both qualitative and quantitative paradigms (Badely, 2003, Cavanaugh & Reynolds, 2006, Ercikan & Roth, 2006, Johnson & Onwuegbuzie, 2004). As Johnson and Onwuegbuzie (2004) suggest

> the full set of beliefs characterizing the qualitative and quantitative approaches or paradigms have resulted in different practices, and...both qualitative and quantitative research have many benefits and costs. In some situations the qualitative approach will be more appropriate; and in other situations the quantitative approach will be more appropriate (p.17).

In the selection of a methodology then, the research question should determine the most appropriate mode of inquiry (Ercikan & Roth, 2006, Johnson & Onwuegbuzie, 2004). The research questions in the current study sought to describe the nature of the relationship amongst the variables of leadership self-efficacy, gender role orientation, and perception of chilly climate in college women and stage of change in leadership participation. A quantitative, correlational research design was therefore employed to address the research questions.

Quantitative methods are based on the analysis of data (whether numerical or textual) that can be represented numerically. Quantitative research commonly employs tests, measures or surveys as a source of data (Ercikan & Roth, 2006). The current study utilized a survey as a means of data collection. Survey or questionnaire research has been frequently employed in the behavioural sciences to gain insight into the traits, attitudes and feelings of

subjects that are not directly observable (Gall, et al., 1996). *Stages of change*, gender role, leadership self-efficacy and perception of climate have most commonly been investigated with the use of survey research. Use of similar methods in the current study allowed some comparison with previously reported research using some of the same instruments and similar methods.

The advantages of surveys include: the ability to question a large sample at less cost; the use of standardized questions allows consistent measurement across participants and facilitates replication; the time required to obtain data is reduced; the pace of responding is controlled by participants; the ease of comparison with studies using similar questions; and the increased anonymity ensured to participants which may promote liberty in answering questions perceived to be of a sensitive nature (Gall, et al., 1996; Nardi, 2006).

Disadvantages of the use of surveys as a tool for data collection include: the lack of flexibility in responding; the lack of opportunity for further probing; the self-report nature of questions requires ability to read and respond honestly; the inability to verify respondent identity, the partial answering by respondents and low response rates (Gall, et al., 1996; Nardi, 2006). As well, use of multiple instruments within a single survey may increase the possibility of measurement error as a result of respondent fatigue (Hutchinson, 2004), or common method variance (Podsakoff, MacKenzie, Lee & Podsakoff, 2003). The construction of surveys for research should consider these factors to reduce the potential for this error. Relevant to the current study, this matter is considered on page 120 related to the overall survey instrument.

In selecting survey research, as in other forms of research, one must attend to methods of sampling and standards of validity and reliability in questionnaire construction and use. The sample selected for a questionnaire survey should be representative of the target population and of sufficient size to allow the proper use of statistical techniques for analysis (Gall, et al., 1996; Groves, 2004). The validity of an instrument refers to its ability to measure "what and only what it is supposed to measure" (Alreck & Settle, 1985, p. 64). Evidence related to the alignment with theoretical constructs, the systematic determination of content, the predictive ability and the relationship to theoretically similar constructs, collectively provide support for validity claims (Gall, et al., 1996). Reliability, a measure of consistency of results, provides an indication of freedom from random error and possibility for replication of findings (Alreck & Settle, 1985).

Descriptive research provides a foundation for understanding educational problems by describing the nature of the environment and variables associated with the phenomenon of investigation. As research attempts to provide insight into understanding, explaining and predicting phenomena "unless researchers first generate an accurate description of the phenomenon as it exists, they lack a firm basis for explaining or changing it" (Gall, et al., 1996, p.374). As little is known about college women and their desire to participate in leadership, description of the current state of involvement, as was done in this study, is an appropriate focus of investigation.

Correlational research is "especially useful for exploratory studies in areas where little is known" (Gall, et al., 1996, p. 415). Correlational studies are utilized to examine the relationship amongst two or more variables and/or to predict the outcome of a relationship on a variable of interest. By determining variables associated with a phenomenon one is able to gain a broader understanding of the problem under investigation. The results of a correlational study do not however indicate a causal relationship but are used to explore possible factors of causation. There is a possibility that a correlational relationship may be the result of an artifact of the investigation. A researcher may strengthen the possibility of significant findings by ensuring "the depth of the rationale and theoretical construct that guide the research" are derived from extensive use of theory and results of previous research (Gall, et al., 1996, p. 413).

In order to build upon previously reported findings related to self-efficacy for leadership, perceived chilly climate for women and the influence of gender role orientation on leadership participation and to extend the examination of college women's varied participation in leadership with a *stages of change* framework, this study took the form of a descriptive, correlational study. As *stages of change* have never before been applied, to the researcher's knowledge, to participation of college women in leadership related activities, the descriptive approach was appropriate. Additionally to gain a broader understanding of variables that may be associated with *stages of change* under the circumstances of the current study, both individual (leadership self-efficacy and gender role orientation) and contextual (perceived chilly climate) constructs

previously reported to influence participation in the campus environment were correlated. The selection of variables based on previous findings and theoretical constructs is consistent with the design of such research.

Research Setting

The single setting for this study was a public post-secondary institution in British Columbia, Malaspina University College, of medium size enrolling approximately 6600 students in university degree programs. As a comprehensive regional institution, certificate, diploma and continuing education programs are also offered but not a part of this study. This setting is where the researcher is employed and as such was selected as a matter of convenience. More than 60% of the university degree student population in this setting is female. Over 70% of students are less than 30 years of age and the institution has a higher proportion of aboriginal students (10%) than other public post-secondary institutions in British Columbia (Malaspina University College, 2007) and low ethnic diversity (4% visible minorities). The institution is located in a community with a population of 80,000 and serves a larger regional population of approximately 240,000.

The institution of study offers a comprehensive range of programs including developmental, trades, applied technology and university degree programs. In addition, an extensive community education and contract training program contributes to the overall learning options available for students. Institutional planning documents highlight the institutions commitment to student success through the maintenance of small class sizes, personal connections with

instructors, opportunities for experiential learning and a range of services to support overall success (Malaspina University College, 2006). Over the next cycle of planning, the number one institutional priority is to enhance the student experience and campus life. The current study offers the opportunity to contribute to advancement of this institutional priority by providing important information related to female students' perceptions of the campus environment and potential for involvement in leadership activities.

Participants

A census sample of female students enrolled in university degree programs was used for the present study. University degree students were chosen as these students are enrolled in programs of study that generally extend over four years and therefore the possibility that these students will participate in leadership related activities is enhanced compared to students in shorter vocational programs. Additionally to allow for comparison to other studies of female college students and leadership, gender role and perceived climate, a similar sample was required.

Instruments

Overall Instrument

The complete instrument for this survey included five parts totaling 79 questions. The instruments included were as follows: Leadership *stages of change* (1 response item), Leadership self-efficacy (9 questions) Bem Sex Role Inventory (Short form-30 questions), Perceived Chilly Climate Scale (28

questions) and Demographic and experiences questions (11 questions). An overview of each of these instruments is provided in the sections below.

In considering the problem of respondent fatigue identified above as a potential source of measurement error in the current study which incorporates five parts, Hutchinson (2004) suggests that for a topic that is highly relevant, a well-educated group will tolerate a survey of 12 to 16 pages. The current survey of 6 pages in length incorporating a topic relevant to undergraduate women falls well below this figure. One would expect that respondent fatigue while still a possible source of measurement error, is less likely. An additional consideration in construction of the overall survey instrument is the possibility for measurement error as a result of common method variance (Podsakoff et al., 2003). When "measures come from the same source, any defect in that source contaminates both [all] measures" (Podsakoff & Organ, 1986, p. 533). The potential for error is more problematic when variables are related to one another or when the same respondent is providing both the predictor and criterion measure (Podsadoff, et al., 2003). A potential remedy, one that is utilized in the present study is to separate the measurement of the predictor and criterion variables by utilizing different response formats (Posakoff et al., 2003).

Stages of Change for Participation in Leadership Activities

The Transtheoretical Model incorporates five *stages of change* that individuals progress through as they adopt or modify a behaviour (Prochaska et al., 1983). The stages of *pre-contemplation, contemplation, preparation, action* and *maintenance* are differentiated according to the intentions of an individual to

change behaviour, within a specified time period, generally six months. The classic interpretation of the model identifies subjects in *pre-contemplation* as lacking any intention to change their behaviour in the foreseeable future; *contemplators* are considering changing their behaviour in the not-too-near future; *preparers* have a stronger intention to change and may have taken initial steps to do so, *actors* are in the midst of changing their behaviour while *maintainers* continue to engage in the relevant target behaviour. Reed et al. (1997) have referred to these stages as "I won't", "I might", "I will", "I am" and "I have" respectively, in characterizing the sentiment of individuals in each of the stages. Refer to Chapter 2 for a full review of the *Stages of Change*.

The most common method reported for classifying individuals into the TTM stages of change is with a self-report staging algorithm. An algorithm is a measure that categorizes individuals into a single, discrete stage based on their response to one or more questions about their intentions and behaviours related to a particular target behaviour (Levesque, Prochaska & Prochaska, 1999). As one of the primary purposes for staging individuals is to allow for stage-matched interventions, accuracy is critical for the success of programmatic recommendations that follow. Reed et al. (1997) compared eight different types of algorithm in order to determine a set of guidelines for accurate staging. The four criteria for algorithm development proposed by the researchers include: 1) create a clear, well-defined description of each of the *stages of change*; 2) include a concrete definition of the target behaviour against which individuals are to assess themselves; 3) use criteria for measurement that individuals can

understand and apply to accurately respond; and 4) choose a true/false or 5-choice Likert response format.

The algorithm created for and used in this study was developed to adhere to the four criteria identified above. In the construction of the staging algorithm, the classic interpretation of the *stages of change* was utilized to operationalize the Transtheoretical Model for participation in leadership related activities and to allow for subsequent programmatic recommendations based on the model. The researcher incorporated a separate response category for each of *pre-contemplation, contemplation, preparation, action* and *maintenance* based on the respondent's intention to become or remain involved in campus activities within a specified period of time.

A concrete definition with examples of the target behaviour was provided so that participants could easily and accurately respond. Feedback was sought from a colleague knowledgeable about the Transtheoretical Model and a "think-aloud" protocol was conducted with two students to test for readability and ease of understanding. Revisions were made based on their advice.

Initially a five choice Likert response format was utilized for each of the stage of change responses. The *stages of change* algorithm was pilot tested with 17 female volunteers from a physical education class at the institution of research. As a result of feedback regarding the algorithm from this group, and in consultation with the researcher's senior supervisor, modification of the response format was completed to eliminate ambiguity in responding. A single response

format resulted whereby students chose only one of five possible answers each reflecting a single stage of change (See Appendix A).

General Leadership Self-Efficacy Scale

Self-efficacy for leadership was measured with the General Leadership Self-Efficacy Scale developed by Kane and Baltes (1998).The original scale items were developed from previous research as reflecting general task requirements of leaders across a variety of situations. Scale reliability is reported as $\alpha = 0.95$. A weakness of this particular scale is the lack of validity data available. Subsequent use of the scale by McCormick et al. (2002) has confirmed the high reliability with $\alpha = 0.90$. Chapter 2 highlights details of scale development.

The General Leadership Self-Efficacy Scale (Kane & Baltes, 1998) asks respondents to report their perceived ability to perform the following 8 functions in group settings: 1) perform well as a leader across different group settings, 2) motivate group members, 3) build group members confidence, 4) develop teamwork, 5) "take charge" when necessary, 6) communicate effectively, 7) develop task strategies, and 8) assess the strengths and weaknesses of the group. A ninth question asks respondents to report their confidence in their overall leadership ability. Responses are recorded along a 7 point Likert-type scale indicating participants" confidence in their ability to perform each task where "1" indicates no confidence and "7" indicates 100% confidence. An average score is then calculated. Reliability for this application of the General

Leadership Self-Efficacy scale was similar to other studies, α=.93. Appendix B includes the General Leadership Self-Efficacy scale.

Bem Sex Role Inventory-Short Form

The Bem Sex Role Inventory (Bem, 1974) is a widely used measure to determine Masculine, Feminine and Androgynous gender role characteristics. The term gender is not used to refer to biological sex, but to an individual's endorsement of stereotypically masculine and feminine or androgynous (both masculine and feminine) characteristics. First developed in 1974, the scale contains 20 items reflecting a Masculine orientation, 20 items reflecting a Feminine orientation and 20 gender-neutral items. Participants answered how well each of the characteristics described him/herself on a 7 point Likert-type scale ranging from 1 (never or almost never true) to 7 (always or almost always true). The long form of the scale has been criticized for its lack of convincing evidence for the validity of the scale (Lippa, 2006, Payne, 2006) and failure to be factorially pure. A two factor exploratory analysis has since been conducted to refine the scale and has resulted in the short form of the BSRI, a 30 item questionnaire (Bem, 1981). Additional factor analysis and item-total-score correlations were used to reduce the total number of items. The results of the revision revealed two distinct measures, "assertiveness-dominance" or "instrumentality" (masculine) and "nurturance-interpersonal warmth" or "expressiveness" (feminine). As a result of the refinement of the scale, the short form of the BSRI is purported to be psychometrically superior to the long form

addressing the noted criticisms (Lippa, 2006, Payne, 2006). Details of scale development can be found in Chapter 2.

The original administration of the scale included two different samples of college students at two institutions. The first sample consisted of 444 male and 279 female psychology students at Stanford University while the second sample included 117 male and 77 female students at Foothills Junior College. The age range or other demographic information of the original participants was not reported (Bem, 1974). Cronbach's alpha for the original scale revealed high reliability (Masculinity α = .86, Femininity α =.82). Test-retest reliability over a 4 week period was also demonstrated (Masculinity r=.90, Femininity, r=.93). As the scale was developed over 30 years ago college students today may differ from the original sample. A more recent study to assess the validity of the BSRI with contemporary college students reconfirmed Bem's earlier findings of all masculine characteristics and all but two of the feminine characteristics (Holt & Ellis, 1998). The two feminine characteristics that did not reach statistical significance were "childlike" and "loyal" are not included in the short form of the inventory that was used in this study. The study by Holt and Ellis involved 68 men and 70 women, predominantly Caucasian with the age range of participants 18-52 (mean = 25). High reliability was repeated in the contemporary study (Masculinity α = .95, Femininity α =.92)

The samples reported above are relatively similar to the population of the current study in age, ethnicity and university status and was therefore employed. Permission to utilize the short form inventory was purchased from Mindgarden©

for use in the current study (Appendix F). Appendix C includes a sample of the BEM Sex Role inventory questions. Due to copyright restrictions only a sample of questions is included. Reliability data for this application of the BEM sex-role inventory reveal high Cronbach's alpha, (Masculinity α = .84 and Femininity, α =.89).

Perceptions of Chilly Climate Scale

The Perceptions of Chilly Climate Scale (PCCS) (Janz & Pyke, 2000) was constructed to assess university student perceptions of the academic climate at a Canadian university. The notion of a Chilly Climate was described by Sandler and Hall (1986) as the "subtle ways women are treated differently - ways that communicate to women that they are not quite first-class citizens in the academic community (Sandler & Hall, 1986, p. 1). This notion served as the basis for the creation of the PCCS. A two part study was utilized in the creation and validation of the PCCS. A detailed review of construction of the instrument items can be found in Chapter 2.

The PCCS was developed with a sample of Canadian graduate (58%) and undergraduate (41%) university students. The initial sample was 80% female with students ranging in age from 21-49 years of age (mean= 28). Thirty percent of the respondents belonged to a minority group. The majority of students (71%) were psychology majors, and most (91%) were attending university full-time. A validation study by the authors included a larger sample of undergraduates (88%) and wider age range 19-54 (mean 25) than the original sample. The second sample also included mostly female respondents (80%).The population

used in the development of the scale is similar to the population of the current study. All respondents are university students in Canada, the mean age of students in the current sample is 25.4, with the majority attending full time (85%). As a result of the similarity in samples, it was deemed appropriate for use in this study.

The Perceived Chilly Climate Scale (PCCS) consists of 28 items and was used unmodified in the current study (See Appendix D). Permission to use the scale was sought and received from the author (Appendix F). The scale items reflect five factors related to perception of climate: a) climate students hear about, b) sexist treatment, c) climate students experience personally, d), classroom climate and e) safety. Participants responded to scale items on a 7 point Likert-type scale. High reliability of scale items was reported with Cronbach's alpha for the original scale development and subsequent validation study of $\alpha = .92$ and $\alpha = .90$ respectively. According to Dawis (1987) reliability should be calculated for "every research use of Likert scales...because reliability is a function not only of the scale but also of the respondent sample" (p. 484). As such, reliability for the PCCS in this study was measured for the current population and was found to be high, Cronbach's alpha =.85.

Demographic and Experiences Data

Demographic and experience data were collected in this study to provide additional information relevant to participation in leadership related activities. Demographic items were developed by the researcher. Age, enrolment status (part-time or full-time), year of study, program of study, previous activity

experience, and previous leadership training were included as potential influences on stage of change for participation in leadership activities. Additionally two open ended questions related to discontinuation of involvement or new involvement were included. Appendix E includes the demographic portion of the survey instrument utilized.

Procedures for Data Collection

Prior to the collection of data, ethical permission from the research site institution and SFU was obtained. Two methods of survey distribution were used. An invitation to participate in the study was forwarded by email to all female students in the research setting who met the criteria and who had provided an email address to the institution's Registrar's office. Secondly, faculty instructors of university credit degree classes were asked for permission (by email and in person) to request that their female students participate in the study. The researcher then distributed and collected the surveys either by attending the class herself to introduce and distribute the surveys for completion in class or, where time or other factors prevented this, the researcher asked the instructor to distribute the survey to volunteers and collect them in sealed envelopes, which were picked up by the researcher. To eliminate the possibility of duplicate responses, student identification numbers were collected. A comparison between student identification numbers from electronic and paper surveys eliminated the possibility of a duplicate response.

Analysis of Survey Data

Data analysis involves the "use of a set of statistical tools that reduce the amount of detail in the data, summarizing it and making the most important facts and relationships apparent" (Alreck & Settle, 1985, p. 287). Initially, descriptive statistics (means, standard deviations and frequencies) provide a summary of the data prior to the examination of any relationships amongst the variables. Examination of the descriptive statistics allows the researcher to become familiar with baseline results, and to identify any outliers or unusual aspects of the data such as missing or incorrectly coded data which may impact selection of subsequent tests of association. The descriptive statistics utilized for the study variables are outlined below. All statistical analyses in the present study were conducted using SPSS statistical software, version 15.0.

Descriptive Statistics

This study examined the descriptive statistics for all of the variables measured for the reasons cited above. Frequencies and percentages of the population were examined for the demographic and experiences data, ie. age group, ethnicity, program, year level, previous leadership and post-secondary and high school experiences. *Stages of change* and gender role variables were also described using frequencies and percentages. Frequencies and percentages of the population were utilized to describe these data as these variables are categorical in nature, either nominal (ethnicity, program, gender role) or ordinal (age group, year level, previous leadership, post-secondary and high school experiences, *stages of change*). The independent variables

Leadership Self-Efficacy and Perceived Chilly Climate Scale are continuous or interval variables and were described using means and standard deviations.

Stage Based Analyses

Following inspection of the descriptive statistics, stage differences on continuous variables were explored using a series of one-way ANOVAs to determine if the stages were significantly different from one another as well as to inform more in depth stage based analyses. To reduce the possibility of Type I error, a Bonferroni correction was applied (Tabachnick & Fidell, 2007). A Bonferroni correction is a conservative approach which sets the alpha level for an entire series of comparisons equal to alpha for only a single comparison by setting alpha at α/n (Tabachnick & Fidell, 2007).The Levene statistic to assess homogeneity of variance was used to determine the appropriate ANOVA and post-hoc statistic to be used in each case to further reduce the possibility of Type I error (Tabachnick & Fidell, 2007). Post-hoc follow up tests were conducted to determine particular differences between stages. The variable *age* was transformed from "raw" age reported to one of four *age groups.* The ordinal variables age group, year level, and previous experiences were included as interval variables in these analyses, a practice supported in the literature (Labovitz, 1970, Tachnick & Fiddell, 2007).

To determine stage based differences in categorical variables, a series of cross-tabulation and pair-wise comparisons of significant findings were conducted. This method is appropriate when examining two categorical variables (Elliott & Woodward, 2007). Cramer's V statistic was used to test for significance.

Cramer's V is an appropriate statistic to use when both row and column variables have more than two levels (Green & Salkind, 2005).

Research Questions 1-5

This section outlines the statistical analysis techniques utilized to answer each of the research questions.

Research Question 1: Is there a relationship between female college students' stage of change for participation in leadership related activities and leadership self-efficacy?

Correlational statistics are used to measure the size and direction of relationships among two or more variables (Gall et al., 1996). The "Pearson product-moment correlation, *r*, is easily the most frequently used measure of association" (Tabachnick & Fidell, 2007, p.56). Research question # 1 was concerned with determining if a relationship between *stages of change* and the continuous variable leadership self-efficacy existed and therefore the Pearson correlation was employed. A follow up, partial correlation was included to control for the influence of time in determining the relationship between *stages of change* and leadership self-efficacy. In this study, the variables of age group and year level were used as an indication of time.

Research Question 2: Is there a relationship between female college student's stage of change for participation in leadership related activities and gender role?

In order to investigate the relationship between *stages of change*, an ordinal variable, and gender role, a nominal variable, a 4 x 4 contingency table was used. A contingency analysis is "a common method of analyzing the

association between two categorical variables" (Elliott & Woodward, 2007, p. 114). As indicated above, the Cramer's V statistic is utilized as a test of significance of the association as both row and column variables have more than two levels (Green & Salkind, 2005). When significance of contingency table analysis is found, comparison of each set of pairs of the table is conducted in follow-up tests to determine where significant differences are found (Green & Salkind, 2005).

Research Question 3: Is there a relationship between female college students' stage of change for participation in leadership related activities and perceived institutional climate?

Pearson product moment correlation was used to determine the association between *stages of change* and perception of institutional climate as measured with the Perceived Chilly Climate Scale. Again, to control for the influence of time, a partial correlation was conducted controlling for both age group and year level.

Research Question 4: Do leadership self-efficacy, gender role and perceived institutional climate together contribute to variance in stage of change for participation in leadership related activities?

In order to investigate the simultaneous influence of interval and nominal variables on a criterion or outcome variable a logistic regression is appropriate (Tabachnick & Fiddell, 2007). Logistic regression provides the opportunity to incorporate all of the question variables within a single analysis to determine their individual and combined contribution to predicting stage of change.

Research Question 5: Do background characteristics such as age, enrolment status, or year of study and experiences such as program of study, previous leadership experience or leadership education influence stage of change for participation in leadership related activities?

Pearson product moment correlations were conducted with the continuous variables age group, year level, previous leadership education or training, post-secondary and high school experiences and *stages of change*. Enrolment status and program of study were addressed in cross-tabulation and pairwise comparisons of significant results.

Analysis of Open Ended Questions

Demographic questions #10 and #11 were open ended questions where the respondent was free to make any response she wished (Gall et al., 1996). An interpretational process was used to "examine the data closely in order to find constructs, themes and patterns that...[could] be used to describe and explain the phenomenon being studied" (Gall et al., 1996, p.562). To begin this analysis, responses to each of the open ended questions were compiled into two documents, one for each question. The first stage of the analysis involved a review of the data to become familiar with the content. A second inspection of the data was conducted to identify words and statements that were repeated throughout the responses. This scan for repetition served to assist in identifying categories for coding the data. A category "is a construct that refers to a certain type of phenomenon mentioned in the data" (Gall et al., 1996, p. 564). Once categories had been established the data were again reviewed in third stage of

the analysis in order to code the individual responses within the categories defined. Once all of the responses had been coded, the data were compiled under each of the categories and reviewed for common sub-themes. Example statements reflecting the themes and sub-themes were selected for presentation in Chapter 4.

Chapter Summary

This chapter has outlined the methodology that was utilized in the conduct of this study. The methods chosen reflect the objective of gaining insight into some variables that may be related to female university students' intention to participate in leadership related activities on campus. Three previously constructed instruments and one researcher designed instrument were utilized in a survey fashion to collect data relevant to the research questions being forwarded. The following chapter presents the results of the data analysis.

CHAPTER 4

DATA ANALYSIS AND RESULTS

The following chapter contains the analysis of survey data and presentation of the results. To begin, a summary of the survey distribution and response is provided followed by demographic characteristics of participants and descriptive statistics of the survey variables. An initial analysis of the differences between *stages of change* on the study variables is incorporated to inform later stages of the analysis.This part is divided into two sections, one investigating the continuous variables and the second the categorical variables. Subsequent sections will explore the research questions individually and follow up questions that arise from the investigation in addition to analysis of the responses to the open ended survey questions. All statistical analyses are conducted using SPSS for Windows statistical software package, version 15.0.

Survey Distribution and Response

The participants of this study were female undergraduate students enrolled in university degree programs at Malaspina University College. A query of the University College's database revealed 3008 students who met the above criteria. Of these students, 2876 had email addresses on record with the institution. Initial invitation to participate in the on-line version of the survey was sent out to all 2876 students via the Malaspina University College's Registrar's office on their "information" email account. Ten (10) emails were returned as undeliverable. Eleven (11) individuals replied indicating that they had just

graduated and four (4) individuals replied that they had received the email with link to the online survey but chose not to reply because they felt they did not represent the population criteria for the study. The number of eligible participants remaining was 2851. A total of 663 women completed the survey on-line. Eighty-three (83) were incomplete and therefore not included in the final analysis. A survey was considered to be incomplete if a score could not be determined on one or more of the instruments or variables, or a student identification number was not provided to allow cross referencing with paper surveys. The PCCS was considered to be incomplete if participants responded to less than 80% of the items (Janz & Pyke, 2000). A paper version of the survey was also produced and instructors were approached to distribute and collect the survey on the researcher's behalf. In some cases, the researcher presented an introduction to the survey in classes. A total of 22 instructors agreed to distribute 374 paper versions. One hundred and nine (109) paper versions of the survey were collected and five (5) were incomplete as per the above criteria and therefore not used in the final analysis. Inspection of the paper surveys during data entry revealed three surveys that appeared as if they were not answered in a serious manner, eg. the same answer on a Likert scale was selected for all 28 scale questions despite reverse scoring of half the items. In all three cases, the survey was also incomplete and therefore not included in the data set. Scanning the electronic data in a similar manner did not reveal any additional "non-serious" responses. In total, 684 surveys were available to use in the final analysis. This represents a response rate of 23.7%.

Demographic Characteristics of Participants

The following section outlines the characteristics of the study participants. Where available, comparative statistics of the census population are included to illustrate the representativeness of the respondent group. Descriptive statistics for these variables include frequencies and percentages for age group, ethnicity, program of study, year in college, enrolment status, previous leadership education, post-secondary experiences and high school experiences.

Age of Participants

Following data collection, participants were grouped into the age categories "under 25", "25-34", and "35+" to mirror institutional categories. Results indicate 66.4% of the respondents fall in the "under 25" age group representing the "traditional" age population of college/university students. With a population skew = 1.88, outside of the normal range of -1 to +1, median age as opposed to mean age provides a more accurate representation of the sample (Elliott & Woodward, 2007). Median age for the study respondents is 23. Table 4.1 shows the age distribution of respondents.

Table 4.1

Age of Respondents and Population

Age Category	Respondent Group		Study Population	
	Frequency	Percentage	Frequency	Percentage
Under 25	454	66.4	1679	58.4
25-34	138	20.2	726	25.2
35+	92	13.5	471	16.4
Total	684	100.0	2876	100.0

Ethnicity of Respondents

The majority of participants reported being Caucasian, 81.1% followed by Aboriginal, 8.7%, Asian, 6.2% and other ethnic groups 2.0%. While Malaspina University College does not collect specific ethnicity data, the percentage of Aboriginal students is recorded and was reported previously in Chapter 3. Table 4.2 shows the results of respondents reported ethnicity.

Table 4.2

*Ethnicity of Respondents**

Ethnicity	Frequency	Percentage
Caucasian	572	83.6
Aboriginal	58	8.5
Asian	41	6.0
Other	13	1.9
Total	684	100.0

* Comparable ethnicity data is not available for the population

Program, Year of Study and Enrolment Status

Program, year of study and enrolment status frequencies and percentages are reported in Table 4.3. The majority of participants, 57.2% indicated enrolment in the Bachelor of Arts degree program. Some participants had indicated enrolment in both the Bachelor of Arts and Bachelor of Education program, reflecting their participation in the concurrent degree offered at Malaspina University College. These individuals were coded as BEd students to reflect their intended career outcome.

A relatively even distribution of respondents across year levels 1-4 is apparent with a smaller (6.1%) representation from year 5+. All years above 5 were collapsed into a single category 5+. As this study involved undergraduate

female students, this distribution of respondents would be expected. For respondents who had indicated years of study higher than five, some had reported studying part time over a number of years, while others indicated their pursuit of a second degree.

Table 4.3

Program, Year of Study and Enrolment Status Frequencies and Percentages

Variable	Respondent Group		Study Population	
	Frequency	Percentage	Frequency	Percentage
Program				
BA	391	57.2	1658	57.3
BBA	85	12.4	331	11.5
BSc	68	9.9	253	8.8
BSN	45	6.6	297	10.3
BEd	65	9.5	276	9.6
BTour	26	3.8	53	1.8
BMus	4	0.6	8	0.3
Total	684	100.0	2876	100.0
Year Level*				
1	153	22.4	772	26.8
2	133	19.4	651	22.7
3	170	24.9	585	20.3
4	186	27.2	609	21.2
5+	42	6.1	259	9.0
Total	684	100.0		
Enrolment Status**				
Full Time	581	84.9		
Part Time	103	15.1		
Total	684	100.0		

*Year level was estimated from accumulated credit hours
**Enrolment status data was not available

Previous Experiences

Previous leadership education or training, post secondary experiences and high school experiences were included in the demographic section of the survey. Previous leadership education or training included enrolment in academic courses focused on leadership in high school or post-secondary,

leadership training for employment and community leadership programs. Space to indicate other forms of leadership education in this category was also provided. Respondents indicated post-secondary experiences that they had participated in during their post secondary study and high school activities during their last year of high school. A checklist of activities was provided as well as an opportunity to supply additional leadership activity items. Some examples of the post-secondary experiences that were listed are student union, academic department club, mentorship program, and residence assistant. High school experiences were similar in nature, again with opportunity to provide "other" activities. Frequencies and percentages for previous leadership education and/or training, post-secondary experiences and high school experiences are presented in Table 4.4. Participation in one or more previous leadership education experiences was reported by 60.8% of the study participants. Among the participants 65.5% reported one or more post-secondary experiences and a higher percentage 77.6% indicated involvement in at least one activity while in the last year of high school. For the variables reported below numbers of experiences reported in excess of three (3) for previous leadership and four (4) post-secondary and high school experiences were collapsed to create the top groupings of "3+" and "4+" respectively. The frequencies and percentages reported are found in Table 4.4.

Table 4.4

Previous Leadership Training and Activity Experiences

Experiences		# Experiences	Frequency	Percentage
Previous Leadership Training		0	268	39.2
		1	216	31.6
		2	120	17.5
		3+	80	11.7
	Total		684	100.0
Post Secondary Experiences		0	236	34.5
		1	214	31.3
		2	123	18
		3	69	10.1
		4+	42	6.1
	Total		684	100.00
High School Experiences		0	153	22.4
		1	169	24.7
		2	152	22.2
		3	108	15.8
		4+	102	14.9
	Total		684	100.0

Descriptive Statistics

The following section provides descriptive statistics for the main variables measured: *stages of change*, gender role, leadership self-efficacy and perceived institutional climate. For the categorical variables of *stages of change* and gender role, frequencies and percentages are included and for the continuous variables of leadership self-efficacy and institutional climate, mean and standard deviation are reported. Additionally, normality of the data is explored.

Stages of Change

Frequencies and percentages of participants in each of the five *stages of change* can be found in Table 4.5. Participants self-identified Stage of Change by completing a staging algorithm created by the researcher for this purpose.

Individuals completing this algorithm could choose only one stage of change. Results indicated that the pre-action stages of *pre-contemplation*, *contemplation* and *preparation* accounted for 72.8% of respondents. Skewness and kurtosis of 0.778 and -0.868 are within the acceptable limits of 1 to -1 (George and Mallery, 2000) for normally distributed data.

Table 4.5

Stages of Change Distribution

Stage	Frequency	Percentage
Pre-contemplation	224	32.7
Contemplation	255	37.3
Preparation	19	2.8
Action	71	10.4
Maintenance	115	16.8
Total	684	100.0

Gender Role

Allocation of participants into one of four gender role categories was accomplished with use of the Bem Sex Role Inventory. Figure 4.1 illustrates the frequency counts for the distribution of participants into the categories Masculine, Feminine, Androgynous and Undifferentiated.

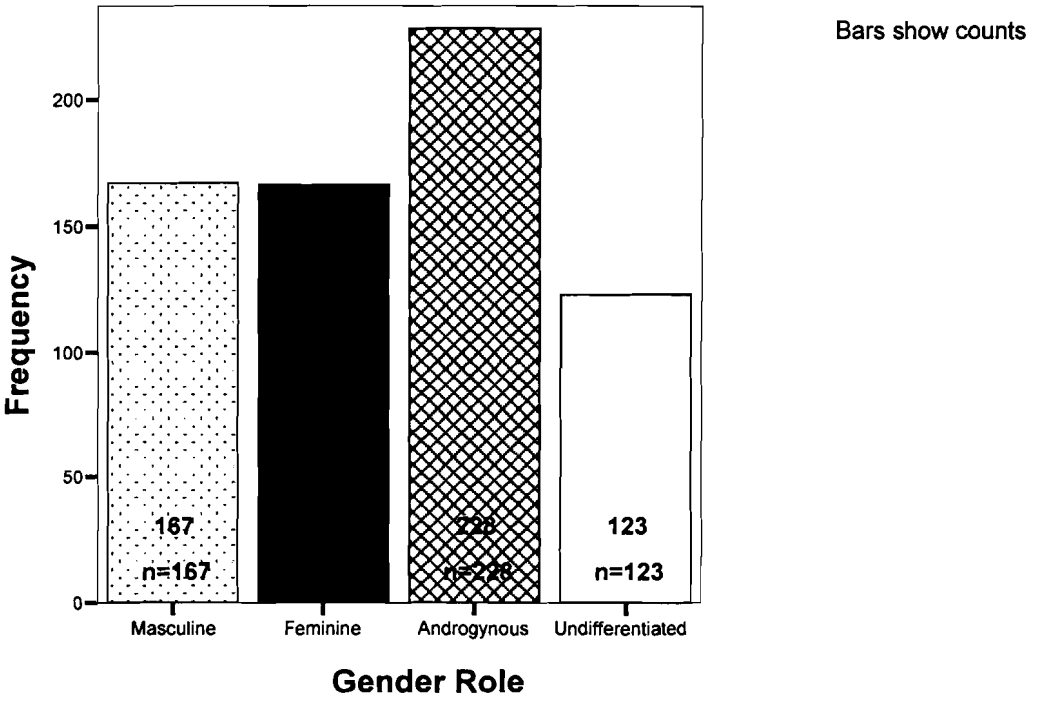

Figure 4.1. Gender role distribution

Leadership Self-Efficacy

Leadership Self-Efficacy scores were obtained with use of the General Leadership Self-Efficacy Scale (Kane & Baltes, 1998). Measures of central tendency and normality for leadership self-efficacy are displayed in Table 4.6. The mean of 5.22 and standard deviation of 1.00 was found for leadership self-efficacy with skewness and kurtosis within the normal range.

Table 4.6

Descriptive Statistics for LSE

	N	Minimum	Maximum	Mean	S.D.	Skewness		Kurtosis	
						Stat.	Std.Error	Stat.	Std.Error
LSE Average	684	1.3	7.0	5.215	.9982	-.855	.093	.967	.187

Perceived Institutional Climate

The Perceived Chilly Climate Scale (Janz & Pyke, 2000) was used to provide a measure of perception of institutional climate. Minimum and maximum scores, mean, standard deviation and skewness and kurtosis are presented below in Table 4.7. The data for the Perceived Chilly Climate scale indicate a mean of 61.38. The standard deviation of 23.06 represents a high degree of variation in reported scores on this variable indicating that some respondents view the climate as "chilly" while other respondents do not. This standard deviation is similar to that reported by Janz and Pyke (2000) in two separate studies using this scale. The standard deviation for respondents in their studies was 33 in the first study and 27 in the second study.

The skewness 0.80 and kurtosis 0.43 are within the acceptable normal range.

Table 4.7

Descriptive Statistics for PCCS

	N	Minimum	Maximum	Mean	S.D.	Skewness		Kurtosis	
						Stat.	Std.Error	Stat.	Std.Error
PCCS	684	23	159	61.38	23.06	.804	.093	.433	.187

Differences between Stages: Continuous Variables

Prior to an examination of the relationships among the variables of this research, a series of one-way ANOVAs were conducted to determine if differences existed between the *stages of change* on the study variables. The continuous variables of leadership self-efficacy, perception of institutional

climate, year in school, previous leadership, post secondary, high school experiences and age group were included in these analyses. In order to determine the appropriate ANOVA statistic and post-hoc test, the Levene statistic for homogeneity of variance was used for each of the variables indicated. Results of these tests are presented in Table 4.8.

Table 4.8

Results of Equality of Variance for Continuous Variables

Variable	Levene Statistic	df1	df2	Significance
LSE avg	3.337	4	679	.010
PCCS	.614	4	679	.653
Age Group	6.248	4	679	.000
Year Level	2.058	4	679	.085
Previous Leadership Training	2.989	4	679	.018
Post-Secondary Experiences	4.475	4	679	.001
High School Experiences	.704	4	679	.589

A significant Levene statistic indicates that equal variances cannot be assumed and therefore the likelihood of Type I error is increased while reporting an F statistic. In such a case, the Brown-Forsythe F* or Welch statistics may be used as an alternative to the ANOVA F statistic for indicating group differences (Clinch & Kesleman, 1982). Both tests have been shown to "be robust to combinations of unequal variances and unequal group sizes" (Clinch & Keselman, 1982, p. 207). The Brown-Forsythe F* was used in the current study as recommended by Clinch and Kelseman (1982) for LSE, Age Group, Previous Leadership and Post-Secondary experiences as an alternative to the ANOVA F as equal variances could not be assumed for these variables.

As group sizes were unequal, post-hoc measures used to identify significant between stage differences were used in the following manner. Where equal variances could be assumed, the Tukey-Kramer post-hoc statistic was used (Cribbie, 2003) and where unequal variances were identified the Games-Howell post-hoc was employed (Hsiung & Olejnik, 1994). Results of the one-way ANOVAs and post-hoc analyses of significant findings for each of the continuous variables are presented below. As described in Chapter 3, a Bonferroni correction (α/n) was applied to the series of ANOVAs to reduce the chance of Type I error. The correction resulted in a significance level of $p < .008$.

Leadership Self-Efficacy

Results of the one-way ANOVA for leadership self-efficacy revealed significant between stage differences, $F^* = 8.89$, $p < .001$. The Games-Howell post-hoc test results are presented in Table 4.9.

Table 4.9

Games-Howell Multiple Comparisons for Leadership Self-Efficacy

Stage (I)	Comparison Stage (J)	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Pre-contemplation	Contemplation	.0122	.0953	1.000	-.249	.273
	Preparation	-.3648	.1819	.292	-.899	.169
	Action	-.4965*	.1141	.000	-.811	-.182
	Maintenance	-.3935*	.1099	.004	-.695	-.092
Contemplation	Pre-contemplation	-.0122	.0953	1.00	-.273	.249
	Preparation	-.3770	.1787	.249	-.904	.150
	Action	-.5087*	.1090	.000	-.810	-.208
	Maintenance	-.4057*	.1046	.001	-.693	-.118
Preparation	Pre-contemplation	.3648	.1819	.292	-.169	.899
	Contemplation	.3770	.1787	.249	-.150	.904
	Action	-.1317	.1894	.956	-.682	.419
	Maintenance	-.0287	.1869	1.000	-.573	.516
Action	Pre-contemplation	.4965*	.1141	.000	.182	.811
	Contemplation	.5087*	.1090	.000	.208	.810
	Preparation	.1317	.1894	.956	-.419	.682
	Maintenance	.1030	.1219	.916	-.233	.439
Maintenance	Pre-contemplation	.3935*	.1099	.004	.092	.695
	Contemplation	.4057*	.1046	.001	.118	.693
	Preparation	.0287	.1869	1.00	-.516	.573
	Action	-.1030	.1219	.916	-.439	.233

* The mean difference is significant at the .008 level

The *pre-contemplation* stage respondents were significantly lower in leadership self efficacy than the *action* and *maintenance* stages, p<.008. The *contemplation* stage participants were also significantly lower in leadership self-efficacy that either of the *action* or *maintenance* stages p< 0.008. No differences were reported between the *preparation* stage and any other stage.

Perception of Institutional Climate

There were no significant between stage differences found for the PCCS, F = .788, p =.53, no further post-hoc tests were warranted. Further

investigation of stage based relationships for the perception of institutional climate will not be explored due to a lack of significant findings.

Age Group

Significant between stage differences were found for age group, F* =4.77, p<.001. Table 4.10 includes results of the Games-Howell test of multiple comparisons to indicate statistically significant findings.

The only significant differences found for age group were between *pre-contemplation* and *contemplation*, p<.002 where *pre-contemplation* respondents were significantly older than *contemplation*.

Table 4.10

Games Howell Multiple Comparisons for Age Group

Stage (I)	Comparison Stage (J)	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Pre-contemplation	Contemplation	.250*	.067	.002	.07	.43
	Preparation	.028	.167	1.00	-.47	.52
	Action	.030	.104	.999	-.26	.32
	Maintenance	.233	.078	.024	.02	.45
Contemplation	Pre-contemplation	-.250*	.067	.002	-.43	-.07
	Preparation	-.222	.165	.665	-.71	.27
	Action	-.221	.101	.193	-.50	.06
	Maintenance	-.017	.073	.999	-.22	.18
Preparation	Pre-contemplation	-.028	.167	1.000	-.52	.47
	Contemplation	.222	.165	.665	-.27	.71
	Action	.001	.183	1.000	-.53	.53
	Maintenance	.205	.169	.745	-.30	.71
Action	Pre-contemplation	-.030	.078	.999	-.32	.26
	Contemplation	.221	.073	.193	-.06	.50
	Preparation	-.001	.169	1.000	-.53	.53
	Maintenance	-.204	.108	.334	-.10	.50
Maintenance	Pre-contemplation	-.233	.078	.024	-.45	-.02
	Contemplation	.017	.073	.999	-.18	.22
	Preparation	-.205	.169	.745	-.71	.30
	Action	-.204	.108	.334	-.50	.10

* The mean difference is significant at the .008 level

Year Level

Results of a one way ANOVA for year level indicated significant between stage differences, F=26.91, p<.001. Table 4.11 reveals the significant between stage differences found as a result of the Tukey-Kramer post-hoc method.

Table 4.11

Tukey-Kramer Multiple Comparisons for Year Level

Stage (I)	Comparison Stage (J)	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Pre-contemplation	Contemplation	.898*	.106	.000	.61	1.19
	Preparation	.168	.277	.974	-.59	.93
	Action	.020	.158	1.000	-.41	.45
	Maintenance	-.190	.133	.611	-.55	.17
Contemplation	Pre-contemplation	-.898*	.106	.000	-1.19	-.61
	Preparation	-.730	.276	.063	-1.48	.02
	Action	-.878*	.156	.000	-1.30	-.45
	Maintenance	-1.087*	.130	.000	-1.44	-.73
Preparation	Pre-contemplation	-.168	.277	.974	-.93	.59
	Contemplation	.730	.276	.063	-.02	1.48
	Action	-.148	.299	.988	-.97	.67
	Maintenance	-.357	.287	.725	-1.14	.43
Action	Pre-contemplation	-.020	.158	1.000	-.45	.41
	Contemplation	.878*	.156	.000	.45	1.30
	Preparation	.148	.299	.988	-.67	.97
	Maintenance	-.210	.175	.752	-.69	.27
Maintenance	Pre-contemplation	.190	.133	.611	-.17	.55
	Contemplation	1.087*	.130	.000	.73	1.44
	Preparation	.357	.287	.725	-.43	1.14
	Action	.210	.175	.752	-.27	.69

* The mean difference is significant at the .008 level

Year level comparisons identified the *contemplation* stage participants as significantly lower in year in school than *pre-contemplation*, *action* and *maintenance* participants, p <0.001.

Previous Experiences

Previous leadership education and post-secondary experiences demonstrated significant between stage differences F*=6.98 , p<.001 and F* = 69.04, p<.001 respectively. High school experiences also revealed significant between stage differences, F = 3.98, p<.01. Results of multiple comparisons for each of these variables are found below. Table 4.12 indicates results of the Games-Howell multiple comparison test for previous leadership education or training.

Table 4.12

Games-Howell Multiple Comparisons for Previous Leadership Education

Stage (I)	Comparison Stage (J)	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Pre-contemplation	Contemplation	-.152	.090	.445	-.40	.10
	Preparation	-.288	.197	.594	-.87	.29
	Action	-.507*	.136	.003	-.89	-.13
	Maintenance	-.496*	.120	.001	-.83	-.16
Contemplation	Pre-contemplation	.152	.090	.445	-.10	.40
	Preparation	-.137	.196	.995	-.72	.44
	Action	-.355	.135	.072	-.73	.02
	Maintenance	-.344	.119	.034	-.67	-.02
Preparation	Pre-contemplation	.288	.197	.594	-.29	.87
	Contemplation	.137	.196	.955	-.44	.72
	Action	-.219	.221	.858	-.85	.42
	Maintenance	-.208	.212	.861	-.85	.41
Action	Pre-contemplation	.507*	.136	.003	.13	.89
	Contemplation	.355	.135	.072	-.02	.73
	Preparation	.219	.221	.858	-.42	.85
	Maintenance	.011	.157	.861	-.42	.44
Maintenance	Pre-contemplation	.496*	.120	.001	.16	.83
	Contemplation	.344	.119	.034	.02	.67
	Preparation	.208	.212	.861	-.41	.82
	Action	-.011	.157	1.00	-.44	.42

* The mean difference is significant at the .008 level

Significantly fewer leadership training and/or education experiences were reported in *pre-contemplation* as compared to *action*, p<.003 and to

maintenance, p<.001. Results of multiple comparisons for post-secondary experiences follow next in Table 4.13.

Table 4.13

Games-Howell Multiple Comparisons for Post-Secondary Experiences

Stage (I)	Comparison Stage (J)	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Pre-contemplation	Contemplation	-.069	.087	.933	.-31	.17
	Preparation	-.925	.283	.028	-1.77	-.08
	Action	-1.128*	.135	.000	-1.50	-.75
	Maintenance	-1.745*	.122	.000	-2.08	-1.41
Contemplation	Pre-contemplation	.069	.087	.933	-.17	.31
	Preparation	-.857	.283	.047	-1.70	-.01
	Action	-1.060*	.134	.000	-1.43	-.69
	Maintenance	-1.677*	.120	.000	-2.01	-1.35
Preparation	Pre-contemplation	.925	.283	.028	.08	1.77
	Contemplation	.857	.283	.047	.01	1.70
	Action	-.203	.301	.960	-1.09	.68
	Maintenance	-.820	.295	.072	-1.69	.05
Action	Pre-contemplation	1.128*	.135	.000	.75	1.5
	Contemplation	1.060*	.134	.000	.69	1.43
	Preparation	.820	.301	.960	-.68	1.09
	Maintenance	-.617*	.159	.001	-1.05	-.18
Maintenance	Pre-contemplation	1.745*	.122	.000	1.41	2.08
	Contemplation	1.677*	.120	.000	1.35	2.01
	Preparation	.820	.295	.072	-.05	1.69
	Action	.617*	.159	.001	.18	1.05

* The mean difference is significant at the .008 level

A number of significant differences were found related to post-secondary activity involvement and *stages of change*. The *pre-contemplation* and *contemplation* stages were both found to report participation in significantly fewer post-secondary activities than the *action* and *maintenance* stages. The *action* stage respondents reported significantly less participation in post-secondary activities than those in the *maintenance* stage, p<.001. Results of multiple comparisons for high school experiences are found below in Table 4.14.

Table 4.14

Tukey-Kramer Multiple Comparisons for High School Experiences

Stage (I)	Comparison Stage (J)	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Pre-contemplation	Contemplation	-.344	.123	.043	-68	-.01
	Preparation	-.509	.322	.509	-1.39	.37
	Action	-.326	.183	.387	-.83	.18
	Maintenance	-.561*	.154	.003	-.98	-.14
Contemplation	Pre-contemplation	.344	.123	.043	.01	.68
	Preparation	.165	.320	.986	-1.04	.71
	Action	.018	.181	1.000	-.48	.51
	Maintenance	-.217	.151	.605	-.63	.20
Preparation	Pre-contemplation	.509	.322	.509	-.37	1.39
	Contemplation	.165	.320	.986	-.74	1.04
	Action	.183	.348	.985	-.77	1.13
	Maintenance	-.052	.333	1.000	-.96	.86
Action	Pre-contemplation	.326	.183	.387	-.18	.83
	Contemplation	-.018	.181	1.000	-.51	.48
	Preparation	-.183	.348	.985	-1.13	.77
	Maintenance	-.235	.203	.775	-.79	.32
Maintenance	Pre-contemplation	.561*	.154	.003	.14	.98
	Contemplation	.217	.151	.605	-.20	.63
	Preparation	.052	.333	1.000	-.86	.96
	Action	.235	.203	.775	-.32	.79

* The mean difference is significant at the .008 level

High school experiences resulted in fewer significant findings than post-secondary experiences. The *pre-contemplation* stage reported significantly lower participation in high school activities than *maintenance*, $p<.003$.

Summary of Stage Differences on Continuous Variables

For ease of interpretation of the stage based results, Table 4.15 summarizes the significant differences found on each of the variables within a single table.

Table: 4.15

Summary of Stage Based Differences on Continuous Variables

Variable	**Stage Differences**
Leadership Self-Efficacy	PC < A, M; C < A, M
Age Group	PC > C,
Year Level	C < PC, A, M
Previous Leadership	PC < A, M
Post-Secondary Experiences	PC < A, M; C < A, M ; A < M
High School Experiences	PC < M

PC = Pre-contemplation, C= Contemplation, Pr=Preparation, A=Action, M=Maintenance

Overall, few significant differences were noted for the *preparation* stage. This may be due to the low number of participants categorized within this stage, N=19. As a consequence, and to increase the robustness of the data, the *preparation* stage will be combined with the *contemplation* stage in further analyses. Combination with the *contemplation* stage is consistent with the theoretical division of stages as both are pre-action with the intention to move to action (Prochaska & DiClemente, 1982).

Differences Between Stages: Categorical Variables

Stage of Change differences in categorical variables; ethnicity, program, enrollment status and Gender Role were examined by cross-tabulation and pairwise comparison of differences. Examination of findings related to ethnicity, program of study and enrollment will be discussed in the current section. Gender role findings will be specifically addressed under findings for Research Question # 3 to follow. Cramer's V statistic was used to identify significant differences.

Cramer's V is used for significance testing when both row and column variables have more than two levels, as in this study (Green and Salkind, 2005).

Ethnicity

Table 4.16 identifies the cross tabulations of stage by ethnicity. No significant differences were found for this comparison, Cramer's V = .077, p = .44, N=684.

Table 4.16

Stage x Ethnicity Cross-tabulations

	Ethnicity				
Stage	Caucasian	Aboriginal	Asian	Other	Total
Pre-contemplation	184	20	13	7	224
Contemplation	220	20	12	3	255
Preparation	13	4	2	0	19
Action	61	4	6	0	71
Maintenance	94	10	8	13	115
Total	572	58	41	13	684

Enrolment Status

Cross-tabulation of enrolment status and stage of change also revealed no significant stage differences Cramer's V = .08, p = .36, N=684. Both ethnicity and enrolment status will be removed from further inferential analysis due to their lack of contribution to stage differences.

Program of Study

Examination of stage by program cross-tabulation revealed significant differences as indicated by Cramer's V = .145, p <.01, N= 684. The Bachelor of Music program was removed as a pairwise comparator due to the low number of participants (4) within that group. Initial inspection of the data reveals one interesting note. The pre-action stages of *pre-contemplation*, *contemplation* and

preparation have been found in many studies of the Transtheoretical Model to account for approximately 80% of the population under investigation with the remaining 20% accounting for those in the *action* and *maintenance* stages (Levesque, Prochaska & Prochaska, 1999). An examination of these stages by program as displayed in Table 4.17 reveals similar distribution, with a range from 69.1% - 80.6% of the population within these early pre-action stages for all programs except Bachelor of Tourism (B.Tour) which shows 25.9% of these program participants within the pre-action stages. Pairwise comparisons were conducted as follow up tests to determine where significant findings existed. Indeed B.Tour was found to be significantly different as indicated by Cramer's V than all other programs. One additional significant finding was a difference between the Bachelor of Arts program and the Bachelor of Education program. Bachelor of Arts students revealed a higher percentage of students in the *contemplation* stage, while Bachelor of Education students revealed a higher percentage of students in the *pre-contemplation* stage.

Table 4.17

Stage x Program Cross-tabulations

	Program							
Stage	BA	BBA	BSc	BSN	BEd	BTour	BMus	Total
Pre-contemplation	119	26	31	18	28	1	1	224
Contemplation	162	35	24	12	17	3	2	255
Preparation	13	1	1	1	1	2	0	19
Action	37	9	4	7	7	7	0	71
Maintenance	60	14	8	7	12	13	1	115
Total								684

BA = B. Arts, BBA = B. Business Admin., BSc. = B. Science, BSN=B.Science in Nursing, BTour =B. Tourism, BMus=B. Music

In order to determine if the findings related to the BTour program were related to unique aspects of the program or could be attributed to other factors such as age of the participants, year level, or experiences, a one-way ANOVA was used to examine differences between programs on these study variables. Results are found in the following section.

Once again, to determine the appropriate statistics to be utilized in significance testing for the analysis of variance for Program and other study variables, the Levene statistic for homogeneity of variance was calculated. Results indicated significant Levene statistics for the variables age group and year level $p<.001$, $N=684$ and $p<.05$, $N=684$ respectively. Non-significant results for previous leadership, post-secondary experiences and high school experiences were found. As equal variances cannot be assumed for age group and year level, the Brown-Forsythe F* and the Games-Howell post-hoc analyses are reported for these variables. The ANOVA F statistic and Tukey-Kramer post hoc analysis for unequal N are reported for previous leadership education, post-secondary experiences and high school experiences.

Program Comparisons: Age group and Year Level.

The Brown-Forsythe F* did identify significant differences between program groups on both age group and year level variables, $F^* = 3.68$, $p<.01$ and $F^* = 16.82$, $p<.001$. Games-Howell post-hoc tests identified Bachelor of Business students as significantly younger than both Bachelor of Nursing and Bachelor of Education students. No differences in age group were seen with Bachelor of Tourism students. Post-hoc analysis of year level differences identified Bachelor

of Education students as being in a higher year level than all other program groups. Year level findings therefore do not account for stage based differences noted above with Bachelor of Tourism students.

Program Comparisons: Experiences

Results of the one-way ANOVA for the experience variables exposed significant differences in program groups on the variables previous leadership education, $F = 5.61$, $p<.001$, $N=684$ and post-secondary experiences, $F=8.08$, $p<.01$, $N=684$. No differences between groups on high-school experiences were shown. Post-hoc analysis of differences indicated that Bachelor of Tourism students had significantly greater previous leadership experience and a significantly higher number of post-secondary experiences than all other programs. No other between group differences were found. These results suggest that differences found for program of study can be attributed to differences in previous leadership education and post-secondary experiences. The variable Program of study as a unique contributor to differences will therefore not be further explored.

Analysis of Research Questions

Research Question 1: Is there a relationship between female college students' stage of change for participation in leadership related activities and leadership self-efficacy?

Pearson correlation coefficients were utilized to examine the relationship between *stages of change* (SOC) and Leadership Self-Efficacy (LSE). As indicated earlier in this chapter, the stages of *contemplation* and *preparation* were combined into a single stage labeled Con-Prep to create a four Stage

Model. Preliminary correlation between the SOC and LSE incorporate this four Stage Model in the analysis as a continuous variable. Table 4.18 shows the result of this correlation.

Table 4.18

Correlation of 4 Stage Model and Leadership Self-Efficacy

		LSE Average	4 Stage Model
LSE Average	Pearson Correlation	1	.175**
	Sig. (2 Tailed)		.000
4 Stage Model	Pearson Correlation	.175**	1
	Sig. (2 Tailed)	.000	

**Correlation is significant at .01 level, N =684 (LSE Avg = Leadership Self-Efficacy)

A significant positive correlation ($r = .175$, $p < .01$) between SOC and LSE indicates that individuals at higher *stages of change* exhibit higher levels of leadership self-efficacy. A stage based examination of the relationship between each of the individual stages and LSE follows in Table 4.19 to more clearly delineate the association.

Table 4.19

Correlation of Stage of Change and Leadership Self-Efficacy

		Pre-C	Con-Prep	Action	Maint.	LSE Avg
Pre-C	Pearson Correlation	—				
	Sig. (2-tailed)					
Con-Prep	Pearson Correlation	-.570**	—			
	Sig. (2-tailed)	.000				
Action	Pearson Correlation	-.237**	-.278**	—		
	Sig. (2-tailed)	.000	.000			
Maintenance	Pearson Correlation	-.314**	-.368**	-.153**	—	
	Sig. (2-tailed)	.000	.000	.000		
LSE Avg	Pearson Correlation	-.086*	-.090*	.127**	.122**	—
	Sig. (2-tailed)	.024	.019	.001	.001	

**Correlation is significant at .01 level, * Correlation is significant at .05 level
N = 684, Pre-C = Pre-contemplation, Con-Prep = Contemplation/Preparation, Maint.= Maintenance

Significant correlations are reported in each stage of change with LSE, (N=684). A negative relationship exists between LSE and *pre-contemplation* as well as *contemplation-preparation*, r = -.086, p<.01 and r=-.090, p<.05 respectively. Positive correlations are reported for both *action* and *maintenance* stages, r = .127, p<.01, and r = .122, p<.01 respectively. Individuals in the pre-action stages of *pre-contemplation* and *contemplation-preparation* exhibit lower levels of leadership self-efficacy than those in higher *stages of change*.

In order to control for the potential influence of time as a factor in shaping the relationship between LSE and SOC a partial correlation was conducted with *age group* and *year level* held constant as variables representing the dimension of time. Table 4.20 displays the result of this correlation.

Table 4.20

Partial Correlation of Stage and Leadership Self-Efficacy Controlling for Age and Year level

Control Variables			Stage	LSE Avg
Age Group & Year Level	Stage	Correlation		.161
		Significance (2-tailed		.000
		df		680
	LSE Avg	Correlation	.161	
		Significance (2-tailed)	.000	
		df	680	

The relationship between SOC and LSE is reduced from the original correlation (r =.175, p <.01) while controlling for age and year level but still remains significant indicating that LSE is related to SOC independent of time.

As previous related experiences have been shown to influence self-efficacy (Bandura, 1997), and self-efficacy is reported to be higher in higher *stages of change* (Prochaska & DiClemente, 1982), it is anticipated that previous

leadership education, post-secondary experiences and high school experiences as measured in the current study may have an influence on the relationship between SOC and LSE through their potential to increase self-efficacy. In order to further investigate this possibility, the relationship between SOC and LSE is analyzed controlling for these experience variables. The result of this analysis appears in Table 4.21.

Table 4.21

Partial Correlation of Stage and Leadership Self-Efficacy Controlling for Previous Leadership, Post-secondary and High School Experiences

Control Variables			Stage	LSE Avg
Previous Leadership, Post-Secondary & High School Experiences	Stage	Correlation		.071
		Significance (2-tailed		.065
		df		679
	LSE Avg	Correlation	.071	
		Significance (2-tailed)	.065	
		df	679	

The relationship between SOC and LSE disappears when controlling for previous experiences. Since this relationship no longer exists while controlling for the three experiences variables, it is possible that these factors alone or in combination are acting as mediators of the relationship. According to Baron and Kenny (1986) a variable may be called a mediator "to the extent that it accounts for the relation between the predictor and criterion" (p.1176). The significant stage based differences on the experiences variables identified above lend further support to the variables acting as mediators.

Research Question 2: Is there a relationship between female college student's stage of change for participation in leadership related activities and gender role?

Both *stages of change* and gender role (GR) may be defined as categorical variables, therefore a 4 x 4 contingency table analysis was employed to determine significant relationships amongst the variables. Cramer's V = .106 was significant at $p<.01$. Table 4.22 shows the results of the contingency table analysis and Figure 4.2 illustrates the stage distribution of gender role categories utilizing a clustered bar chart to graphically represent the data.

Table 4.22

Stage by Gender Role Cross-tabulation

4 Stage Model		Gender Role				Total
		Masculine	Feminine	Androgynous	Undifferentiated	
Pre-C	Count	61	55	60	48	224
	% in Gender	36.5	33.1	26.3	39.0	32.7
	Role	8.9	8.0	8.8	7.0	32.7
	% of Total					
Con-	Count	54	75	95	50	274
Prep	% in Gender	32.3	45.2	41.7	40.7	40.1
	Role	7.9	11.0	13.9	7.3	40.1
	% of Total					
Action	Count	17	20	29	5	71
	% in Gender	10.2	12.0	12.7	4.1	10.4
	Role	2.5	2.9	4.2	.7	10.4
	% of Total					
Maint.	Count	35	16	44	20	115
	% in Gender	21.0	9.6	19.3	16.3	16.8
	Role	5.1	2.3	6.4	2.9	16.8
	% of Total					
Total	Count	167	166	228	123	684
	% in Gender	100.0	100.0	100.0	100.0	100.0
	Role	24.4	24.3	33.3	18.0	100.0
	% of Total					

Pre-C = Pre-contemplation, Con-Prep = Contemplation/Preparation, Maint.= Maintenance

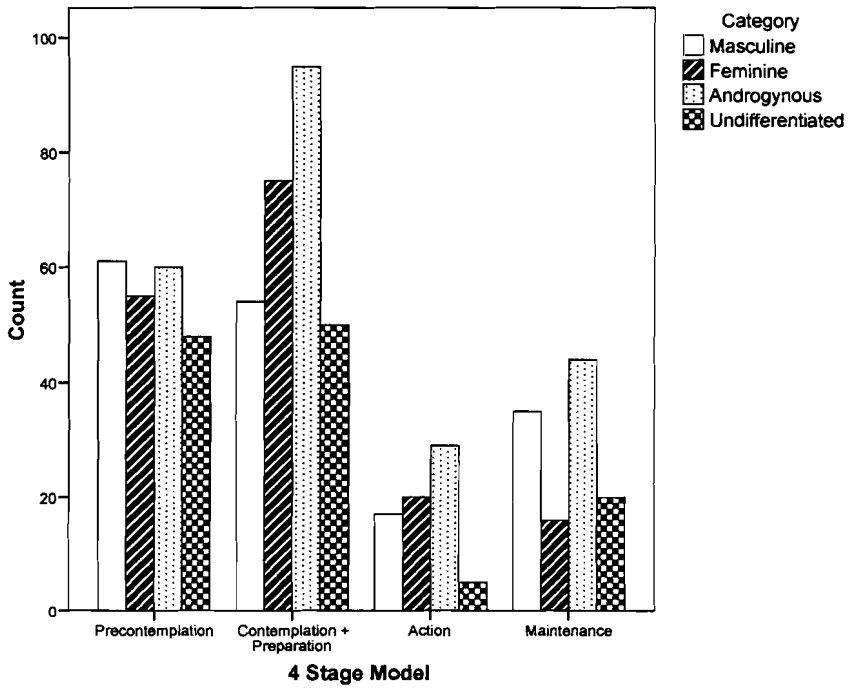

Figure 4.2. Clustered bar chart of stage by gender role

Follow up pair-wise tests identified significant relationships amongst the groupings. A significant relationship was found for Masculinity versus Femininity, V = .168, p<.05. Twice as many participants holding the Masculine gender role occupied the *maintenance* stage (21%) as opposed to those with Feminine gender role, (10.5%). A higher percentage of participants with Feminine gender role occupied the *contemplation/preparation* stage (44.4%) as opposed to Masculine gender role (32.3%). Significant pair-wise relationships were also found between Feminine and Androgynous and Feminine and Undifferentiated gender role categories, V=.138 , p<.05 and V=.177, p<.05 respectively. The Feminine/Androgynous pairing revealed approximately half as many respondents in the Feminine gender role category as occupying the *maintenance* stage (9.6% of Feminine category, versus 19.6% of Androgynous category). Finding related to

the Feminine/Undifferentiated comparison showed Feminine gender role participants having a higher representation in both the *contemplation* stage (45.2%) and *action* stage (12.0%) and lower percentage within *pre-contemplation* (33.1 %) and *maintenance* stage (9.6%) as opposed to the Undifferentiated group (40.2%, 3.9%, 40.2% and 15.7% respectively). The final significant pair was Androgynous and Undifferentiated categories, $V = .185$, $p < .01$. Undifferentiated gender role participants maintained a higher percentage in *pre-contemplation* (40.2%) as opposed to Androgynous (26.3%). Those holding an Androgynous gender role had approximately three times the percentage of participants in the *action* stage (12.7%) as opposed to the Undifferentiated gender role (3.9%). Feminine/Undifferentiated gender role, $V = .164$, $p < .05$.

Research Question 3: Is there a relationship between female college students' stage of change for participation in leadership related activities and perceived institutional climate?

Earlier one way ANOVA analysis of stage based differences on Perception of Institutional Climate revealed no significant differences. Further examination of the relationship between stage of change and perceived institutional climate is therefore not justifiable.

Research Question 4: Do leadership self-efficacy, gender role and perceived institutional climate together contribute to variance in stage of change for participation in leadership related activities?

As discovered in earlier analyses, variability exits in the contribution of the independent variables that play a role in stage based differences whereby each stage shows a slightly different constellation of significant variables. As a result the *stages of change* were considered separately in a series of logistic

regressions addressing this research question. Logistic regression is an appropriate statistical technique as it allows for the simultaneous examination of independent variables which may be nominal, ordinal or continuous, known as predictor variables and a dependent variable of a dichotomous type known as the response variable (Elliott and Woodward, 2007) and potential interaction of those variables in predicting the response. In this analysis both a nominal variable (Gender role) and a continuous variable (Leadership Self-efficacy) are included. A binary logistic regression was produced for each of *pre-contemplation*, *contemplation* & p*reparation*, *action* and *maintenance* stages. As indicated earlier, the *contemplation* stage and *preparation* stages were combined due to the low number of participants in *preparation*.

The individual contributions of each variable, LSE and GR, were first investigated to determine if further examination of interaction effects were warranted. Again, due to the lack of influence of Perception of Institutional Climate on Stage of Change, this variable was omitted from the logistic regression analyses. The variables included, LSE and GR were entered simultaneously into the equation using the SPSS enter method to determine the independent effects of each variable while others were held constant. The categorical variable GR was coded with Masculine as the reference category, Category (1) as Feminine, Category (2) as Androgynous and Category (3) as Undifferentiated. Results of the logistic regression for each stage of change are presented below in Tables 4.23 to 4.26.

Model for Pre-contemplation

The omnibus test of variables for the *pre-contemplation* stage revealed no significant results suggesting that neither LSE nor GR improve the prediction of stage assignment beyond a constant-only model. Examination of the GR categories did indicate a significant (35.6%) decrease in odds of being in the *pre-contemplation* stage for Androgyny as compared to the reference category Masculinity, but GR overall failed to reach statistical significance as a predictor. Since inclusion of neither of these variables improve the model, further investigation of any interaction between them will not be conducted.

Table 4.23

Logistic Regression Model for Pre-contemplation

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for Exp(B)	
							Lower	Upper
LSE Avg	-.140	.091	2.343	1	.126	.870	.727	1.040
GR Category			4.952	3	.175			
GR Category(1)	-.246	.239	1.053	1	.305	.782	.489	1.250
GR Category (2)	-.440	.222	3.936	1	.047	.644	.417	.995
GR Category (3)	-.011	.257	.002	1	.965	.989	.597	1.637
Constant	.205	.519	.155	1	.694	1.227		

GR Category = Masculine, GR Category (1) = Feminine, GR Category (2) = Androgynous, GR Category (3) = Undifferentiated

Model for Contemplation/Preparation

The logistic regression analysis for the *contemplation/preparation* stage was statistically significant, χ^2 (4, N= 684) = 10.0, p< .05, Nagelkerke R^2 = .02. Results of the Hosmer and Lemeshow test for goodness of fit revealed a non-significant chi-square (χ^2 =3.45, p=.90) indicating a good fit of the model (Tabachnick and Fiddell, 2007). Table 4.24 reports the regression coefficients,

Wald statistics, odds ratios and 95% confidence intervals for odds ratios for each of the predictor variables.

Table 4.24

Logistic Regression Model for Contemplation/Preparation

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for Exp(B)	
							Lower	Upper
LSE Avg	-.192	.089	4.682	1	.030	.826	.694	.982
GR Category			5.467	3	.141			
GR Category(1)	.418	.235	3.157	1	.076	1.519	.958	2.409
GR Category (2)	.457	.215	4.502	1	.034	1.579	1.035	2.408
GR Category (3)	.200	.259	.598	1	.439	1.221	.736	2.028
Constant	.300	.506	.351	1	.554	1.349		

GR Category = Masculine, GR Category (1) = Feminine, GR Category (2) = Androgynous, GR Category (3) = Undifferentiated

According to the Wald statistic =4.68, $p<.05$, LSE is the only significant predictor in the model. An odds ratio below 1.0 as is found for LSE (.826) signifies a negative odds situation indicating that for every unit increase in LSE, the odds of being in the *contemplation/preparation* stage decrease by 17.4%. Similar to the *pre-contemplation* stage findings, although the overall test for GR as a predictor fell short of reaching statistical significance for inclusion in the predictive model, within the GR category, a significant increase (57.9%) in the odds of being in the *contemplation/preparation* stage was found for Androgynous individuals as compared to the reference category Masculine. Interaction effects will not be further explored due to the lack of significant findings related to GR.

Model for Action

The *action* stage was the next stage to be investigated with use of logistic regression analysis. A test of the full model versus the constant-only model was

statistically significant χ^2 (4, N= 684) = 18.12, p< .001, Nagelkerke R^2 = .054. The Hosmer and Lemeshow test again showed a non-significant chi-square (χ^2 =8.0, p=.43) indicating a good model fit. The regression coefficients, Wald statistics, odds ratios and 95% confidence interval are found below in Table 4.25.

Table 4.25

Logistic Regression Model for Action

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for Exp(B)	
							Lower	Upper
LSE Avg	.498	.168	8.745	1	.003	1.646	1.183	2.289
GR Category			5.153	3	.161			
GR Category(1)	.495	.365	1.837	1	.175	1.640	.802	3.354
GR Category (2)	.128	.328	.153	1	.696	1.137	.598	2.163
GR Category (3)	-.615	.537	1.311	1	.252	.540	.189	1.549
Constant	-4.946	.989	25.008	1	.000	.007		

GR Category = Masculine, GR Category (1) = Feminine, GR Category (2) = Androgynous, GR Category (3) = Undifferentiated

The results of the analysis indicated that the only significant predictor was LSE. A 1.65 odds ratio indicates that when holding all other variables constant, for every unit increase in LSE, the odds of a respondent being in the *action* stage increases 64.6%. Again, as only LSE showed a significant contribution to prediction of stage membership, interactions with GR will not be investigated.

Model for Maintenance

The final stage based analysis related to research question #4 is a logistic regression for the criterion variable *maintenance* stage and predictor variables LSE and GR. The omnibus test of model coefficients resulted in a significant chi-square, χ^2 (4, N= 684) = 16.53, p< .01, Nagelkerke R^2 = .040. To determine goodness of fit, the Hosmer and Lemeshow test was again utilized and revealed

a non-significant chi-square (χ^2 =4.73, p=.79) indicating a good fit of the model. Table 4.26 displays the results of the regression model.

Table 4.26

Logistic Regression Model for Maintenance

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for Exp(B)	
							Lower	Upper
LSE Avg	.324	.130	6.181	1	.013	1.383	1.071	1.786
GR Category			5.137	3	.162			
GR Category(1)	-.714	.334	4.586	1	.032	.490	.255	.941
GR Category (2)	-.189	.257	.543	1	.461	.827	.500	1.369
GR Category (3)	-.057	.326	.031	1	.860	.944	.499	1.788
Constant	-3.110	.749	17.226	1	.000	.045		

GR Category = Masculine, GR Category (1) = Feminine, GR Category (2) = Androgynous, GR Category (3) = Undifferentiated

Once again, the overall logistic regression analysis revealed only LSE as a predictor of stage. A positive odds ratio of 1.38 indicates that while holding other predictors constant, for every one unit change in LSE the odds of being in the *maintenance* stage increase by 38%. The overall test for GR as a predictor did not reach statistical significance for inclusion in the predictive model, however, a significant decrease (51.0%) in the odds of being in the *maintenance* stage was found for Feminine individuals as compared to the reference category Masculine. Further examination of interactions was not explored due to the lack of predictive contribution of GR to the overall model.

Research Question 5: Do background characteristics such as age, enrolment status, or year of study and experiences such as program of study, previous leadership experience or leadership education influence stage of change for participation in leadership related activities?

Previous results of cross tabulation of the categorical variables enrolment status, ethnicity, and program of study by stage did not reveal that they were unique contributors to stage assignment and will therefore not be explored here. ANOVAs including year of study, previous leadership training, post-secondary experiences and high school experiences showed some significant effects. Further, Pearson product moment correlations were conducted with the continuous independent variables identified here to determine the nature of the relationship with Stage of Change. Results of the correlations with the 4 stage model are found in Table 4.27 below.

Table 4.27

Correlation Matrix of 4 Stage Model and Demographic and Experiences Data

		Age	Year	Pr. Lead	PS Exp.	HS Exp.	4 Stage Model
Age Group (Age)	Pearson Correlation	—					
	Sig. (2-tailed)						
Year Level (Year)	Pearson Correlation	.127**	—				
	Sig. (2-tailed)	.001					
Previous Leadership (Pr. Lead)	Pearson Correlation	-.117**	.102**	—			
	Sig. (2-tailed)	.002	.008				
Post-Secondary Experiences (PS Exp.)	Pearson Correlation	-.014	.344**	.260**	—		
	Sig. (2-tailed)	.720	.000	.000			
High School Experiences (HS Exp)	Pearson Correlation	-.210**	.067	.356**	.227**	—	
	Sig. (2-tailed)	.000	.078	.000	.000		
4 Stage Model	Pearson Correlation	-.068	.117**	.188**	.539**	.125**	—
	Sig. (2-tailed)	.074	.002	.000	.000	.001	

** Correlation is significant at the .01 level, N=684

Significant positive correlations are found between *stages of change* and year level, previous leadership education, post-secondary experiences and high school experiences. Thus more experience, both post-secondary and high school, and more time in school correspond to higher stage of change for involvement in leadership related activities on campus. Stage by stage presentation of the data is presented in Table 4.28 on page 173.

The *pre-contemplation* stage is positively correlated with age group, and year level and negatively correlated with previous leadership training, post-secondary activity experiences and high school experiences. Examination of the *contemplation* stage reveals only negative correlations with age group, year level and post-secondary activity involvement. The *action* stage is positively correlated with year level, previous leadership and post-secondary experiences. The *maintenance* stage repeats the pattern of positive correlations of the *action* stage in addition to showing a positive correlation with high school experiences.

In summary, there is a relationship between stage of change for involvement in leadership related activities and a variety of individual factors and experiences variables included in the current study.

Table 4.28

Correlation Matrix for Stage of Change and Experiences Data

		Age	Year	Pr. Lead	PS Exp.	HS Exp.	Pre-C	Con-Prep	Action	Maint.
Age Group (Age)	Pearson Correlation Sig. (2-tailed)	—								
Year Level (Year)	Pearson Correlation Sig. (2-tailed)	.127** .001	—							
Previous Leadership (Pr. Lead)	Pearson Correlation Sig. (2-tailed)	-.117** .002	.102** .008	—						
Post-Secondary Experiences (PS Exp.)	Pearson Correlation Sig. (2-tailed)	-.014 .720	.344** .000	.260** .000	—					
High School Experiences (HS Exp)	Pearson Correlation Sig. (2-tailed)	-.210** .000	.067 .078	.356** .000	.227** .000	—				
Pre-contemplation (Pre-C)	Pearson Correlation Sig. (2-tailed)	.132** .001	.174** .000	-.138** .000	-.269** .000	-.139** .000	—			
Contemplation Preparation (Con-Prep)	Pearson Correlation Sig. (2-tailed)	-.112** .003	-.353** .000	-.032 .408	-.228** .000	.051 .181	-.570 .000	—		
Action	Pearson Correlation Sig. (2-tailed)	.050 .188	.079* .038	.103** .007	.190** .000	.014 .718	-.237** .000	-.278** .000	—	
Maintenance (Maint.)	Pearson Correlation Sig. (2-tailed)	-.060 .114	.181** .000	.131** .001	.482 .000	.096* .012	-.314** .000	-.368** .000	-.153** .000	—

**Correlation is significant at the .01 level, N=684

Analysis of Open-Ended Questions

Two open-ended questions were asked as part of the demographic and experiences portion of the survey to provide an opportunity to gain insight into the reasons for ending or beginning active campus involvement. Each of these questions will be addressed individually below to allow for later incorporation into the discussion and recommendations where appropriate.

Demographic and Experiences Question 10: If you participated in high school but not university, why not?

The number of individuals responding to this question was 402. Responses were compiled and data was examined for common themes. Three themes emerged from the responses: time, individual factors and activity factors.

Overwhelmingly, lack of time was cited as a reason for discontinuing active participation. Four sub-themes related to lack of time were apparent. These included working, course load, commuting and family responsibilities. Both full and part time work were cited as a necessity to pay for tuition and living expenses resulting in considerably less free time than was previously available in high school. For example one student commented "while attending university I found I have to work full time in order to pay for all of the expenses associated with university and I no longer have the time to participate in extra activities."

The demands of particular programs or of university in general as opposed to high school were identified as a barrier to continued participation. Some students identified placing a greater emphasis on studies in university

versus high school, heavy workloads and pressure to do well. Below are some examples of student comments related to lack of time as a result of workloads.

"In university courses are more demanding and I have less free time"

"I am at Malaspina to complete my degree. And while I think that extra curricular activities are important, I do not have time in a schedule with a full course load."

"I wanted to concentrate more on my studies and not bog myself down with other responsibilities."

"Don't feel as if I have time...Biology program is very intense"

Commuting to and from campus was indicated as a factor in reducing the amount of time and in some cases flexibility students felt they had available to commit to campus activities. While some students identified not living close to campus, for example, "I don't live close to school and it is a hassle going back and forth" others identified living a considerable distance away and in some cases car pooled, limiting their flexibility for involvement in some activities. Two examples of comments follow: "I live more than an hour away and never made the time", "I live over an hour away from the campus and have no vehicle. I car pool and therefore am not free to commit to volunteer programs that require me to change my schedule at all."

The final sub-theme related to time reflects family responsibilities. Many women indicated having children, spouses and other familial responsibilities that were significant factors in the amount of time available to commit to other activities. Student comments reflecting this sub-theme are included below.

"Fulltime working single parent with two young children to raise. Not much extra time to devote to outside interests on campus."

"Financial and family responsibilities in a single parent environment do not leave much time for other activities when also pursuing studies".

"My time is largely filled with academics and parenthood".

Additionally, a number of students just cited "lack of time" or being "too busy" as a cause for discontinuing involvement without expanding on the reason for having less available time.

Individual factors that students reported as barriers to post-secondary involvement included being shy, being intimidated by the environment or involvement of other students, lacking the confidence in one's ability to participate, being uncomfortable due to not knowing others who may be participating and being new to the university setting. One student comments "when you change to a big university where you don't know anyone, it's very intimidating, and you often feel as if you're not smart enough or have good enough leadership skills to join". "I don't feel confident enough to be part of a leadership position" writes another student.

Shyness and not knowing anyone was a factor indicated by some students as a reason to discontinue participation once in post-secondary education. "I didn't know anyone here when I moved here. I am not a very outgoing person and don't like going to new places where I don't know anyone so joining a new place without knowing anyone was not what I wanted to do" writes one participant. Another student notes "university is a lot bigger with a larger

body of students that I don't know well or at all. In high school I knew my peer group and was comfortable with those that I participated with in events".

Several first year students indicated their desire to get to know the university setting and its demands prior to committing to "extra" activities. One student writes "I am only in first year, so I am getting settled into the whole atmosphere of university". Another first year student comments "I was just waiting to feel out my first year of study. I didn't want to take on too may things at once in my first year at Mal-U, now that I am comfortable with my schedule of schooling and work, and comfortable in Nanaimo, I can join all of the activities that are appealing to me in the coming year".

The last theme emerging from the data for this question is activity factors. Grouped under this theme include students lack of awareness or knowledge of the availability of activities, uncertainty with how to get involved, and the lack of a match between available activities and/or interest in participating in them. Some student comments suggest that they "don't really know a lot about where the programs are started or how", that "available opportunities are not well advertised", and that it is "more difficult to find information about programs". A student compared the difference between ease of involvement in high school versus college as follows "[I am] less aware of how to get involved with things in college. If you want to get involved you have to seek things out where in high school involvement was more easily accessible, things just kind of fell into your lap". This same uncertainty about how to get involved is reflected in the comment "I'm not even really aware of how I would go about joining if I decided I wanted

to". Another student expressing an interest in participating echoed "I would like to participate in certain activities now, but am not entirely sure how to go about doing so, or which activities to join".

A lack of fit between interests and available activities was noted in the observation "there are no clubs established at this particular school that interest me". "I'd rather spend time pursuing my own interests and they don't match up with any of the clubs on campus" explains another student. Other student comments related to this topic reflect simply a lack of interest and/or motivation to become involved in the campus environment.

In summary, responses to *Demographic and Experiences Question #10* reflected the themes of time, individual factors and activity factors with a number of sub-themes emerging in each category. There was often overlap of factors cited by students in explaining change in the level of involvement from high school to university, suggesting complex reasons for discontinuing participation. For example, "not much time, [and] feel I won't be as good as others", or "I have a larger course load and have 3 children of my own now". Overall, the responses to this question took on a negative tone as compared to the responses for *Demographic and Experiences Question #11* as will be described in the following section.

Demographic and Experiences Question 11: If you did not participate in high school but have in university, what prompted you to begin?

Data from the 87 respondents to this question were compiled and scrutinized for common themes. Three themes again surfaced from the data:

personal maturation, activity factors and value of experiences. These three themes will be explored below with supporting comments.

Women attributed their new participation to being older and having more confidence and self-assuredness in university as opposed to when they were in high school. Examples of comments reflecting this attitude are:

> "I am older and have more confidence than when I was in high school."
>
> "I came out of my shell more at university".
>
> "I've gained a wider experience and have become much less shy over the last few years".
>
> "I have participated more in university than high school because it has taken me 28 years to grow into a more confident woman who believes in her abilities".

Activity related factors emerged as a second theme within the responses for this question. Two factors were identified within this theme: the variety of opportunities available and the social benefits derived from involvement. Students suggested that having a wider range of opportunities that corresponded with their interests was a reason for beginning participation at university. One student writes, "The new options are closer to my interests, such as outdoor rec and environmental themed activities, like the world water day". This is echoed by another student who stated "I felt more akin to the activities and experiences available at university. I did not feel in high school I was interested in the kinds of activities that were promoted". Others cite that there is "more opportunity to enroll in programs", "interest in a certain area", and "academic department & club was within my direct interest topics".

An opportunity for networking and meeting others in the same academic program, or those with similar interests, was also identified as an important factor in the decision to participate in campus activities at university. "Networking with other business students" was identified by one student as a reason for participation while another identified "meet[ing] more people who are interested in the same things as myself". Similarly, one woman explains her new involvement as important "to gain a feeling of being integrated and connected to the school and to other students, including those who are in related fields of study and those that I would not have met otherwise". The latter comment suggests a broader rationale for becoming involved in activities that extends the activity specific reasons to the wider university community. The theme of the value of experiences is reviewed next and encompasses this notion.

Women commented on the value of their involvement in campus activities as contributing to their personal and professional growth and providing the opportunity to make a difference to the institution or to other students. Expressions of these ideas are found in the following responses:

> "...when I started university I wanted to take steps to becoming the type of person I say myself being (outgoing, athletic, involved, etc) so I took the opportunity to be a part of my school",
>
> "I try to participate in what affects me personally, in college. Aboriginal issues, teaching or local events",
>
> "I feel that University is a stepping stone to the real world, and the more you push yourself outside of your comfort zone, and be involved with campus activities, the more you can personally develop into the person you want to be outside of the classroom after graduation",
>
> "I wanted a sense of belonging and responsibilities that were meaningful for learning how to be proactive",

> "I was interested in gaining more volunteer experiences for my future career",
>
> "I ...participate to obtain practical experience for a future career. My recent involvement with a student-run NGO is an attempt to gain practical experience by applying what I have learned to a development project and to gain leadership skills",
>
> "I would like to support the school",
>
> "[I] feel like I can make more of a difference",
>
> "I want to participate now because I am in a program and want to give back to my university. I want to create a better experience for all of present and future nursing students".

Demographic and Experiences Question #11 was posed in order to provide insight into the reasons that university women previously uninvolved high school, changed their activity level at university. In examining the responses to these questions the themes that emerged from the data as motivating change in behaviour were personal maturation, activity factors, and the value derived from experiences.

Additional Analyses

In an attempt to gain a better understanding of the role of the study variables as they contribute to female undergraduate students' participation in the campus environment, and to permit further discussion in Chapter 5 as they relate to previous findings in the literature some additional analyses were conducted. The results of these analyses are presented below.

Leadership Self-Efficacy

To examine the relationship between experience factors and LSE and permit further discussion related to a potential mediation effect, an analysis using Pearson correlations was conducted with LSE and experiences factors. Table 4.29 below reports the result of the correlation matrix for these variables.

Table 4.29

Correlation Matrix for LSE and Experiences Variables

		LSE Avg	Pr. Lead	PS Exp.	HS Exp.
LSE Avg	Pearson Correlation	—			
	Sig. (2-tailed)				
Previous Leadership	Pearson Correlation				
(Pr. Lead)	Sig. (2-tailed)	.305**			
		.000			
Post-Secondary	Pearson Correlation			—	
Experiences	Sig. (2-tailed)	.204**	.260**		
(PS Exp.)		.000	.000		
High School	Pearson Correlation				—
Experiences	Sig. (2-tailed)	.157**	.356**	.227**	
(HS Exp)		.000	.000	.000	

**Correlation is significant at the .01 level

Significant correlations are reported for all experience categories. Previous leadership education shows the highest correlation, $r = .305$, $p<.001$, followed by post-secondary experiences, $r = 0.204$, $p<0.00$, and high school experiences, $r = .157$, $p<.001$. A partial correlation was also conducted using the time variables of age group and year level as controls and all three experiences factors retained their significance at the $p<.001$ level.

To permit a broader discussion of leadership self-efficacy results in Chapter 5 an additional one-way ANOVA was conducted to determine if leadership self-efficacy differences were present between the four gender role categories. Significant between group differences were found, $F^*=57.15$, $p<.001$.

Results of the Games-Howell multiple comparisons are found below in Table 4.30.

Table 4.30

Games-Howell Multiple Comparisons for Gender Role on LSE

Gender Role (I)	Comparison Gender Role(J)	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Masculine	Feminine	.6761*	.1008	000	.416	.937
	Androgynous	-.2731*	.0787	.003	-.476	-.070
	Undifferentiated	.8390*	.1132	.000	.546	1.132
Feminine	Masculine	-.6761*	.1008	.000	-.937	-.416
	Androgynous	-.9491*	.0931	.000	-1.190	-.709
	Undifferentiated	.1629	.1236	.552	-.157	.483
Androgynous	Masculine	.2731*	.0787	.003	.070	.476
	Feminine	.9491*	.0931	.000	.709	1.190
	Undifferentiated	1.1120*	.1063	.000	.836	1.388
Undifferentiated	Masculine	-.8390*	.1132	.000	-1.132	-.546
	Feminine	-.1629	.1236	.552	-.483	.157
	Androgynous	-1.1120*	.1063	.000	-1.388	-.836

*The mean difference is significant at the .05 level

Of interest in the present study, respondents classified as possessing a Feminine gender role had significantly lower leadership self-efficacy than either of Masculine and Androgynous gender roles, both $p<.001$. Individuals in the Androgynous gender role group reported significantly higher leadership self-efficacy than all other groups, (vs Masculine $p<.003$, Feminine and Undifferentiated, $p<.001$). Implications of these findings will be discussed in Chapter 5.

Gender Role

In order to discuss potential explanations for stage based findings in Chapter 5, a one way ANOVA was conducted to determine if differences

between gender role categories existed on the demographic and experiences variables of age group, year level, previous leadership education, post-secondary and high school experiences. As in other ANOVAs conducted for this study the Levene statistic to determine homogeneity of variance was conducted prior to selection of ANOVA statistics and post-hoc measures. A non-significant statistic was found for both year level and high school involvement and a significant statistic was found for age group, previous leadership and post-secondary involvement. As a result equal variances were assumed for the former variables and utilized the ANOVA F statistic, whereas non-equal variances were assumed for the latter variables and the Brown-Forsythe F* statistic was used. Significant differences between the gender role categories were determined for previous leadership education and post-secondary experiences, $F^* = 9.485$, $p < .001$ and $F^* = 6.943$, $p < .001$ respectively. The Games-Howell post-hoc analyses for unequal groups and unequal variance identified significant between group differences. Masculine and Androgynous individuals showed significantly more previous leadership education and more post-secondary experiences than either Feminine or Undifferentiated individuals. Results of the post-hoc analyses are found below in Table 4.31.

Table 4.31

Games-Howell Multiple Comparisons for Gender Role and Previous Leadership, Post-Secondary Experiences

Dependent Variable	Gender Role (I)	Comparison Gender Role(J)	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Previous Leadership	Masculine	Feminine	.306*	.106	.021	.03	.58
		Androgynous	-.071	.108	.913	-.35	.21
		Undifferentiated	.420*	.117	.002	.12	.72
	Feminine	Masculine	-.306*	.106	.021	-.58	-.03
		Androgynous	-.378*	.098	.001	-.63	-.12
		Undifferentiated	.114	.108	.718	-.17	.39
	Androgynous	Masculine	.071	.108	.913	-.21	.35
		Feminine	.378*	.098	.001	.12	.63
		Undifferentiated	.491*	.111	.000	.21	.78
	Undifferentiated	Masculine	-.420*	.117	.002	-.72	-.12
		Feminine	-.114	.108	.718	-.39	.17
		Androgynous	-.491*	.111	.000	-.78	-.21
Post-Secondary Experience	Masculine	Feminine	.413*	.123	.005	.10	.73
		Androgynous	.015	.129	.999	-.32	.35
		Undifferentiated	.417*	.132	.009	.08	.76
	Feminine	Masculine	-.413*	.123	.005	-.73	-.10
		Androgynous	-.398*	.119	.005	-.71	-.09
		Undifferentiated	.004	.123	1.000	-.31	.32
	Androgynous	Masculine	-.015	.129	.999	-.35	.32
		Feminine	.398*	.119	.005	.09	.71
		Undifferentiated	.402*	.128	.010	.07	.73
	Undifferentiated	Masculine	-.417*	.132	.009	-.76	-.08
		Feminine	-.004	.123	1.000	-.32	.31
		Androgynous	-.402*	.128	.010	-.73	-.07

* The mean difference is significant at the .05 level

Chapter Summary

This chapter has described the characteristics of the respondents and initial aspects of the data using descriptive statistics. Significant stage based differences on the continuous variables Leadership Self-efficacy, age, year level, previous leadership, and post-secondary and high school experiences were

determined with the use of one-way analysis of variance and subsequent post-hoc analyses. Cross-tabulations of categorical demographic variables ethnicity, enrolment status and program of study failed to reveal any significant findings that could not be explained by other study factors. Correlation, cross tabulation and logistic regression procedures responding to the research questions also revealed significant findings. Significant correlations were found between Leadership self-efficacy and stage of change and previous experiences and *stages of change*. Cross-tabulation of gender role with *stages of change* also revealed significant findings. Logistic regression involving the combined contributions of gender role and leadership self-efficacy to stage of change revealed a significant overall contribution of leadership self-efficacy only in explaining the variance in stage of change. Additionally, an examination of the responses to the two open-ended questions as part of the demographic and experiences data revealed a number of themes and sub-themes that may contribute to explanation of statistical findings. A thorough discussion of these results, subsequent conclusions and recommendations for future research arising from this study follows in the next chapter.

CHAPTER 5

DISCUSSION

The purpose of this study was to explore the applicability of the Transtheoretical Model to undergraduate women's participation in leadership development activities and the contribution of factors that may influence their intention to participate. The framework for the study as outlined at the end of Chapter 1 incorporates both "internal" or individual specific factors and "external" or context specific factors that influence one's intentions to become involved in a given activity. The current study investigated the relationship of two "internal" variables that have been reported to influence women's choice of involvement in a variety of activities: self-efficacy for leadership and gender role orientation. Additionally, one "external" variable, perception of institutional climate provided a measure of context. Research has supported the notion that certain environments are more supportive of women and contribute to improved outcomes including leadership related outcomes (Riordan, 1992; Whitt, 1994). Therefore perception of institutional climate was included in this study as a possible factor involved in women's intention to participate. Demographic and experiences variables were also included as a result of their potential contribution to stage of change for participation and association with other study variables.

This chapter discusses the significant findings of the study organized into subsections for *stages of change* and research questions 1-3. Due to the integrated nature of findings related to research questions # 4 and 5, discussion regarding these results is incorporated into the other subsections. The discussion

begins by considering the *stages of change* separate from other findings. Limitations of the study and recommendations for future research and for practice follow the discussion section. Conclusions from the research complete the chapter.

Stages of Change

Participants in the current study self-reported their intention to participate in campus activities by completing a staging algorithm which placed them in one of five stages based on their response. Use of an algorithm is one of two staging methods employed for such a purpose and has been found to be an accurate method of staging if a clear, well-defined description of each of the *stages of change* is used in conjunction with response criteria that individuals can understand and easily apply (Reed et al., 1997).

Results of the stage categorization in this study indicated 73 % of respondents were within the pre-action stages of *pre-contemplation*, *contemplation* and *preparation* and 27% of respondents were within the *action* and *maintenance* stages. Of those in pre-action stages, 45.7 % were in *pre-contemplation*, 50.1% were in *contemplation* and 2.7% were in the *preparation* stage. Overall, this result suggests that the majority of the population surveyed is not yet prepared to take action for participating in leadership related activities. This result is consistent with research of other behaviours studied utilizing the Transtheoretical Model (Fava et al., 1995; Marcus and Owen, 1992; Rapley & Coulson, 2005; Sarkin et al., 2001; Tucker et al., 2002).

The lower percentage of participants in the *preparation* stage is also consistent with the pre-action (*pre-contemplation*, *contemplation* and *preparation*) stage distributions common in other behaviours such that *preparation* represents the lowest proportion of the three groups (Bull et al., 2001; Etter et al., 1997; Harlow et al., 1999; Rapley & Coulson, 2005). The small number of participants in the *preparation* stage may be a result of the time of year that the survey was distributed (March). The *preparation* stage is defined according to an individuals' intent to take action in the next 30 days, therefore it is possible that as students were coming to the end of their school semester while they intended to take action in the future, they were not prepared to do so within the next 30 days (*preparation*) but in the next academic year (*contemplation*). This would account for the higher percentage of respondents in the *contemplation* stage as well. While this is one possible explanation for the lower frequency reported, it is also possible that there are variables related to the individuals on this campus, or their intent to participate in campus activities that account for the response. Results of the open ended question (demographic question #10) asking individuals who were formerly active in high school their reasons for not participating in university suggest that some students lack awareness about the availability of activities on campus and report uncertainty about how to get involved. If these students are interested in getting involved but do not know how to join, where to go, or who to ask about their potential involvement, they would be "stuck" in the *contemplation* stage unable to take initial steps which would move them to *preparation*. An additional possibility regarding the lack of *preparation* respondents is that this

stage is not applicable in the context of participation in leadership activities. Harris and Cole (2006) stated that "*preparation* is oftentimes treated and measured more as a transition phase...than a distinct stage" (p.11). Continuous measures of the *stages of change* often do not include *preparation* as a separate stage but rather infer *preparation* from high scores on both *contemplation* and *action* scales (Brogan et al., 1999; McConnaughy et al., 1989; Prochaska et al., 1992). Levesque, Prochaska and Prochaska (1999) failed to identify any subjects in the *preparation* stage in their case study investigating use of the TTM in an integrated service delivery initiative at a university. DiClemente et al. (1991) however suggested that the *preparation* stage better characterizes the intention to act than the *contemplation* stage alone so recommended its inclusion in studies of *stages of change*. Further research examining the *preparation* stage is required to clarify the nature of this stage in the current context.

As a result of the low number of respondents in the *preparation* stage, some of the analyses were unable to include *preparation* as a separate stage so further examination of variables related to this group was not possible. The combination of the *preparation* stage with the *contemplation* stage, a practice consistent with other examinations of the Transtheoretical Model (Tucker, et al. 2002), did however provide the opportunity to gain insight into the factors related to the *preparation* participants' intention to participate in the future.

Both similarities and differences among and between adjacent stages were identified in this study. Among the pre-action stages, students within the *pre-contemplation* stage were older ($p<.002$) and at a higher year level ($p<.001$)

in school as compared to those in the *contemplation* stage. They were also found to have lower leadership self-efficacy and previous leadership and post-secondary experiences than women within the a*ction* and *maintenance* stages ($p<.004$ for all comparisons). It is possible that women in *pre-contemplation* had no intention to participate as they had other priorities, were finishing their studies or lacked the knowledge or efficacy to become involved. One woman noted in an unsolicited comment that "ageism, not sexism was a problem on this campus". While this is only the comment of one individual it points toward a possible reason that older women may not intend to participate in leadership-related activities on campus.

Contemplation students were the youngest of all stage participants reaching statistical significance for comparison with *pre-contemplation* ($p< .002$) and at the lowest year level of all other groups except *preparation* ($p<.001$ vs *pre-contemplation, action* and *maintenance*). Lower involvement in previous post-secondary experiences as compared to *action* ($p<.001$) and *maintenance* ($p<.001$) was also reported in this group suggesting that they had not yet had the time to engage in such experiences. Their intention to participate in activities in the next academic year suggests their desire to expand their range of experiences but also reflects a hesitation to act as yet. Responses to the *demographic and experiences question #10* suggest that some students wanted to become accustomed to the university environment before committing to involvement in other activities. For example, one student wrote that she was "just waiting to feel out my first year of study....now that I am comfortable with my

schedule of schooling and work, and comfortable in Nanaimo, I can join all of the activities that are appealing to me in the coming year". Other factors that may influence these students intention to participate, but not yet act, such as leadership self-efficacy and gender role orientation are discussed in the following sections.

The algorithm utilized for the current study was able to differentiate individuals based on their intention to participate in leadership related activities. When considering the desire to expand the pool of female students involved in leadership activities the pre-action stages of *pre-contemplation*, *contemplation* and *preparation* are of import as the women in these stages are not yet participating. In particular, the results related to the *contemplation* and *preparation* stages are of interest as they provide an indication of individuals who are next most likely to become involved. Throughout the remaining sections investigating the other variables of the study these stage based findings are highlighted.

Research Question 1: Is there a relationship between female college students' stage of change for participation in leadership related activities and leadership self-efficacy?

Bandura (1997) suggests that self- efficacy beliefs are domain specific and influence one's choice of activity, persistence and effort in activity, response to one's own thoughts regarding their abilities, facility to cope with adversity and the level of accomplishment realized. In response to research question # 1 the relationship between an individuals' leadership self-efficacy (LSE) and her intention to participate in leadership related activities on campus (stage of

change for participation) was investigated. Findings from the research support the notion that higher levels of self-efficacy are associated with one's choice to engage in a particular activity as *stage of change* was found to be positively correlated with LSE ($r=.175$, $p<.001$). One-way analysis of variance and post-hoc comparisons of stage based differences showed that women in the *action* and *maintenance* stages ie. those choosing to participate in leadership-related activities, showed significantly higher levels of leadership self-efficacy than those in the non-action stages of *pre-contemplation* and *contemplation* ($p<.004$ for all comparisons). No significant findings were reported for the *preparation* stage which may reflect the small number reported in this stage. Although statistically significant differences were not present between every stage of change, a general linear trend of increasing self-efficacy across *stages of change* was apparent, except for a slight but non-significant decline between the *action* and *maintenance* stages. Since this is a non-significant finding it may not represent any difference in self-efficacy however, it is worth noting as it does not show an increase beyond the *action* stage scores as would be expected from the Transtheoretical Model. A possible explanation of this finding is the nature of the task being performed. Stajkovic and Luthans (1998) suggest that for complex tasks, individuals must have an accurate knowledge of the task one is trying to accomplish otherwise a faulty assessment of the task will lead to a faulty assessment of efficacy. Leadership has often been acknowledged as a task requiring a complex set of skills and abilities to enact (Burns, 1978; Northouse, 2004). It is possible, that someone new to participation in leadership activities

has not been exposed to enough different experiences or does not fully comprehend the tasks involved to accurately judge their own ability, potentially inflating their self-efficacy assessment. Those in the *maintenance* stage however, who have been involved over a longer period and are more aware of the nature of the activity, may provide a more realistic assessment of their abilities, attenuating their self-efficacy appraisal.

Leadership Self-efficacy and Demographic and Experiences Variables

The relationship between leadership self-efficacy and *stages of change* was found to be independent of age group and year level in a partial correlation analysis suggesting that increases in self-efficacy were not simply a result of maturation. When controlling for previous experiences (previous leadership, post secondary experiences and high school experiences) however, the relationship between leadership self-efficacy and *stages of change* failed to reach statistical significance suggesting that these experiences are at least in part responsible for the relationship between LSE and *stages of change*. Since past accomplishments have been found to alter self-efficacy beliefs (Bandura, 1997), it is likely that they play a mediating role in influencing *stages of change*. To support this notion, a significant relationship between previous experiences and *stages of change* and leadership self-efficacy and previous experiences would also need to exist (Baron & Kenny, 1986). Pearson correlations conducted for research question #5 confirmed significant relationships between the three previous experiences variables (previous leadership education, post-secondary and high school experiences) and the *stages of change* (r=.188, r =.539, r=.125,

p<.001 respectively). Additionally, findings in Chapter 4 revealed significant positive relationships between LSE and previous leadership education, post-secondary and high school experiences, (r=.305, r=.204, r=.157, p<.001, respectively) such that in all cases, the greater the frequency of these experiences the higher the leadership self-efficacy reported. McCormick, Tanguma and Sohn (2002, 2003), Kane and Baltes (1998) and Kane et al. (2002) lend support for this finding as they also reported significantly higher levels of leadership self-efficacy in individuals with a greater number of leadership experiences. Of practical interest in assisting students to increase their leadership self-efficacy is the number of activities required to recognize a significant improvement in efficacy. The current research identified that only one leadership training experience was necessary to recognize a significant (p<.01) increase in leadership self-efficacy. Komives (2006, personal communication) confirms this finding in preliminary results of the multi-institutional study of leadership of over 165,000 students across 52 institutions in the United States. It is however unclear what kinds of experiences or training opportunities account for this difference. Further examination of the nature of these experiences would be helpful in designing opportunities, both in and out of class, to foster efficacy development.

Leadership Self-efficacy and Gender Role

The examination of gender role orientation and LSE identified significant differences between gender role categories. Individuals with an Androgynous and Masculine gender role had significantly higher levels of leadership self-

efficacy than the Undifferentiated and Feminine gender role categories ($p<.001$ for all comparisons). Studies have reported higher leadership self-efficacy for men as opposed to women (Kane et al., 2002; McCormick et al., 2002; Schyns & Sanders, 2005; Tsui, 1998). To the researchers' knowledge only one study however has been found that investigates leadership self-efficacy and gender role orientation as opposed to biological sex. McCormick, Tanguma and Sohn (2003) reported that women who scored high on Masculine gender role characteristics had higher levels of leadership self-efficacy and more leadership-related experiences than those who scored lower. This finding which incorporates both Masculine and Androgynous gender role categories, supports the findings of the present research.

The results of the current study also indicated that the Androgynous category had significantly greater leadership self-efficacy than the Masculine category ($p<.003$). The reasons for this difference are unclear, but could relate to changing conceptions of leadership as relational and process oriented (Komives et al., 1998; Rost, 1993). While leadership has traditionally been considered a masculine activity (Schein, 2001), it is now also being thought to require a number of traditionally feminine skills and abilities. Androgynous individuals who score highly on both the masculine and the feminine scales may perceive themselves to possess both the traditional masculine, "get the job done" characteristics (Bem, 1981) associated with leadership and the interpersonal attributes necessary to successfully enact relational leadership (Komives et al., 1998). Androgynous individuals have been reported to be the most adaptable of

the gender role categories as they are not restricted to behave according to an internalized sex-role standard but can "engage in whatever behaviour seems most effective at the moment" (Bem, 1975, p. 635). Further findings related to gender role orientation and *stages of change* are reported in the following section.

Research Question 2: Is there a relationship between female college student's stage of change for participation in leadership related activities and gender role?

The second "internal" variable considered as a potential contributor to the choice to participate in activities was gender role orientation. Gender role orientation refers to the relative presence of feminine and masculine characteristics in an individual. Some researchers have proposed that individuals will participate in or avoid activities based on their congruence with gender role (Eagly & Karau, 2002; Ritter & Yoder, 2004). Leadership has been traditionally identified as a masculine activity (Schein, 2001) therefore suggesting that women possessing a Masculine or Androgynous gender role would likely choose to participate in leadership related activities and those with a Feminine gender role would not. As a result the present study aimed to investigate the function of gender role in influencing differential participation in leadership related activities.

Initial examination of the gender role distribution illustrates that one third of the survey respondents were categorized as Androgynous suggesting that these women attained high scores on both the masculine and feminine scales. Approximately one quarter of the sample were identified as possessing a Masculine gender role orientation and one quarter of the sample Feminine, with

the remaining individuals identified as Undifferentiated, ie. scoring low on both the masculine and feminine scales. An examination of stage based findings revealed several significant differences. To begin, an overall comparison of the pre-action stages of *pre-contemplation*, *contemplation/preparation* and the action stages of *action* and *maintenance* by gender role show a grouping of categories. The Masculine and Androgynous categories and the Feminine and Undifferentiated categories show similar frequency results. A higher proportion of Masculine and Androgynous individuals (31.2% and 32% respectively) occupied the action stages as opposed to those in the Feminine (21.7%) and Undifferentiated (20.3%) categories. These differences reached statistical significance ($p<.05$) for the comparison between Androgynous-Feminine, Androgynous-Undifferentiated and Masculine-Undifferentiated pairings and approached significance ($p<.06$) for the Masculine-Feminine pair. These data suggest that those with a Masculine or Androgynous gender role are more likely to take action for involvement in leadership-related activities than those with a Feminine or Undifferentiated gender role. This finding supports the achievement orientation reported for women with Masculine and Androgynous gender roles (Alagna, 1982; Major, 1979) and the "cognitive focus on getting the job done" (Bem, 1981, p.18) associated with masculinity.

These data also support the notion that women with Masculine or Androgynous gender roles will choose to participate in leadership, a traditionally masculine activity(Schein, 2001).This would suggest that despite more recent ideas about the effectiveness of relational leadership and the match with

feminine attributes such as collaboration and interconnectedness, leadership is still being perceived by many in traditional terms, defined by male norms (Duehr & Bono, 2006; Eagly, 2007; Schuck & Liddle, 2004;Sczesny, 2004). In order to advance the practice of relational leadership that supports a broad range of participation accessible to men and women it will be necessary to broaden the definition of what it means to be a successful leader. By incorporating the attributes and competencies of both men and women into an integrated model of leadership, the resulting new non-gendered norm allows for the participation of individuals in leadership who demonstrate those competencies regardless of gender (Cooper, Eddy, Hart, Lester, Lukas, Eudey, et al., 2007).

Of particular concern in the present investigation is the nature of the *contemplation/preparation* stage as it corresponds to the women considering involvement. The results related to the *contemplation/preparation* stage and gender role reveal that a high percentage (45.2%) of women with a Feminine gender role orientation occupy this stage, a significantly greater percentage than those with a Masculine gender role. Women with a Feminine gender role orientation have been reported to have lower leadership self-efficacy (McCormick et al., 2003) which limits their involvement in leadership-related activities. McCormick et al. (2003) stated that "the more masculine-type behaviours a person had incorporated into their self-concept, the greater was the number of leadership-related developmental activities engaged in. And the more leadership-related developmental experiences a person had encountered, the greater was his or her leadership self-efficacy" (p.12).This finding was supported in the

current research which demonstrated that women with a Feminine gender role orientation had significantly lower levels of leadership self-efficacy than either Masculine or Androgynous women. Additionally, significantly fewer leadership training experiences and post-secondary experiences were reported by these women. No differences in age, year level or high school experiences were detected between gender role categories suggesting that at least in part, the activities that women engage in while at university matter and encouraging the involvement of all women is important.

Since these women have indicated an intention to participate in the future (*contemplation* stage), it seems reasonable to assume that their lack of participation is not the result of a lack of desire but to other factors which are limiting their involvement. Beyond the lower levels of self-efficacy indicated above, women with a Feminine gender role have been reported to have lower levels of self-esteem (Boatwright& Egidio, 2003; Hoffman & Fidell, 1979) and are more introverted (Hoffman & Fidell, 1979) than those identified as Masculine or Androgynous which may play a role in attenuating active involvement. Results of the qualitative analysis of *demographic and experiences question #10* lend support to the notion that introversion may limit involvement. For example, one student noted, "I am not a very outgoing person and don't like going to new places where I don't know anyone". The significant role that peers play in the lives of undergraduate students has been reported by Astin (1993) and the desire to be accepted by peers and to be evaluated positively is of particular concern to women with a Feminine gender role (Bem, 1975; Boatwright & Egidio, 2003).

One student's response to the qualitative question referred to above reflects this awareness of the potential for peer evaluation in her comment "most people within the clubs or activities have a bond or friendship with others, so I would be the odd one out and would not have the nerve to give my opinion". If women with a Feminine gender role lack confidence in their abilities and are fearful of the situations in which leadership-related activities are conducted then their desire to become involved may be hampered by these concerns, stalling their transition to action. Investigations of decision making and the *stages of change* suggest that individuals weigh the pros and cons of engaging in a particular behaviour differently across the stages (Brogan et al., 1999; Ling & Horwath, 2001; Velicer et al., 1985; Ward, Velicer, Rossi, Fava & Prochaska, 2004). In pre-action stages individuals perceive the cons or disadvantages of moving to action to be higher than the pros (advantages) which limits stage transition. At later *stages of change* the advantages outweigh the disadvantages supporting transition to action. Women in the current study who became involved in campus activities while in university and therefore represent women within later *stages of change* highlight the benefits of involvement in their responses to *demographic and experiences question #11*. Opportunities for networking and meeting others, developing skills and abilities for future careers, and gaining practical experience were cited as reasons for becoming involved. Further examination of the perceived pros and cons of involvement in leadership-related activities of women within the *contemplation* stage would provide insight for programmatic interventions to reduce negative beliefs and increase the perception of the

benefits of participation to enable transition to action. Additionally, engaging women in the *action* and *maintenance* stages to highlight the advantages of participation may be useful for exposing pre-action women to ideas not previously considered.

An alternative explanation for the Feminine women's desire to participate but failure to act is the enhanced priority placed on other activities in one's life and the finite amount of time available. Women with a Feminine role orientation place a high value on caring, concern for the welfare of others and family relationships (Bem, 1981, Eagly and Chrvala, 1986, Hoffman & Fiddell, 1979) and rather than spend time in activities on campus place priority in caring for significant others. Women reported a lack of time as a result of child rearing responsibilities and desire to spend time with family as barriers to involvement.

While some significant results related to gender role orientation were found in the current study, gender role did not enter as a significant predictor in any of the stage based regression analyses conducted suggesting that other variables, in this case leadership self-efficacy, play a stronger role in stage assignment. Since women with a Feminine gender role orientation report lower levels of leadership self-efficacy and fewer experiences in which efficacy could be developed, clarifying the variables which either limit or prevent opportunities for this group is required.

Research Question 3: Is there a relationship between female college students' stage of change for participation in leadership related activities and perceived institutional climate?

The examination of perceived institutional climate revealed no stage based significant findings. Female students at this institution did vary in their perceptions of climate but the variance was similar across all *stages of change*. The mean score of 61.4 was well below the mid-point of the scale (ie. 112) suggesting that most female students do not view the climate at this institution as "chilly". A review of the frequency of scores revealed that only 3% of the population studied reported scores above the mid-point of the scale. The institution of investigation is a mid-sized university-college which has evolved from a mandate of providing access to a wide range of students and a focus on teaching and personal interaction (MacDonald, 1962). Fostering student success by maintaining small class sizes within a personal atmosphere and providing "the best possible teaching/learning environment" (Malaspina University-College, 2006, p. 16) are identified as key institutional strengths in institutional planning documents. It appears that most students at this institution do not perceive the environment to be negative. It is unclear if stage based differences in participation may exist in a different institution where perceptions of climate are "chillier" as in the study by Janz and Pyke (2000).

While no significant findings were derived from the PCCS, individual perceptions of the environment do appear to influence intention to participate as evidenced in the analysis of qualitative responses to *demographic and experiences question #10.* Some students indicated being intimidated by the

university environment and/or other students as reasons for not continuing participation in leadership related activities after high school. This response may reflect individual or situational factors as opposed to overall perceptions of climate. Additional variables that have been reported in the literature to limit women's aspirations for leadership and may help to explain reluctance to become involved include: fear of negative evaluation (Boatwright & Egidio, 2003), fear of loss of approval from peers (Leonard & Sigall, 1989) and low self-esteem (Boatwright & Egidio, 2003, Dickerson & Taylor, 2000). Astin (1993) suggested that the "single most potent source of influence on growth and development during the undergraduate years" (p. 398) is one's peers. Given the importance of peers, women with lower levels of self-esteem and fear of negative evaluation or loss of approval would perceive situations such as campus leadership activities which involve peer interactions as intimidating and therefore choose not to participate. Examination of these individual potential factors may provide a better indication of one's intention to participate than an overall climate measure does.

The instrument utilized to assess perceptions of institutional climate was designed to gauge the overall environmental bias and may not have captured particular aspects of the context in which leadership related activities take place. Additionally, there was inherent difficulty for some students in generalizing their experiences. For example, after completing the instrument one student commented that she had participated in two different programs "one was good and the other one wasn't" and she was unclear about how to respond. Similar difficulties in generalizing across experiences may have existed for other

students and therefore influenced climate scores. A large standard deviation found for this measure may also have contributed to a lack of significant findings.

Limitations

While interpreting the results of the current study limitations associated with the population and timing of the investigation, the research method utilized and the variables measured should be noted. The population of study was from a single university-college in British Columbia. Women who attend this institution may not be representative of undergraduate women at other types of institutions or in other locations. Additionally, although all university-credit women were invited to participate, only some volunteered to complete the entire survey. Those women who chose to respond may differ in some way with non-respondents. The characteristics of the participants as noted in comparisons with institutional data presented in Chapter 4 however are similar to the overall population studied and would suggest, though not confirm their representativeness. As well, only some demographic and experiences data were collected from population and it should be noted that there may be other potential variables of the population such as socioeconomic status that could be an important consideration for intention to participate. As a result of the above population related factors, caution should be exercised in generalizing any findings.

The time of year that the survey was distributed may have influenced students' intention to participate in leadership-related activities. The survey was distributed in March as the spring semester was coming to an end. Students may

have been unsure of their plans for the next academic year or may have been completing their studies. Distribution of the survey at a different time of year may have produced different results. The *preparation* stage for example indicates intention to take action in the immediate future (next 30 days). As many students were leaving for the summer at semester's end they may have "put off" taking next steps towards action until the next academic year. Combination of the *contemplation* and *preparation* stages as conceptually similar did however allow for inclusion of both states of readiness for action. Study at an earlier point in the year would be helpful to delineate the nature of *preparation* stage distribution more clearly.

The second area of limitation concerns the research method utilized. A survey questionnaire which involved self-report on a variety of instruments and demographic information was employed. Reliance on self-report data assumes that individuals will respond accurately and honestly (Hutchinson, 2004). Researchers can improve the likelihood of obtaining accurate and honest responses by requesting information that is known to the respondent and by providing clear, unambiguous questions that refer to recent events (Brener et al., 2003, Kuh, 2001). In cases where information that is of a sensitive nature is requested there is a potential for answering in a socially desirable or approval seeking way (Fowler, 2002). Ensuring privacy and confidentiality of responses reduces the likelihood of this eventuality (Fowler, 2002, Gall et al., 1996). The survey instrument utilized for the current study requested information of respondents that they had knowledge of and the questions were posed in clear

simple language. The Perceived Chilly Climate Scale was the only portion of the survey that included questions which may have been interpreted as sensitive by some respondents. In a previous study, socially desirable answering as measured with the Marlowe-Crown Social Desirability Scale (Reynolds, 1982) was not found (Janz and Pyke, 2000). Additionally, respondents were guaranteed confidentiality of their results and were free to discontinue participation at any time increasing the potential for honest responses. Schwarz (1999) suggests that "respondents do their best to be cooperative communicators" (p.103) as they provide information that they believe to be relevant and important to the goal of the researcher.

An additional assumption of the current research was that the individual invited to participate in the electronic version of the survey was indeed the one who responded. A password was required to log onto the on-line version of the survey and students provided an identification number upon completion. Although this process does not prevent someone other than the intended recipient from responding it reduces the possibility of such an occurrence.

The third area of limitation is associated with the measurement of study variables and restriction of the scope of the activities investigated. The focus of the current study was on-campus leadership-related activities. Development of leadership skills and abilities can occur in many settings, and involvement in leadership-related activities in the broader community may have provided a different picture of undergraduate women's *stages of change* and associated variables. Since a goal of this research was to identify factors that would assist

practitioners as they encourage and support women's involvement on campus, beginning by examining the campus environment was justified. Further research which expands beyond the bounds of the university campus may also prove fruitful for informing such practice.

With survey questionnaire research, the data collected are defined by the instruments utilized and response categories provided. Respondents were constrained to answer within the response format given and were not afforded the opportunity to elaborate on their perceptions. While the inclusion of two open-ended questions allowed for some explanation by respondents, they only related to two specific situations.

The "internal" and "external" constructs investigated in this study do not represent the entire range of variables that may play a role in *stage of change* for involvement in leadership-related activities, only a starting point for investigation. Other variables, for example family experiences and support, peer relations, travel/study abroad or self-esteem were not included in the study but may also play a role in *stage of change*.

Involvement in previous experiences was measured only as frequency of involvement (quantity) rather than also incorporating a measure of quality or intensity of involvement. Astin (1999) suggests that involvement has both quantitative and qualitative features and that the amount of development is directly related to both the quality and quantity of involvement. As involvement in previous experiences was identified as significantly related to stage of change, a

measure of quality of involvement may have provided further elucidation of this relationship.

As indicated earlier, the instrument used to measure perception of institutional climate may have been problematic for students attempting to generalize across all of their in and out of class experiences at the institution. A large variance in scores was found suggesting that women may have varied in their ability to respond to the instrument or that students do indeed experience the campus climate differently. Reliability of the PCCS was found to be similar to the original study by Janz and Pyke (2000) and standard deviations were also similar suggesting that differences in perception of campus climate are indicated. Overall, at this institution students did not have perceptions of the climate as biased. Forrest, Hotelling and Kuk (1984) noted that even though perceptions of bias may not be present, a "null environment" which does not intentionally encourage students may be just as discouraging. Rather than investigating the negative impact of climate on participation as the approach taken in this study, it may be more important to examine the supportiveness of the environment for encouraging involvement.

A fourth limitation is related to the field of study of women's leadership. A focus on women in leadership sets up a dichotomy (male/female) through which to view attitudes, behaviours and practices. In doing so, differences are maximized, there is a tendency to view everyone within a category as identical and an adversarial condition is promoted whereby one category is valued as superior to another (Indvik ,2004). "The disadvantage of such a focus is that

individuals' sex can become the only or the primary attribute identifying them, rather than one of many attributes that may affect their worldview or experience" (p. 283). Adopting a more pluralistic view as suggested by Kezar (2000, 2002) where an individuals' multiple, overlapping roles (eg. gender, race, class, organizational position) within a particular context are considered in tandem may provide a more integrated and realistic assessment of a variety of aspects of leadership. Use of positionality theory (Kezar, 2000, 2002) or intersectionality (Stewart & McDermott, 2004) as a basis for future investigations may prove fruitful. Nevertheless, studies of gender continue to uncover important insights for practice in an attempt to encourage and support women in their leadership aspirations.

While there are many different definitions and interpretations of what constitutes leadership (Rost, 1993) it is unknown how the respondents in this study viewed leadership. It is possible that an individual's "working definition" of leadership may have influenced her response to both the staging algorithm and the general leadership self-efficacy scale. Clarifying the nature of these perceptions in future examinations may be desirable.

A final caveat in regard to the current research is that as a correlational study, one cannot assume cause and effect of any of the relationships revealed. Further experimental studies would be required to establish this connection.

Recommendations

For Research

The conduct of this exploratory study has generated a number of potential avenues for future investigation which can contribute to the literature related to the participation of undergraduate women in leadership-related activities.

The *stage of change* construct of the Transtheoretical Model appears to provide a useful framework for examining the differential participation of students in leadership- related activities. Extension of the use of this model to include the *decisional balance* construct would illuminate the inhibiting and empowering factors associated with an individuals' intention to participate. Additionally, examining the *processes of change* construct identifying the cognitive and behavioural activities that individuals engage in as they transition across stages would provide insight into practical approaches to encouraging active participation. Incorporation of these two constructs in addition to the self-efficacy construct already investigated would provide a holistic approach to encouraging change. An interested reader may see Prochaska and Norcross (2001) and Prochaska et al. (1994) regarding processes of change and decisional balance. While not a construct of the transtheoretical model, also incorporating an examination of the role of motivation within the *stages of change* framework may help to explain the underlying processes that drive intent to participate and provide further insight into our understanding of the initiation and persistence in leadership activities.

The current study utilized a cross-sectional design to examine *stages of change*. A longitudinal study which investigates change over time would provide a more complete picture of the factors involved with stage maintenance or transition. Additionally, incorporation of an experimental or quasi-experimental approach would allow for causal attribution of variables influencing stage transition.

Replication of the current study at other institutions and institutional types and at different times of the year may round out the picture of *stages of change* for participation in leadership-related activities. Different results may arise from larger institutions or institutions with a more ethnically diverse population. Additionally extending this study to a mixed gender population may provide additional insight.

Stage based examinations may prove useful to further elucidate initial findings reported here. In order to expand and encourage the participation of more women, learning more about those within the *contemplation* and *preparation* stages would be appropriate. Examining fear of negative evaluation and self-esteem in women with a Feminine gender role within this stage may help clarify the potential barriers to movement to action. Additionally, deeper investigation with use of qualitative methods is another potential extension of stage based research. Particular examination of students within the *contemplation* or *preparation* stages may provide rich detail concerning the factors that encourage or inhibit movement to action.

Given the significant findings related to leadership self-efficacy and previous leadership and post-secondary experiences it seems justified to further examine the nature of these relationships. Are some experiences more important than others? Does quality of involvement matter? How does leadership self-efficacy develop and change across *stages of change*? Examining these questions would assist practitioners in their work to structure the conditions necessary for student development.

Finally, the current research could be expanded to incorporate the relationships discovered here with additional potential variables to build a model of *stages of change for participation in leadership related activities*. The specification of a model would be helpful in clarifying complex relationships amongst a number of variables. Structural equation modeling (SEM) could be used to test and evaluate the model's effectiveness and simultaneously analyze combinations of discrete and continuous variables. SEM takes a "confirmatory (hypothesis testing) approach...that stipulates causal relationships among multiple variables [with a goal of determining] whether a hypothesized theoretical model is consistent with the data collected to reflect this theory" (Lei & Wu, 2007).

For Practice

Findings of the present research provide some guidance for educators interested in encouraging the leadership participation of female undergraduate students. While these recommendations may only be applicable to the current

research setting more global ideas about engaging students in other settings may be sparked.

Several implications for practice follow from the results regarding leadership self-efficacy and will be discussed first. Faculty should recognize the value of introducing a variety of experiences both inside and outside of the classroom to allow for opportunities to practice leadership and for their potential to enhance the leadership self-efficacy of students. As time was reported as a barrier for many individuals, activities that can be integrated into class work may provide a necessary boost in students' beliefs in their abilities and catalyze their intention to become involved outside of the classroom. Moreover, faculty may be able to play an important role in enhancing the leadership self-efficacy through the use of verbal persuasion (Bandura, 1997). By intentionally encouraging and supporting women for their leadership efforts, and showing faith and confidence in their abilities, leadership self-efficacy may be enhanced.

Given the important role that peers play for undergraduates (Astin, 1993), the nature of role models in the development of self-efficacy (Bandura, 1997) and the knowledge of the advantages and benefits of participating in leadership-related activities, engaging current female student leaders in active encouragement and recruitment of others may assist those not currently active in campus activities to become initially connected. The current study found that women within the *contemplation* stage were at a lower year level than other *stages of change*. Offering opportunities and support in a mentorship/peer support model may create the necessary conditions for them to integrate into the

campus environment earlier than they would on their own, or before they decided not to be involved at all.

Results related to leadership self-efficacy and previous experiences are instructive for post-secondary advisors, K-12 counselors and high school leadership coordinators as they reinforce the importance of initial experiences for fostering later involvement. Highlighting some of the benefits of involvement identified by newly involved students such a networking opportunities or obtaining experience related to future career goals may provide initial inspiration for future intentions to become involved.

Many students were shown to be contemplating involvement in campus activities but had yet to act on their intentions. Helping students to make connections with others, to identify opportunities and to navigate the university as well as providing them with support and encouragement for their involvement may assist them in taking the next step. Actively thinking about how to encourage students in an intentional way is a necessary condition for successfully implementing such assistance.

Educators at this institution should be encouraged by the perception of climate as unbiased, but should be cautioned not to infer that it is therefore supportive and encouraging. Further investigation of the nature of encouraging environments and differential participation would illuminate this possibility.

Finally, given the overall response to the survey and willingness of students to participate at a less than ideal time of the year, it appears that the

female students at Malaspina University College are interested in sharing their views. Opportunities for additional research and soliciting student feedback and opinions appear to be favourable and would greatly enhance the development of programs and services suited to their needs.

In light of the recommendations for practice above, institutions may wish to consider adopting policies to support the implementation of such recommendations. For instance, since the results of this research show that women in the *contemplation* stage are at a lower year level than other *stages of change*, implementing programs for new students which facilitate engagement and early involvement may support students in transition toward *action*. Freshman seminars and "first year experience" courses mandatory for incoming students have proven successful at some institutions for orienting students to the institution and post-secondary studies and have assisted in establishing peer and faculty relationships (Hoffman, Richmond, Morrow & Salomone, 2002; Milem & Berger, 1997; Schnell & Doetkott, 2002). In addition to providing a venue for student interactions and a mechanism for supporting initial engagement, Milem and Berger (1997) argue that "students' involvement with the campus environment(s) leads to perception of institutional and peer support....[which]...affects the levels of subsequent involvement in the campus environment(s)" (p.392).

Additionally, given the importance of formal leadership education for increasing leadership self-efficacy as identified in the current study, institutions should consider the following:

- Establishing the infrastructure to support student leadership development,
- Dedicating human and financial resources to such activities,
- Assigning responsibility for student leadership development within a departmental unit.

The intentional incorporation of activities aimed at encouraging and promoting involvement in student leadership should benefit the campus community in general and individual students in particular.

Conclusions

This study aimed to examine the utility of the Transtheoretical Model's *stages of change* as potential framework for identifying students with varying levels of intention for participation in leadership-related activities and to identify factors that may be related to their differential involvement. The current research extended the study of student leadership to a non-leader perspective by incorporating a more sensitive structure for examining female undergraduate students' intentions to become involved in leadership-related activities. The primary conclusions that can be drawn from the research are as follows:

- *Students differ* in their intention to become involved in leadership-related activities on this campus. A significant number of students in the population that are not currently active have the desire to become involved. The more that we can learn about this group of potential actors, the more successful we can be at providing programs and services to support and encourage their involvement.

- *Leadership self-efficacy and post-secondary experiences matter* for predicting involvement of students in leadership-related activities. Identifying ways and creating opportunities for students to become involved in and out of class to develop self-efficacy should assist students in progressing from the "I might" stage to the "I am" stage. Identifying particular activities, quality of involvement and development of self-efficacy over time would provide additional information to enhance the effectiveness of programs.
- *Further research is needed* to clarify the nature of the *preparation* stage for involvement in the current context, for more deeply examining preliminary findings of women in the *contemplation* stage and extending the study to other settings to allow for more generalizable results.

The current research provides preliminary evidence of how the TTM *stages of change* may be used in the study of female undergraduate students' intentions to participate in leadership-related activities on campus. The incorporation of additional dimensions of the model in a longitudinal design would lend further support for its usefulness.

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Appendix A

Stages of Change Algorithm

Please read the following carefully prior to responding below.

The campus environment provides a number of opportunities for students to get involved in activities that enhance the development of leadership knowledge, skills and abilities. Some examples of activities include: academic department clubs, student union, student ambassadors, mentorship program, event organization and volunteering, peer helpers, campus recreation and residence assistants.

There are a number of ways to be involved in activities including:

- attending most meetings/events/activities of the group
- sharing your ideas and providing input
- taking on tasks within the group
- working with others toward common goals

Consider your involvement in campus activities. Please rate your level of involvement by selecting the most appropriate answer below:

☐ I have no intention of getting involved in campus activities the near future.

☐ I am thinking about getting involved in one or more campus activities in the next academic year.

☐ I intend to find out more (or have already inquired) about getting involved in one or more campus activities in the next 30 days.

☐ I have been involved in one or more campus activities for 1 to 6 months.

☐ I have been involved in one or more campus activities for more than 6 months.

Appendix B

General Leadership Self-Efficacy Scale (Kane & Baltes, 1998)

The following questions relate to your confidence in your leadership ability. Please circle the number that best represents your level of confidence.

HOW MUCH CONFIDENCE DO YOU HAVE IN YOUR OVERALL LEADERSHIP ABILITY TO DO THE FOLLOWING:

0% CONFIDENCE 1 2 3 4 5 6 7 100% CONFIDENCE

	Not at all confident						**100% Confident**
Perform well as a leader across different situations	1	2	3	4	5	6	7
Motivate group members	1	2	3	4	5	6	7
Successfully build group members' confidence.	1	2	3	4	5	6	7
Develop good performance strategies for complex tasks	1	2	3	4	5	6	7
Develop the teamwork of your group members	1	2	3	4	5	6	7
"Take charge" when you have to.	1	2	3	4	5	6	7
Communicate effectively.	1	2	3	4	5	6	7
Accurately assess the strengths and weaknesses of your group	1	2	3	4	5	6	7
How much confidence do you have in your overall leadership ability.	1	2	3	4	5	6	7

Appendix C

Bem Sex Role Inventory (Bem, 1981) -Sample Questions

Due to copyright restrictions only a sample of items from the inventory may be included.

Respondents are provided with the following directions:

Below you will find a number of personality characteristics. We would like you to use those characteristics to describe yourself, that is, we would like you to indicate on a scale of 1 to 7, how true of you each of these characteristics is. Please do not leave any characteristic unmarked.

The following guide is provided for respondents to consider in rating themselves

1	2	3	4	5	6	7
Never or almost never true	Usually not true	Sometimes but infrequently true	Occasionally true	Often true	Usually true	Always or almost always true

Five sample characteristics that respondents rate themselves on are as follows:

Defend my own beliefs
Affectionate
Conscientious
Independent
Sympathetic

Appendix D

Perceived Chilly Climate Scale (Janz & Pyke, 2000)

		Strongly Disagree						Strongly Agree		
1	A member of the teaching staff has treated me as if I have limited intellectual ability.	1	2	3	4	5	6	7	N/A	Don't Know
2	The teaching staff most often use examples from men's lives.	1	2	3	4	5	6	7	N/A	Don't Know
3	In general, I believe that the academic climate at this university college is very supportive of female students.	1	2	3	4	5	6	7	N/A	Don't Know
4	I have HEARD of one or more instances where a member of the teaching staff put down a female student or was rude to her because she was female.	1	2	3	4	5	6	7	N/A	Don't Know
5	I have HEARD of an instance where a member of the teaching staff has used humour (eg.sexual/sexist humour, or told sexually suggestive stories, jokes etc.) to "liven up" the class.	1	2	3	4	5	6	7	N/A	Don't Know
6	A woman student must outperform male students in order to be taken seriously by the teaching staff.	1	2	3	4	5	6	7	N/A	Don't Know
7	Some teaching staff have "put down" or belittled specific individuals who raise feminist issues or take a feminist position in the classroom	1	2	3	4	5	6	7	N/A	Don't Know
8	The teaching staff generally seem to associate particular occupations or achievements with one sex (eg. By saying, "suppose you went to the doctor and *he*..."; *or* "suppose you spoke with a psychologist and *she*..."	1	2	3	4	5	6	7	N/A	Don't Know
9	Teaching staff have made *sexist remarks* (eg. Suggesting that women are too emotional to be scientists, or men are too aggressive to be caretakers of the young or elderly).	1	2	3	4	5	6	7	N/A	Don't Know
10	Most teaching staff have supported and encouraged me to obtain my academic goals (eg. Provided emotional support, important information, etc.).	1	2	3	4	5	6	7	N/A	Don't Know
11	I have NEVER HEARD that a female student has been sexually harassed by a member of the teaching staff.	1	2	3	4	5	6	7	N/A	Don't Know
12	Most teaching staff have assigned readings that were written by women.	1	2	3	4	5	6	7	N/A	Don't Know
13	I have received an *unfair* grade due to differences in opinion between myself and a member of the teaching staff.	1	2	3	4	5	6	7	N/A	Don't Know
14	I have HEARD that some members of the teaching staff have said things that made female students feel uncomfortable.	1	2	3	4	5	6	7	N/A	Don't Know
15	I have HEARD that most female students are NOT afraid to go the library alone at night.	1	2	3	4	5	6	7	N/A	Don't Know

Perceived Chilly Climate Scale

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		Strongly Disagree						Strongly Agree		
16	Course material is presented from a broad range of perspectives (ie. Includes many ways of looking at the same material, includes the perspectives of women, etc.)	1	2	3	4	5	6	7	N/A	Don't Know
17	I have NEVER HEARD that a member of the teaching staff has attempted to establish a sexual relationship with a female student.	1	2	3	4	5	6	7	N/A	Don't Know
18	Most teaching staff seem to respond just as well to female students as they do to male students.	1	2	3	4	5	6	7	N/A	Don't Know
19	I have made a comment in class that has been ignored, and later another student received credit for my idea.	1	2	3	4	5	6	7	N/A	Don't Know
20	I am not afraid to go to the library alone at night.	1	2	3	4	5	6	7	N/A	Don't Know
21	A member of the teaching staff has incorrectly seemed to think that I was incompetent when I asked a question.	1	2	3	4	5	6	7	N/A	Don't Know
22	I have NEVER HEARD that a member of the teaching staff has made crude and offensive remarks to female students.	1	2	3	4	5	6	7	N/A	Don't Know
23	I have HEARD of one or more instances when a member of the teaching staff has engaged in inappropriate physical contact toward a female student.	1	2	3	4	5	6	7	N/A	Don't Know
24	The campus is a relatively safe place.	1	2	3	4	5	6	7	N/A	Don't Know
25	Topics regarding women (eg. Women's contribution to the field) are integrated into the course material in most of the classes I have taken.	1	2	3	4	5	6	7	N/A	Don't Know
26	I have HEARD of a member of the teaching staff treating female students as though they have limited intellectual ability.	1	2	3	4	5	6	7	N/A	Don't Know
27	Most of my textbooks contain some examples of feminist research.	1	2	3	4	5	6	7	N/A	Don't Know
28	Most teaching staff seem to have enough time to meet with me.	1	2	3	4	5	6	7	N/A	Don't Know

Appendix E

Demographic and Experiences Questions

The following questions relate to personal and background characteristics related to yourself, your program of study, and experiences relevant to the current study.

1. Please indicate your age as of today _____ .

2. Please indicate the race (s)/ethnicity(ies) with which you identify_____.

3. Do you self-identify with, or have ancestry as an Aboriginal person (status or non-status Indian, Métis or Inuit)? ☐**Yes** ☐**No**

4. Please indicate your academic major_____.

5. Please indicate your enrolment status. ☐**Part time** ☐**Full time**

6. Please indicate your year level in your program of study

   ☐ **First year** ☐ **Second year** ☐ **Third year** ☐ **Fourth year** ☐ **Other:**_____

7. Please indicate whether you have completed any leadership education or training to date. (Check all that apply)

   ☐ **Academic course focused on leadership (post-secondary)**
   ☐ **High School leadership program**
   ☐ **Leadership training for employment**
   ☐ **Community leadership program**
   ☐ **Other:**_____
   ☐ **NONE**

8. Please indicate as many of the activities below that you have participated in during your post-secondary study (Check all that apply)

   ☐ **Student union**
   ☐ **Academic department or major club**
   ☐ **Student ambassadors**
   ☐ **Mentorship program**
   ☐ **Intramural sports**
   ☐ **Mariner Athletics**
   ☐ **Other** _____
   ☐ **On-campus employment**
   ☐ **Peer helper**
   ☐ **Residence assistant**
   ☐ **Volunteer service**
   ☐ **Taken a women's studies course**

9. Please indicate as many of the activities below that you have participated in during your last year of high school (Check all that apply)

   ☐ **Student union**
   ☐ **Intramural sports**
   ☐ **Yearbook**
   ☐ **Volunteer service**
   ☐ **Varsity Athletics**
   ☐ **Other clubs** _____

10. If you participated in high school but not university, why not?

11. If you did not participate in high school but have in university, what prompted you to begin?