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Considerations Regarding Graduate Student Persistence

Completion of graduate studies is a central issue for universities. Over the past decade researchers interested in higher education have become concerned with graduate student completion rates. Possible reasons underlying variations in graduate student persistence have included the amassed learning experiences and subsequent perceptions of graduate students, supervisory committee members, and other department staff. This article addresses some of the psychosocial considerations that underlie the complex interactions among students, supervisory committees, and departmental support staff, referred to here as the "academic triad." Using Seligman's (1991) explanatory framework and Bandura's (1986) self-efficacy theory, this article explains how student persistence is closely tied to the behavior of students, academics, and departmental support staff. Further, the article provides two frameworks to gain a broadened understanding of the relationship between the academic triad and graduate student persistence. Recommendations are provided as to how to foster graduate student persistence through improved personal and interpersonal reflexivity.

L'obtention par les étudiants d'un diplôme de deuxième ou troisième cycle constitue une question centrale pour les universités. Depuis les dix dernières années, les chercheurs dans le domaine de l'éducation postsecondaire se penchent davantage sur les taux de réussite chez les étudiants du deuxième ou troisième cycle. Parmi les raisons évoquées pour expliquer la variation dans la persévérance des étudiants du deuxième ou troisième cycle, on a proposé trois facteurs: l'accumulation des expériences d'apprentissage et les perceptions qu'en ont les étudiants, les membres du comité de thèse et finalement, les membres du personnel non-académique des départements impliqués. Cet article étudie quelques-unes des considérations psychosociales qui sous-tendent les interactions complexes entre les étudiants, les comités de thèse et le personnel non-académique. On nomme ces trois groupes la «triade académique». En s'appuyant à la fois sur le cadre de Seligman (1991) et la théorie d'autoefficacité de Bandura (1986), les auteurs expliquent le lien serré entre la persévérance des étudiants d'une part et le comportement des étudiants, du personnel académique et du personnel non-académique d'autre part. Les auteurs fournissent en plus deux cadres permettant de mieux comprendre le rapport entre la triade académique et la persévérance des étudiants de deuxième ou troisième cycle. Sont également présentées des recommandations pour favoriser

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la persévérance des étudiants de deuxième ou troisième cycle par le biais d'une autoréférence personnelle et interpersonnelle améliorée.

Although graduate education is a relatively small portion of university enrollment, it is viewed as essential for the viability of national economies and the future vitality of the university (Holdaway, Debois, & Winchester, 1995). Graduate programs prepare students to become scholars, leaders, and professionals who will be responsible for the advancement of knowledge and the continued functioning of society. However, a number of researchers have identified serious shortcomings with graduate education and its negative impact on students. According to Holdaway (1997), problems relating to student persistence rates have been noted in Canada, Australia, the United Kingdom, and other countries. Golde (2000) asserted that "stunningly high rates of doctoral student attrition, which consistently range from 40 to 50% are one of academia's well-kept secrets" (p. 199). The University of Toronto (2000) reported that of its 1990 doctoral cohort of students, 67.3% had either graduated or were still registered by 1998 for a 32.7% rate of attrition. The University of Toronto went on to report that this was an improvement over the completion rate of the previous year's doctoral cohort of whom 64.7% had either graduated or were still registered in 1997 for a 35.3% attrition rate. Similarly, the University of California at San Diego reported that of the doctoral cohort that entered programs between 1981 and 1986, 59% had completed or were continuing their programs 10 years later. A total of 41% of this group was identified as having abandoned their doctoral programs. A review of the literature on graduate student persistence suggests that reasons for withdrawal include inadequate faculty supervision, unreasonable program requirements, and poor facilities. These concerns have been elaborated by a number of researchers (Aguinis, Nesler, Quigley, Lee, & Tedeschi, 1996; Anderson & Swazey, 1998; Association of Universities and Colleges of Canada, 1992; Bargar & Mayo-Chamberlain, 1983; Canadian Association for Graduate Studies, 1992; Holdaway et al., 1995).

In this article we suggest that one of the most important factors that affects student persistence is the quality of the mentoring provided by faculty and departmental support staff. We believe that some of the complexity that can underlie the faculty-departmental support staff-student interface, referred to here as the *academic triad* (see Figure 1), can be better understood through the combined use of Seligman's (1991) explanatory framework and Bandura's (1986) efficacy theory. These two frameworks offer intertwined motivation-related facets to help explain why students' persistence behavior varies when they attempt to complete their graduate programs. The basic tenets of this article are that graduate student persistence is in part related (a) to students' previous educational experiences, (b) to the previous educational experiences of faculty and departmental support staff members, and (c) to the resulting present faculty-departmental support staff-student interpersonal dynamics. Each of these facets is addressed in this article.

A Preliminary Look at Student and Faculty Perceptions

Students, colleagues, and professors associated with graduate students leaving or being asked to leave their educational programs in midstream have ques-

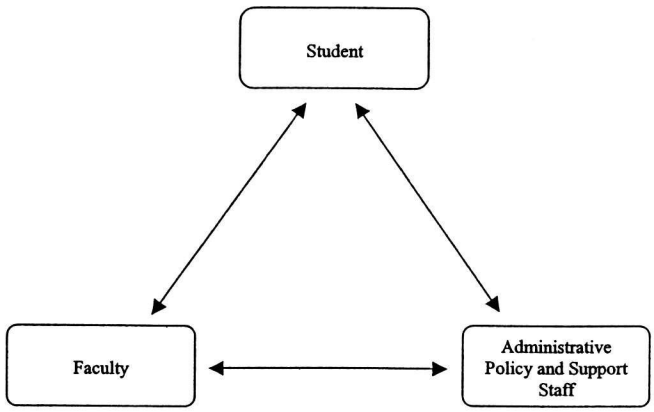

Figure 1. The academic triad.

tioned why some students persist whereas others do not. Answers to the latter provided by graduate students to Holdaway (1997) varied from the inability to get along with members of their supervisory committee to lack of patience with the amount of time needed to complete academic requirements. In a study of first-year doctoral attrition, Golde (1998) reported the positive socialization of graduate students into the community of an academic department as an important factor in persistence. In addition, a University-wide survey of students from the University of Alberta (1998) highlighted differences in student-supervisor research interests as another concern. Professors provided similar responses when considering reasons for students' difficulties in graduate programs. Examples, again provided to Holdaway (1997), included lack of student commitment and the autonomy necessary to complete the required research. These combined responses from faculty and former students are not necessarily representative of all the reasons for graduate student discontinuance. Certainly there are other possibilities.

When considering more closely the above reasons for program discontinuance, it seems that most causes do not fall directly under departmental accountability. According to Holdaway et al. (1995) and Smith and Barber (1994), most academics believe that it is not their fault if students do not learn as they should. A closer examination of this transition in student development, however, suggests that a number of superficially dissociated reasons for student status can in part be linked to systemic difficulties embedded in the faculty-departmental support staff-student interface (Girves & Wemmerus, 1988; Holdaway, 1997). This seems reasonable given that competence, academic or otherwise, is typically defined as the variance between a combination of personal and support-system attributes and the skills required to complete a given task (Bandura, 1986; Dembo & Gibson, 1985; Schinke & da Costa, 2000). Considering the difficulties that arise in a graduate department and how these difficulties seem to be interpersonal in nature, one must consider the individual backgrounds and present states of each facet of the academic triad. This holistic interpersonal approach to the academic context is emphasized in this discussion.

Theoretical Considerations Regarding Persistence

As noted by Bargar and Mayo-Chamberlain (1983), the relationship between graduate students, their advisory committee, and their department as a whole cannot help but be tenuous. Bandura's (1986) efficacy theory and Seligman's (1991) explanatory classification offer interrelated parts of a motivation-based explanation as to why the program persistence of students varies. Both frameworks provide useful suggestions regarding how earlier educational experiences cumulatively affect students' achievement behaviors in academic contexts, the former based on sources of personal and contextual information and the latter on how such experiences are interpreted and explained to the listener. Each framework is discussed below.

Efficacy theory: expectations for the future. As noted by Geslo, Mallinckrodt, and Brust-Judge (1996), efficacy theory provides one part of the explanation that underlies graduate student persistence. Efficacy information addresses how human experience is gained through a reciprocal relationship between personal behavior and social factors, including others in the academic triad. Bandura (1986) provided four sources of information as contributors to expectations of success across contexts including graduate academic contexts. The sources of information that contribute to graduate student persistence include what is learned through personal experience, observation, persuasion from creditable others in the achievement context, and from oneself in response to the context. Each of these sources of information is discussed below.

The primary source of information can be derived from students' personal experiences. As Hill (1997) recognized, the extent to which academic experiences indicate intellectual ability on the part of the student affects the likelihood of future expectations of academic persistence. Students with a history of academic success and appropriate studying strategies are more likely to anticipate continued success in their academic future given the compilation of favorable recollections. Such expectations, however, are also tempered by the increased levels of program challenge as the student progresses through each respective level of academic development and acquires formative experiences at that level (Schinke & da Costa, 2000).

The secondary source of information for aspiring graduate students is gained by watching or having watched others of similar effort and ability perform in similar academic contexts. Bandura (1986) acknowledged that the extent to which similar students are able to complete their graduate degrees in a given program provides useful information about personal academic expectations and how these relate to the support of significant others in the academic context. The aspiring student who witnesses another student experiencing success and appropriate support from a supervisory committee will gain significantly more confidence regarding potential program success than the student who witnesses student-supervisory committee-departmental support staff dissension in their graduate program. An example of such dissension might be a disagreement among committee members and departmental support staff on how a student should proceed with the course of study. Because of potential differences between administrative policy regarding graduate student management and supervisory committee suggestions as to a specified

pathway for the graduate student's progress, it seems possible that graduate students may through observation experience conflicts in guidance.

The tertiary source of information mentioned by Dembo and Gibson (1985) when considering teacher efficacy in a high school context is the support received from present and past significant and creditable academic staff. In higher learning, Kahn and Scott (1997) and Bercuson, Bothwell, and Granatstein (1997) suggested that students experience variation in the quantity and type of support they receive from their academic mentors. Persuasive information of what to expect can affect their resolve when they face increasingly arduous academic challenges. Schinke and da Costa's (2000) analysis of the effects of coaching and related administrative support on the development of competence in elite athletes indicates that assistance from mentors may extend beyond physical availability to the content they transmit regarding the likelihood of achieving a given outcome expectation. Taken to a graduate academic setting, the outcome expectations transmitted by supervisory members can serve as a useful source of information about whether it is worthwhile for the student to persist, and further, how to do so in a specified adversity.

Finally, based on Bandura's (1986) speculations, students' past similar experiences would undoubtedly manifest themselves in terms of personal emotional, cognitive, and physiological indicators. Because aspiring students will face some intellectual and logistical challenge in their graduate programs, those who respond with clarity of mind and enthusiasm will gain significantly more confidence and hope in the context than those who are mired in rumination, lethargy, and despondency (Seligman, 1991).

These four combined sources of information provide the aspiring academic with useful information about the expected likelihood of future academic success given personal efforts and abilities in relation to supportive assistance and performance barriers. In addition, the above-mentioned sources of efficacy information can provide the two supportive facets of the academic triad with an understanding of where their students' outcome expectations reside, and so how to monitor and, when necessary, supplement student confidence.

Explaining and interpreting the past. How students explain their previous academic experiences provides insight into variations in degree persistence over and above contextually based sources of efficacy information. According to Seligman (1991) and Weiner (1979), assessments of academic experiences can be understood based on students' explanatory patterns, which vary between optimism and pessimism. Understanding of students' optimism, according to Seligman (1991), is gained through observing (a) how they appraise the permanence of amassed positive and negative academic performances, (b) where they perceive accountability resides for such outcomes, and (c) whether they view the cause as unique to the academic context or constant across aspects of their life.

Permanence, according to Seligman (1991), refers to whether an experience is interpreted as constant over time or changing from moment to moment. For the student who typically receives an "A" at the end of each course, permanence is a continual reinforcement of positive evaluation that sustains his or her expectations of future academic success. Provided professors are perceived as fair in their assessments, and students are provided with constructive feedback to

improve their marks subsequently, the occasional atypical sub-par evaluation will not affect the student's optimism (Weiner, 1979). The initial response for the self-perceived competent university student, much like that of any other student (Patrick, Skinner, & Connell, 1993), would be to increase effort in subsequent assignments. Provided these changes in behavior return the student to the former pattern of positive experience, his or her persistence and self-belief will be reinforced or heightened (Bandura, 1989; Seligman, 1991). If increases in effort coupled with personal ability continue to produce sub-par academic results, however, the student's optimism in academic endeavors will be challenged and possibly weakened. The resulting level of optimism in subsequent courses or in later stages of academic development such as the completion of a graduate degree might then be placed in jeopardy, and the student may become despondent because outcome expectations are diminished.

Girves and Wemmerus (1988) and Hill (1997) also noted that a graduate student's persistence in a given program can be affected by professors and department administrators. According to Hill, supervisory committee members have varying philosophies about the time and emphasis to be allotted to student mentoring. Department administrative support staff also may vary in their demeanor from day to day as students seek clarification or assistance about enrollment and related structural concerns. In both instances, academic staff adopt specific approaches with their students, and the decision as to what is appropriate staff behavior plays a subsequent role in students' experiences in graduate programs. Depending on the extent to which past observed or personal staff-related experiences are perceived as positive and permanent, graduate students develop beliefs about whether their academic goals will be achieved. Resulting perceptions of control, as noted in the work of Maddux (1995) and Seligman (1991), will inevitably play a role in present and future expectations of success, and so on subsequent levels of program persistence.

Personalization, the second dimension elaborated by Seligman (1991) in his explanatory framework, is defined as the extent to which a cause is attributed to factors within or outside the performer's direct control. An internally attributed factor for the graduate student is the personal effort exerted or ability when completing a term assignment, a thesis, or a dissertation. External factors for the graduate student, as described by Weiner (1979, 1985), include the actions of others in the academic environment and the varying amounts of perceived luck associated with the final outcome of the task. Related to this discussion, Weiner (1985) recognized that students explain their academic experiences in terms of their own attributes and the attributes of significant others. Elaborating further, Kahn and Scott (1997) found that when students perceived themselves as competent in an academic task, it was partly the result of clear, useful, and positive directives received from advisory committee members. When graduate students perceived themselves as incompetent, Aguinis et al. (1996) noted that when a committee member was perceived as uninterested in the student's topic, tardy in providing feedback, or both, the student's ability to complete the program would suffer. Suffering in the graduate program, then, might well be caused partly by lack of personal control and partly by some potentially associated negative reflection. Thus it can be said

that the development of favorable program-related outcome expectations for students is tied to externally controlled factors such as the behavior of departmental support staff. Negative behaviors from faculty or departmental support staff, or both, inevitably play a role in the student's academic development throughout his or her graduate experience, especially when such experiences are, or have been, perceived as negative and stable over time.

Pervasiveness, the third dimension elaborated by Seligman (1991) and Peterson and Barrett (1987), is the potential carryover of an attribute from one context to other related and unrelated contexts. In the graduate environment, Peterson, Luborsky, and Seligman (1983) noted that carryovers in perception can stem from experiences outside academic contexts, such as parenting, and that these can subsequently affect academic performance. Seligman (1991) also found instances where charges were made to students' characters and dispositions by their supervisory committees, and lack of support from academic mentors transcended the outcome of graduate program termination to an internalization and self-questioning of general character. In academia, graduate departments are faced with both scenarios: students who lack relational trust and students who lack the resilience to withstand personal criticism (Seligman & Csikszentmihalyi, 2000). Optimistic students facing false accusations will undoubtedly remain resilient and attempt to alter impermanent and impersonal differences with others in the academic triad. Less resilient students, however, will carry over distrust from earlier relational challenges in their personal life. The less resilient will also lack the necessary strength to challenge environmental constraint in the academic context (see Peterson, 2000, for a review of little optimism). Such would be the implication of pervasiveness on the achievement-based explanations and academic persistence in graduate students.

Possible Behavioral Outputs

Based on the preliminary review of self-efficacy information and explanatory patterns, a number of possible behaviors can be discerned from the experiences and potential explanations provided by graduate students. First, graduate students may perceive themselves as capable on the personal level, yet incapable as a result of the actions of significant others such as departmental support staff and faculty professors. Second, graduate students may perceive themselves as incapable on the personal level, yet capable on a more general level as a result of support from academic staff. Third, graduate students may possibly perceive themselves as incapable due to a combination of personal and support-system limitations. Fourth, students may also perceive themselves as capable both on the personal and supportive levels.

The Complexity of Graduate Student Persistence

Adding to the complexity of the academic process, graduate student persistence might also be tied to past and more recent experiences, expectations, explanations, and behaviors of powerful others such as graduate chairs, supervisory committee members, and other department staff. Typically, these support staff are expected to be facilitative actors who contribute to the student's likelihood of success. However, Aguinis et al. (1996) noted that only some students are blessed with positive learning environments. It is conceivable that

the departmental support staff in each graduate department acquired their own past experiences in relation to others in a given context. Graduate committees, for instance, may comprise professors who experienced lack of support when they were graduate students. Negative past experiences for such people may have included inattentive, abusive, or inflexible professors and staff. Through such experiences integrated into staff members' earlier perceptual frames, former developing academics may adopt negative mentoring behaviors. Following the work of Bandura (1997), Seligman (1991), and Schinke and da Costa (2000), this implies that people in organizational settings develop a *shared* context founded on a wide variety of positive and negative experiences. Bandura (1989, 1997) has suggested that people in achievement settings, including academic programs, do not function as "social isolates." In the graduate school environment, then, each student's personal academic development is in part linked to the accumulated experiences of and with significant others, including professors and departmental support staff.

Encapsulating the Foundational Premises

With the above in mind, a few foundational premises underpin this article. First, students approach their graduate programs with specific concerns, problems, and expectations partly based on past formal educational experience. These factors can surface and affect the student's learning process throughout the graduate program. Second, students' expectations can become difficult to fulfill when their academic development might be affected by the actions of academic and departmental support staff who in turn bring their own strengths and shortcomings to the workplace. Third, on a more general level, each student's academic development is based in part on collaboration from the immediate faculty-department staff-student interface. Therefore, it is possible that variations in graduate degree persistence of students are affected by a combination of personal attributes, faculty attributes, and administrative attributes. Fourth, it seems plausible that understanding of the underlying reasons for graduate program persistence can be discerned from internal and external informational sources, as well as from the explanatory patterns that explain achievement-related information.

How Competence as a Whole Process Functions in Academe

As Girves and Wemmerus (1988) among others have said, experiences from the past influence people's current perceptions of competence. It is difficult to discern when comparing students how great a role distant and recent experiences respectively play in whether the student continues or discontinues in a graduate program. It can be said, however, that the compilation of experiences that have occurred in interactions with significant others such as former professors, recent professors, and graduate coordinators must be taken into account when attempting to understand each student's particular level of persistence and competence. Typically, cognitive psychologists such as Holyoak and Gordon (1984) have attempted to reconcile the past and present in terms of each person's perceptual framework. As noted by Baron and Bryne (1984), perceptual frameworks are partly the result of accumulated experiences, which in turn might be confirmed or negated by more recent experiences. It is likely, however, that reframed thoughts from the past become generalized anchors

from which present, like experiences are approached and past beliefs are upheld. This being the case, recent academic experiences that have occurred in relation to other professors or former teachers can trigger, or even stimulate, emotions in the student, depending on how far the present environment is familiar and positive. Hence it can be hypothesized that students' expectations when approaching the day-to-day trials and tribulations of graduate studies are anchored in their own as well as others' past memories and the resulting optimistic or pessimistic explanatory patterns that Peterson et al. (1983) described.

Summary

It is suggested that people's past experiences affect their own and each other's development of competence and persistence. The literature on graduate student motivation has considered the relationship between levels of self-confidence and resultant academic pursuit at the graduate level, as in the case of Hill (1997) and Kahn and Scott (1997). In our discussion, based on the work of Holdaway and colleagues (Holdaway, 1997; Holdaway et al., 1995) and Schinke and da Costa (2000), we consider that graduate students' outcome expectations transcend their beliefs of self. Students might be confident of their own abilities as aspiring students, but they may lack confidence in the abilities, efforts, and intentions of significant others who serve as crucial support. The resultant outcome expectations, according to Seligman (1991) and Peterson (2000), can be discerned through the students' explanatory patterns and how these are symbiotically tied to the behaviors of significant, involved academic and departmental support staff.

Motivational despondency in the current context occurs when the student perceives a lack of congruence between academic challenges and the completion of the graduate degree. For the self-confident student, a perceived lack of congruence between personal effort or ability and subsequent levels of program success will initially spark an increase in personal effort (Bandura, 1986; Weiner, 1979). An increase in task difficulty and environmental adversity might not detract from the graduate student's persistence in the short term. Such optimistic behaviors, as noted by Seligman (1991), might have served the graduate student well to the present, undoubtedly because they were not confused with previous negative sources of information, negative experiences, and subsequently negative interpretations. When it is eventually recognized that outcomes are permanently impeded by negative mentoring, or by no mentoring at all, despondency will eventually result (Abramson, Alloy, & Metalsky, 1995). In such instances, as Bandura (1997) recognized, even the most adept and self-confident graduate students will be rendered academically incompetent because of lack of necessary mentoring support on the technical and tactical levels. Sometimes the student's lack of academic development will be related to lack of external assistance and a resultant lack of associated resolution to externally controllable factors. For the underconfident graduate student—one who has a history of difficult setbacks in academic contexts—the level of academic challenge coupled with immediate environmental restrictions will engender the behavioral response of program-related despondency and apathy. Therefore, regardless of students' initial expectations of academic success when entering their graduate faculties, program persistence and result-

ing academic development will be tied in part to their own actions and behaviors in relation to department support staff. It seems reasonable that the behavior of one facet in the academic triad can affect its own, or another facet's, competence, and in so doing affect the competence of the academic triad as a whole.

Implications for Educational Policy

Based on the premises that underlie the two above-mentioned motivational frameworks, graduate student persistence can be better understood by considering the informational cues and reflective patterns of students, academic staff, and support staff as a reciprocal process. Earlier literature, including that of Seligman (1991) and Kahn and Scott (1997), has suggested that academic faculties could select their students more carefully based on certain traits. The purpose of this article is not to dispute these suggestions, although we view such an approach as deterministic. Rather, we suggest that a deeper understanding of the reasons behind graduate students' difficulties is worthy of consideration. In terms of educational policy, as suggested by Holdaway (1997), we must first evaluate the learning opportunities that our staff members provide before considering how they are accepted. Unlike Bercuson et al. (1997), we are not simply speaking of what our staff offer in relation to academic knowledge. Each professor or administrator who works with the varied population of students that arrives at their departments must be certain that the students learn and subsequently adopt a positive approach to learning and interacting in an academic milieu. This form of mentorship will ensure that the confident student remains confident about favorable academic outcome expectations, and that underconfident students are provided with the necessary facilitative support to bolster their confidence. In essence, when the necessary support is provided to assist students, the final outcome should be an increase in exemplary research conducted by a larger number of competent and persistent researchers than ever before. Furthermore, through positive mentoring experiences, the successful, competent student will in time become an optimistic and caring mentor to future developing academics.

On another level, in this article we advocate a stronger awareness of student, faculty, and department staff background. This increase in dispositional knowledge should not be used for positional deselection. However, with a better understanding of those with whom we work as to how they gain information and explain their respective academic contexts, it seems plausible that we can help facilitate and sustain optimism in those around us. Such active interventions run counter to the possibility of transference whereby students might attempt to relive and subsequently resolve their past educational difficulties in present graduate contexts. In terms of academic functioning, the development or refinement of a positive learning environment might marginalize the interpersonal disputes that Aguinis et al. (1996) describe as resulting from a perceived misuse of faculty-situated control.

Finally, it seems reasonable that the motivational frameworks described in this article can provide an additional part of the answer to improved academic triad dynamics. Seligman's (1991) explanatory framework can be used to gain a reflexive understanding of one's own and others' views regarding the likelihood of success in the graduate academic context. A supervisory commit-

tee member can learn a great deal when a graduate student explains personal outcome expectations along the dimensions of permanence, personalization, and pervasiveness. The information gained from such explanations can lead to an appropriate form of mentoring support that in turn could lead to increased graduate student persistence. In terms of reflexivity, it might also prove useful to record occasional meetings with other members of the academic triad and consider one's own explanatory pattern in relation to people within and across the triad in view of variations in graduate student motivation.

The information garnered from Bandura's (1986, 1997) efficacy (termed confidence) framework can provide the other useful facet of understanding the outcome expectations of the graduate student in view of others in the academic context. Just as distant and recent past experiences provide a useful link to interpretive evaluations, they also provide useful information on how those interpretations are made based on various first-, second-, and third-hand sources of information. In terms of increasing the likelihood of academic triad success, it seems reasonable that the interactions among the members of the academic triad can be crafted more thoughtfully and positively such that graduate student achievement is enhanced. Through the cooperation of the members of the academic triad, the academy can remove many of its weaknesses as perceived by students, and in so doing truly become a place of higher learning.

References

Abramson, L.Y., Alloy, L.B., & Metalsky, G.I. (1995). Hopelessness depression. In G. McClellan Buchanan & M.E.P. Seligman (Eds.), *Explanatory style* (pp. 113-134). Hillsdale, NJ: Erlbaum.

Aguinis, H., Nesler, M.S., Quigley, B.M., Lee, S.J., & Tedeschi, J.T. (1996). Power bases of faculty supervisors and educational outcomes for graduate students. *Journal of Higher Education, 67*, 267-297.

Anderson, M.S., & Swazey, J.P. (1998). Reflections of the graduate student experience: An overview. In M.S. Anderson (Ed.), *The experience of being in graduate school: An exploration* (pp. 3-14). San Francisco, CA: Jossey-Bass.

Association of Universities and Colleges of Canada. (1992). *Report of the AUCC Task Force on the Report of the Commission of Inquiry on Canadian University Education*. Ottawa: Author.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. London: Prentice-Hall.

Bandura, A. (1989). Human agency in social cognitive theory. *American Psychologist, 44*, 1175-1184.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.

Bargar, R.B., & Mayo-Chamberlain, J. (1983). Advisor and advisee isuues in doctoral education. *Journal of Higher Education, 54*, 406-432.

Baron, R.A., & Bryne, D. (1984). *Social psychology: Understanding human interaction*. Boston, MA: Allyn and Bacon.

Bercuson, D., Bothwell, R., & Granatstein, J.L. (1997). *Petrified campus: The crises in Canada's universities*. Toronto, ON: Random House.

Canadian Association for Graduate Studies. (1992). *Statistical report*. Ottawa, ON: Author.

Dembo, M., & Gibson, S. (1985). Teachers' sense of efficacy: An important factor in school improvement. *Elementary School Journal, 86*(2), 173-184.

Geslo, C.J., Mallinckrodt, B., & Brust-Judge, A. (1996). Research training environments, attitudes toward research, and research self-efficacy: The revised research training environment scale. *Counseling Psychologist, 24*, 304-322.

Girves, J.E., & Wemmerus, V. (1988). Developing models of graduate student degree progress. *Journal of Higher Education, 59*, 163-189.

Golde, C.M. (1998). Beginning graduate school: Explaining first year doctoral attrition. In M.S. Anderson (Ed.), *The experience of being in graduate school: An exploration* (pp. 55-64). San Francisco, CA: Jossey-Bass.

Golde, C.M. (2000). Should I stay or should I go? Student descriptions of the doctoral attrition process. *Review of Higher Education, 23*, 199-227.

Hill, C.E. (1997). The effects of my research training environment: Where are my students now? *Counseling Psychologist, 25*, 74-81.

Holdaway, E.A. (1997). Quality issues in postgraduate education. In R.G. Burgess (Ed.), *Beyond the first degree: Graduate education, lifelong learning and careers* (pp. 60-78). Bristol, PA: Open University Press.

Holdaway, E.A., Dubois, C., & Winchester, I. (1995). Supervision of graduate students. *Canadian Journal of Higher Education, 25*(3), 1-29.

Holyoak, K.J., & Gordon, P.C. (1984). *Information processing and social cognition. Handbook of social cognition* (Vol. 2). Hillsdale, NJ: Erlbaum.

Kahn, J.H., & Scott, N.A. (1997). Predictors of research productivity and science related career goals among counseling psychology doctoral students. *Counseling Psychologist, 25*, 38-67.

Maddux, J.E. (1995). Self-efficacy theory: An introduction. In J.E. Maddux (Ed.), *Self-efficacy, adaptation and adjustment: Theory, research, and application* (pp. 3-22). New York: Plenum.

Patrick, B.C., Skinner, E.A., & Connell, J.P. (1993). What motivates behavior and emotion? Joint effects of perceived control and autonomy in the academic domain. *Journal of Personality and Social Psychology, 65*, 781-791.

Peterson, C. (2000). The future of optimism. *American Psychologist, 55*, 44-55.

Peterson, C., & Barrett, L. (1987). Explanatory style and academic performance among university freshmen. *Journal of Personality and Social Psychology, 53*, 603-607.

Peterson, C., Luborsky, L., & Seligman, M.E.P. (1983). Attributions and depressive mood shifts: A case study using the symptom-context method. *Journal of Abnormal Psychology, 92*, 96-103.

Schinke, R.J., & da Costa, J.L. (2000). *The relationship between support-infrastructure and competence.* Paper presented at the Canadian Society for Studies in Education Annual Conference, Edmonton.

Seligman, M.E.P. (1991). *Learned optimism: How to change your mind and your life.* New York: Pocket Books.

Seligman, M.E.P., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychologist, 55*, 5-14.

Smith, A.B., & Barber, J.A. (1994). Faculty evaluation and performance appraisal. In A.M. Cohen, & F.B. Brawer (Eds.), *Managing community colleges: A handbook for effective practice* (pp. 382-399). San Francisco, CA: Jossey-Bass.

University of Alberta. (1998). *University of Alberta graduate studies survey: Analysis of findings 1994-97.* Edmonton, AB: Faculty of Graduate Studies and Research, University of Alberta.

University of California at San Diego. (1995). *Graduate student data* [On-line]. Available: http://www.ogsr.ucsd.edu/graddata/95Fall/indices/Tofcont.htm

University of Toronto. (2000). *Performance indicators for governance annual report: September 2000* [On-line]. Available: http://www.utoronto.ca/provost/perf2000/retent.htm

Weiner, B. (1979). A theory of motivation for some classroom experiences. *Journal of Educational Psychology, 71*, 3-25.

Weiner, B. (1985). An attribution theory of achievement motivation and emotion. *Psychological Review, 92*, 548-573.