

The transition to university:
Examining predictors of positive adjustment and the role of the university environment

by

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A thesis submitted to
the Faculty of Graduate and Postdoctoral Affairs
in partial fulfillment of the requirements for the degree of

Master of Arts

in

Psychology

Carleton University
Ottawa, Canada

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Your file Votre référence
ISBN: 978-0-494-71714-1
Our file Notre référence
ISBN: 978-0-494-71714-1

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Abstract

Previous research on adjustment to university focused on background characteristics rather than university environment factors. The purpose of the present study was to examine adjustment to university by isolating university environment factors. The study compared ArtsOne students, a program designed to aid in first year transitions, to students in introductory psychology courses. At T1, 429 first year undergraduate students completed a demographic questionnaire and individual difference measures. At T2, a subset of 189 students completed university environment measures and adjustment measures. Results indicated that first year grades can largely be explained by incoming student background characteristics. However, satisfaction with the academic experience and commitment to the institution are mainly attributable to university environment factors. While Arts One enrolment did not predict GPA, there was a trend for these students to report greater commitment to the institution. Results suggest ArtsOne program effects may not become evident until at least second year.

Acknowledgements

I would like to thank Dr. Anne Bowker for her overwhelming support, encouragement, and dedication to both the success of this research and to my own personal success. I would also like to extend a sincere thank you to Dr. Kathryn Lafreniere, my honours thesis supervisor, for encouraging my interest in research on the first year transition to university, for helping me to get started, and most importantly, for her unwavering support throughout the past three years. To Dr. David Toews, thank you for teaching me the value of using theory to inform research and for encouraging both a critical perspective and an independent mind. A special thanks to Richard Nimijean for backing this research and to Sarah Quirt for all of her administrative support.

To my fellow lab mates and friends both within this program and outside of the university – thank you for all of your encouragement and for our long conversations, particularly when things did not go according to plan. Thank you to my sister, Kelly and to my grandparents, Wayne and Gwen, for always believing in me. Thank you to my parents, Ken and Karen, for helping me to make tough choices, to stand by my decisions, follow my dreams and to always have integrity. I would not be who I am without you and I would not be where I am without you. A special thank you to my dad, Ken, who passed away earlier this year, for the value of hard work, the ability to persist in the face of challenge, for strength of character and for personal pride in work and in life. Last but not least, thank you to Ken Duval, my partner, for helping me to focus on the positive and on my long-term goals, but most importantly, for his unconditional love and support.

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The transition to university:

Examining predictors of positive adjustment and the role of the university environment

The transition from adolescence to adulthood can be a rather lengthy process for many individuals. This transition typically requires a minimum of two years to complete but can last anywhere up to eight years or more (Kenniston, 1970). This period can be described as the time between adolescence and adulthood, but does not fall neatly into either category. Defined as “youth” in previous sociological research by Kenniston, Arnett (2001) more recently identified this transitional phase as “emerging adulthood.” More clearly defined, emerging adulthood is said to take place between the ages of approximately 18 to 25 and is typically characterized by greater independence from parents and the exploration of more challenging life choices concerning education, work, and relationships (Arnett, 2000). People who fall into this age group typically change residences frequently, some work, some choose higher education, and others alternate back and forth between work and school (Arnett, 2000). Because of the increasing number of emerging adults choosing to attend college or university, some live with parents for extended periods of time while others return to live with parents at some point during their education or thereafter (Arnett, 2000). Many also cohabit with roommates or romantic partners (Arnett, 2000). Regardless of how this transitional phase between adolescence and adulthood is defined or the experiences that each individual has during this time, most theorists could agree that for young people, this is a period of experimentation and personal growth, characterized by many important milestones, particularly the transition from high school to post-secondary education.

In the last decade, the proportion of Canadian students attending university has increased substantially (Statistics Canada, 2009). In the 2006/07 academic year, enrolment in Canadian universities rose nearly 1%, but since 2000, this was one of the smaller growth years. That said, 90% of this growth was attributable to the increase in the number of emerging adults between the ages of 18 to 21 (Statistics Canada, 2009). In 2006, approximately 225,900 students received degrees, diplomas, or certificates from Canadian universities (Statistics Canada, 2009). This figure demonstrates a nearly 5% increase since 2005 (Statistics Canada, 2009). Furthermore, of those who obtain undergraduate degrees, increasingly more are going on to pursue graduate degrees. In fact, between 2005 and 2006, the number of people who received master's degrees rose 3.4% to an all-time high of approximately 34,100 degrees (Statistics Canada, 2009). More importantly, the 2006 statistic shows a dramatic increase of nearly 40% since 2001 (Statistics Canada, 2009). The number of people who received doctorate degrees also increased. Of all qualifications, the majority in both undergraduate and master's level categories were awarded to women. Statistics show that since 1994, women have consistently outnumbered men across all categories, with the exception of doctorate degrees (Statistics Canada, 2009). Therefore, although more students are pursuing university degrees than ever before and statistics show increases in the number of undergraduate and graduate degrees being completed, these figures fail to reflect the bigger picture - increasingly more are also enrolling, but are failing to complete (Strage, 1999) or are exceeding the predicted four year completion rate (Arnett, 2000).

The present study examined factors related to the successful transition from high school to university with a particular focus on entering student characteristics, the university environment and student adjustment outcomes.

Because higher education has become increasingly important in an information-based economy where individuals must compete for jobs, greater value has been placed on higher education in recent years (Smith, MacGregor, Matthews, & Gabelnick, 2004). In many cases, ongoing education throughout the lifespan has become a necessary ingredient for career mobility (Morey, 2004). Consequently, increasing participation in post-secondary education has extended the period of time spent between adolescence and adulthood, thereby delaying entry into adulthood, marriage and career decisions. In the United States, it takes approximately six years to obtain what was typically a four year undergraduate degree (Arnett, 2001). Additionally, fewer students are graduating from the institution where they began their studies, often resulting in extended degree completion times (Smith et al.). Clearly, decreasing retention rates and extended degree completion times have certainly become important concerns with possible negative implications for emerging adults and for universities.

Financial concerns are cited as the most common explanation for this extended completion time (Arnett, 2001). Increasingly more students are taking full-time or part-time jobs while enrolled in university and many must take student loans on top of part-time earnings to accommodate costs of rising tuition and living expenses (Smith et al., 2004). Working during university has been shown to present an array of problems for students who maintain a full-time course load while working simultaneously.

Particularly, spending more time in paid employment has been associated with less time

spent on campus (Scanlon, Rowling & Weber, 2007). Less time spent on campus in turn, has been negatively linked to student identity development during the transition to university. Specifically, spending less time immersed in the university setting has made it more difficult for students to identify with the university and to define themselves as university students (Scanlon et al.). Therefore, students are left feeling less connected to campus and less certain about how they fit in to the university environment.

Aside from the more obvious financial difficulties many students often struggle with when making the transition from high school to university, this transition additionally involves a change in terms of the type of learning environment as compared to the high school setting. Typically, the university environment is less personal, more culturally diverse, and physically larger than most high schools. In recent years, however, declining resources have distracted university administrators from seeking out new learning and training strategies to accommodate an increasingly diverse student population studying in a learning environment that is indeed quite different from high school (Smith et al., 2004). Instead, universities are focusing more energy on managing strict budgets and maintaining the functionality of institutions (Smith et al.).

Furthermore, in terms of assessment, universities tend to place more emphasis on academic achievement and performance as compared to high school and evidently, student performance expectations continue to rise each year (Santrock, 2005; Smith et al.). Just as this transition involves a great deal of adaptation in a constantly changing world, it also can cause a great deal of stress for some students who do not adjust well to their new lifestyles or to the new learning environment (Santrock). Often characterized by high expectations for their new, more independent lives, the transition from high school

to university may be far less smooth than some might anticipate particularly if discrepancies exist between expectations for university and the university experience (Braxton, Vesper & Hossler, 1995).

In the United States, the Carnegie Foundation for the Advancement of Teaching highlighted a rather troubling discontinuity between the types of education received in high schools as compared to the learning context in post-secondary institutions (Boyer, 1986). Of the students surveyed who were contemplating decisions regarding higher education, many indicated that they struggled with trying to select a college and older students indicated that they did so nearly “blindfolded” (Santrock). That is, students were confused about the criteria upon which they should select a post-secondary institution (Santrock). Consequently, students may choose institutions, enrol, and if expectations about the institution are not met, and students are not well integrated within the university community, this negative experience may result in student departure (Braxton et al., 1995; Santrock). Students may depart from post-secondary studies altogether or may transfer to an alternative institution (Smith et al., 2004). In turn, this often delays the average time required to complete a degree, thereby negatively impacting raw retention rates.

Furthermore, research by Scanlon et al. (2007) describes a phenomenon known as a state of “identity discontinuity” which occurs as a result of students’ naive ‘knowledge about’ as opposed to more contextualized ‘knowledge of’ the new learning setting. That is, because learning experiences differ from high school to university, students often expect that their knowledge of the high school setting and their learning skills will transfer over to university when in reality, attempting to use knowledge from the previous learning environment typically does not assist students in navigating the new learning

context (Scanlon et al.). Again, a mismatch between expectations for university and experiences in the university setting tend to result in a decreased likelihood of academic and social integration, both of which have negative implications for student outcomes in terms of departure (Braxton et al., 1995). Additionally, Smith et al. (2004) highlight the increasing difficulty to achieve academic and social integration in terms of fostering a sense of community when more universities are becoming commuter schools. As such, students are spending less time on campus, thereby negatively impacting the academic and social integration process, and undoubtedly influencing student adjustment outcomes.

In sum, more students are entering university now than ever before and many are doing so without sufficient information to make informed decisions about university programs (Santrock, 2005). University students are also becoming an increasingly diverse population as more first generation, mature students and international students have enrolled in recent years than in previous years (Kuh, Kinzie, Schuh, & Whitt, 2005; Scanlon et al., 2007; Smith et al., 2004). Expectations for student performance are also changing and becoming more challenging for students to achieve (Smith et al.). Students are facing greater financial challenges as tuition fees and the cost of living continue to rise (Morey, 2004). Many are accepting part-time jobs to supplement their incomes, often at the expense of their studies (Scanlon et al.; Smith et al.). The quality of secondary education received varies greatly across students as well which contributes to differing academic characteristics prior to their entry into post-secondary education. Lastly, budgetary constraints are resulting in increasing pressure on universities to maintain a high standard of learning while simultaneously offering a greater selection of academic programs to an increasingly diverse student population, and all with very limited financial

resources (Smith et al.). Essentially, universities are being asked to up the ante in terms of student learning, but are being asked to do so with little funds (Smith et al.). The transition to university has become a complex phenomenon certainly worthy of further exploration if researchers are to develop a better understanding of its impact on emerging adults.

The problem with using retention rates to define adjustment

For decades, researchers have conducted studies about the transition to university (Pascarella & Terenzini, 2005; Tinto, 1993). Research has examined different factors that contribute to likelihood of staying at particular post-secondary institutions. Retention can be defined as maintaining students at one institution until their graduation (Arnett, 2001). Recent data in the United States has shown that of those students who enrol in a university program, nearly fifty percent will drop out before their graduation (Arnett, 2001). Comparably, Canadian statistics from 2005 indicated that of those emerging adults who had entered post-secondary education in 1999, 21% had left their institution by December of 2005 (Statistics Canada, 2008). Accordingly, raw retention rates varied across institutions. More importantly, North American and Australian governments have become increasingly interested in measuring student outcomes as opposed to inputs (Sharma, 2004). That is, there has been a movement toward using student outcomes (i.e. graduation rates, employment rates, and graduate persistence rates) as the basis upon which government funding is allotted to post-secondary institutions (Sharma).

Recently, governments in Australia and in North America have relied on performance-based measures to inform their decisions regarding funding for post-

secondary institutions (Sharma, 2004). However, when examining this notion from a more critical perspective, one begins to see that relying on raw retention rates to assess the effectiveness of institutions in retaining their students is problematic for many reasons. For example, some students may transfer to another institution or may choose to attend college or a technical school as opposed to university (Wintre, Bowers, Gordner, & Lange, 2006). Therefore, raw retention rates simply reflect whether or not students graduate from the institution where they began their studies. Raw retention rates fail to reflect critical information required if researchers are to better understand the reasons behind student departure. Specifically, retention rates do not provide any explanations for academic decisions made and actions taken nor do they acknowledge student adjustment to university as a contributing factor to academic success, and ultimately, to student departure.

Furthermore, research supports the idea that relying on cross-sectional data to assess student adjustment and the transition to university poses some serious trouble for researchers attempting to understand outcomes without a firm grasp on incoming student characteristics. In fact, research by Astin (2003) has highlighted the dangers of using one-shot cross-sectional assessments of undergraduate students to understand problems that occur longitudinally. Accordingly, many factors are involved in student adjustment and overall retention which are not independent of one another. Therefore, raw retention rates that simply assess whether or not one stays at the institution where they begin their undergraduate degree may not be reflective of the whole picture (Astin, 2005).

For example, in a recent investigation of “leavers” by Wintre et al (2006), findings revealed that more than half of students interviewed did not simply abandon

post-secondary education, but rather transferred to other institutions (Wintre et al., 2006). Most often, students cited personal reasons for leaving as opposed to reasons to do with the institution, thereby suggesting that students do not necessarily leave an institution because of academic failings or failings of the institution to meet their needs, but rather because of other life events including job opportunities and financial concerns (Wintre et al., 2006). Retention rates, however, do not consider factors that may have influenced academic decisions. Hence, the need for a better understanding of adjustment to university and what factors contribute academic decisions to stay or to leave institutions. Additionally, it is essential that researchers assess incoming student characteristics, the university context in which students must adapt, and the overall outcome of these factors in terms of student adjustment.

Examining predictors of positive adjustment

Because students leave universities for various reasons, researchers have struggled to concretely identify factors that cause student departure. Many variables have been suggested, but little consensus exists among the research in terms of which factors play the most critical role in the transition to university. One of the challenges of research in student adjustment lies in pinpointing factors that contribute to adjustment consistently across students and that are not simply attributable to individual differences (i.e. expectations for university, academic self-esteem, and family upbringing). As previous research by Tinto (1975) has noted, the majority of precollege characteristics and experiences (i.e. sex, race, high school grades, family upbringing, etc.) can be responsible for students' premature departure from their institution.

Methodologically, research design and measurement selection determine to a large extent, the types of conclusions that can be drawn from research in this area (Pascarella & Terenzini, 2005). Problems that speak directly to some of the limitations in the existing body of literature include sample variability and differences in how the same constructs are operationally defined and measured across studies (Astin, 1999; Pascarella & Terenzini). The present study has defined adjustment to university as the extent to which students are satisfied with the academic and social experiences at the university as well as their academic achievement and overall performance.

Research also varies in that some samples are taken from only one institution while others are gathered from multiple institutions. The sizes of the samples and participant characteristics also differ greatly across studies (Pascarella & Terenzini, 2005). Therefore, it can be difficult to draw definitive conclusions from studies that do not necessarily measure the same constructs on samples with similar participant characteristics (Astin, 1999). Indeed, replication of results to establish more firm, consistent findings becomes challenging when multiple assessment methods are incorporated into studies with the same or similar constructs that differ in terms of their operational definitions (Astin, 1999; Pascarella & Terenzini). That said, much literature exists on the transition to university and some general patterns in the research have become evident in recent years.

Much research, predominantly American, has examined factors associated with adjustment to university. Many variables have been previously linked to positive outcomes, but do not fall neatly into very specific categories. Positive outcomes are also defined differently across researchers although more clear patterns exist in outcomes than

they do in predictor variables. Indeed, the current body of literature that exists on student adjustment can be quite overwhelming and difficult to grasp at first glance (Astin, 1999). Therefore, it seems logical to first identify factors that relate to successful transitions and to group them into more manageable clusters. Only then can specific variables be pinpointed as having had the greatest impact on student adjustment in the literature thus far and variables of potential interest for the present study can be identified as worthy of further investigation. Outcome variables, academic predictors, demographic variables, family background characteristics, personal characteristics, and university environment factors will be discussed in the next sections.

Outcome variables

Grade point average has been the most common yardstick for measuring student adjustment outcomes in previous research (Kuh et al., 2005, Smith et al., 2004). While grade point average is the easiest variable to deal with statistically in terms of assessing student outcomes, it may not be reflective of issues rooted deeper in student adjustment.

Student success has also been defined in terms of satisfaction (Allen, Robbins, Casillas & Oh, 2008; Kuh et al., 2005). Satisfaction may get to the heart of some of the issues associated with positive adjustment. In fact, student satisfaction with the institution attended has been identified as the most influential variable in determining whether students have thoughts, talk to someone about or take actions to leave their institution (Freeman, Hall & Bresciani, 2007). Additionally, research by Nora (2004) found that students who reported that they were satisfied with the institution were more likely to continue on in university and ultimately, to stay at the institution where they were

satisfied. Because the operational definitions of such constructs have varied in previous research, defining such variables so that they can be measured and so that meaningful conclusions can be drawn have become critical at least if future researchers are to replicate such findings – an important methodological consideration in the present study. Accordingly, the present study defined satisfaction with the academic experience as student satisfaction with the classroom experiences, interactions with staff, and preparation for the future relative to expectations (Nora).

Previous research has also shown that psychosocial factors (i.e. a sense of belongingness on campus) tend to influence commitment to the institution and ultimately, intentions to stay (Nora, 2004). That is, experiences within the university setting, feelings of connectedness and a perceived person-environment ‘fit,’ influence decisions to stay or to go. Institutional commitment, defined as student satisfaction with the decision to attend a particular university and commitment to said institution (Nora), was incorporated into the present study as an outcome variable.

Academic predictors

By far the most obvious individual factor that has consistently been shown to predict university grades and student retention is high school grades (Astin, 2005). That is, secondary school performance to a large extent, predicts how well students perform in post-secondary studies. Therefore, high school grades should be considered when measuring incoming student characteristics.

Although not formally defined in research by Astin (2005), academic preparation has been identified as the strongest predictor of degree completion. Feeling academically

unprepared for university has been negatively associated with having thoughts about leaving the university (Freeman et al., 2007). Academic and social confidences have also been associated with positive adjustment as measured by grade point average (Strage, 1999). Social and academic integration into the university setting have been shown to have significant implications in determining positive transitions to university (Allen et al., 2008; Astin, 2005; Freeman et al., Strage, 1999). Thus, academic preparation clearly plays a central role in student adjustment and retention that should not be ignored. Therefore, the present study incorporated a measure of academic self-esteem at Time 1. Academic self-esteem was defined as the extent to which students felt academically prepared for university, felt confident in their ability to succeed and felt academically competent relative to peers (Nora, 2004).

Lastly, university grades are typically the single best predictor of whether or not students will leave university. In fact, in a study that assessed retention after the third year of university, researchers found that first year grade point average had a strong relationship with staying versus dropping out (Allen et al., 2008). Logically, students whose academic performance was poorer were said to be at an increased risk of dropping out (Allen et al.). Therefore, first year grades play an important role in determining adjustment to university and decisions to stay or to go, factors that should not be ignored.

Demographic variables

In both past and present research, investigators have looked and continue to look to demographic variables to predict likelihood of positive adjustment, success, and retention in university students. Typical demographic variables which have been

examined include sex and ethnicity to name but a few (Astin, 2005; Pascarella & Terenzini, 2005). For example, females have often been described in previous research as more likely to persist and complete their degrees. Females have also been found to outperform males academically (Allen et al., 2008). However, research by Wintre et al. (2006) showed that reasons for, or ways of leaving an institution, did not differ by gender, suggesting that females may be more likely to finish, but encounter the same types of conflicts as males when it comes to making the decision to leave.

Degree completion has also been positively linked to father's level of education (Astin, 2005). Some research has indicated that the father's level of education is more important in determining academic achievement and persistence among sons while mother's level of education is more important for daughters.

While previous research has linked all of these factors to various outcomes of student adjustment to university, it is important to recognize that such factors are neither controllable by the individuals nor by the institutions they choose to attend. That is, neither students nor universities are capable of altering such individual demographic characteristics even if they have been found to advantage or disadvantage certain students. Therefore, while it is both important and necessary to consider such factors in terms of the likelihood that students will positively adjust and be successful in their post-secondary studies, the focus of research should be on adjustment within the university environment.

Family background characteristics

Research by Jackson, Pancer, Pratt, and Hunsberger (2000) has shown that the attitudes and expectations students hold toward university may develop according to past experiences and information provided by others, especially parents and teachers (Jackson et al.). Such results provide further evidence for the critical role that parents play in student ideas and expectations about university.

Furthermore, encouragement from family and friends has been shown to be an important factor in likelihood of student departure. For example, in cases where students have not been encouraged by family or friends to stay in school, a significant relationship was found between a lack of encouragement and taking actions to leave an institution (Freeman et al., 2007). Such findings support the need to consider family encouragement as a possible contributing factor in adjustment to university and further emphasize the need for parents and friends to support and encourage students throughout the course of their studies. In the present study, parental encouragement was defined as the extent to which students felt family support in their decisions to attend university.

Personal characteristics

Working during school and having financial concerns about being able to fund post-secondary education have become hot topics in research in higher education over the years with increasing numbers of students participating in part-time employment in order to fund their studies. Results have shown that both working during school and financial concerns about paying for school have been negatively linked to degree completion (Astin, 2005). Most of the recent literature has indicated that the more hours students

work during school; the less likely they are to persist and to complete their degrees (Pascarella & Terenzini, 2005). Students who work during university also encounter more problems, encountering scheduling conflicts for courses, time to study, and more obviously, with their academic performance (Pascarella & Terenzini). Funding educational expenses through savings from summer employment has been shown to have a positive impact, thereby suggesting that summer time is best spent working in paid employment and saving up for studies, but working while studying may not be in the best interest of the student in terms of completing their degree on time (Astin, 2005).

However, findings from another study by Freeman et al. (2007) failed to establish a relationship between working while in university and having thoughts about, talking to someone about, and taking steps to leave their institution, suggesting that while working during school may negatively impact grades and chances of degree completion, it may have little influence on voluntary withdrawal behaviours. While much attention has been given to working during school, these findings suggest that other variables like student satisfaction with university and emotional preparedness for the new learning setting may carry more weight in terms of determining likelihood of success and therefore, may be more worthy of further investigation (Freeman et al.). However, because findings appear mixed, working during school should still be considered as a student characteristic that may influence adjustment to university.

In addition to the demographic, family, and personal characteristics factors that influence student adjustment to university, individual differences in terms of expectations for university have also been discussed in previous research. Previous research by Braxton et al. (1995) has shown that expectations for university predict academic and

social integration within the university community, factors which then predict likelihood of remaining at that institution. Furthermore, where expectations were unmet, academic and social integration within the university community tended to be lower (Braxton et al.). Therefore, this research highlights the need for universities to accurately represent their programs as well as campus life so that students are aware of what to expect in terms of the university experience and so that expectations are met accordingly. It also emphasizes the important role expectations play in determining student adjustment to university and ultimately, student departure. The present study defined expectations for university as beliefs about the characteristics of an institution prior to entering university. Expectations for university were measured twice over the course of first year.

University environment factors

Living on-campus, in residence, has been associated with increased chances of degree completion in numerous studies (Astin, 1997; 2005). This finding, while fairly consistent across studies, supports the idea of students living in a university owned residence on campus in the first year of study as doing so may provide a certain advantage in terms of increasing their likelihood of staying and degree completion.

On a more interpersonal note and building on the idea that living in residence fosters relationships with peers and an overall more positive university experience, a lack of personal relationships has commonly been cited as a reason behind student departure (Freeman et al., 2007). Because professors are at times unclear about their expectations or are not readily available to meet with students, students often must depend on their peers for help and for social cues as to how to navigate the new learning setting (Scanlon

et al., 2007). Therefore, building social relationships with peers becomes critical to identity formation, decreasing feelings of anonymity, fostering a sense of control and comfort in the new university context (Scanlon et al.). As a result, feeling connected to the university seems to be an essential component to a smooth transition.

However, for those that find it difficult to establish social relationships, research suggests that these students may be more likely to drop out (Scanlon et al.). In fact, whether or not students are able to develop meaningful relationships while at university has been linked to having thoughts or talking to someone about leaving university, but was not associated with actually taking steps to leave (Freeman et al.). Furthermore, a social life at university that fails to live up to one's expectations has been linked to having thoughts, talking about, and taking steps to leave an institution (Freeman et al.). This information suggests that meaningful social relationships may be an important factor in easing the transition to university and to positive adjustment.

Much research has assessed environmental factors associated directly with the university as an institution that affect student retention. Adding college characteristics like class size, institutional selectivity, and type of institution have also been found to add to the prediction of degree completion (Astin, 2005). Institutional selectivity has been identified as the most critical characteristic related to the institution. Surprisingly, institutional selectivity has been shown to have nearly the same amount of power in predicting degree completion as high school grades which are known to be the strongest predictors (Astin, 2005). That is, degree completion rates are heavily influenced by the types of students the university admits. For example, institutions that accept students with higher average high school grades are more likely to retain those students as opposed to

institutions that accept lower calibre students. This relationship reinforces the notion that an institution's retention rate should be examined only in terms of the types of students it admits (Astin, 1997). Accordingly, immersion in a group of peers who are well-prepared academically for university and who have high goals also show positive predictive outcomes for degree completion rates in university students (Astin, 2005).

Overall, less attention has been given to academic and social connectedness to the university community. That said, research by Freeman et al (2007) found that a lack of connection with the institution was associated with having thoughts or talking to someone about leaving that institution, but did not result in their taking action to leave that institution. Similarly, feeling that one was a part of the university community was again related to talking about or having thoughts of leaving, but not to the act of leaving itself (Freeman et al.). Social connectedness and commitment to the institution one attends have been found to directly affect likelihood of student departure with commitment having direct effects on staying (Allen et al., 2008). Furthermore, a recent study by Wintre et al. (2008) demonstrated that a perceived mismatch between the student and the university environment is likely to hinder the adjustment process, ultimately resulting in withdrawal from the university. Such findings highlight an important need for further attention to be given to these variables in the present research. The present study measured campus connectedness during the second semester of university. Campus connectedness was defined as the extent to which students felt socially connected or integrated within the university campus environment.

Learning communities

Clearly, the university environment is thought to play a critical role in determining student outcomes. However, tightening budgets, increasing student diversity, and rising academic standards have caused universities to consider alternative options in terms of how best to accommodate students' changing needs while increasing the value of the learning experience, with few financial resources (Smith et al., 2004). Recently, learning communities have been proposed as cost effective strategies designed to improve the quality of student learning (Smith et al.). Formally defined as a restructuring of course offerings that bundle several courses into clusters, centred on common themes (Smith et al.), learning communities are believed to have two basic components. The first is described as a form of shared learning which occurs as a result of the participation of a group of students in the same courses (Pascarella & Terenzini, 2005). The second component is connected learning which is said to occur because of the linking of courses centred on one common theme. The learning community design is intended to foster collaboration between peers, a more lively learning environment, and overall, a sense of community which might otherwise not be established in larger classrooms (Pascarella & Terenzini). In the past, learning communities have been linked to increased academic involvement and overall learning quality (Tinto & Russo, 1994), however, background characteristics were not necessarily controlled (Pascarella & Terenzini) and therefore present an important limitation which will be controlled in the present study. Additionally, where background variables have been included, results have appeared mixed with respect to effects of learning communities (Pascarella & Terenzini). Where some universities have made developing learning communities a priority, student success

and persistence have improved (Kuh et al., 2005). Overall, findings surrounding the effects of learning communities appear mixed and certainly worthy of further exploration.

ArtsOne

Recently, Carleton University has adopted this strategy, implementing the ArtsOne program for students studying within the Faculty of Arts and Social Sciences. Developed by the Faculty of Arts and Social Sciences, ArtsOne is a program unique to Carleton University which offers “clusters” of courses centred on common themes available to different majors for credit. All of the courses are first-year level courses exclusive to ArtsOne students. The instructors for each cluster communicate with one another to effectively structure courses so that related topics from different courses may be introduced or reviewed in the classrooms at approximately the same time. Such structure allows students to learn about the same topics from different perspectives, thereby enhancing the quality of learning as well as offering more opportunity for reflection on the topics and class discussion. In addition to presenting overlapping material at approximately the same time in each course, instructors also organize tests and assignments so that the course loads are straddled. In other words, tests and assignments take place at different times in each course so that students do not become overwhelmed by having multiple tests and assignments due at the same time.

The program also offers structured course selection. Course schedules are pre-determined and students who enrol in the ArtsOne program are not responsible for independently registering for courses. When students enrol in ArtsOne, the university registers them in the four appropriate ArtsOne lectures and tutorial sections. This practice

is intended to help first year students by alleviating most of the responsibility of choosing and scheduling courses that will meet degree requirements. However, students can still gain the experience of registering for one extra course outside of ArtsOne since ArtsOne clusters only include four courses and students are permitted to enrol in as many as five courses if they are studying full-time.

In addition to providing students with structured course selection, ArtsOne also offers small class sizes (lectures are capped at 100 students; tutorials are capped at 25). When students enrol in an ArtsOne cluster, they are part of a group and as such, they see the same faces in all of their lectures. This design is intended to help students build relationships with faculty and peers within a comfortable classroom setting, encouraging participation and engagement in the learning process through interactive class discussions. Overall, the ArtsOne learning community setting is intended to provide a positive learning environment where students can make good course choices and make connections with peers in the first year of university. Ultimately, the program's goals are to improve student transitions and to increase student retention.

Because the ArtsOne program targets many of the key concerns for student adjustment to university in first year, the present study will compare ArtsOne students to non-ArtsOne students to see if the program impacts adjustment outcomes.

Summary

Many of the aforementioned variables have been identified as positive predictors and outcomes of student adjustment to university and retention. However, many studies have failed to provide sound theoretical justification for their research design and

methodology. Overall, few studies have assessed the effects of learning communities on adjustment to university. Thus, the following section will review the theory of adjustment to university used to inform the present research. The model used is American, however, the present study will examine a sample of Canadian first year university students, incorporating characteristics of both the individual and his or her environment. It is important to reiterate that not all research in higher education has been informed by theory and to stress the importance of using theory to guide research. Student adjustment will be examined using measures of satisfaction, institutional commitment, grade point average, and intentions to continue.

Conceptual framework

Over the years, various theories and models have been proposed as to how best to assess student change and adjustment in the transition to university. Interestingly, some of the older theories continue to guide much of the current research as investigators continue to refine these theories (Pascarella & Terenzini, 2005).

While many psychological and sociological explanations have been proposed and modified over the years, one of the most popular and influential theories of student change falls somewhere in between the two disciplines and has been described not as a theory, but rather as a set of interrelated concepts that describe the general dynamic of the post-secondary adjustment process (Pascarella & Terenzini, 2005). Specifically, the model attempts less to explain student change within the college setting, but rather it provides a conceptual framework for how best to think about and study college effects (Pascarella & Terenzini). Alexander Astin's I-E-O model (Inputs - Environment -

Outcomes) assesses student input characteristics, environmental context variables, and how such factors impact student outcomes (Astin, 1970a, 1970b, 1991). Students change as a function of characteristics they possess prior to college and experiences they have while in the college setting. This model recognizes that student input characteristics such as family background, demographic information and previous academic learning experiences directly influence and shape student outcomes. However, the experiences that students have in the new learning environment and with cultural exposure also indirectly influence outcomes (Pascarella & Terenzini). At its most basic level, the I-E-O model was created as a strategy to isolate the effects of the college setting on student outcomes, independent of incoming student characteristics (Pascarella & Terenzini).

To put this into perspective, if an institution were to admit mainly students with high school grade point averages of eighty percent or more, the expected completion rate for that institution would be higher than another university that typically admitted students with grade point averages below eighty percent. To be clear, expected completion rates focus on characteristics of the student as opposed to those of the institution. For example, Astin (2005) found that entering student characteristics accounted for over two thirds of the variation in degree completion rates across institutions ($R^2 = .70$). In other words, differing incoming student characteristics appeared to explain most of the variation in degree completion rates across institutions thereby suggesting that differences in degree completion rates may be more attributable to differences in incoming student characteristics than to institutional or environmental factors. Hence, it is critical that incoming student characteristics be taken into consideration in the present study.

Overall, degree completion rates appear to be dependent upon entering student characteristics and differences in retention between institutions vary based on differences in student characteristics at the time of entry to university (Astin, 2005). Furthermore, upon closer examination, one can see that several weaknesses exist in using degree completions as the basis of institutional comparisons as mentioned in the earlier section on the problem with using retention rates to define adjustment. In fact, when expected retention rates based on the characteristics of incoming students are compared to the actual retention rates by institution; most schools are meeting their expected rates (Astin, 2005). Only those that exceed their expected rates are in a position to take credit for doing something unique or better than expected in their attempts to retain students (Astin, 2005). Therefore, such evidence provides support for the current research which will attempt to assess student adjustment based not on degree completion, but rather on outcomes such as student satisfaction with the academic experience, commitment to the institution, grade point average, and intentions to continue on to at least the second year of study.

Overview of the present study

The present study was designed based on Astin's I-E-O model. Specifically, the model assessed student input characteristics, environmental context variables, and how such factors impacted student outcomes over time (Astin, 2003). Students each bring with them their own unique characteristics upon entering university. Therefore, the first phase of the present study focused on background characteristics and individual differences in incoming students. Particularly, the researcher examined demographic characteristics including gender, age, student status (Canadian versus International), high school

average, work and finance, and place of residence. Individual difference variables including expectations for university, family encouragement, and academic self-esteem were also examined. Demographic information and background characteristics (academic self-esteem, family encouragement, and expectations about university) were measured during Phase I for two purposes: 1) To control for their potential effects on outcome variables and ultimately, on first year student adjustment to university and 2) To control for potential differences in incoming student characteristics between ArtsOne and non-ArtsOne students.

Although it is clear that incoming student characteristics directly influence student adjustment outcomes, such characteristics also interact with factors in the university environment. Environmental factors also have direct influences on student adjustment outcomes. Therefore, the present study expanded its focus to include university environment characteristics such as the student-university match and campus connectedness. The study also compared experiences for students in different university environments – ArtsOne and non-ArtsOne. Satisfaction with the academic experience, commitment to the institution, grade point average, and intentions to continue were assessed as outcome measures.

The purpose of the present study was to develop a better understanding of the student adjustment process during first year. More specifically, how incoming student characteristics and environment factors influence students' feelings of adjustment at the end of first term and at the end of first year. Therefore, students were assessed during two key times in the first year of university (November and February).

First year students in the ArtsOne program at Carleton University were compared to non-ArtsOne Carleton students to see if student adjustment outcomes differed in a specialized first year program versus non-specialized programs.

In an effort to better predict likelihood of positive adjustment to university, the present study examined background characteristics of incoming freshmen and university environment variables in relation to adjustment outcomes. Data was collected in phases over the course of one school year (two academic terms).

During the first phase of the study, in November 2009, incoming student characteristics were tested. That is, measures administered during this phase included demographic characteristics, student expectations, academic self-esteem, and family encouragement.

In February 2010, during the second phase of the study, environmental variables were measured: student-university match and campus connectedness. These measures were used to assess the extent to which student environment variables affected student adjustment outcomes. Specifically, campus connectedness and student-university match were used to determine how much of the student adjustment process was dependent on environment variables and to assess potential differences between ArtsOne and non-ArtsOne students in terms of their adjustment to university relative to the learning environment. Expectations for university were measured again at T2 in order to determine whether or not expectations changed over the course of the first year of university from Time 1 (1st semester – November 2009) to Time 2 (2nd semester –

February 2010) as a function of being immersed in the university environment for one full semester.

Commitment to the institution, satisfaction with the academic experience, intentions to continue, and grade point averages were used to assess student adjustment to university and ultimately, to likelihood of staying in university. These measures were also used to compare adjustment outcomes for ArtsOne and non-ArtsOne students. Grade point average and intentions to continue were assessed in the second phase of the study in February 2010.

Hypotheses

Phase I (November, 2009): Demographic and incoming student characteristic variables

The following predictions have been made with respect to the influence of demographic and incoming student characteristic variables on student adjustment outcomes:

Hypothesis 1: It was hypothesized that high school grades, living in an on-campus residence, high levels of parental education (completion of a Bachelor of Arts degree or higher) would be positively associated with adjustment outcomes as reflected in grade point average, satisfaction with the academic experience, commitment to the institution, and intentions to continue.

Hypothesis 2: As stated earlier in the literature review, previous findings have indicated that working during school and having financial concerns about paying for school have been negatively linked to degree completion (Astin, 2005). Therefore, working part-time

or full-time off-campus and financial concerns about paying for university were expected to be negatively associated with grade point average and intentions to continue.

Hypothesis 3: A positive outlook toward university in terms of expectations was likely to produce positive adjustment outcomes as reflected in grade point average, intentions to continue, commitment to the institution, and satisfaction with the academic experience.

Hypothesis 4: A lack of encouragement from family has been linked to taking actions to leave an institution (Freeman et al., 2007). Therefore, encouragement from family was expected to produce positive effects on student adjustment as reflected in grade point average, intentions to continue, commitment to the institution, and satisfaction with the academic experience.

Hypothesis 5: Research by Astin (2005) identified academic preparation as the strongest predictor of degree completion. Additionally, feeling academically unprepared for university has been negatively associated with having thoughts about leaving the university (Freeman et al., 2007). Finally, academic confidence has been linked to positive adjustment (Strage, 1999). Therefore, it was expected that academic self-esteem (preparedness, confidence and perceived academic competence) would positively predict grade point average, intentions to continue, commitment to the institution, and satisfaction with the academic experience.

Phase II (February, 2010): University Environmental Context Variables

The following predictions have been made with respect to the influence of university context variables on student adjustment outcomes, controlling for demographic and incoming student characteristic variables:

Hypothesis 1: Students who indicated high scores on the SUM (Student-University Match) questionnaire thereby indicating a better person-environment fit were expected to show more positive adjustment outcomes as reflected in grade point average, commitment to the institution, intentions to continue, and satisfaction with the academic experience.

Hypothesis 2: It was hypothesized that students' scores on a measure of campus connectedness would be positively related to student adjustment outcomes including grade point average, commitment to the institution, satisfaction with the academic experience, and intentions to continue.

Hypothesis 3: Finally, based on previous findings by Allen et al. (2008), females were expected to have higher overall average grade point averages than males across the school year (both academic terms as tested in January and April 2010). Females are typically more likely to complete their degrees than males (Allen et al., 2008; Wintre et al., 2006). Therefore, it was expected that more females than males would indicate that they intended to continue on to at least the second year of study. No other gender differences were expected.

Possible interactions

In addition to the hypotheses mentioned above, several interactions were considered. Although the demographic and background characteristics of incoming students were expected to have direct effects on outcome measures of student adjustment modelling Astin's (1970a, 1970b, 1991) inputs-environment-outcomes theory, it was also expected that background characteristics would interact with environment variables to

impact adjustment outcomes. Thus, it was expected that environment variables might indirectly produce more subtle effects on student adjustment outcomes as a function of incoming student personality characteristics.

Given that Astin's model did not include any provisions for possible interactions between individual and environmental variables, the proposed interactions are necessarily speculative in nature. The present research was primarily interested in the effects of the ArtsOne program and student experiences within the university environment, therefore, three potential interactions were expected with respect to expectations for university, academic self-esteem and ArtsOne status. Other background variables (i.e. high school grades) were not tested as potential moderating factors because the present research focused on psychological factors (i.e. expectations for university and academic self-esteem) or attitudes and beliefs prior to entering university in an attempt to understand how those factors might influence experiences within the university setting and in turn, student adjustment outcomes. Following Astin (1970a, 1970b, 1991), it was believed that academic and social experiences prior to university would impact the attitudes and beliefs students held upon entering university, and in turn, the ways they engaged with the university environment. Therefore, the following predictions were made:

Hypothesis 1: It was hypothesized that students would show similar results across all factors, but that students who were part of the ArtsOne program would show higher levels of connectedness, commitment to the institution, and satisfaction with the academic experience, based on the goals of the program and its small, community-based design. These students should show better overall adjustment outcomes as compared to students across other disciplines and outside of the ArtsOne program.

Hypothesis 2: It was predicted that the expectations that students had about their academic and social experiences in the university setting would interact with feelings of campus connectedness, and student-university match which would ultimately influence student adjustment outcomes, as reflected in grade point average, commitment to the institution, satisfaction with the academic experience, and intentions to continue. That is, student-university match and campus connectedness, collected at T2, would be most strongly related to student adjustment outcomes, for students with more positive (higher) expectations of their university experience.

Hypothesis 3: It was hypothesized that academic self-esteem (feelings of preparedness, confidence, and academic competence) would also interact with the environmental variables noted above, such that these variables would be most strongly predictive of student adjustment at higher levels of academic self-esteem. For individuals with lower academic self-esteem, the environmental variables might not play a significant role in their university adjustment.

Method

Phase I

Participants

In total, the sample consisted of 429 first year undergraduate students (136 males (32%) and 293 females (68%)) from Carleton University. One hundred twenty-six (29%) students were enrolled in ArtsOne and 303 (71%) students were not part of ArtsOne. The average age of all participants was 19.08. The mean high school average of all

participants was 80.43 percent. All students were enrolled in their first semester of study at Carleton University.

Measures

All participants, ArtsOne and non-ArtsOne, completed survey measures early in their first term of study at Carleton University (November 2009). Demographic information (Appendix A) was collected in combination with measures of academic self-esteem, family encouragement, and expectations about university in Phase I of the study. Grade point averages were collected at the end of the first semester as the sole outcome variable.

Academic self-esteem scale (Nora, 2004).

This 5-item subscale is part of the larger Survey of Student Attitudes and Behaviours Influencing College Choice (Nora, 2004). Students are asked to rate the degree to which they agree or disagree with statements about their academic self-esteem (e.g., I feel confident that I can succeed in my courses) (see Appendix B). Items measure the extent to which students feel academically prepared for university, confident in their ability to succeed, and academically competent relative to peers (Nora). Researchers have found that this scale possesses strong internal consistency reliability ($\alpha = .84$) (Nora). For the purpose of this research, academic self-esteem is defined as feelings of academic preparedness and confidence. Therefore, all items in this scale have been taken directly from Nora's academic self-esteem measure; however, two new items have been added to better reflect confidence and preparedness as opposed to perceptions about being able to compete academically with other students at the same institution. Reliability analyses were performed using only the original scale items and again using the original scale

items with the newly added items included. Reliability increased from $\alpha = .83$ to $\alpha = .85$ by adding the two new items (e.g., I feel that my academic ability is similar to my peers at this university; I feel confident about my ability to complete university).

Family encouragement scale (Nora, 2004).

This subscale is part of the larger Survey of Student Attitudes and Behaviours Influencing College Choice (Nora, 2004). This 3-item subscale measures family encouragement of decisions to attend university. Students are asked to indicate the degree to which they agree or disagree with statements that reflect family support (e.g., My decision to attend this university was encouraged by my parents) (see Appendix C). Specifically, family encouragement is defined as the extent to which students feel parental supports in their decisions to attend university. Internal consistency reliability of this scale is moderate ($\alpha = .74$) and family encouragement has been found to be predictive of student satisfaction in previous studies (Nora). In this study, the family encouragement scale demonstrated adequate internal consistency reliability ($\alpha = .69$).

Expectations for university scale (Braxton, Vesper & Hossler, 1995).

This 6-item subscale is part of a larger freshman-year survey and measures expectations for academic and intellectual development in university. A list of university traits is presented and students are asked to indicate the extent to which each trait has met their expectations at the school they are attending (e.g., Students learn a lot in their majors; Students get a good general education) (see Appendix D). Traits are rated using a four-point Likert scale (1 = this trait has not met my expectations; 4 = this trait has met my expectations to a very large extent). Internal consistency reliability of this scale is relatively strong ($\alpha = .82$) (Braxton et al.). Expectations for university are defined as

beliefs about the characteristics of an institution prior to entering university (Braxton et al.). Expectations for academic and intellectual development in university have previously been linked to academic and social integration to the university. In this study, the researcher found that the expectations for university scale demonstrated moderate internal consistency reliability ($\alpha = .75$)

Phase II

Participants

In total, 189 students returned to the study to complete Phase II of the research (43 males (23%) and 146 females (77%)), therefore, the study had a return rate of approximately 44%. Of the 189 students, 63 (33%) were enrolled in ArtsOne and 126 (67%) students were not part of ArtsOne. The average age of returning participants was 19.18 years. All students were enrolled in their second semester of study at Carleton University in the winter term.

For Phase II, all participants completed measures of student-university match and campus connectedness. Additionally, institutional commitment, satisfaction with the academic experience, and first year grade point averages were gathered.

Measures

In Phase II (February 2010), expectations about university were measured once again. Students also completed measures of student-university match and campus connectedness. End of first year grade point averages (collected in May), commitment to the institution, and satisfaction with the academic experience were assessed as outcome

variables. Intentions to continue on to at least the second year of study were also measured¹.

Expectations for university scale (Braxton, Vesper & Hossler, 1995).

As outlined in the Phase I measures section, this 6-item subscale measures expectations for academic and intellectual development in university. This scale has demonstrated strong internal consistency reliability ($\alpha = .82$) (Braxton et al.). At Time 1 during Phase I of this study, this scale demonstrated moderate internal consistency reliability (Cronbach's alpha of .75). At Time 2, this scale also demonstrated moderate internal consistency reliability ($\alpha = .76$).

The student-university match (SUM) questionnaire (Wintre, Knoll, Pancer, Pratt, Polivy, Birnie-Lefcovitch, & Adams, 2008).

The Student-University Match Questionnaire is a 17-item self-report scale which measures the quality of fit between the student and the university based on the student's needs and the university environment. The scale possesses strong internal consistency reliability ($\alpha = .87$) and construct validity (Wintre et al., 2008). The SUM also demonstrates strong predictive validity in that the scale can differentiate leavers from persisters, meaning students who leave their post-secondary institution versus those who stay and persist in their studies (Wintre et al, 2008.). Students rate the extent to which they feel there is a match between them, their needs, and those of their present university with regard to the student body, the physical environment, etc. Statements are rated using

¹ Ninety-seven percent of students reported intentions to continue on to at least the second year of study and of those students who intended to continue, 94% reported that they would continue to study at Carleton University. Further analyses were not conducted on intentions to continue as results were overwhelmingly positive.

a five-point Likert scale (1 = absolutely no fit; 3 = neither a good fit nor a bad fit; 5 = a great fit) (see Appendix E). In this study, the Student-University Match Questionnaire demonstrated strong internal consistency reliability ($\alpha = .90$)

Campus connectedness scale (Lee & Robbins, 1995).

The Campus Connectedness Scale is a 14-item self-report scale that measures the degree of belongingness students feel in the campus environment. This scale is a variation of the Social Connectedness Scale (Lee & Robbins). The scale possesses strong internal consistency reliability (Cronbach's alpha ranging from .80 to .92) and strong test-retest reliability (ranging from $\alpha = .73$ to $\alpha = .76$). Participants are asked to rate the degree to which they agree or disagree with statements that may be used to describe their experience on campus (e.g., There are people on campus with whom I feel a close bond) (see Appendix F). Statements are rated using a six-point Likert Scale (1 = strongly disagree; 6 = strongly agree). Campus connectedness is defined as the extent to which students feel socially connected or integrated into the university environment. In this study, the Campus Connectedness scale demonstrated very strong internal consistency reliability ($\alpha = .95$)

Institutional commitment (Nora, 2004).

This 5-item subscale is part of the larger Survey of Attitudes and Behaviours Influencing College Choice (Nora). In the original study, student satisfaction was used as an outcome measure, ultimately predicting whether students would stay or leave their institution (Nora). In total, three subscales comprised the student satisfaction measure - institutional commitment, satisfaction with academic experience, and environmental satisfaction. Environmental Satisfaction was not included in this study because the items

listed were limited to living environments and this research was intended to focus more heavily on academic and social experiences within the campus environment. The Environmental Satisfaction subscale also possessed slightly lower internal consistency reliability as compared to the Institutional Commitment and Satisfaction with Academic Experience subscales ($\alpha = .72$).

For the Institutional Commitment subscale, students are asked to rate the degree to which they agree or disagree with statements that reflect the level of commitment they have toward their institution (e.g., I feel that this university is the best university for me overall) (see Appendix G). The scale possesses strong internal consistency reliability ($\alpha = .85$). The present study defined institutional commitment as student satisfaction with the decision to attend university and commitment to that institution. In this study, the Institutional Commitment scale demonstrated very strong internal consistency ($\alpha = .89$). *Satisfaction with academic experience* (Nora, 2004).

The 5-item Satisfaction with Academic Experience subscale is also part of the larger Survey of Student Attitudes and Behaviours Influencing College Choice (Nora). Students are asked to rate the degree to which they agree or disagree with statements that reflect their level of satisfaction with their academic experience at Carleton (e.g., My classes are appropriately challenging) (see Appendix H). This scale has established strong internal consistency reliability ($\alpha = .77$) (Nora). Satisfaction with the academic experience is defined as student happiness or satisfaction with the classroom experiences, interactions with staff, and preparation for the future relative to expectations (Nora). Both the Institutional Commitment and Satisfaction with Academic Experience scales have

been found to predict student persistence or departure from university (Nora). In this study, the Satisfaction with the Academic Experience scale demonstrated strong internal consistency ($\alpha = .82$)

Procedure

ArtsOne students were recruited via oral presentations given to one class from each respective cluster and via mass email to all ArtsOne students. The presentation and the email invited students to participate in a research study of the first year experience at Carleton and provided information about eligibility criteria and various incentives offered in exchange for participation.

Participation was restricted to students enrolled in their first semester of study at Carleton University. ArtsOne students enrolled in introductory psychology courses were able to sign up to participate in this research online through the Psychology Department Participant Pool (SONA) website. As an incentive, these students were awarded 0.25 bonus course credit in exchange for their participation in Phase I of the study. Alternatively, if ArtsOne students were not enrolled in introductory psychology courses, their names were entered into a draw for a prize of two tickets to an NHL hockey game featuring a local team. Students enrolled in ArtsOne and in introductory psychology courses had the option of choosing the bonus course credit or entering their names into the draw for hockey tickets.

Non-ArtsOne students enrolled in introductory psychology courses were informed of the research study via the Psychology Department Participant Pool (SONA) website, a mass recruiting system designed for students to sign up electronically to participate in

research studies conducted on campus by students and faculty within the Department of Psychology. Non-ArtsOne students enrolled in introductory psychology courses who signed up online using SONA were awarded 0.25 bonus course credit in exchange for their participation in Phase I of the study. All data was gathered online using Survey Monkey.

When students had consented to participate in the study, they completed a brief questionnaire as part of Phase I. The questionnaire gathered basic demographic information and measured academic self-esteem, family encouragement, and expectations about university. In February 2010, students were contacted and asked to participate in Phase II of the research study. The questionnaire given during the second phase of the included measures of expectations about university, student-university match, campus connectedness, institutional commitment, and satisfaction with the academic experience. Fall term and end of first year grade point averages were collected from the Registrar's Office for those students who provided informed consent at the onset of the study. Students were then provided with a letter of explanation clearly outlining the purpose of the study, hypotheses, and when and where findings would be available.

Results

Phase I

The main purpose of the present study was to examine the impact of incoming student background characteristics and university environment variables on first year adjustment to university. First year students in the ArtsOne program at Carleton University were compared to non-ArtsOne students to investigate potential program effects on feelings of adjustment at two points in the academic year: a) at the end of first

term, and b) at the end of first year. Demographic information and background characteristics (academic self-esteem, family encouragement, and expectations about university) were measured during Phase I for two purposes: a) to control for their potential effects on outcome variables and ultimately, on first year student adjustment to university, and b) to control for potential differences in incoming student characteristics between ArtsOne and non-ArtsOne students. Preliminary analyses of Phase I data included descriptive statistics, chi square tests of independence, and ANOVAs to examine the data and to test for potential differences in ArtsOne and non-ArtsOne students. Correlations were performed to test relationships between variables and to test hypotheses. Finally, hierarchical regression was used to test the predictive value of each of the respective background and individual variables in predicting fall term grade point average.

Data Screening

Prior to conducting any analyses, the data set was screened for inaccurate or missing data. Maximum and minimum scores were considered and the data were cleaned to ensure that all responses fell within the appropriate ranges. Accordingly, inaccurate data was removed from the study and mean substitution was performed where scale item scores were missing. The data were plotted and appeared to be normally distributed.

Attrition analyses

Following data screening, a multivariate analysis of variance was performed to assess whether students who returned to participate in the study at T2 differed from students who did not return to participate at T2 in terms of their incoming characteristics

and academic performance. Fall GPA, high school average, expectations for university, academic self-esteem, and parental encouragement were tested. The independent variable, participation in Phase II, had two levels: Participation in Phase I only ($n = 240$) and participation in Phase I and Phase II ($n = 189$). The dependent variables were Fall GPA, high school average, expectations for university, academic self-esteem, and parental encouragement. A multivariate analysis of variance (MANOVA) was conducted and there was a significant overall effect ($F(5, 303) = 3.51, p < .01, \text{Wilks' } \Lambda = .945$). Follow up univariates revealed a significant effect for Fall GPA $F(1, 309) = 9.84, p = .002$. Participants who participated in both Phase 1 and Phase 2 had higher GPAs² in the Fall term ($M = 8.02, SD = 2.68$) than students who participated in Phase I only ($M = 7.04, SD = 2.77$). Students who did not return for Phase II did not differ from returning students on any of the other measures.

Sample characteristics

Most students (93%) reported that they began their studies at Carleton University while the remaining five percent began their studies elsewhere. The majority of students were from Ontario (88%). Approximately half of the remainder were from outside the province of Ontario, but still within Canada, and the other half were International students. Results are displayed in Table 1.

² Note. GPA is calculated based on a 12.0 scale at Carleton University.

Table 1

Student Status

	<i>N</i>	<i>%</i>
Ontario domestic student	386	90.0
Out-of-province student	23	5.4
International student	18	4.2
Special student	2	.5
Total	429	100.0

Ninety-four percent of participants indicated that they were in their first year of study at Carleton University, but the remaining 6% indicated second year standing due to college transfer credits. These students were permitted to be included in the study so long as this was their first time attending university and their standing was not beyond second year.

On average, students indicated that they were taking approximately 4.56 courses in the fall semester and 93% of students had full-time course loads. Seventy-seven percent of students indicated that they were not currently taking any courses on CUTV (Carleton University Television) and sixteen percent indicated that they were taking one course. Less than five percent were taking two or more courses on CUTV. Students indicated that approximately 2.31 of their courses had tutorials.

As shown in Table 2, 41% of students lived in residence and 38% were living at home with parents. Two percent lived in a relative's home and 19% lived in an off-campus apartment or house.

Table 2

Living Situation

	<i>N</i>	<i>%</i>
A residence hall	175	40.8
My parents' home	163	38.0
A relative's home	9	2.1
An off-campus apartment or house	81	18.9
Other	1	.2
Total	429	100.0

As shown in Table 3 below, approximately 8% of students indicated that their mother did not finish high school, 23% graduated from high school and 26% completed some college or CEGEP. Seven percent attended university without earning a degree and about 37% completed a bachelor's degree or higher.

Table 3

Highest Level of Education Completed by Mother

	<i>N</i>	<i>%</i>
Did not finish high school	33	7.7
Graduated from high school	98	22.8
Some or completed college or CEGEP	113	26.3
Attended university without earning a degree	30	7.0
Completed a bachelor's degree	115	26.8
Completed a master's degree	32	7.5
Completed a doctoral degree	7	1.6
Total	428	99.8

Approximately 9% of students indicated that their father did not finish high school, 18% graduated from high school and 28% completed some college or CEGEP. Five percent attended university without earning a degree and about 40% completed a bachelor's degree or higher. Results are presented in Table 4.

Table 4

Highest Level of Education Completed by Father

	<i>N</i>	<i>%</i>
Did not finish high school	38	8.9
Graduated from high school	79	18.4
Some or completed college or CEGEP	118	27.5
Attended university without earning a degree	20	4.7
Completed a bachelor's degree	102	23.8
Completed a master's degree	49	11.4
Completed a doctoral degree	22	5.1
Total	428	99.8

More than half of students (58%) indicated that they were not currently employed; however, 39% indicated that they were employed part-time and 2% were employed full-time. Of the 41% who were currently employed (part or full time) the majority were employed off campus (38%) and the remaining 3% were employed on campus. In terms of the number of hours worked, few students exceeded 20 hours per week and most did not exceed 15 hours. Results are displayed in Table 5.

Table 5

Hours per Week Worked at Job

	<i>N</i>	<i>%</i>
1-5	33	7.7
6-10	33	7.7
11-15	58	13.5
16-20	35	8.2
21-25	8	1.9
26-30	8	1.9
More than 30	7	1.6
Total	182	42.4

In terms of financial need, only 37% of students indicated that they were in receipt of OSAP (Ontario Student Assistance Program) funds and 11% indicated that they had a bank loan. When asked if students had financial concerns about funding their university education, results seemed evenly distributed as 47% reported that they were concerned and 51% were not concerned.

As part of the Phase I questionnaire, students completed measures of academic self-esteem, parental encouragement, and expectations for university. Additionally, fall term grade point averages were gathered where students provided informed consent. Descriptive statistics for scales and fall term grade point averages are displayed in Table 6.

Table 6

Descriptive Statistics for Scales and Fall Term Grade Point Average

<i>Scale</i>	<i>N</i>	<i>Minimum</i>	<i>Maximum</i>	<i>M</i>	<i>SD</i>
ASE	429	1.00	5.00	3.91	.68
PE	429	1.00	5.00	3.95	.88
EX1	428	1.00	4.00	2.86	.49
GPA1 ³	315	.50	12.00	7.47	2.77

Note. ASE = Academic Self-Esteem ; PE = Parental Encouragement; EX1 = Expectations for University (Time 1) ; GPA1 = Grade Point Average (Fall Term)

Comparing ArtsOne and Non-ArtsOne Students

Following the descriptive statistics, a series of crosstabulations were performed to investigate potential group differences between ArtsOne and non-ArtsOne students in terms of incoming student characteristics. Chi square tests of independence were performed on all categorical variables in Phase I: Gender, ArtsOne status, student status, start location, full or part time status, living situation, mother's level of education, father's level of education,, employment status, job on or off campus, hours worked per week, bank loan status, financial concerns about funding university and OSAP (i.e. government loan) status. There were no differences in ArtsOne and non-ArtsOne students on the majority of these variables. The findings presented include only significant results where group differences were found to exist: Job on or off campus and OSAP status.

³ Note. GPA was only obtained from those students who provided written consent. Therefore, GPA1 did not include all participants.

On or off-campus employment: For those students who reported that they were employed, the dependent variable was whether or not the job was on or off campus. The relationship between these variables was significant, $X^2(1, n = 178) = 8.38, p = .004$. Results are shown in Table 7 below. Of those students who worked, both groups were more likely to have jobs off campus than on campus overall. However, a higher proportion of ArtsOne students had jobs on campus, relative to Non-ArtsOne students.

Table 7

Crosstabulation of ArtsOne and Job On or Off Campus

Job on or off	ArtsOne		x^2	df	p
	ArtsOne Frequency (%)	Non-ArtsOne Frequency (%)			
On campus	8 (15.1)	4 (3.2)	8.375**	1	.004
Off campus	45 (84.9)	121 (96.8)			

Note. ** $p < .01$.

Finally, as shown in Table 8, the relationship between Arts One status and receipt of OSAP was significant, $X^2(1, n = 428) = 4.14, p = .042$. Relative to Non-ArtsOne students, ArtsOne students were more likely to be in receipt of OSAP.

Table 8

Crosstabulation of ArtsOne and OSAP

Job on or off	ArtsOne		χ^2	<i>df</i>	<i>p</i>
	ArtsOne Frequency (%)	Non-ArtsOne Frequency (%)			
Yes	57 (45.2)	105 (34.8)	4.143	1	.042
No	69 (54.8)	197 (65.2)			

Note. * $p < .05$.

Next, analysis of variance tests were performed on all Phase I continuous variables to investigate potential group differences between ArtsOne and non-ArtsOne students on incoming student characteristics; demographic information and scale measures: high school average, age, CUTV (Carleton University Television) courses, tutorials, number of courses, academic self-esteem, and parental encouragement and expectations for university. ArtsOne students and non-ArtsOne students only differed on three of these measures: tutorials, number of courses, and expectations for university.

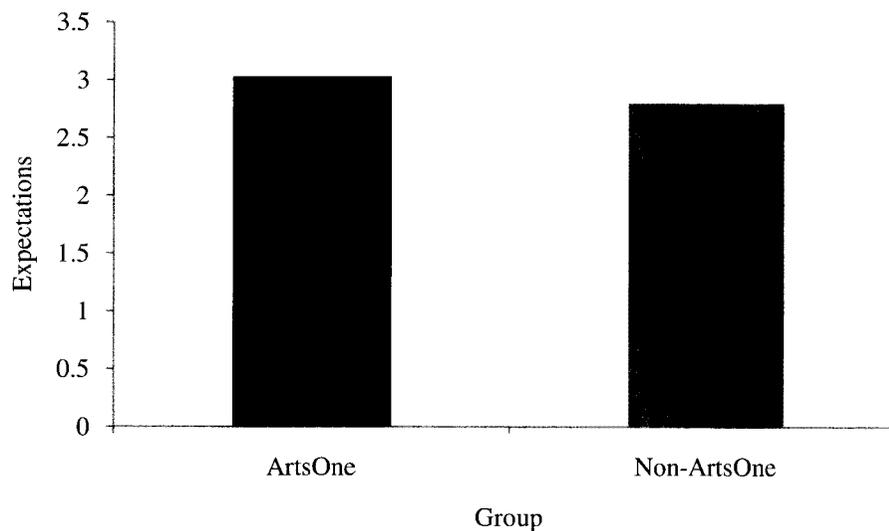
A one-way analysis of variance was performed to assess the relationship between tutorials and ArtsOne. The independent variable, ArtsOne, had two levels: ArtsOne ($n = 126$) and Non-ArtsOne ($n = 303$). The dependent variable was total number of tutorials. The ANOVA was significant, $F(1,428) = 100.66, p = .000$. ArtsOne students reported having more tutorials ($M = 3.16, SD = .94$) than non-ArtsOne students ($M = 1.95, SD = 1.21$).

Results of a one-way analysis of variance showed that differences existed between ArtsOne and non-ArtsOne students in terms of the number of courses. The dependent variable was total number of courses. The ANOVA was significant, $F(1,427) = 6.30, p = .012$. ArtsOne students reported having more courses ($M = 4.71, SD = .61$) than non-ArtsOne students ($M = 4.50, SD = .89$).

Group differences were also found to exist between ArtsOne and non-ArtsOne students in terms of expectations about university. The ANOVA was significant, $F(1, 427) = 20.65, p = .000$. ArtsOne students reported having higher mean expectations for university ($M = 3.03, SD = .51$) than non-ArtsOne students ($M = 2.80, SD = .47$).

Differences are depicted graphically in Figure 1.

Figure 1. Mean differences in expectations for university at time 1 by group.



Summary

Overall, there were few differences between Arts One and non-Arts one students in terms of incoming characteristics. Of particular interest was the fact that ArtsOne students reported higher expectations for university as compared to non-ArtsOne

students, an important finding which was given further consideration in the regression analyses.

Correlation analyses

Relationships between predictor variables and Fall term GPA

A series of independent samples t-tests were performed to examine the relationship between categorical variables (living situation, level of parental education, employment status, and financial concerns) and Fall term GPA. Contrary to expectations, Fall term GPA did not differ as a function of any of the categorical variables.

Correlational analyses were then performed to examine the relationships between background characteristics, individual variables and outcome measures. Table 9 presents correlational analyses for any continuous control variables⁴ (i.e., high school average), individual difference variables (academic self-esteem, parental encouragement, and expectations for university) and the outcome measure (Fall GPA). Several significant relationships emerged between predictors and the outcome variable.

As predicted, results revealed significant positive correlations between high school grades and Fall term grade point average, $r(310) = .35, p < .001$. Academic self-esteem and expectations for university were also found to be positively related to Fall term GPA (see Table 9). In other words, those who reported higher high school grades, higher academic self-esteem and higher expectations for university, had higher grade point averages at the end of the first semester of university.

Additionally, a significant positive correlation was found between academic self-esteem and high school average, $r(422) = .19, p < .001$, suggesting that students with

⁴ High school average was the only control variable included in the correlation matrix because it is the only continuous variable that was correlated with the other variables. None of the other control variables were significantly correlated with the individual difference variables or the outcome measure.

higher averages also had higher academic self-esteem. Parental encouragement was also found to be positively associated with academic self-esteem, $r(429) = .14, p < .01$, and with expectations for university, $r(428) = .19, p < .001$.

Summary

As expected, high school grades were found to be positively related to fall term grade point average. Expectations for university and academic self-esteem, were also positively correlated with fall GPA. Other background variables such as parental education, living situation, working off campus, and having financial concerns about university were not related to Fall GPA.

Phase I

Table 9

Correlations between Incoming Student Characteristics, Individual Variables, and Outcome Measures

	HS Avg	ASE	PE	EX1	GPA1
HS Avg	1.00	.19***	.06	.08	.35***
ASE		1.00	.14**	.31***	.32***
PE			1.00	.19***	-.03
EX1				1.00	.23***
GPA1					1.00

Note. HS Avg = High school average in percent; ASE = Academic Self-Esteem; PE = Parental Encouragement; EX1 = Expectations for University (Time 1); GPA1 = Grade Point Average (Fall GPA)

***p > 0.001; **p > .01; *p > .05

Regression analyses

Predicting Fall GPA

A hierarchical regression was performed to predict Fall GPA from individual student variables controlling for background characteristics. Variables were entered in to the regression equation in a pre-determined order based on Astin's I-E-O model and the notion that student background characteristics or "inputs" must be controlled for in order to determine the impact of the university "environment" on student adjustment "outcomes."

Following preliminary correlational analyses, gender, ArtsOne status, and high school average were selected as control variables and were entered on Step 1 of the regression. Expectations for university, parental encouragement and academic self-esteem were entered on Step 2. As previously mentioned, preliminary analysis of variance tests revealed differences between ArtsOne and non-ArtsOne students on expectations for university. It was expected that expectations for university, academic self-esteem and parental encouragement might moderate the relationship between ArtsOne and Fall GPA. That is, participation in ArtsOne might have a stronger influence on Fall GPA for students with higher expectations for university, academic self-esteem, and parental encouragement. As such, interaction terms were entered in to the regression on Step 3.

On Step 1, with control variables entered, gender was significantly and negatively related to Fall GPA, such that females (coded as 1) had higher Fall GPA than did males (coded as 2) ($\beta = -.12$). Consistent with hypotheses, high school average was a significant predictor ($\beta = .35$), indicating that high school average was positively associated with

Fall GPA. On Step 2, as predicted, academic self-esteem ($\beta = .21$) and expectations for university ($\beta = .13$) were significantly and positively related to Fall grade point average. Contrary to predictions, parental encouragement was not found to significantly predict Fall GPA. On Step 3, none of the variables accounted for a significant proportion of the variance in Fall GPA as none of the interactions entered on Step 3 were statistically significant (see Table 10).

Table 10

Hierarchical Regression Analyses Predicting Fall Term Grade Point Average from Incoming Student Characteristics and Individual Variables

Predictor	R^2	ΔR^2	β
Step 1	.15	.15	
Gender			-.12*
HS Avg			.35***
ArtsOne			-.09
Step 2	.22	.07	
ASE			.21***
PE			-.08
EX1			.13*
Step 3	.23	.01	
ArtsOne x ASE			.59
ArtsOne x PE			-.38
ArtsOne x EX1			-.48

Note. HS Avg = High school average in percent; ASE = Academic Self-Esteem; PE = Parental Encouragement; EX1 = Expectations for University (Time 1).

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

Summary

To summarize, females had higher Fall GPAs than males. High school grade point average was positively related to Fall GPAs in the first semester of university. Finally, individual difference variables, specifically academic self-esteem and expectations for

university, were found to positively predict Fall GPA in that higher expectations and self-esteem were associated with higher Fall GPAs.

Conclusion

Preliminary analyses revealed few initial differences in ArtsOne and non-ArtsOne students in terms of background characteristics and the groups were overall, very similar. However, ArtsOne students and non-ArtsOne students differed in one important respect: expectations for university. Results showed that ArtsOne students, on average, had higher expectations for university than non-ArtsOne students.

Across the sample, high school grades, expectations for university, academic self-esteem emerged as variables that were positively and significantly related to fall term grade point average. Hierarchical regression analyses (following Astin) then found that only high school grades, expectations for university, and academic self-esteem significantly predicted grade point average in the fall term.

Phase II

The purpose of the Phase II of this study was to isolate university environment variables while controlling for student background characteristics and individual variables, in order to determine the effect of the university environment on student adjustment outcomes. There were three student adjustment variables: GPA (end of first year), Satisfaction with the academic experience and Institutional commitment. Expectations for university were measured again in order to determine whether or not expectations changed over the course of the first year of university from Time 1 (1st semester – November 2009) to Time 2 (2nd semester – February 2010). Campus connectedness and student-university match were also measured and were used to assess

the extent to which university environment variables affected student adjustment outcomes. Specifically, these variables were included to determine how much of the student adjustment process was dependent on environment variables and to assess potential differences between ArtsOne and non-ArtsOne students in terms of their adjustment to university relative to different learning environments. Descriptive statistics were performed first to assess the data, followed by a series of analysis of variance tests on the university environment and outcome variables to examine potential differences between ArtsOne and non-ArtsOne students on these measures. Correlations between variables were then tested. Finally, a series of hierarchical regressions were performed to examine which variables predicted the outcome measures.

Table 11 displays descriptive statistics for all scales measured in Phase II and end of first year grade point averages.

Table 11

Descriptive Statistics for Scales and First Year Grade Point Average

<i>Scale</i>	<i>N</i>	<i>Minimum</i>	<i>Maximum</i>	<i>M</i>	<i>SD</i>
EX2	189	1.67	4.00	2.89	.49
SUM	189	39.00	85.00	65.88	9.31
CC	189	19.00	84.00	60.58	14.10
IC	189	1.00	5.00	3.58	1.04
SAEX	189	1.20	5.00	3.90	.79
GPA2	147	1.80	12.00	7.90	2.38

Note. EX2 = Expectations for University (Time 2) ; SUM = Student-University Match; CC = Campus Connectedness; CGPA2 = Grade Point Average (1st Year)

Comparing ArtsOne and Non-ArtsOne Students

Similar to Phase I, preliminary data analysis involved next performing a series of ANOVAs to examine potential differences between ArtsOne and non-ArtsOne students across measures for Phase II. One-way analysis of variance tests were performed on all measures included in the Phase II questionnaire; expectations for university at Time 2, university environment measures (campus connectedness and student-university match) and outcome measures (institutional commitment, satisfaction with the academic experience, and first year GPA). ArtsOne and non-ArtsOne students differed on expectations for university at Time 2. The ANOVA was significant, $F(1,188) = 15.50, p = .000$. ArtsOne students reported having higher mean expectations for university ($M = 3.09, SD = .49$) than non-ArtsOne students ($M = 2.80, SD = .46$) (see Figure 2). No other significant differences were found. Mean scores on expectations for university at Time 2,

university environment and outcome measures for ArtsOne and non-ArtsOne students are displayed in Table 12.

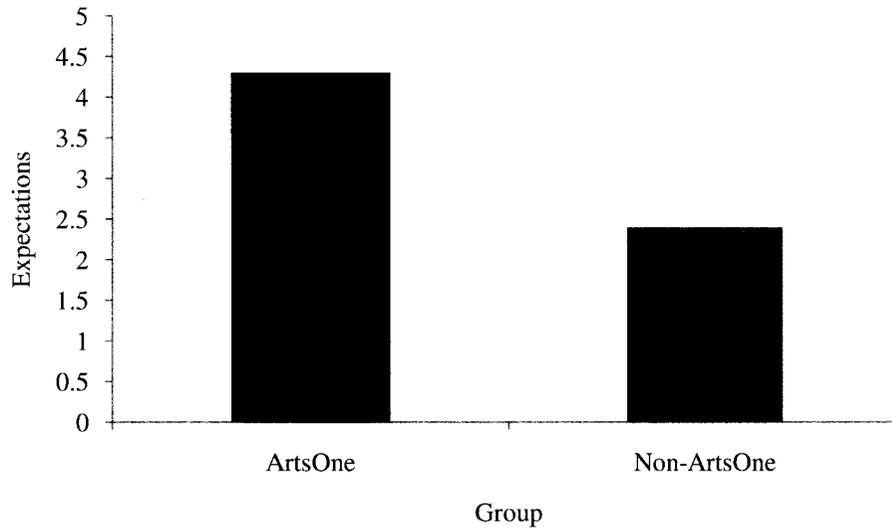
Table 12

Descriptive Statistics (by ArtsOne Status)

<i>Scale</i>	<i>ArtsOne</i>					<i>Non-ArtsOne</i>				
	<i>N</i>	<i>Min.</i>	<i>Max.</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>Min.</i>	<i>Max.</i>	<i>M</i>	<i>SD</i>
EX2	63	1.67	4.00	3.09	.49	126	1.67	3.67	2.80	.46
CC	63	32.00	84.00	61.16	13.50	126	19.00	84.00	60.28	14.44
SUM	63	49.00	83.00	67.71	8.05	126	39.00	85.00	64.97	9.78
IC	63	1.00	5.00	3.77	.93	126	1.00	5.00	3.48	1.08
SAEX	63	1.60	5.00	4.01	.75	126	1.20	5.00	3.85	.80

Note. EX2 = Expectations for University (Time 2); CC = Campus Connectedness; SUM = Student-University Match; IC = Institutional Commitment ; SAEX = Satisfaction with the Academic Experience

Figure 2. Mean differences in expectations for university at time 2 by group.



Summary

Consistent with findings at Time 1, results revealed that ArtsOne students had higher expectations for university at Time 2 than non-ArtsOne students. Arts One student did not differ from non Arts One students on any of the university environment variables. However, when compared to the sample in the original study used to validate the student-university match questionnaire (SUM) (Wintre et al., 2008), mean scores of student-university match were on average, higher across Carleton students ($M = 65.9$) relative to samples of students from six other universities across Canada ($M = 48.7$). In the original study (Wintre et al.) perceived student-university match was higher among students who attended small universities. Interestingly, results from the present study have yielded higher mean scores of student-university match than even scores from other small Canadian universities ($M = 50.2$). Therefore, one may conclude that Carleton students, on average, felt quite a good 'fit' with the university. Additionally, when compared to a sample of students in a validation study of the campus connectedness scale

by Summers, Beretvas, Svinicki, & Gorin (2005), results of the present study yielded comparable findings with respect to mean campus connectedness scores. Carleton students (both ArtsOne and non-ArtsOne) scored slightly lower than students in the sample by Summers et al., however, mean scores indicated that overall, students felt quite 'connected' to the university.

Correlation analyses

Relationships between student background characteristics, university environment variables and first year GPA

Correlations were performed to investigate relationships between control (high school average), individual (academic self-esteem, parental encouragement, expectations for university), environment (student-university match and campus connectedness), and outcome variables (institutional commitment, satisfaction with the academic experience, end of first year grade point average). Significant relationships were revealed (see Table 13).

Demographic variables and first year GPA

High school average was positively correlated with end of first year GPA, $r(145) = .28, p < .01$. Therefore, the notion that high school average predicts GPA in university appears to hold true for both first term (Fall GPA) and end of first year GPA. Moreover, Fall GPA and end of first year GPA were strongly and positively correlated, $r(144) = .88, p < .001$, indicating that grades in the Fall term were remained relatively stable over time through the end of first year.

Individual variables and first year GPA

At Time 2, expectations for university were found to be positively associated with end of first year GPA, $r(147) = .24, p < .01$. Correlational results also showed that expectations for university at Time 1 and Time 2 were positively and significantly correlated with each of the predictor, individual, environment and outcome variables except for parental encouragement (see Table 13). Expectations for university at Time 1 and expectations at Time 2 were positively and significantly correlated, $r(188) = .57, p < .001$, indicating that expectations for university were fairly stable over the course of first year. Academic self-esteem was also positively associated with GPA at the end of first year, $r(147) = .42, p < .001$.

Environmental variables and first year GPA

As predicted, correlation analyses revealed a significant positive relationship between SUM scores and institutional commitment, $r(188) = .67, p < .001$. Student-university match was also positively related to satisfaction with the academic experience, $r(188) = .56, p < .001$. Results did not reveal a significant relationship between student-university match and end of first year grade point average, $r(147) = .10, p = .21$. Students who felt that they were a good 'fit' with the university also felt more committed to the institution and were more satisfied with the academic experience. Student-university environment fit however did not appear to impact grade point average as the relationship between these variables was non-significant.

Results showed that, as expected, campus connectedness was positively related to institutional commitment, $r(189) = .66, p < .001$, and satisfaction with the academic experience, $r(189) = .30, p < .001$. In other words, students who felt connected to the

university campus also felt more committed to the institution and were more satisfied with the academic experience. The relationship between campus connectedness and end of first year grade point average was not significant, $r(147) = .08$, $p = .36$, indicating that feeling connected to the campus was not related to grade point average at the end first year.

Summary

High school average, expectations for university and academic self-esteem were positively and significantly correlated with grade point average both in the fall term and at the end of first year. Expectations for university and academic self-esteem also predicted greater institutional commitment and satisfaction with the academic experience; however, high school average did not. As expected, university environment variables (student-university match and campus connectedness) were positively and significantly related to institutional commitment and satisfaction with the academic experience, however, they were not significantly related to end of first year grade point average, thereby suggesting that university environment variables impact feelings of commitment to the university and satisfaction with the academic experience, but are not related to grades at the end of first year. It is important to highlight, however that institutional commitment and satisfaction with the academic experience were positively and significantly related to end of first year GPA.

Table 13

Correlations between Incoming Student Characteristics, Individual Variables, Environment Variables, and Outcome Measures

	HS Avg	ASE	PE	EX1	EX2	SUM	CC	IC	SAEX	GPA1	GPA2
HS Avg	1.00	.19*	.13	.17*	.08	.07	.14	.04	-.09	.29**	.28**
ASE		1.00	.12	.32***	.30***	.24**	.10	.21**	.29***	.38***	.42***
PE			1.00	.11	.08	.14	.10	.01	.13	.08	-.07
EX1				1.00	.57***	.43***	.29***	.30***	.43***	.25**	.23**
EX2					1.00	.65***	.47***	.53***	.54***	.29**	.24**
SUM						1.00	.63***	.67***	.56***	.17*	.10
CC							1.00	.66***	.30***	.07	.08
IC								1.00	.56***	.20*	.18*
SAEX									1.00	.20*	.18*
GPA1										1.00	.88***
GPA2											1.00

Note. HS Avg = High school average in percent; ASE = Academic Self-Esteem; PE = Parental Encouragement; EX1 = Expectations for University (Time 1); EX2 = Expectations for University (Time 2); SUM = Student-University Match; CC = Campus Connectedness; IC = Institutional Commitment; SAEX = Satisfaction with the Academic Experience; GPA1 = Grade Point Average (Fall GPA); GPA2 = Grade Point Average (First Year GPA)

***p <.001 level; **p < 0.01; * p < 0.05

Regression analyses

A series of hierarchical regression analyses were performed to examine the amount of variance accounted for in student adjustment outcomes (institutional commitment, satisfaction with the academic experience and first year grade point average) by student background characteristics, individual variables, and university environment variables. Gender, ArtsOne, and high school average were entered on Step 1. Expectations for university, parental encouragement, and academic self-esteem were entered on Step 2. Student-university match and campus connectedness were entered in on Step 3. ArtsOne x campus connectedness and ArtsOne x student-university match interaction terms were entered in on Step 4. Regressions were performed separately using the same set of independent variables to predict each dependent variable: a) institutional commitment, b) satisfaction with the academic experience, and c) first year grade point average.

It was hypothesized that campus connectedness and student-university match would be positively associated with adjustment outcomes as reflected in each of the three dependent variables.

Predicting institutional commitment

On Step 1, results revealed a significant trend in the data, indicating that ArtsOne status was negatively associated with institutional commitment ($\beta = -.14$) That is, students enrolled in ArtsOne (coded as 1) had greater institutional commitment than non-ArtsOne students (coded as 2). On Step 2, expectations for university were significantly and positively associated with institutional commitment ($\beta = .26$). Consistent with hypotheses, on Step 3, both campus connectedness ($\beta = .43$) and student-university match

($\beta = .40$) were significantly and positively related to institutional commitment (see Table 14). ArtsOne status did not interact with campus connectedness nor student-university match when predicting institutional commitment.

Table 14

Hierarchical Regression Analyses Predicting Institutional Commitment from Incoming Student Characteristics, Individual Variables and University Environment Variables

Predictor	R^2	ΔR^2	β
Step 1	.03	.03	
Gender			.09
HS Avg			.05
ArtsOne			-.14 ^t
Step 2	.12	.09	
ASE			.13
PE			-.03
EX1			.26**
Step 3	.56	.44	
CC			.43***
SUM			.40***
Step 4	.56	.00	
ArtsOne x CC			.19
ArtsOne x SUM			-.13

Note. HS Avg = High school average in percent; ASE = Academic Self-Esteem; PE = Parental Encouragement; EX1 = Expectations for University (Time 1); CC = Campus Connectedness; SUM = Student-University Match

* $p < .05$. ** $p < .01$. *** $p < .001$. ^t $p = .059$.

Predicting satisfaction with the academic experience

On Step 1, none of the control variables contributed significantly to predicting satisfaction with the academic experience. On Step 2, regression analyses revealed that expectations for university ($\beta = .39$) and academic self-esteem ($\beta = .21$) were both positively associated with satisfaction with the academic experience. As predicted, on Step 3, student-university match was significantly and positively related to satisfaction with the academic experience ($\beta = .45$), however, campus connectedness was not found to be significantly related to this outcome measure. Additionally, on Step 4, ArtsOne was not found to interact with campus connectedness or student-university match when predicting satisfaction with the academic experience (see Table 15).

Table 15

Hierarchical Regression Analyses Predicting Satisfaction with the Academic Experience from Incoming Student Characteristics, Individual Variables and University Environment Variables

Predictor	R^2	ΔR^2	β
Step 1	.02	.02	
Gender			.07
HS Avg			-.08
ArtsOne			-.11
Step 2	.27	.24	
ASE			.21**
PE			.08
EX1			.39***
Step 3	.41	.14	
CC			-.04
SUM			.45***
Step 4	.42	.01	
ArtsOne x CC			-.51
ArtsOne x SUM			-.20

Note. HS Avg = High school average in percent; ASE = Academic Self-Esteem; PE = Parental Encouragement; EX1 = Expectations for University (Time 1); CC = Campus Connectedness; SUM = Student-University Match

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

Predicting first year GPA

On Step 1, high school average was found to be a significant and positive predictor of first year grade point average ($\beta = .28$), indicating that high school average was positively associated with first year GPA. On Step 2, academic self-esteem was also found to be significantly and positively related to first year GPA ($\beta = .34$). On Step 3, neither campus connectedness nor student-university match were significantly related to first year GPA and ArtsOne status was not found to interact with either variable where GPA was predicted (see Table 16).

Table 16

Hierarchical Regression Analyses Predicting End of First Year Grade Point Average from Incoming Student Characteristics, Individual Variables and University Environment Variables

Predictor	R^2	ΔR^2	β
Step 1	.10	.10	
Gender			-.12
HS Avg			.28**
ArtsOne			.01
Step 2	.25	.15	
ASE			.34***
PE			-.14
EX1			.11
Step 3	.25	.00	
CC			.03
SUM			-.03
Step 4	.26	.02	
ArtsOne x CC			-.12
ArtsOne x SUM			1.33

Note. HS Avg = High school average in percent; ASE = Academic Self-Esteem; PE = Parental Encouragement; EX1 = Expectations for University (Time 1); CC = Campus Connectedness; SUM = Student-University Match

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

Interactions

In addition to interactions between ArtsOne and university environment variables (campus connectedness and student-university match), it was hypothesized that expectations for university and academic self-esteem might moderate the relationship between university environment and outcome variables. That is, the university environment might have a stronger impact on outcome variables such as institutional commitment and satisfaction with the academic experience for students with higher expectations and/or higher academic self-esteem at the beginning of university. Accordingly, two additional sets of regression analyses were conducted.

Gender, ArtsOne status, and high school average were entered in on Step 1 as control variables. On Step 2, academic self-esteem, parental encouragement and expectations for university were entered in to the regression. Campus connectedness and student-university match were entered on Step 3. Campus connectedness by expectations and student-university match by expectations interaction terms were entered on Step 4. Regressions were performed, predicting each dependent variable: a) institutional commitment, b) satisfaction with the academic experience, and c) first year grade point average.

There were no significant effects for academic self-esteem. However, a significant interaction was found between student-university match and expectations for university ($\beta = -2.16$) (see Table 17). Simple slope analysis indicated that the relationship between student-university match and satisfaction with the academic experience was stronger for students with lower expectations at the beginning of university (see Figure 3).

Table 17

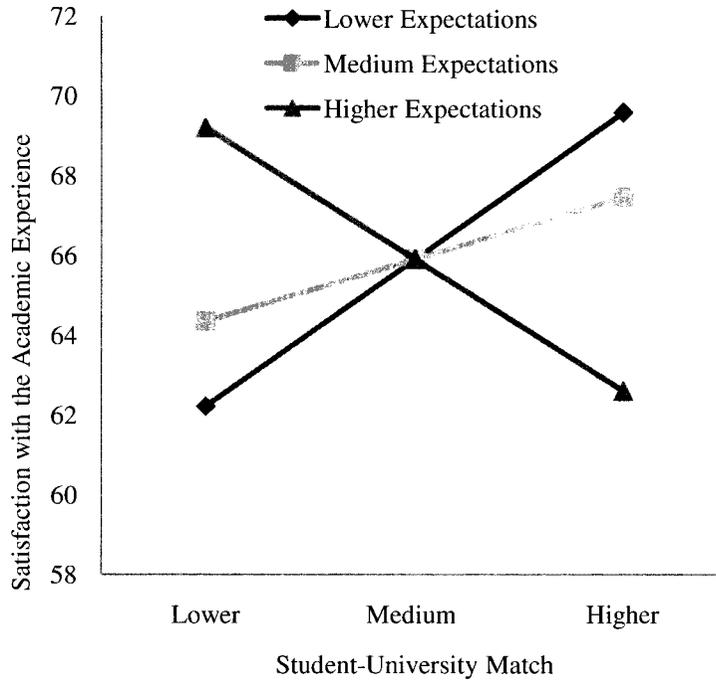
Hierarchical Regression Analyses Predicting Satisfaction with the Academic Experience with Tested Interactions between Individual and University Environment Variables

Predictor	R^2	ΔR^2	β
Step 1	.02	.02	
Gender			.07
HS Avg			-.08
ArtsOne			-.11
Step 2	.27	.24	
ASE			.21**
PE			.08
EX1			.39***
Step 3	.41	.14	
CC			-.04
SUM			.45***
Step 4	.42	.01	
EX1 x CC			1.29
EX1 x SUM			-2.16**

Note. HS Avg = High school average in percent; ASE = Academic Self-Esteem; PE = Parental Encouragement; EX1 = Expectations for University (Time 1); CC = Campus Connectedness; SUM = Student-University Match

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

Figure 3. Expectations for university by student-university match interaction.



Conclusion

At Time 2, ArtsOne students continued to have higher expectations for university as compared to non-ArtsOne students. Findings showed that ArtsOne status did not play a significant role in predicting outcomes; however, there was a trend for ArtsOne students to be more committed to the institution than non-ArtsOne students. For first year GPA, only the individual difference variables and high school average seemed to predict, but the university environment did account for a significant amount of variance in both satisfaction with the academic experience and institutional commitment over and above individual variables. Individual difference variables (expectations for university and academic self-esteem) also helped to account for variance in institutional commitment and satisfaction with the academic experience. Finally, results revealed a significant

interaction between student-university match and satisfaction with the academic experience. The relationship between student-university match and satisfaction with the academic experience was found to be stronger where lower expectations existed. In conclusion, both individual and environment variables predicted student adjustment outcomes. While university environment variables had a significant effect on satisfaction with the academic experience and institutional commitment, they did not play a significant role in predicting GPA at the end of first year. In all cases, however, individual variables (those the student came in with) were significant predictors.

Discussion

Previous research on adjustment to university has primarily focused on contributing factors associated with positive adjustment, however, little consensus exists in terms of which factors are most critical to adjustment. Primarily cross-sectional in nature, few existing studies have attempted to isolate and interpret the role of university environment factors and their relative contribution to positive adjustment; even fewer studies have examined these factors longitudinally. The main purpose of the present study was to investigate the respective roles of student background characteristics and university environment factors in predicting adjustment to university. Using Astin's (2003) I-E-O (Inputs - Environment - Outcomes) model of student change, this study attempted to isolate university environment effects (campus connectedness and student-university match) on adjustment to university by controlling for students' incoming characteristics at the onset of university. Specifically, this study sought to determine a) to what extent could adjustment to university be attributed to pre-university characteristics and experiences students possessed prior to entering university and b) to what extent

could the university environment be responsible for first year adjustment to university. Results of the present study yielded three main findings: 1) only individual difference variables and high school average predicted GPA at the end of first year 2) university environment variables were the most significant predictors of institutional commitment and satisfaction with the academic experience and 3) the relationship between student-university match and satisfaction with the academic experience was strongest where expectations for university were low.

Predicting Fall GPA and first year GPA

In terms of predicting GPA at the end of Fall term, high school grades was the only background variable that predicted Fall GPA. Expectations for university and academic self-esteem predicted Fall GPA and academic self-esteem continued to predict GPA at the end of first year. Such findings imply that expectations for university may play a role in initial adjustment to university, but their influence on grades may dwindle throughout the course of first year. Academic self-esteem at the onset of university, however, remains an important predictor across first year, thereby suggesting that feeling confident in one's ability to succeed in courses, to complete university, and feeling overall, academically similar to peers may be an important determining factor in terms of how students fare with respect to grades across first year.

ArtsOne status did not appear to play a role in determining end of first year grade point average. That is, participation in the program did not predict GPA. Such results are perhaps not surprising given that the goals of the ArtsOne program in the learning community setting is not necessarily designed to increase grades, but rather to increase the value of the learning experience.

However, results suggest that ArtsOne status does appear to play a role in determining commitment to the institution. In fact, ArtsOne status was the only background variable that seemed to predict institutional commitment. A significant trend was revealed in the data; students enrolled in ArtsOne were more committed to the institution than non-ArtsOne students. This finding suggests that ArtsOne may in fact have some positive effects in terms of increasing commitment to the institution, an important finding with possible implications for retention, discussed in further detail below.

The role of the university environment

University environment variables were not found to predict Fall GPA or end of first year GPA. Therefore, students' pre-university characteristics and experiences are the most important factors in determining grades at the end of first year. As a result, it is important to reiterate that, universities have no control over pre-university characteristics and experiences. Furthermore, these findings provide support for Astin's (2005) research which identified institutional selectivity as the most critical characteristic related to academic success of students. In other words, academic success, at least in terms of grades, may be most heavily influenced by the types of students the university admits.

Previous research has shown that social connectedness to the institution one attends can directly impact the likelihood of student departure (Allen et al., 2008). Freeman et al (2007) highlighted the importance of having a connection with the institution or feeling that one was part of the university and a lack of these feelings was associated with having thoughts or talking to someone about leaving that institution. The present study found that, as predicted, university environment variables (campus

connectedness and student-university match) were significantly and positively associated with adjustment to university, reflected in institutional commitment and satisfaction with the academic experience.

Predicting institutional commitment

Expectations for university were significantly related to institutional commitment, thereby implying that while effects of expectations for university on grades may dwindle throughout the course of the academic year, their impact on commitment to the institution remains an important factor until at least the second semester of first year. Such findings suggest that institutional commitment may predict second, third, or even fourth year success.

The most significant positive predictors of institutional commitment, however, were the university environment variables, campus connectedness and student-university match. Such findings suggest that while the university environment may not play a significant role in determining grade point averages in first year, it plays a critical role in determining commitment to the institution. Furthermore, commitment to the institution may in fact be more critical to determining student departure than grade point averages. If retention is defined as maintaining students at one institution until their graduation (Arnett, 2001) and retention statistics primarily determine how government funding is allotted to post-secondary institutions (Sharma, 2004), then commitment to the institution should carry far more weight than GPA. More clearly, commitment to the institution implies intent to remain at the same university – the definition of retention. Therefore, if university environment variables such as student-university match and campus connectedness predict institutional commitment, as findings from the present study have

shown, then universities should direct more attention to the university environment and its effects on students, particularly if they are to improve their understanding of student departure, and ultimately, to propose solutions to retention problems.

Predicting satisfaction with the academic experience

None of the incoming student characteristics predicted satisfaction with the academic experience. Academic self-esteem and expectations for university, both individual difference variables, were significantly related to satisfaction with the academic experience. Additionally, student-university match predicted satisfaction with the academic experience. However, campus connectedness did not. Results imply that the students' perceived overall 'fit' with the university in terms of the physical environment, the political climate, the social environment, the academic challenges, and so on, is more important than the degree to which they feel connected with others on campus, at least in terms of predicting satisfaction with the academic experience. There are several reasons for this result. First, the student-university match questionnaire aims more at measuring an overall person-environment fit in terms of the academic environment whereas the campus connectedness measure is more interested in gauging perceived connections to campus, primarily as a function of social relationships. Furthermore, the outcome measure, satisfaction with the academic experience, measures satisfaction as a function of academic experiences within the classroom and within the university which do not necessarily include social experiences. This suggests that students' perceived 'fit' with the university environment may be most critical to predicting how satisfied they feel with their academic experiences.

Finally, one of the most interesting findings of the study involved tested interactions between expectations for university and student-university match. Specifically, a significant interaction was found between student-university match and expectations for university when predicting satisfaction with the academic experience. It was expected that the relationship between student-university match and satisfaction with the academic experience would be stronger for students with high expectations at the onset of university. However, this was not the case. Contrary to predictions, results indicated that the relationship between student-university match and satisfaction with the academic experience was actually stronger for students with low expectations at the onset of university. This is interesting because it seems that the role of the university environment in determining satisfaction with the academic experience may be more critical to students with lower expectations for university in first semester. Furthermore, these findings suggest that participation in a first year adjustment program like ArtsOne, for example, may be more effective for students with lower expectations at the onset of university. As mentioned earlier, ArtsOne students had higher expectations for university at T1 and T2 in this study. If participation in a first year adjustment program like ArtsOne may be more useful for students with lower expectations to begin with, then it is possible that typically more 'keen' students are entering ArtsOne and that they may in fact not be the students who would benefit most from the program.

In summary, while ArtsOne status does not appear to influence grades, trends indicate that participation in the program does influence commitment to the institution. High school average, academic self-esteem, and expectations for university – all background characteristics students bring with them upon entry into university appear

most critical to determining grade point averages at the end of first year. This suggests that background characteristics over which the university has no control may be the most important factors in determining adjustment to university if grade point average is the sole measure of adjustment to university. The university environment, however, seems to play a more critical role in determining students' commitment to the university and their satisfaction with the academic experience in first year, variables which may arguably be more important to retention than GPA. Therefore, while high school average and academic self-esteem seem to be the most important predictors of first year grades, the university environment (campus connectedness and student-university match) are the most critical predictors of adjustment to university as measured in terms of satisfaction with the academic experience and institutional commitment.

Limitations and future directions

The present study examined first year adjustment to university by directly comparing students in ArtsOne to students who were not part of this program. Several limitations exist which should be considered when conducting further research in this area.

First and foremost, this study used a longitudinal design and Astin's (2003) I-E-O model of student change. Therefore, it was possible to isolate and control for student incoming characteristics (Inputs) and university environment factors (Environment) with respect to predicting adjustment to university (Otcomes). A pressing need exists for research in this area to continue to adopt a similar approach, particularly a longitudinal rather than a cross-sectional design. A longitudinal design is essential if adjustment to

university is to be investigated because it is not possible to examine change over time if students are not first tested at matriculation.

Because the majority of incoming student characteristics can account for adjustment to university, it is critical that when examining the ways in which university environment factors impact adjustment, a research design is used that can control for incoming student characteristics, separate from university environment factors. Adopting this approach, the present study tracked adjustment to university over the course of first year. However, it cannot ultimately provide an explanation for student change in the long-term, particularly with respect to retention and time required for degree completion. Therefore, it is important that the study extends into at least second year and ideally, until the end of fourth year in order to better understand adjustment to university as it exists as a process. This is particularly important as ArtsOne program effects may not become evident until second year and beyond, once students are no longer part of the program. Findings suggested some positive effects in the short term in that ArtsOne status may predict satisfaction with the academic experience. University environment measures were also found to predict satisfaction with the academic experience and institutional commitment. Accordingly, participants should be tested throughout university to see whether or not these effects persist over time.

A need also exists to replicate these findings at other universities in Canada. Few studies exist that involve directly comparing students in a first year adjustment program to students enrolled in the mainstream, despite the fact that first year adjustment programs are growing due to decreasing completion rates and retention issues throughout Canadian universities.

Second, future research should consider eliminating some of the non-significant measures in this study which were not found to predict adjustment to university in any of the outcome measures. For example, although it was correlated with other individual variables (expectations for university and academic self-esteem), parental encouragement was not found to predict adjustment. Because results supported the notion that individual characteristics, expectations for university and academic self-esteem, play an important role in adjustment to university, future research should incorporate more of these types of measures instead. For example, one might consider incorporating personality or identity measures to better capture personality traits and attitudes upon entering university.

Third, this study is limited in that it did not capture “leavers” or students who were not likely to stay or were unhappy with the university experience. Results of this study showed that an overwhelming proportion of the students who returned to participate in this research at T2 intended to continue on to at least the second year of study and the majority indicated that they would do so at Carleton University. It is likely that, to a certain extent, students who did not intend to stay were probably less likely to return to the study. Therefore, this study was unable to capture students who had already left or to provide explanations as to why they left. For those few students who indicated that they would not continue on to at least the second year of study, most indicated that they would continue in post-secondary studies, but would do so rather at a college than at a university. Furthermore, most students indicated that they would transfer institutions rather than abandon post-secondary studies altogether. Interestingly, the majority of leavers cited personal reasons (i.e. financial concerns or being too far away from home) as their explanations for leaving Carleton University.

Given that students who did not intend to stay most likely did not return to the study, it is possible that the sample of students who returned to the study may not be representative of the general student population. Indeed, students who returned to the second phase of the study had significantly higher Fall GPAs than students who did not return to the study. There are several reasons why this might be the case. A report from the Office of Institutional Research and Planning (Carleton University) showed that based on all degree-seeking undergraduate students admitted in 2008, approximately 74% continued on to their second year of studies at Carleton University. Over the past ten years, these rates have ranged from a low of 70% in 2000 to a high of 75% in 2005. However, when results were based on undergraduate students seeking a Bachelor of Arts degree, these rates were slightly lower. Results showed that of those students admitted in 2008, 72% continued on to their fourth year of studies at Carleton University.

The present study focused on students studying within the Faculty of Arts and Social Sciences. Findings showed that at T2, 97% of students intended to continue on to at least the second year of study and 94% indicated that they would do so at Carleton University. Because results in this case were overwhelmingly positive and therefore limited the analyses, intentions to continue were removed from this study as outcome measures. However, given these high rates and taking into consideration that the retention rate for students seeking a Bachelor of Arts degree has typically been around 72%, it is unlikely that the present study captured a representative sample of the general student population. This is an important limitation for several reasons. First, because the overwhelming majority of students in the present study indicated intentions to continue at T2, these findings imply that the students who were retained in this study were most

likely already committed to staying. As a result, scores may be inflated across measures of student-university match, campus connectedness, commitment to the institution and satisfaction with the academic experience. Therefore, the relationship between the university environment and outcome variables may be somewhat exaggerated in that experiences within the environment may not influence outcomes as heavily as results show in this case. Second, the unique structure of the ArtsOne program and its subsequent appeal to students, in combination with the promotion of the program may have also affected the current sample. Particularly, students entering ArtsOne may have had inflated scores on measures of expectations for university in that their expectations might have been higher than expectations for students not entering ArtsOne because of the promotional aspects and uniqueness of the program.

Recognizing that this sample may not be representative of the general student population due to strong intentions to continue, it is also important to acknowledge that students who returned to the study at T2 typically had higher Fall GPAs than students who participated at T1. Therefore, this suggests that students who returned to the study at T2 may have been more 'keen' or academically stronger than those students who participated at T1. As a result, scores on measures of student-university match, campus connectedness, commitment to the institution and satisfaction with the academic experience may have again, been inflated; the relationships between university environment and outcome variables may have been somewhat exaggerated. Consequently, the sample may have been slightly biased and not necessarily representative of the larger student body.

Considering the strong intentions to continue indicated in the present study and the inability of that measure to capture academic and social integration factors that predicted adjustment to university in the present study, future research may consider incorporating a persistence measure rather than one of intentions to continue. Persistence has previously been linked to academic and social integration (Strage, 1999). For example, academic and social integration have determined whether students are likely to persist in university (Strage). Persistence measures general confidence, sense of self, goal orientation at school, concern about preparation for the future, and adjustment to college (university) (Strage). This differs from intentions to continue in that it captures personal awareness (i.e. confidence and sense of self) as well as goals and concerns, in combination with adjustment to university. Personal awareness (i.e. academic self-esteem) has been shown to be an important factor in predicting adjustment to university in the present study and social integration (i.e. campus connectedness) has been shown to influence satisfaction with the academic experience and institutional commitment. Intentions to continue, however, only measure whether or not one plans to continue on to at least the second year of study and the institution they are likely to attend. Therefore, a measure of persistence could add to the prediction of adjustment to university.

Future research may also consider incorporating more qualitative measures, particularly if leavers are to be investigated. Qualitative responses may be able to capture information that simply cannot be quantified. For example, incorporating qualitative measures would allow students to provide explanations for their attitudes toward university, experiences within the university environment, and reasons for staying versus

leaving. Such responses could provide important insight into student adjustment to university as it impacts grades, satisfaction, commitment, and ultimately, retention.

Implications

Despite the ability of incoming student characteristics to predict adjustment to university at the end of first year, universities ultimately cannot control students' backgrounds. High school grades, attitudes, and expectations for example, have already been pre-determined. At a minimum, results from the present study suggest that universities should consider gathering more information about their students prior to entering university. For example, Carleton University might consider incorporating measures of expectations for university and academic self-esteem into admissions applications to help determine student readiness for university, expectations, and academic confidences. This information could be beneficial to both faculty and administration not only in determining which students need the most supports, but also in tailoring academic programs to promote and encourage student success.

Findings seem to suggest that background and social integration factors are some of the best predictors of adjustment to university. Clearly, this is a changing student population with needs that differ from previous cohorts and a pressing need exists to find out why students come to university and to better understand what they hope to gain from the experience. More importantly, who are these students and what would it take to get them to stay if the experience does not go according to plan?

Furthermore, both researchers and universities need to look beyond just examining incoming students more closely to determine their needs. Carleton University and other universities alike must ultimately decide what they are trying to achieve by

examining adjustment to university and student retention rates. Specifically, is the bottom line of retention the only thing that matters? Should universities primarily concern themselves with the goal of retaining and graduating students within the expected four year degree completion time in order to achieve sufficient funding from governments? Is the function of the university primarily to serve as a business that focuses mainly on profit or does the university strive to create and promote an effective learning environment where students receive a high quality of learning, remain committed to the institution, have positive experiences to recount beyond their fourth year and ultimately leave the institution to make a positive contribution to society? Ultimately, is it possible for universities to effectively retain students and graduate students who are satisfied with their experiences?

To rely primarily on the findings of this research to inform decisions regarding the future of the ArtsOne program at Carleton University would be erroneous. Findings from the present study show that while ArtsOne may not necessarily predict satisfaction with the academic experience in first year, there is a trend for ArtsOne students to be more committed to Carleton University by their second semester of study. If commitment to the institution indicates intent to stay and retention specifically measures maintaining students at one institution until graduation then results found here suggest that the ArtsOne program may be increasing the likelihood that students will stay at Carleton University until graduation. Additionally differences between ArtsOne students and non-ArtsOne students may not become apparent until second year and beyond. Consequently, these findings need to be further examined to determine if students remain committed up

until fourth year and if other effects of the learning community setting become evident in second year and beyond.

Ultimately, universities should re-evaluate what is most important with respect to student outcomes. Grade point averages should not be the only focus when assessing student adjustment to university as factors such as commitment to the institution and satisfaction with the academic experience also play very active roles in student retention. Arguably more important, commitment and satisfaction help to shape the attitudes and feelings graduates hold about the institutions where they studied, effects which extend well beyond fourth year – often expressed in ties as alumni and as valuable contributing members of the university community.

Theoretical Implications

In terms of theoretical implications, the present research provides empirical support for Astin's (1970a, 1970b, 1991) I-E-O conceptual framework for studying student change. Findings from the present study reinforce the notion that student change as a function of background "inputs" (characteristics they possessed prior to entering university) and the university "environment" (experiences they have while in the setting). Indeed, findings confirm that student background characteristics and previous academic learning experiences (i.e. high school grades, academic self-esteem and expectations for university) directly influence and shape student outcomes (GPA, commitment to the institution, and satisfaction with the academic experience). Accordingly, experiences within the university environment (student-university match and campus connectedness) also indirectly influence outcomes. To reiterate, the I-E-O model was designed to isolate

the effects of the college setting on student outcomes, independent of incoming student characteristics. Applying the model to the present study allowed student background characteristics and university environment factors to be isolated and their relative contributions to adjustment to be measured. The present study found that both student background characteristics and university environment variables were found to predict adjustment to university at the end of first year.

In addition to the finding that both student inputs and environment variables predicted adjustment, the present study built upon Astin's model by providing empirical support for specific variables of interest. High school grades, academic self-esteem, expectations for university, student-university match and campus connectedness and were all identified as being statistically significant predictors of university adjustment. Identifying specific factors from students' backgrounds that impact adjustment to university is critical to the development of a better model of student university adjustment and retention.

Because researchers have struggled to identify factors that predict adjustment to university, little consensus exists among researchers in terms of which factors play the most critical role. The present study fills a gap in that it pinpoints specific individual and environmental factors that directly predict and moderate adjustment to university. However, replication of these results, incorporating the same measures at other Canadian universities and modelling Astin's I-E-O model, remains essential.

Conclusion

In conclusion, results of the present study demonstrated that adjustment to university can largely be explained by student background characteristics, or characteristics that the students 'bring with them.' High school grades, academic self-esteem, and expectations for university are the most critical variables in terms of predicting grades when it comes to the first year experience, expectations tend to dictate outcomes or "you get what you expect." Additionally, confidence and previous academic performance are largely responsible for first year grades, suggesting carryover effects from high school. However, it is the university environment that tends to be most critical in determining satisfaction with the academic experience and commitment to the institution. It is important that future research consider more longitudinal studies that control for incoming student characteristics and investigate the transition to university from the time of matriculation until graduation in order to better understand adjustment to university and its impact on retention within Canadian universities.

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Appendix A

Phase I: Demographic Variables

- 1) Gender:
_____ Female
_____ Male
- 2) Age: _____
- 3) Please indicate your student status (circle one):
 - a) Ontario domestic student
 - b) Out-of-province student
 - c) International student
 - d) Other (please specify): _____
- 4) What is your current classification in university?
 - a) 1st year
 - b) 2nd year
 - c) 3rd year
 - d) 4th year
- 5) How many courses are you currently taking? _____
- 6) How many of your courses are on CUTV? _____
- 7) How many of your courses have tutorials? _____
- 8) Did you begin university at your current institution or elsewhere? (check one)
 - Started here
 - Started elsewhere
- 9) Are you in the ArtsOne program at Carleton?:
 - Yes
 - No
- 10) Please indicate your academic major(s) or your expected major(s):

- 11) How would you characterize your enrolment?
 - Full-time
 - Part-time

- 12) Approximate academic average in final year of high school (percentage %):

- 13) While attending university, I am currently living in (circle one):
- a) a residence hall
 - b) my parents' home
 - c) a relative's home
 - d) an off-campus apartment or house
 - e) other (please specify): _____
- 14) What is the highest level of education that your mother completed? (circle one)
- a) Did not finish high school
 - b) Graduated from high school
 - c) Some or completed college or CEGEP
 - d) Attended university without earning degree
 - e) Completed a bachelor's degree (B.A., B.Sc., etc.)
 - f) Completed a master's degree (M.A., M.Sc., etc.)
 - g) Completed a doctoral degree (Ph.D., J.D., M.D., etc.)
- 15) What is the highest level of education that your father completed?
- a) Did not finish high school
 - b) Graduated from high school
 - c) Some or completed college or CEGEP
 - d) Attended university without earning degree
 - e) Completed a bachelor's degree (B.A., B.Sc., etc.)
 - f) Completed a master's degree (M.A., M.Sc., etc.)
 - g) Completed a doctoral degree (Ph.D., J.D., M.D., etc.)
- 16)a) Please indicate your employment status (check one):
- Employed full-time
 - Employed part-time
 - Not currently employed
- b) If employed, is the job on-campus or off-campus?
- Yes
 - No
- c) On average, how many hours per week do you work? (circle one)
- a) 1-5
 - b) 6-10

- c) 11-15
- d) 16-20
- e) 21-25
- f) 26-30
- g) More than 30

- 17) Will you be receiving OSAP to fund your studies this year?
- Yes
 - No
- 18) Will you be receiving a bank loan to fund your studies this year?
- Yes
 - No
- 19) Do you currently have concerns about being able to fund your university education? (check one)
- Yes
 - No

20)a) Please indicate your contact information below:

Phone number: _____

Email: _____

b) Please indicate your preferred method of contact:

Phone Preferred days/times to be called:

Email _____

Appendix B

Phase I: Academic Self-Esteem Scale

Directions: Please circle the number that best corresponds to your agreement with each statement below.

	Strongly Disagree	Somewhat Disagree	Neither agree nor disagree	Somewhat Agree	Strongly Agree
1. I feel that my academic ability is similar to my peers at this university.	1	2	3	4	5
2. I truly feel that I can compete academically with other students at this university.	1	2	3	4	5
3. I feel confident that I can succeed in my courses.	1	2	3	4	5
4. When I chose to attend this university, I felt that I was academically prepared for this university.	1	2	3	4	5
5. I feel confident about my ability to complete university.	1	2	3	4	5
6. When I chose to attend this university, I felt that I could compete with other students here.	1	2	3	4	5
7. I could academically achieve and surpass others at this university.	1	2	3	4	5

Appendix C

Phase I: Parental Encouragement Scale

Directions: Please circle the number that best corresponds to your agreement with each statement below.

	Strongly Disagree	Somewhat Disagree	Neither agree nor disagree	Somewhat Agree	Strongly Agree
1. My decision to attend this university was based on support offered by my family.	1	2	3	4	5
2. My decision to attend university was encouraged by my parents.	1	2	3	4	5
3. My decision to attend this university pleased my parents.	1	2	3	4	5

Appendix D

Phase I & II: Expectations for University Scale

Directions: The following list describes the traits of universities. Please indicate the extent to which this trait has met your expectations at the school you are attending.

1 = This trait has not met my expectations

2 = This trait has met my expectations to a small extent

3 = This trait has met my expectations to an extent

4 = This trait has met my expectations to a large extent

1. Students learn a lot in their majors.	1	2	3	4
2. Graduates are satisfied with their experience.	1	2	3	4
3. Most of the classes are small.	1	2	3	4
4. Graduates get into good graduate schools of their choice.	1	2	3	4
5. Students improve their reading, writing, and thinking skills.	1	2	3	4
6. Students get a good general education.	1	2	3	4

Appendix E

Phase II: Student-University Match (SUM) Questionnaire

Directions: Please indicate the extent to which you feel there is a match between you and your needs and that of Carleton University with regard to each of the items below. Circle your response for each item.

	<u>Absolutely No Fit</u>	<u>Neither a Good Fit Nor a Bad Fit</u>			<u>A Great Fit</u>
	0	1	2	3	4
1. The physical environment	0	1	2	3	4
2. The student body	0	1	2	3	4
3. The student ethnic mix	0	1	2	3	4
4. The political climate	0	1	2	3	4
5. The intellectual climate	0	1	2	3	4
6. The distance from my family	0	1	2	3	4
7. The social environment	0	1	2	3	4
8. The amount of freedom/independence	0	1	2	3	4
9. The anonymity	0	1	2	3	4
10. The amount of student participation	0	1	2	3	4
11. The academic goals	0	1	2	3	4
12. The critical debate	0	1	2	3	4
13. The relevance of material in my courses	0	1	2	3	4
14. The academic challenges	0	1	2	3	4
15. The level of assistance available	0	1	2	3	4
16. The variety of courses	0	1	2	3	4
17. The programs available	0	1	2	3	4

Appendix F

Phase II: Campus Connectedness Scale

Directions: The following statements reflect various ways in which you may describe your experience on this entire university campus. Rate the degree to which you agree or disagree with each statement using the following scale (1 = Strongly Disagree and 6 = Strongly Agree). There is no right or wrong answer. Do not spend too much time with any one statement and do not leave any unanswered.

Strongly Disagree 1	Disagree 2	Mildly Disagree 3	Mildly Agree 4	Agree 5	Strongly Agree 6	
		<u>Strongly</u> <u>Disagree</u>			<u>Strongly</u> <u>Agree</u>	
1. There are people on campus with whom I feel a close bond.....	1	2	3	4	5	6
2. I don't feel that I really belong around the people that I know on campus.....	1	2	3	4	5	6
3. I feel that I can share personal concerns with other students.....	1	2	3	4	5	6
4. I am able to make connections with a diverse group of people.....	1	2	3	4	5	6
5. I feel so distant from the other students	1	2	3	4	5	6
6. I have no sense of togetherness with my peers.....	1	2	3	4	5	6
7. I can relate to my fellow classmates.....	1	2	3	4	5	6
8. I catch myself losing all sense of connectedness with college life.....	1	2	3	4	5	6
9. I feel that I fit right in on campus.....	1	2	3	4	5	6
10. There is no sense of brother/sisterhood with my university friends.....	1	2	3	4	5	6

11. I don't feel related to anyone on campus	1	2	3	4	5	6
12. Other students make me feel at home on campus.....	1	2	3	4	5	6
13. I feel disconnected from campus life.....	1	2	3	4	5	6
14. I don't feel I participate with anyone or any group.....	1	2	3	4	5	6
	<u>Strongly Disagree</u>			<u>Strongly Agree</u>		

Appendix G

Phase II: Institutional Commitment Scale

Directions: Please circle the number that best corresponds to your agreement with each statement below.

	Strongly Disagree	Somewhat Disagree	Neither agree nor disagree	Somewhat Agree	Strongly Agree
1. I feel that this university is the best university for me socially.	1	2	3	4	5
2. I am satisfied with my social life here at this university.	1	2	3	4	5
3. I like this university better than I thought I would.	1	2	3	4	5
4. I feel that this university is the best university for me overall.	1	2	3	4	5
5. Overall, I would still choose this university if I had to make my decision over again.	1	2	3	4	5

Appendix H

Phase II: Satisfaction with Academic Experience Scale

Directions: Please circle the number that best corresponds to your agreement with each statement below.

	Strongly Disagree	Somewhat Disagree	Neither agree nor disagree	Somewhat Agree	Strongly Agree
1. My classes are appropriately challenging.	1	2	3	4	5
2. My classes are what I expected in terms of their difficulty.	1	2	3	4	5
3. I feel that this university is the best university for me academically.	1	2	3	4	5
4. I feel that the faculty members provide adequate support.	1	2	3	4	5
5. I believe this university will prepare me to succeed.	1	2	3	4	5

Appendix I

Phase II: Intentions to Continue

1) a) Do you intend to continue on to at least your second year of study?

- Yes [If yes, proceed to question b)]
- No [If no, proceed to question d)]

b) If yes, will you be continuing at Carleton?

- Yes [If yes, stop here]
- No [If no, proceed to question c)]

c) If you will not be continuing at Carleton, where will you transfer and why? Please explain below:

d) If no, why not? Please explain below:
