University of Alberta

Sexual Behaviours During the Transition to University: A Positive Development Approach

by

Andrea Louise Dalton

A thesis submitted to the Faculty of Graduate Studies and Research
in partial fulfillment of the requirements for the degree of

Master of Arts

Department of Psychology

Edmonton, Alberta
Spring, 2007

Your file Votre référence
ISBN: 978-0-494-29878-7
Our file Notre référence
ISBN: 978-0-494-29878-7

ABSTRACT

The purpose of the current study was to describe sexual behaviour among first-year university students by determining average trajectories of engagement in sexual behaviour. A second objective was to examine within-time associations between these measures and affective experiences. Participants were 182 full-time, first-year students at the University of Alberta, who completed a baseline questionnaire followed by six monthly, web-based checklists. Analyses with multilevel models showed that the average trajectory of change in odds of engaging in oral sex, but not penetrative sex, displayed a 15% per month increase, after controlling for person-level factors (gender, sexual beliefs, and psychosocial maturity). Within-time associations showed that participants who had more liberal attitudes toward sexual behaviour and who were psychosocially mature tended to experience greater positive affect during months in which they engaged in sexual activities. Implications of these findings are discussed and placed in the context of existing research.

ACKNOWLEDGEMENT

I wish to thank my supervisor, Dr. Nancy Galambos, for supporting my involvement in this research. Nancy encouraged me to set ambitious goals, and provided invaluable feedback, guidance, and support at all stages of this project. I also thank Drs. Jeffrey Bisanz and Elena Nicoladis for their thorough and thoughtful critiques of this work, and for their general support of my graduate career. Thanks also go to Dr. Cameron Wild for his excellent insights and feedback.

I could not have completed this research without the help of the graduate students and research assistants from the Youth Transitions Lab. In particular, I wish to thank Clayton Kleparchuk for his dedication and commitment to the lab, and Rebecca Williams for developing and maintaining the study website. I also thank Karen Ross, Kelly Arbeau, and Meredith Kenzie for their assistance with data collection. As a recent graduate of the lab, I also thank Dr. Erin Barker for her guidance and mentorship. She has been an invaluable source of advice and an excellent role model.

Thanks to my friends across the University of Alberta community who have contributed to creating a supportive environment in which to pursue graduate studies, and to my family for their unwavering belief in my ability to succeed. I thank my parents, Sharon Dalton, Keith Dalton, and Elaine Orgill, my brother Ross Dalton, and the Barker family: my grandfather Cedric, uncles Robert and John, and my aunt Janice Ristow.

Finally, thanks are extended to the first-year English instructors who allowed us to recruit participants from their classes, to the students who participated, and to the granting agencies whose funds supported this research: the Social Sciences and Humanities Research Council of Canada, and the Canadian Institutes of Health Research.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

INTRODUCTION

Adolescents have been the focus of a substantial literature exploring the emergence of sexuality and its associated implications for healthy development. However, few researchers have expanded this literature by conducting studies of sexuality development during the years immediately following adolescence. Erikson (e.g., 1963) has argued that a key task of development that occurs for adolescents as they approach adulthood is the achievement of *intimacy*, part of which includes the ability to commit to long-term relationships. Progressively changing engagement in various sexual behaviours, from kissing to touching to intercourse, is a component of this task. Indeed, almost half of all Canadian adolescents have initiated their first sexual intercourse experiences by age 17 (Canadian Association for Adolescent Health [CAAH], 2006), and over 90% of Canadians become sexually active by age 25 (Maticka-Tyndale, Barrett, & McKay, 2000). This implies that the period of development from the late teens to the mid-twenties is essential for studying sexual development.

According to Jeffrey Arnett (2000), demographic trends in North America during recent decades have placed mean ages of marriage, parenthood, completion of education, moving out of the family home, and employment higher than have been observed since the first half of the twentieth century. These trends have exposed a distinct period of development during the life course he termed *emerging adulthood* to highlight the ways in which youth aged approximately 18-25 are gradually approaching and making the transition to adulthood. Emerging adulthood is distinct from adolescence and young adulthood for several reasons: First, emerging adults are demographically diverse. Many

continue to live with their parents, some move away to attend colleges and universities, and others enter the workforce (Arnett, 2000). Because mean ages of marriage, parenthood, employment, and other life events have risen to the mid- to late-twenties, there are fewer expectations for emerging adults in their late teens to early twenties to settle into permanent roles. Thus, a second characteristic that distinguishes this period of development is the freedom emerging adults have to explore roles and identities without feeling forced to make serious commitments or take on permanent responsibilities. An example of this freedom is that emerging adults in America display the most residential mobility relative to all other age groups (Arnett, 2000). Such residential mobility implies that emerging adults have fewer responsibilities to others that prevent frequent moving for purposes of convenience or to pursue desirable career opportunities. These features of emerging adulthood make it a desirable period of development in terms of self-exploration. Emerging adulthood is also a period in which love relationship explorations become more sophisticated relative to adolescence. Erikson's (1963) task of intimacy development is clearly aligned with the romantic experiences of emerging adults. According to Arnett (2000), a focus of this period is on "exploring the potential for emotional and physical intimacy," (p. 473), and consequently, on sexuality development.

A unique demographic subgroup of emerging adults are those individuals who enter post-secondary education after high school. In Canada, over 60% of emerging adults aged 20-24 attend college and/or university for some time, although only 31% earn a diploma, certificate, or degree (Statistics Canada, 2001). The transition to college or university can include multiple changes for late adolescents and emerging adults, such as moving away from the family home and experiencing greater freedom from parental

supervision (Lefkowitz, 2005). Indeed, transitions in general are periods during which behaviours change, emerge, and disappear, and university is a salient example of a context in which new behaviours can be anticipated (Graber & Brooks-Gunn, 1996). Given the variable environments and diverse social contexts to which emerging adults at university are exposed, it is worthwhile to study them independently of the broader range of individuals classified as emerging adults.

Emerging adults in college and university programs have the opportunity to explore and experiment with sexual behaviours to a greater extent than may have been possible previously in their lives given the greater parental supervision typically present in adolescence. Indeed, a study of sexual behaviour among nearly 800 first- through fourth-year university students at a private New York college (Siegel, Klein, & Roghmann, 1999) revealed that a substantial proportion of students in all years report actively engaging in vaginal and oral sex. Rates of such active sexual engagement increase from 34% among first-year students to 44% among second-year students, and 63% among third and fourth year students. Furthermore, students reported ever having engaged in sexual behaviour at rates between 52% among first-years to 86% among fourth-year students. Clearly, the majority of emerging adults enrolled in college and university take advantage of opportunities to explore their sexuality through intimate behaviours such as oral and vaginal intercourse.

Two major shortcomings of sexuality research are the primary focus on adolescent, rather than emerging adult sexual health, and the general orientation of the field to preventing risks rather than exploring positive developmental consequences of sexual activity. Lefkowitz and Gillen (2006) reviewed existing literature on sexuality in

emerging adulthood and found that most studies have focused on the inherent risks and negative consequences of sexual activity rather than on sexuality as a normative developmental process. For example, Siegel et al. (1999) addressed issues of unplanned pregnancy and HIV transmission among college students. Their interpretations focused on the ways in which the results of their study could be used to improve sexual risk-management in university settings. Other studies geared toward prevention of risky sexual behaviour in adolescence have shown relations between positive outcomes and engagement in sexual activities that were contrary to the authors' hypotheses or that were interpreted from the bias of a risk perspective. For example, Lammers, Ireland, Resnick, and Blum (2000) surveyed a sample of 26,023 adolescents aged 13-18 and found that sexually active adolescents of all ages reported higher levels of body pride than adolescents who had not yet had sexual intercourse. In another study, Paul, Fitzjohn, Herbison, and Dickson (2000) found that adolescent girls who initiated sexual intercourse at earlier ages had higher scores on a measure of self-esteem.

One study of 12,000 American adolescents found an interesting relationship between intelligence and sexual behaviour that was interpreted with a bias toward identifying risk and protective factors against engagement in sexual activities. Halpern, Joyner, Udry, and Suchindran (2000) determined that a curvilinear relationship existed between intelligence scores and odds of engaging in sexual intercourse. Adolescents with higher intelligence scores were less likely to be sexually active, but adolescents with very low intelligence scores were also less likely to be sexually active. Their interpretation of this finding was that higher intelligence acted as a protective factor against early involvement in sexual activities. With respect to lower intelligence, the authors suggested

that these individuals probably had the benefit of constrained opportunities and parental protection against involvement in sexual activities. However, by taking the perspective that sexual activity in adolescence is typically normal, healthy, and explorative, this finding could be reinterpreted to suggest that higher and lower intelligence scores impede adolescents from becoming involved in sexual activities at times that are consistent with a normal developmental timeline. Individuals with very high and very low intelligence scores may have more difficulties integrating into social situations and may thus have fewer opportunities to develop intimate friendships that may lead to sexual exploration.

Michaud (2006) noted that sexual activity in general should not be characterized as strictly risk-oriented, and that engagement in sexual behaviour, as well as other potentially risky activities, reflects exploration and experimentation. In emerging adulthood, the exploratory nature of sexuality fits with the developmental mandate of the late teens and early twenties. Indeed, Lefkowitz and Gillen (2006) note that sexual behaviour in emerging adulthood is normative, and thus a risk-focused approach fails to capture an accurate picture of the variety of behaviours and beliefs associated with sexuality during this period. There is a lack of research that informs about the behaviours, feelings, and events that contribute to adaptive patterns of sexual development across adolescence and emerging adulthood. For example, how does involvement in sexual behaviour change over time? Are any indicators of positive development related to increasing involvement with sexual behaviour over time? Do these indicators lead to positive experiences when individuals are sexually active, or to negative experiences when they are not?

The present study will address these gaps by pursuing the following goals: First, this study will determine whether or not, on average, sexual behaviours among first-year university students follow predictable increasing or decreasing patterns, referred to here as *trajectories*, over time. Second, this study will investigate the impact that positive development indicators and feelings about sexual behaviour have on these patterns of sexual behaviour. Third, this study will determine how engagement in sexual behaviour changes in relation to positive emotional experiences. The relationship between sexual behaviour and negative emotion will also be examined to learn whether a strictly positive development approach is warranted.

CHAPTER II

LITERATURE REVIEW

This chapter reviews literature that is relevant to understanding how engagement in sexual behaviour develops and changes across the first year of university. A discussion of sexuality development is prefaced by an overview of the *lifespan perspective* of development. This overview presents the goals and assumptions held by scholars conducting research under this theoretical framework, and discusses the application of a lifespan approach to research on sexuality. Sexuality development is then discussed in two contexts: first, in terms of how engagement in sexual behaviour may be expected to progress during emerging adulthood and what kinds of behaviours are likely to exhibit change in the first year of university; second, in terms of how engagement in sexual behaviour may be related to positive experiences, rather than risks or negative outcomes in emerging adulthood. Next, literature describing potential predictors of variation in sexuality development across these two contexts is presented. Developmental differences are anticipated based on participants' gender, sexual beliefs, and psychosocial maturity status.

Despite the importance of understanding sexuality development in these contexts for emerging adults, the majority of available literature has focused on relevant issues in adolescent samples. Findings are presented as evidence for hypotheses about sexual behaviour in emerging adulthood, and highlight the importance of confirming known relationships between sexuality and other psychosocial factors beyond adolescence. The chapter concludes with a discussion of the goals of the present study and a summary of the research questions to be examined.

Lifespan Theory of Development

Sexual development is a process, not an event. However, researchers have primarily studied sexuality by contrasting adolescents who have initiated intercourse with those who have not (Brooks-Gunn & Furstenberg, 1989). Such a dichotomy prevents the detection and exploration of variation among individuals who have not yet had intercourse, as well as in those whose sexual experiences vary in terms of frequency and type of behaviour. Given these concerns, it may be more appropriate to study sexuality from a lifespan perspective. Researchers who operate under this framework make at least two key assumptions about human development: First, developmental processes are not restricted to childhood and adolescence, rather, they take place throughout the life course. Adaptation and compensation for developmental gains and losses are constant, lifelong processes such that most behavioural and psychological phenomena cannot be fully appreciated if studied exclusively within a restricted age range (Baltes, Lindenberger, & Staudinger, 1998). Second, individual development is embedded within a network of contexts or dimensions that simultaneously influence each other and the individual. In other words, individual development cannot be understood from the perspective of a single context (e.g., home, school, culture), because development is wholistically influenced by a network of contexts, within which the influence of a single context cannot be fully detached from the influence of the network (Bronfenbrenner, 1977; Lerner, 1998).

Researchers working from a lifespan perspective are generally concerned with promoting successful or positive development and with evaluating how individuals remain stable or change over time. Specifically, a lifespan perspective permits

examination of development on three dimensions: (1) norms of development (i.e., average or typical patterns of behaviour), (2) interindividual differences in developmental progress (i.e., predictors of behavioural patterns), and (3) intraindividual change over time (i.e., covariation between behavioural patterns and changes in other behavioural or psychosocial factors; Baltes et al., 1998). In addition, a major concern of lifespan research is to evaluate these norms, differences, and changes from the perspective of promoting positive youth development. In other words, it is essential that problematic or risky behaviours be viewed as exceptional instances within the context of a developmental path that is replete with resources capable of promoting positive outcomes (Lerner, Almerigi, Theokas, & Lerner, 2005). Applying a lifespan perspective to sexuality means that research using this framework has the capacity to differentiate traditionally defined, sexually active, and inactive individuals in terms of their patterns or trajectories of sexual behaviour, differences in sexual behaviour as predicted by other variables, and covariation between sexual behaviours and other variables as they change over time. Taking a lifespan perspective thus eliminates the weaknesses associated with a dichotomous, time-invariant, and problem-focused view of sexuality. The assumptions and methodology of the lifespan perspective help to shape the questions pursued in the present study, and lead to an interest in asking not only about correlates of sexual behaviour, but predictors of sexual behaviour trajectories, from which inferences about intraindividual change over time can be made.

Change Over Time in Sexual Behaviour

Lerner (1998) argued that, in order to appropriately address the complex nature of human development, researchers operating from a lifespan perspective must include

"multiple occasions, methods, levels, variables, and cohorts" (p. 12) in their methodologies. Although no studies of sexuality have yet exhausted this list of criteria in published research, some have incorporated selected elements of the list, leading to preliminary insights into sexuality from a lifespan perspective. For example, Bingham and Crockett (1996) attempted to predict psychosocial outcomes in development based on the timing of adolescents' first sexual intercourse experience. They followed 505 girls and boys in grades 9 through 12, and assigned participants to three categories of sexual activity: early, middle, or late initiation of intercourse (individuals who remained sexually inactive at the outset of grade 12 were assigned to the "late" group). These categories were used to predict outcomes on several measures, including problem behaviours (e.g., shoplifting, cheating, fighting, substance use), conventional behaviours (e.g., academic expectations, church attendance), quality of relationships (e.g., ability to rely on parents, ability to make friends easily), and psychosocial adjustment (e.g., self-esteem, positive affect). In general, their results were consistent with many non-developmental approaches to adolescent sexuality such that earlier sexual involvement was associated with poorer outcomes. For example, trajectories of psychosocial adjustment were poorest for the early timing group versus the middle and late timing groups. Interestingly, however, after controlling for participants' prior levels of psychosocial adjustment, the absolute timing of first intercourse did not predict negative psychosocial outcomes. This finding is inconsistent with the well-established notion that early initiation of intercourse is related to problem behaviours and other negative outcomes. However, Bingham and Crockett's (1996) use of a lifespan perspective revealed that early sexual initiation does not necessarily place adolescents at risk for

problems such as low self-esteem later in development. Cross-sectional studies that correlate involvement in problem behaviours with age at first intercourse may be misleading because they cannot account for differences in the measurement of factors such as psychosocial adjustment at a single point in time, compared to the measurement of change in these factors over time. For example, a participant's self-esteem score at a single occasion of measurement may be interpreted to be low, but if measured on multiple occasions, it may be revealed that the participant's trajectory of change in self-esteem is actually improving. Bingham and Crockett were able to determine the impact of these kinds of trajectories, whereas most studies have been restricted to making inferences based on single occasions of measurement.

Another developmental study attempted to determine what psychosocial factors might predict adolescents' delay of first intercourse (Carvajal, Parcel, Basen-Engquist, Banspach, Coyle, et al., 1999). Over a period of 18 months that included follow-up measures at nine-month intervals, Carvajal et al. found that adolescents aged 13-18 who were sexually inactive at the outset of the study were more likely to delay initiating intercourse if they had more conservative attitudes towards sex, and if they believed their friends had more conservative attitudes (e.g., agreeing that individuals of the same age as the respondent should postpone sex until they are older). Other predictors of delay included ethnicity (non-African-Americans were more likely to delay intercourse) and having a parent who graduated from college. Although absolute age did not predict delay of intercourse, Carvajal et al. determined that age may act as a factor moderating the relation between attitudes and delay of onset: Influences of attitudes were strongest among the youngest participants (those under age 15). By taking a lifespan approach to

their research questions, Carvajal et al. showed that individual characteristics can interact differently at different times in development to influence adolescents' initiation of intercourse.

Other studies have taken a lifespan perspective by hypothesizing developmental pathways to sexual behaviour in adolescence. For example, Feldman, Rosenthal, Brown, and Canning (1995) studied grade 10 boys from diverse ethnic backgrounds in San Francisco, and followed them up four years later. They proposed a path-analytic model in which rejection by peers in grade 10 was expected to be related directly to having a greater number of sexual partners four years later, and indirectly by way of relations between peer rejection, misconduct (e.g., antisocial behaviour, substance use), and self-restraint (e.g., impulsivity vs. control and respect for others). They found that rejection by peers in grade 10 was only indirectly related to number of sexual partners 4 years later. Rejected boys had poorer self-restraint in grade 10, and consequently were more likely to exhibit misconduct four years later. Misconduct and number of sexual partners were positively related in the path analysis, which implies that misconduct precedes engagement in sexual activity and may be linked to a relation between preadolescent rejection by peers and sexual activity in adolescence. A recent study by Zimmer-Gembeck, Siebenbruner, and Collins (2004) proposed a path model from infancy through adolescence to explain number of sexual partners at age 19 This outcome was selected because individuals who report more sexual partners are more likely to have initiated intercourse earlier. Unlike Feldman et al., this model also incorporated positive predictors, such as sociability, peer acceptance, and friendship quality. Using structural equation modeling, they found that higher sociability at 30 months of age was related to

higher quality friendships at age 12-13, which in turn was related to an earlier onset of romantic relationships (as reported at age 16). Earlier onset of relationships was related to a higher frequency of alcohol use at age 16, which was related to a greater lifetime number of sexual partners, as reported at age 19. Peer acceptance at age 12-13 was also positively related to alcohol use and thus to sexual partners. A strength of this study is that the authors provide some positive interpretations to the data. For example, they suggest that adolescents whose friendships are of higher quality may feel more competent at an earlier age to initiate romantic relationships. However, they also suggest that these adolescents may benefit from guidance to help manage these early relationships in a responsible way, rather than suggesting that adolescents with poorer-quality friendships may need guidance to acquire the confidence needed to initiate romantic relationships when they are ready.

The studies reviewed here reveal the equivocal nature of the relations between engagement in sexual behaviour and psychosocial outcomes that are positive and negative, when change over time is taken into account. Although none of these studies has pursued the study of sexual development using the exhaustive methodology recommended by Lerner (1998), they have nonetheless highlighted the ways in which developmental methods can impact our understanding of adolescent and emerging adult sexual activity.

To study emerging adult sexual behaviour in an appropriately complex manner, it is important to measure sexual behaviour in more complex terms than the traditional active/inactive dichotomy. This dichotomy fails to differentiate, for example, between individuals who engaged in sexual intercourse on one or a few occasions during

adolescence and did not repeat the experience over a number of years, and those who have had multiple partners or who have been regularly active in engaging in sexual behaviours. It also fails to distinguish individuals who actively engage in non-coital sexual behaviours (such as oral sex and intimate touching) from those who do not engage in any sexual behaviours.

Research conducted by Halpern-Felsher and colleagues (e.g., Cornell & Halpern-Felsher, 2006; Halpern-Felsher, Cornell, Kropp, & Tschann, 2005) has highlighted the importance of considering oral sex as a measure of sexual behaviour in studies of adolescent sexuality. They argue that adolescents engage in oral sex for different reasons than vaginal intercourse, and that a greater proportion of adolescents experiment with oral sex than vaginal intercourse. Indeed, 58% of Canadian adolescents aged 14-17 agree that "oral sex is a good alternative to intercourse for someone who wants to remain a virgin." (CAAH, 2006). Halpern-Felsher et al. found, in a sample of 580 grade nine students, that teens perceive oral sex as more acceptable than vaginal intercourse among their age-matched peers, that negative social and emotional consequences are less likely between partners who engage in oral sex compared to vaginal intercourse, and that substantially more adolescents view oral sex as free of risk for contracting sexually transmitted infections (STIs). Cornell and Halpern-Felsher asked a subsample of these same grade nine students to generate reasons why adolescents engage in oral sex. One of the most frequently cited reasons, by almost 16% of the sample, was the notion that oral sex carries less risk than vaginal intercourse. In a related study that reviewed adolescents' perceptions of the benefits of engaging in vaginal intercourse (Widdice, Cornell, Liang, & Halpern-Felsher, 2005), cited benefits were similar to those reported for engaging in

oral sex: pleasure, relationship improvement, gaining experience, and improving popularity or social status. These results support the notion that oral sex is related but distinct from sexual intercourse, and should be measured separately.

The range of distinguishable sexual behaviours is not limited to oral and vaginal intercourse. Among emerging adults, however, there is little reason to suspect that less intimate behaviours such as touching and kissing will occur with sufficient variability to warrant separate measurement. Indeed, over 80% of grade 11 students reported ever having engaged in open-mouthed kissing, and 75% reported ever having engaged in genital touching (Boyce, Doherty, Fortin, & MacKinnon, 2003). Too few students making the transition to university can be expected to experience transitions in these less intimate behaviours. As a result, the current study will focus on three measures of sexual behaviour. First, this study will determine whether or not participants are engaging in penetrative sexual intercourse (i.e., vaginal or anal intercourse) at each measurement occasion across the first year of university. Typical studies of sexual behaviour ask this question, but are not able to collect repeated measures to evaluate patterns or trajectories of engagement in sexual intercourse. Second, this study will determine whether or not participants are engaging in oral sex (i.e., oral-genital contact between partners) at each measurement occasion. Including this question will satisfy the gap in sexual behaviour research identified by Halpern-Felsher and colleagues (Cornell & Halpern-Felsher, 2006; Halpern-Felsher et al., 2005), and will provide a starting point for research on emerging adults' patterns of engagement in oral sex. Third, this study will determine the frequency with which participants engage in penetrative sex at each measurement occasion across their first year of university. Including this question will facilitate distinction between

individuals who experiment irregularly and infrequently with penetrative sex from those who are sexually active on a regular basis.

Associations Between Sexual Behaviour and Affect

Despite some researchers' efforts to apply a developmental perspective to the study of sexuality in adolescence, their focus has remained on highlighting the ways in which research findings can reduce risk, as opposed to promoting positive outcomes (Bingham & Crockett, 1996; Carvajal et al., 1999). Given that sexual development is a process, it is shortsighted to study it primarily in terms of risks and negative consequences. To arrive at a comprehensive conceptualization of the process of sexuality in adolescence and emerging adulthood, McKay (2004) has emphasized the importance of accounting for positive outcomes of sexual behaviour (e.g., satisfaction, positive romantic relationship experiences) in addition to negative consequences. One way to investigate sexuality from this perspective is to explore the relation between positive and negative affective states (emotions, feelings) and sexual behaviour over time. For example, it is possible that individuals who experience more positive affect and less negative affect in relation to their sexual behaviours will have more positive views of their sexual experiences and more positive outcomes in other related domains than individuals who experience more negative affect and less positive affect in relation to their sexual behaviours.

Several researchers have explored the relations among affect and sexual involvement, although primarily from a risk-focused perspective, and have revealed the relationship to be complex. A recent developmental study of 198 African-American adolescents aged 9-13 examined the relationship among family conflict, family-wide

experiences of positive affect, and adolescents' age of onset of sexual intercourse (*sexual debut*; McBride, Paikoff, & Holmbeck, 2003). They found that more intense family conflict (participants' assessments of anger levels associated with discussions between parent and child over homework, friends, etc.) and less positive affect among parents and children (as coded by independent raters) were independently predictive of an increased likelihood that children experienced an early sexual debut at a follow-up approximately two years later. The apparent negative impact of less positive affect among family members was particularly significant for adolescents who showed more advanced pubertal maturation. Despite the authors' initial claim that early sexual debut is an important indicator of negative-outcome trajectories, they conceded that the ages at which adolescents were sampled in their study were too young to differentiate between youth traveling on problematic trajectories and those whose protective behaviours demonstrate sexual competence and potentially positive trajectories.

In an attempt to provide a comprehensive theoretical framework for studying sexuality, Impett, Peplau, and Gable (2005) explained sexual involvement in terms of *approach motives* (obtaining positive outcomes; e.g., physical pleasure, partner's happiness) and *avoidance motives* (evading negative outcomes; e.g., avoid conflict, prevent partner from getting upset). They obtained daily reports from 121 ethnically diverse college students aged 18-38 (mean age = 20.2) on their satisfaction with life, positive affect, sexual activity, and motivations for having sex, among other measures. Participants were all sexually active and involved in dating relationships in which they had frequent face-to-face contact with their partners. Individuals who engaged in sexual activities on any given day with approach motivations were expected to experience

higher positive affect that day, and those who engaged with avoidance motivations were expected to experience higher negative affect on that day. Using daily diary methodology (see Bolger, Davis, & Rafaeli, 2003), Impett et al. determined that approach motivations for having sex were significantly associated with higher daily positive affect, while avoidance motives were associated with higher daily negative affect. Frequency of sexual activity was not related to affect ratings. However, an important limitation of the study was the general nature of their inquiry into sexual behaviours: Participants were asked, "Have you engaged in sexual activity with your partner since the last time you completed a daily survey?" (p. 471). "Sexual activity" is a broad term that can have many meanings, from kissing to intimate touching to oral, vaginal, or anal intercourse. By failing to define their meaning of sexual activity, the authors introduced an unnecessarily broad source of variability into their analyses.

Other studies have also made use of daily diary methodology to assess the relationship between affect and sexual behaviour using more explicit definitions of sexual activity (e.g., sexual intercourse, condom use). Shrier, Shih, and Beardslee (2005), for instance, compared two methods of collecting daily ratings by asking participants to respond to multiple daily inquiries of sexual behaviours and affective states either by mail (using pen-and-paper questionnaires) or electronically (by responding to random alerts on a two-way pager). Participants were 10 adolescents aged 15-18 who were assigned to complete two pen-and-paper questionnaires or four electronic responses per day for two weeks. For each response, participants reported on occasions of intercourse and the time of day at which each occasion took place, characteristics of their partners, and ratings of positive and negative affect, among other measures. Although they

uncovered a trend of increased daily positive affect and decreased daily negative affect after episodes of intercourse, the effect was nonsignificant. Shrier et al. suggested that the infrequent nature of sexual activities limits the extent to which such behaviours can be effectively assessed over short time intervals. Using a larger sample of 47 adolescents aged 12-19 who completed daily checklists of positive and negative affect, occasions of sexual intercourse, and other behaviours, Skiba, Fortenberry, and Blythe (1997) found a significant relation between daily positive mood and sexual activity over 14 days. By extending the period of study to 90 days in a sample of 146 adolescents aged 14-17, Fortenberry, Temkit, Tu, Katz, and Orr (2003) also demonstrated that daily positive mood increased participants' likelihood of having sex that day, and that for days on which sexual activity occurred, participants experienced more positive moods and fewer negative moods. Even more recently, Shrier and de Moor (2006) used daily diary methodology to determine whether engagement in penetrative sex was motivated by prior negative affect. A sample of 67 adolescents aged 15-21 were signaled every 3 hours to complete scales assessing positive and negative affect and to report on events of penetrative sex. They determined that levels of positive and negative affect reports began to change approximately 8-10 hours prior to engaging in penetrative sex, and returned to baseline levels approximately 8 hours following the sexual event. Positive affect improved and negative affect decreased in these intervals surrounding engagement in penetrative sex.

Although limited research has been conducted on the link between affect and sexual behaviour (see Shrier et al., 2005), a more extensive literature, as seen in a meta-analysis by Crepaz and Marks (2001), documents the specific connection between

negative affect and risky sexual behaviour. Crepaz and Marks reviewed 27 studies that met their criteria for contrasting measures of negative affect (depressive symptoms, anxiety, and anger) with measures of sexual risk (e.g., unprotected sex, multiple partners). Participant groups were varied and ages were unspecified, but many studies used groups of adults at risk for contracting HIV, such as homosexual males (44% of samples), injection drug users (15% of samples), and individuals with high likelihood of having substance abuse problems (15% of samples). Most studies ($n = 23$) were cross-sectional and used tests such as correlation and analysis of variance to determine the relationships between negative affect and sexual risk. Crepaz and Marks calculated an effect size (weighted r) based on these data for each sample and determined that the average effect size across studies was not significantly different from zero. They concluded that the association between negative affect and sexual risk is not supported. A commentary on the meta-analysis (Kalichman & Weinhardt, 2001) suggested that one potential problem working against support of this hypothesis was the prevalent use of cross-sectional designs, which preclude the investigation of time-based relations between negative affect and sexual risk. Another problem noted was the use of current affect ratings in relation to retrospective reports of sexual behaviour. Most affect ratings were relevant to a period of 1-2 weeks, but self-reports of sexual behaviours ranged from periods of 1 week to over 1 year. Although the commentary suggests investigating the affect-sexual risk link by using daily diary methods and other event-level analyses, there are drawbacks to using such methods, as discussed above (see Shrier et al., 2005).

The present research will investigate the relationship between affect and sexual behaviour by merging the advantages of both methodological approaches discussed

previously. Purely cross-sectional designs allow researchers to capture more variability in sexual involvement, but confound the time-sensitive connection between sexual events and participants' antecedent and subsequent affective experiences. Daily, event-level designs capture this connection, but are limited with respect to the range of sexual experiences that will occur in each data collection period. The present study will examine the within-time associations between sexual behaviours (oral and penetrative sex) and positive versus negative affect experiences over time. Participants will report on sexual experiences over periods of one month, and on affective states over periods of two weeks at the end of each month (across a period of six months in their first year of university). Although daily measures of affect are likely to be more accurate, Shrier et al. (2005) noted that two-week retrospective summary reports of affect were comparable to daily methods of data collection. In addition, Brown, Williams, Barker, and Galambos (in press) found that participants' estimates of how many days in a two-week period they experienced particular affective states were accurate (i.e., recall did not vary from the actual frequency by more than 2 days).

As previous research has demonstrated, the relation between affect and sexuality is complex. A wide range of studies has demonstrated connections between negative affect and risky sexual activity, while just as many have failed to uncover this relation (see Crepaz and Marks, 2001, for a meta-analysis). Other research has identified variables that influence the relation between sexual behaviour and affect, such as family conflict (McBride et al., 2003). Still other research has identified types of motivations for sexual involvement and related them independently to affective outcomes (Shrier et al., 2005). This degree of complexity demands that research on the relation between affect

and sexuality take into account potentially influential moderating factors. The present research will examine the within-time association between sexual behaviours and positive versus negative affect experiences across six months. Part of this analysis will determine whether or not gender, sexual beliefs, and psychosocial maturity act as predictors of the within-time association between affect and sexual behaviour.

Predictors of Sexual Behaviour Trajectories and Associations Between Sexual Behaviour and Positive and Negative Affect

Trajectories of change and within-time associations between variables may vary depending on person-level characteristics that are unlikely to change over the measured period of time. In the current study, several factors are expected to predict variation in trajectories of change in sexual behaviours and in the within-time associations between sexual behaviours and positive and negative affect. The following sections review the literature that relates sexual behaviour and affective experiences to four between-persons factors: gender, sexual beliefs (intentions to have sex and attitudes toward sexual behaviour), and psychosocial maturity status.

Gender

Gender differences have been thoroughly investigated in all areas of social, psychological, and behavioural research, due at least in part to popular beliefs about inherent differences between males and females in a variety of social and cognitive domains. However, a recent study reviewed over 40 meta-analyses of gender differences and concluded that males and females are more similar than different, evidence in support of the *gender similarities hypothesis* (Hyde, 2005). Among the few listed exceptions to this hypothesis were selected aspects of sexuality. Indeed, an earlier meta-analysis of

gender differences in sexuality in 177 studies concluded that men and women are different in their attitudes toward casual and premarital sex (acceptability versus nonacceptability of premarital and casual intercourse), feelings of guilt about sex, ages at first intercourse, number of sexual partners, and frequency of intercourse, among other differences (Oliver & Hyde, 1993). Generally, males' attitudes were more liberal than females', and males tended to engage in sexual intercourse earlier, more frequently, and with more partners. Given these findings, it is reasonable to suspect that gender may act as a predictor of sexual behaviour trajectories in the present study.

No studies have yet examined the direct impact of gender on the association between sexual behaviour and affective experiences, however, several studies have investigated gender differences in positive and negative affect. Fujita, Diener, and Sandvik (1991) sought to clarify the long-standing belief that women experience more negative emotions and have more emotional problems than men. They surveyed college students on measures including positive and negative affect and emotional intensity, and they determined that women experience more intense emotions of both valences than men, but that men and women experience equal amounts of positive and negative emotions.

In a study of psychological well-being among adolescents and college students, Ben-Zur (2003) investigated factors hypothesized to influence positive and negative affect and life satisfaction (two components of well-being). He expected that internal resources such as beliefs about self-control over life events (a.k.a., mastery) and optimism would be positively related to positive affect and inversely related to negative affect. Indeed, this hypothesis was supported. Gender differences emerged in this study

such that female adolescents and female college students' reports of negative affect were higher than males', but contrary to the explanation provided by Fujita et al. (1991), there were no differences in males' and females' reports of positive affect.

Reid (2004) also conducted a study of well-being (as measured by positive and negative affect) designed to examine differences between predictors that account for men's and women's sense of well-being. She hypothesized that self-esteem would be a stronger predictor of well-being among men, while relationship harmony (i.e., relationship quality or lack of conflict) would more strongly predict women's well-being. In a sample of 199 college students, self-esteem was a superior predictor of positive and negative affect among both men and women, however relationship harmony predicted positive and negative affect among women more strongly than among men, for whom the predicted pathway was nonsignificant.

Although no studies have been identified that examine the impact of gender on sexual behaviour in relation to affect, the studies discussed here reveal the importance of including gender in such an analysis. Fujita et al. (1991) concluded that gender differences in affective experiences were the result of affective intensity, not valence. However, other studies that have assessed both positive and negative affect have revealed gender differences in favour of men experiencing less negative affect than women (Ben-Zur, 2003; Reid, 2004). The present study will take these contradictory findings into account and will investigate the moderating influence of gender on the within-time association between sexual behaviour and affect.

Sexual Beliefs

Attitudes toward sexual behaviour. An extensive literature exists documenting the relation between sexual attitudes and sexual behaviour. A meta-analysis of 530 studies of this relation conducted between 1943 and 1999, showed that attitudes have become generally more liberal, or accepting of marriage outside the marriage context, over time (Wells & Twenge, 2005). The authors found evidence that attitudes and behaviour enjoy a reciprocal relationship; that is, previously held attitudes were correlated with current behaviours, but current behaviours were also predictive of later attitudes. However, it is difficult to interpret the meaning that differences across time in attitudes have for positive and negative sexual outcomes. Although attitudes have become more liberal while ages at first intercourse have dropped, this observation alone does not imply negative outcomes. For example, a different indicator of sexual risk, number of partners, was found not to have changed significantly across samples over time (Wells & Twenge, 2005). Individuals who have had more sexual partners are statistically more likely to contract a sexually transmitted infection.

A large-scale study conducted among adolescents, young adults, and middle-aged adults in Sweden examined the extent to which sexual knowledge, attitudes, beliefs, and behaviours had changed between 1989 and 2003 (Herlitz & Ramstedt, 2005). Questionnaires were administered by mail 5 times, in 1989, 1994, 1997, 2000, and 2003 to random samples of 4,000 members of the general population. A total of 13,762 people participated. In terms of general sexual behaviour involvement, they found that the odds of having multiple sexual partners was 1.9 times higher in 2003 than in 1989, and that the odds were significantly higher at each occasion of measurement relative to 1989. In terms

of conservative attitudes toward sexual behaviour (i.e., agreement that "sexual intercourse should only take place in a stable relationship"), the odds were 60% lower in 2003 than in 1989 that participants of all ages held this belief. Again, odds were significantly lower at each measurement occasion relative to 1989. The odds of holding this belief were also 20% lower among 16-17 and 18-19-year-olds relative to 35-44-year-olds across all times of measurement.

Existing evidence suggests that attitudes toward sexual behaviour have become more liberal or permissive over time, and that these attitudes are directly related to sexual behaviour differences across time. However, only one study provides preliminary evidence of the predictive role that attitudes play on sexual behaviour trajectories: Carvajal et al. (1999) examined attitudes in relation to the timing of first intercourse in a longitudinal study described previously, and determined that adolescents with stronger attitudes about the importance of delaying intercourse were indeed more likely to initiate intercourse later. The present study will expand on these findings by attempting to determine whether liberal versus conservative attitudes toward sexual behaviour predict sexual behaviour trajectories.

Few studies have examined sexual attitudes in terms of their relations to affective and emotional states. Lefkowitz (2005) studied emerging adults making the transition to university, and asked about the extent to which participants perceived changes in their views about sex since coming to university. One of the most frequently reported changes in sexual attitudes was that of becoming more open-minded and less judgmental. In general, emerging adults viewed their attitudinal changes as positive, rather than negative.

An earlier study by Whitbeck and colleagues (Whitbeck, Conger, & Kao, 1993) examined the influence of depressed affect on sexual attitudes of adolescent girls as one of several questions surrounding parent-adolescent and peer-adolescent influences on attitudes toward sexuality. Data from 76 girls aged 14-18 were used. Results showed that higher depressed affect at baseline was strongly related to liberal or permissive attitudes toward sexual behaviour one year later. Interestingly, however, liberal attitudes at baseline were not related to later sexual behaviour.

A recent study conceptualized attitudes in terms of perceived costs and benefits of sexual behaviour. Among adolescents who had not yet had intercourse, perceptions of costs associated with sexual behaviour were higher and perceptions of benefits were lower, compared to those who had already initiated first intercourse (Deptula, Henry, Shoeny, & Slavick, 2006). These results suggest that individuals on different sexual behaviour trajectories have different expectations about the positive vs. negative outcomes of engaging in sexual activities, but they do not indicate the actual positive and negative experiences of individuals engaged in varying degrees of sexual behaviour.

Although these studies provide only limited evidence and mixed interpretations of the relationship between sexual attitudes and affective experiences, they nonetheless suggest a link between the two. In addition, the extent to which attitudes have been shown to be directly related to sexual behaviours implies that a measure of sexual attitudes should be tested as a moderator of the link between sexual behaviour and affect in the present study.

Intentions to have sex. Approaches to sexuality in adolescence have been dichotomized not only with respect to the so-called event of first becoming sexually

active, but also with respect to adolescents'—especially female adolescents'—intentions or desire to engage in sexual activity. Michelle Fine (1988) argued that discourses of sexuality in schools and in the public have limited girls' expressions of sexuality to two options: they may consent to sexual activity, or they may refuse it. Adolescents are rarely, if ever, encouraged to discuss their intentions, motivations, or interest in sexual activity, yet these factors may have strong implications for the positive and negative qualities of sexual experiences throughout the life course. Unsurprisingly, the majority of research on intentions to have sex has examined adolescents' intentions within a risk-prevention context. For example, one study of early adolescent African-Americans found a strong relation between adolescents' beliefs about their likelihood of having sex within the subsequent six months and their actual behaviour. Most adolescents who had not yet initiated intercourse at Time 1 thought it unlikely that they would be sexually active six months later (Time 2), and these adolescents were less likely to have sex by Time 2 than those who thought it more likely that they would become sexually active. However, the intentions of adolescents who were sexually active at Time 1 were not related to actual behaviour reports at Time 2 (Stanton, Li, Black, Ricardo, Galbraith, et al., 1996). Consistent with the focus of most adolescent sexuality research, the authors suggested that health educators could adopt intervention approaches that communicate the "desirability of virginity" (p. 18) to their clients, given that virgins with no expectations or intentions to become sexually active were less likely to initiate intercourse in a six-month period.

A study of Latino adolescents aged 11-17 measured the sexual intentions of adolescents in terms of their plans to delay intercourse (until married; until older; until

responsible; Guzmán, Schlehofer-Sutton, Villanueva, Stritto, Casad, et al., 2003). They asked adolescents to report their level of comfort in communicating about sexual issues with parents, friends, dating partners, and other people in their lives. Guzmán et al. first reviewed earlier research which indicated that adolescents who had more frequent communication with parents about sex engaged in safer-sex behaviours (e.g., delayed intercourse, fewer partners, more condom use, more communication about sex with sexual partners). Indeed, their results showed that adolescents who felt more comfortable talking about sex with their mothers had more intentions to delay intercourse. However, they interpreted a parallel finding about communication comfort with dating partners negatively: Guzmán et al. found that adolescents who were comfortable discussing sexual issues with their dating partners had fewer intentions to delay intercourse. Despite the fact that the authors previously cited evidence suggesting that such partner communication was part of a cluster of safer-sex behaviours, this finding was interpreted as a potential indicator of risk for pregnancy and STI infection. They further suggested that such communication comfort may exist in the context of sexual coercion, thus leading to unsafe sexual behaviour.

One study took a developmental approach to investigating the reasons why adolescent girls decide to have sex. Rosenthal, von Ranson, Cotton, Biro, Mills, et al. (2001) recruited adolescent girls aged 12-15 to complete interviews every six months over a period of three years. They found that at younger ages, girls' reasons for having sex were more likely to be curiosity, partner pressure, and a perception that one's friends were all having sex. These reasons changed over time, such that girls at older ages were more likely to report the following reasons for having sex: being in love, physical

attraction, excitement, and partner intoxication. Clearly, intentions to have sex may be expected to change over time given the changes observed among adolescents' reasons for having sex. The authors recommended that further research investigate adolescents' reasons for engaging in different kinds of sexual behaviour (e.g., oral sex and anal intercourse).

Another study of young adolescents examined intentions to have sex in terms of adolescents' perceived likelihood of becoming sexually active (Epstein, Dusenbury, Botvin, Diaz, & Schinke, 1994), similar to Stanton et al. (1996). Epstein et al. also framed their research objectives in terms of preventing sexual risks. For example, they determined that adolescents who were frequent cigarette smokers were more likely to have a greater perceived likelihood of having sex before finishing high school. Studies such as those reviewed here appear to conceive of sexual intentions in adolescence as strictly risk-related. That is, adolescents who do not intend to have sex are safer than those who do intend to have sex. However, the controversial interpretation provided by Guzmán et al. (2003) on communication about sexual issues with dating partners in relation to intentions highlights the problems associated with approaching sexual intentions from this perspective. For example, although individuals who feel comfortable communicating about sexual issues with their dating partners may be more likely to have sex earlier, they may also be more likely to have positive sexual experiences and practice safer sex behaviours than individuals who are less comfortable discussing sex with their partners.

The risk-prevention context within which most research on sexual intentions has taken place has left a limited literature documenting the relations between such intentions

and positive affect. Taris and Semin (1999) examined this relationship from a neutral, rather than risk-focused perspective. They referred to communication comfort and self-confidence in discussing sexual issues as *sexual efficacy*, and they anticipated that it would act as a moderator of the relationship between sexual intentions and sexual behaviours. A total of 253 adolescents from two communities in England completed questionnaires at two occasions of measurement. Taris and Semin found that adolescents who reported greater intentions to engage in sexual behaviours at Time 1 were more likely to be sexually active (nonvirgins) at Time 1 and Time 2. Similarly, adolescents with higher ratings of sexual efficacy were significantly more likely to be sexually active at Time 1. The authors concluded that sexually efficacious adolescents had greater success in realizing the nature of their sexual intentions. The authors did not suggest that sexual efficacy has implications for negative consequences.

One study directly examined affective states, but in relation to participants' intentions to use condoms, not their general intentions to engage in sexual activities. MacDonald and Martineau (2002) experimentally induced positive and negative mood states in 67 emerging adult university students, and administered a single-item measure of intentions to engage in unprotected sex. They found that participants were more likely to report intentions to engage in unprotected sexual activity if their induced mood state was negative, rather than positive. This effect was elaborated by an interaction between mood and self-esteem (as measured prior to testing), which indicated that participants with high self-esteem were less likely than participants with low self-esteem to report intentions to engage in unprotected sex if a negative mood had been induced.

Given the bias toward interpreting intentions to have sex as indicative of proneness to sexual risk, it is essential that attempts be made to go beyond the examination of relations between intentions and negative outcomes. The limited evidence of a relation between sexual intentions and affective experiences also highlights the importance of studying this relation from a non-risk-focused perspective. This goal is well served by attempting to determine, in the present study, the extent to which intentions predict sexual behaviour trajectories, and the extent to which intentions to have sex act as a moderator of the link between sexual behaviour and affect.

Psychosocial Maturity

Greenberger and her colleagues (Greenberger, Josselson, Knerr, & Knerr, 1975; Greenberger & Sørensen, 1974) proposed the concept of *psychosocial maturity*, defined as a three-dimensional construct that represents an individual's ability to function independently in society, to effectively navigate interpersonal relationships, and to contribute to the overall social functioning of his or her community. Greenberger and colleagues' psychosocial maturity construct has its roots in the developmental stage theories of such scholars as Erikson (1963), who proposed that individuals progressed through a series of crises such as the achievement of a sense of identity or stable persona. Successful development was marked by the resolution of each crisis and progression to the next stage.

More recent research by Galambos and Tilton-Weaver (2000) expanded on the hypothetical construct of psychosocial maturity by seeking empirical confirmation that adolescents could be classified according to their maturity status. Mature and immature statuses were implied by a continuum of maturity, but Galambos and Tilton-Weaver

anticipated a third status based on observations by Greenberger and Steinberg (1986) that certain adolescents exhibit behaviours consistent with adulthood (e.g., work, alcohol use, sexual experience) but who lack the psychological maturity that is also consistent with adulthood and assumption of adult roles. Using cluster analysis, Galambos and Tilton-Weaver identified three categories of maturity, in line with their hypotheses: (1) *Mature* adolescents were characterized by above-average psychological maturity, as measured by scores on the self-reliance, identity, and work-orientation subscales of Greenberger and colleagues' psychosocial maturity inventory (Greenberger et al., 1975). They were also below average in their engagement in problem behaviours (e.g., disobedience, delinquency), and had slightly older subjective ages (i.e., how old one feels). (2) *Immature* adolescents were characterized by below-average psychological maturity, low problem behaviours, and younger subjective ages. (3) The final group of adolescents, referred to as *pseudomature* or *adultoid*, were characterized by below-average psychological maturity, high engagement in problem behaviours, and older subjective ages.

Psychosocial maturity should not be confused with progression between developmental stages such as adolescence, emerging adulthood, and adulthood. In other words, there will be interindividual differences in maturity status, regardless of whether individuals are adolescents, emerging adults, or adults. Many theorists have argued that the accomplishments of genuine psychological maturity "come about over the course of adolescence and young adulthood... as a result of strenuous introspection, active engagement with others, experimentation in a variety of social roles, conflict, and often grievous (but nonetheless useful) mistakes" (Greenberger & Steinberg, p. 5). In other

words, it is entirely possible for individuals to make the transition between developmental stages without demonstrating developmentally appropriate maturity. In adolescence, Galambos and Tilton-Weaver (2000) found that 43% of the sample were mature. Among emerging adults, the proportion who are mature may be higher, but many individuals may not yet have engaged in the kinds of psychosocial development necessary to achieve genuine maturity.

Greenberger and Sørensen (1974) noted that psychological maturity can be viewed as the completion of development such that mature individuals are capable of successful private and social functioning. The achievement of psychosocial maturity, or Galambos and Tilton-Weaver's (2000) mature status thus reflects successful development. It is reasonable to suggest that measures of sexual behaviour that are shown to be positively related to genuine maturity will also reflect healthy development within their respective domains. However, only a few studies to date have provided evidence that sexuality is connected to maturity: Gowen, Feldman, Diaz, and Yisrael (2004) found that among grade nine girls with older vs. same-aged boyfriends, girls with older boyfriends were significantly more likely to endorse the belief that engaging in sexual activity makes one more mature. Udry, Kovenock, Morris, and van den Berg (1995) investigated childhood precursors of age of first intercourse, and found that maternal reports of girls' temperaments at ages 9-11 predicted onset of intercourse. Specifically, items classified in a factor analysis as indicative of maturity (e.g., "makes friends easily", "acts older than she is") strongly predicted an earlier age of onset of intercourse. Zimmer-Gembeck et al. (2004) also provided an interpretation of their findings that suggest a connection between maturity and sexual behaviour: Adolescents who were more capable

of forming intimate friendships at ages 12-13 may have developed expectations for positive, intimate qualities of romantic relationships and thus felt confident in initiating these relationships at an earlier age.

A few researchers have attempted to connect psychosocial maturity to general positive development, though not to positive affect experiences in particular. For example, Brackney and Westman (1992) conducted a correlational study that related Erikson's psychosocial stages (e.g., identity, intimacy) to measures of hopefulness (e.g., anticipation of continued positive experiences, improvements). In a sample of college students, they found that higher hopefulness scores were strongly correlated with higher scores on achievement of psychosocial stages, indicating a connection between achievement of psychosocial maturity and positive emotional experiences.

In a discussion of human sexuality, DeLamater and Friedrich (2002) noted that psychosocial development tasks such as identity and intimacy achievement (including the emergence of sexual identity) are important components of adolescent sexual development. In an earlier article, Chilman (1990) critiqued the problem-focused approach of researchers to adolescent sexuality. She noted that the extent to which adolescent sexual engagement may be problematic depends on several factors, including the adolescent's developmental readiness and the degree of adolescent partners' mutual satisfaction derived from sexual experiences. Chilman described sexuality development as integrated with other forms of maturation, such as open and honest communication skills, the ability to form interdependent relationships, and the development of a sense of self-worth and competency as an individual. Sexual behaviours occur within a larger

developmental context, "...not a thing apart, but an integral aspect of their total lives." (p. 124).

Results of the studies reviewed here provide peripheral evidence that psychosocial maturity is related to engagement in sexual activity, although the studies do not cast this relationship in a positive light. Only limited research exists to demonstrate a connection between psychosocial maturity, sexuality, and positive versus negative emotional experiences. Thus, it is essential to include a measure of psychosocial maturity in the present study to determine its impact on the within-time association between positive and negative affect and sexual behaviour. The present study will also attempt to provide more proximal evidence of a relation between psychosocial maturity status and sexual behaviour by determining whether psychosocial maturity status acts as a predictor of sexual behaviour trajectories. Interpretation of evidence in the present study will determine the extent to which this relationship is positive or negative.

The Current Study

The extant literature on sexuality and its relations with positive outcomes is burgeoning, and offers some preliminary insights into sexuality from a lifespan perspective. There is some evidence that sexual experiences in adolescence are not necessarily linked with negative outcomes, but it is unclear how this evidence translates into a connection between sexual behaviour and positive experiences. A few studies have explored this connection by examining time-varying changes in affect in relation to sexual activity on a daily basis (Fortenberry et al., 2003; Shrier et al., 2005; Skiba et al., 1997), but methodological barriers limit the utility of these data. Furthermore, there is virtually no research evidence to connect sexuality and positive development in emerging

adulthood. The present study will attempt to supplement and extend existing literature on sexuality in emerging adulthood by addressing two primary objectives. First, to explore change over time in engagement in sexual behaviours across the first year of university, referred to here as *sexual behaviour trajectories*. Second, to investigate the associations between sexual behaviour and positive experiences during the first year of university, referred to here as *within-time associations between affect and sexual behaviour*. Four distinct research questions follow from these goals:

1. What are the average, six-month trajectories of change in three sexual behaviours (monthly engagement in oral sex, monthly engagement in penetrative sex, and occasions of penetrative sex per month) among students making the transition to university? (see Figure 1)
2. Do selected between-persons characteristics (gender, sexual beliefs, and psychosocial maturity status) predict variation in these trajectories? (see Figure 1)
3. Are sexual behaviours associated within time with experiences of positive versus negative affect across the first year of university? (see Figure 2)
4. Do selected between-persons characteristics (gender, sexual beliefs, and psychosocial maturity status) predict variation in these within-time associations? (see Figure 2)

Corresponding with these research questions, hypotheses are (1) that average trajectories of sexual behaviours will increase slightly over time, as more participants engage in sexual behaviours; (2) trajectories of participants with more liberal attitudes toward sex, greater initial intentions to have sex, and mature status will display sharper

increases (due to the lack of previous research a prediction is not made as to how gender will be related to sexual behaviour trajectories); and (3) during months in which participants are sexually active, positive affect will be higher, and negative affect will be lower. Mixed results of previous research and a lack of empirical evidence from a positive development perspective on sexuality in emerging adulthood prevents specific hypotheses about the effects of between-persons predictors on these within-time associations (research question 4).

Figure 1. Model of between-person effect of gender, sexual beliefs, and psychosocial maturity status on six-month trajectories of sexual behaviour.

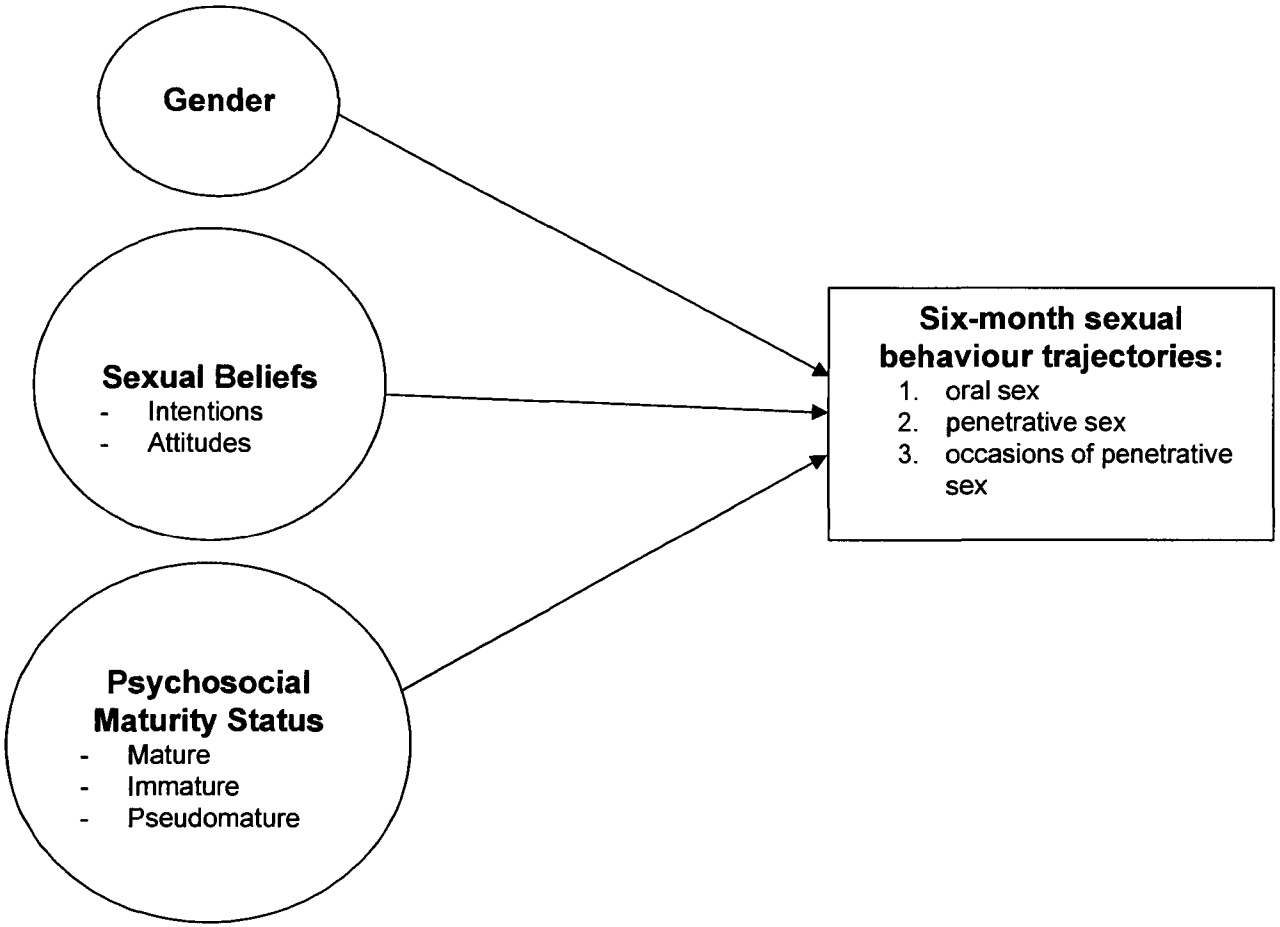
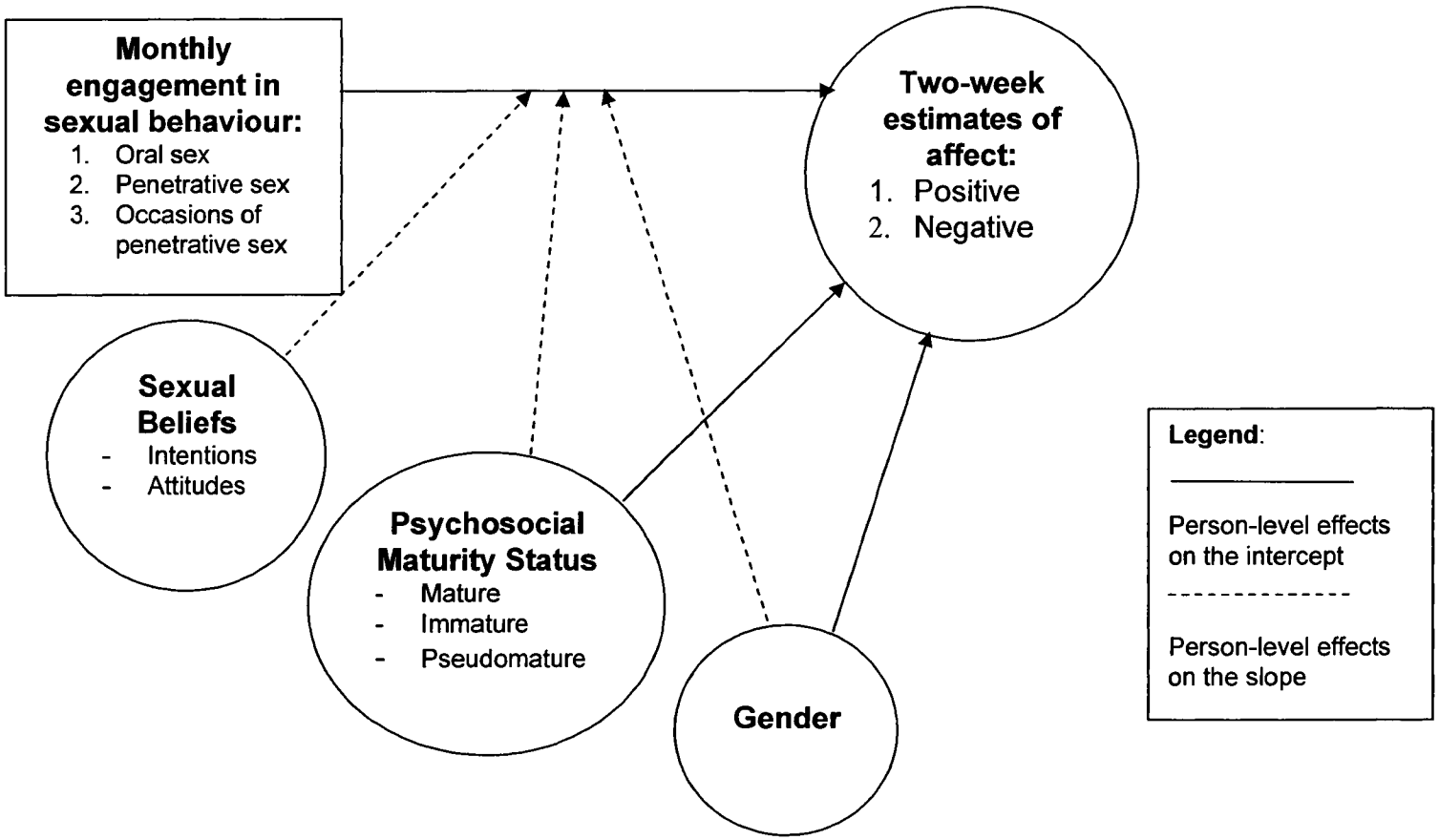


Figure 2. Model of within-person effects of monthly engagement in sexual behaviours on monthly, two-week estimates of positive and negative affect, between-person moderating effects of sexual beliefs, psychosocial maturity status, and gender on this association, and between-person effects of psychosocial maturity status and gender on monthly, two-week estimates of positive and negative affect.



CHAPTER III

METHOD

Participants

Participants were 182 students (110 females) with relevant data from *Making the Transition II*: a large-scale study of the health behaviours of 198 students during the transition to university. Participants met four criteria: (1) they were first-year students; (2) they must not have been enrolled in any post-secondary program prior to their first year at the University of Alberta; (3) they must have been enrolled as full-time students; and (4) they must have been under age 20 at the outset of the study. These criteria ensured that participants were enrolled at the University of Alberta directly from high school. In other words, participants were expected to be at the beginning of their transition to university. Sixty percent of participants in the current study were female (56% of all full-time students at the University of Alberta aged 19 and under during the 2005 fall term were female). Participants' ages ranged from 17.5 to 19.8 at the beginning of the study ($M = 18.4$, $SD = .44$). Participants were ethnically diverse. Based on students' reports, 74% were white, 12% were Asian, 6% were of mixed ethnicity, 3% were Indo-Canadian, 2% were black, and 3% belong to another visible minority (e.g., Aboriginal, Arabic). The majority of participants lived with their parents at the beginning of university (53%), while 28% lived in campus residence, 14% lived in an apartment on their own or with roommates, and 5% lived with other relatives. These proportions are similar to the living arrangements of a representative sample of Canadian university students (Kuo, Adlaf, Lee, Gliksman, Demers, et al., 2002), of whom 52% lived with their parents, 17% lived in residence, and 31% lived in off-campus housing without

parents. Two participants in the current study were married and three reported cohabitating with a partner. Most participants reported that they lived in two-parent homes while growing up (84%), and that 75% of their mothers and 76% of their fathers had completed college or university. Demographic questions are presented in Appendix A.

Participants were recruited from first-year English classes at the University of Alberta during the first six weeks of their first semester. English classes were selected as recruitment fora because students enrolled in most faculties at the University of Alberta are required to take an introductory English course for their degree. Students enrolled in Engineering, a faculty that manages this requirement differently, were recruited through Engineering classes. Using this procedure, we acquired a sample that is representative of first-year enrollment across all faculties at the University of Alberta. Distribution across faculties in the present sample was 41% Science, 32% Arts, 20% Engineering, 5% Agriculture, 2% Physical Education, and 1% Native Studies. This distribution was similar to the actual distribution of first-year students across faculties at the University of Alberta (34% Science, 32% Arts, 12% Engineering, 6% Agriculture, 4% Physical Education, 1% Native Studies, and 10% other), with two exceptions: Engineering students were oversampled and students from other faculties such as Medicine and Nursing were not represented. It should be noted, however, that not all first-year students in all faculties at the University of Alberta were eligible to participate in this study, based on the four criteria listed above.

Procedure

Participants were recruited during the first week of classes in September, 2005 through the second week of October, 2005. During recruitment sessions, participants were invited to attend an orientation session during which consent forms were distributed (see Appendix B) and the details of the study were described in full. Out of approximately 704 students who were eligible to participate, 51% (n=359) expressed an interest in attending the orientation sessions, and 28% (n=198) actually did so. The orientation session also included administration of a baseline questionnaire that took 30-45 minutes to complete. Participants were informed that participation in the study was voluntary and included completion of six monthly, web-based checklists that could be completed from home or any convenient internet-accessible setting. Participants were assigned an ID number and password that they could use to access the web-based checklists each month. The checklists were stored on a secure server administered by the Department of Psychology. For each checklist completed online, participants received $10. An additional incentive of $5 was offered to participants in exchange for completion of the final checklist. Participants were given several days' notice via email when the next monthly checklist would become available. Additional reminders were provided before the checklist opened and before it became unavailable. Checklists were made available for approximately 7 days at the beginning of each month, from November, 2005 through April, 2006. Attrition among the 198 original participants were low. Eighty-eight percent of participants completed 4 or more checklists, and only 11 participants failed to complete any checklists.

Measures

Sexual Behaviour

Three measures of sexual behaviour were administered on a monthly basis. First, two questions were used to determine whether participants engaged in *oral sex* during the month. Participants were asked, "In the past month, have you performed any oral sexual activity on a partner?" and "In the past month, have you received any oral sexual contact from a partner?" Responses are coded as 0 (*no*) and 1 (*yes*). Participants who respond "yes" to either question are assigned a score of 1 for the oral sex variable; others are assigned a score of zero (had not engaged in any oral sex). Second, one question was used to determine whether participants engaged in *penetrative sex* during the month. Participants were asked, "In the past month, have you had penetrative sex (sex in which the penis penetrates the vagina or anus)?" Responses are coded as 0 (*no*) and 1 (*yes*). Third, one question was used to determine *occasions of penetrative sex*: Participants reporting penetrative sex that month were asked, "In the past month, on how many occasions have you had penetrative sex?" There were no restrictions on the maximum number of occasions reported by participants. Participants who reported no penetrative sex were assigned a score of zero.

Sexual Beliefs

Attitudes toward sexual behaviour. Sexual behaviour attitudes were measured on the baseline questionnaire. No sufficient measure was available to assess general attitudes toward sexual behaviour. As a result, items were selected and modified from two sources: the Canadian Youth, Sexual Health, and HIV/AIDS study (Boyce et al., 2003), and the University of Alberta Student Sexual Behaviour Survey (Doherty, 1995).

Five items were selected to assess attitudes toward sexual behaviour. The items are intended to measure participants' general attitudes about the appropriateness of sexual behaviours ("sex before marriage is OK if you're in love"; "it's alright to have casual sex"; "I feel guilty when I think about sex" [reverse-scored], "unmarried people should not have sex" [reverse-scored], and "it's alright to masturbate"). Items are rated on a scale ranging from 0 (*strongly disagree*) to 3 (*strongly agree*). The mean of participants' responses is generated. A higher score indicates more liberal attitudes toward sexual behaviour. Cronbach's alpha for the scale was acceptable, at $\alpha = .84$.

Intentions to have sex. Participants' intentions to have sex were assessed at baseline with the question, "How likely are you to engage in penetrative sex during this academic year?" This item is rated on a scale ranging from 0 (*absolutely will not*) to 5 (*absolutely will*). This question was asked again on the monthly checklist administered in January. The baseline and January responses were correlated at $r = .82$, indicating good test-retest reliability of the item.

Psychosocial Maturity Status

Cluster analysis was used to identify the existence of maturity statuses in the present sample based on scales administered at baseline. Three subscales of the *Erikson Psychosocial Inventory Scale* (EPSI; Rosenthal, Gurney, & Moore, 1981; Appendix C) measured psychological components of psychosocial maturity status (12 items each; self-reliance, identity, and work orientation). Participants were asked to rate how well each item applies to them, on a scale ranging from 1 (*Hardly ever true*) to 5 (*Almost always true*). The self-reliance subscale included items such as "I like to make my own choices," and "I find it hard to make up my mind" (reverse-scored). The identity subscale included

items such as "I know what kind of person I am," and "I change my opinion of myself a lot" (reverse-scored). The work orientation subscale included items such as "I'm a hard worker," and "I stick with things until they're finished." The mean of participants' responses to items on each subscale are generated. Higher scores indicate greater achievement of psychological maturity in each of the three domains. Cronbach's alpha reliabilities for all subscales administered on the baseline questionnaire were acceptable, at $\alpha = .80$ (self-reliance), $\alpha = .85$ (identity) and $\alpha = .82$ (work orientation). On average, participants' scores on these three scales were above the midpoint, indicating that, in general, participants are more psychologically mature. Mean self-reliance was 3.83 (SD = 0.55), mean work orientation was 3.96 (SD = 0.53), and mean identity was 3.70 (SD = 0.67).

The measure of problem behaviour originally used by Galambos and Tilton-Weaver (2000) to explore psychosocial maturity status focused on adolescents' parental disobedience and delinquency. Many participants in the present sample lived on their own or in campus residences, and many of those who lived with their parents were legal adults, thus, a measure of disobedience is an inappropriate indicator of problem behaviour in the current sample. Furthermore, too few participants in the present sample were likely to engage in serious delinquent behaviours and remain in university for most or all of the academic year. Instead, four questions about alcohol use were used as indicators of potential problem behaviour. On the baseline questionnaire, participants were asked, "On how many occasions have you had alcoholic beverages to drink – more than just a few sips…" for the past 12 months and for the past 30 days. They were also asked, "On how many occasions (if any) have you <u>been drunk or very high</u> from drinking

alcoholic beverages..." for the past 12 months and for the past 30 days. Participants reported their use of alcohol on a seven-option scale: 0, 1-2, 3-5, 6-9, 10-19, 20-39, or 40+ occasions. The mean of the four items was generated. Higher scores indicate greater alcohol use and greater potential for alcohol abuse and its concomitant problem behaviours. Cronbach's alpha reliability for a scale based on these four items was good, at $\alpha = .90$. Average reported alcohol use was 1.67 (SD = 1.43), a score below the midpoint of this measure, indicating that in general, participants used alcohol infrequently.

Seven items administered on the baseline questionnaire measure participants' subjective ages, or sense of how old they "feel," relative to peers of the same chronological age. Participants rated each item on a scale ranging from 1 (*A lot younger than my age*) to 4 (*The age I am*) to 7 (*A lot older than my age*). Sample items include: "Compared to most people my age, most of the time I feel...", and "My interests and activities are most like people who are...". The mean of seven items was generated. Higher scores indicate higher subjective ages ($\alpha = .80$). On average, participants reported feeling slightly older than their chronological ages (mean = 4.56, *SD* = 0.78).

Based on participants' scores on each of the five measures above (self-reliance, identity, work orientation, alcohol use, and subjective age), three clusters were expected to emerge (mature, immature, and pseudomature).

Positive and Negative Affect

The positive and negative affect subscales of the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) were administered on a monthly basis (Appendix D). Each subscale consists of 10 items measuring positive emotions

(e.g., interested, proud) and negative emotions (e.g., distressed, hostile), respectively. Participants were asked, "over the last *14 days*, on how many days did you feel..." Subscale scores are generated by summing the number of days participants reported feeling positive and negative emotions. Scores indicate that in each month, participants experienced each of 10 possible positive and negative emotions, respectively, a certain number of days over a 2-week period. Participants could report as few as 0 days of positive affect and 0 days of negative affect, to as many as 140 days of positive affect and 140 days of negative affect, for total scores between 0 and 140 on each of the positive and negative affect scales (10 positive emotions x 14 days in which to experience each emotion; 10 negative emotions x 14 days in which to experience each emotion). Higher scores indicate that participants experienced more monthly positive and negative affect, and low scores indicate that participants experienced less monthly positive and negative affect.

CHAPTER IV

RESULTS

Subsample

A restriction of multilevel modeling, the data analysis technique used in the present study, is that between-persons predictor variables must not have missing values. However, a strength of this technique is that all participants who contribute data to at least one occasion of measurement may be included in the analyses (Raudenbush & Bryk, 2002). Of the 198 participants who completed the baseline questionnaire and were invited to complete monthly checklists, only 11 participants failed to complete at least one checklist. An additional 5 participants had missing data on one or more of the variables used as between-persons predictors. Thus, there were 182 participants in the subsample used for analyses. Demographic characteristics of this subsample were in many cases identical to the demographic characteristics of all 198 participants, with few exceptions. For example, 74% of the subsample identified as white (compared to 73%), 76% of fathers had completed college or university programs (compared to 75%), and 86% of participants grew up in two-parent homes (compared to 84%). Mean age of the subsample was identical to the full sample, and in all cases subsample deviations in demographic characteristics were within 2% of proportions reported by the full sample.

Cluster Analysis

To assign participants to psychosocial maturity status groups, cluster analysis was used to sort participants on the basis of their psychological maturity (self-reliance, work orientation, and identity), subjective age, and alcohol use. Following a procedure initially employed by Galambos and Tilton-Weaver (2000) to determine the existence of maturity

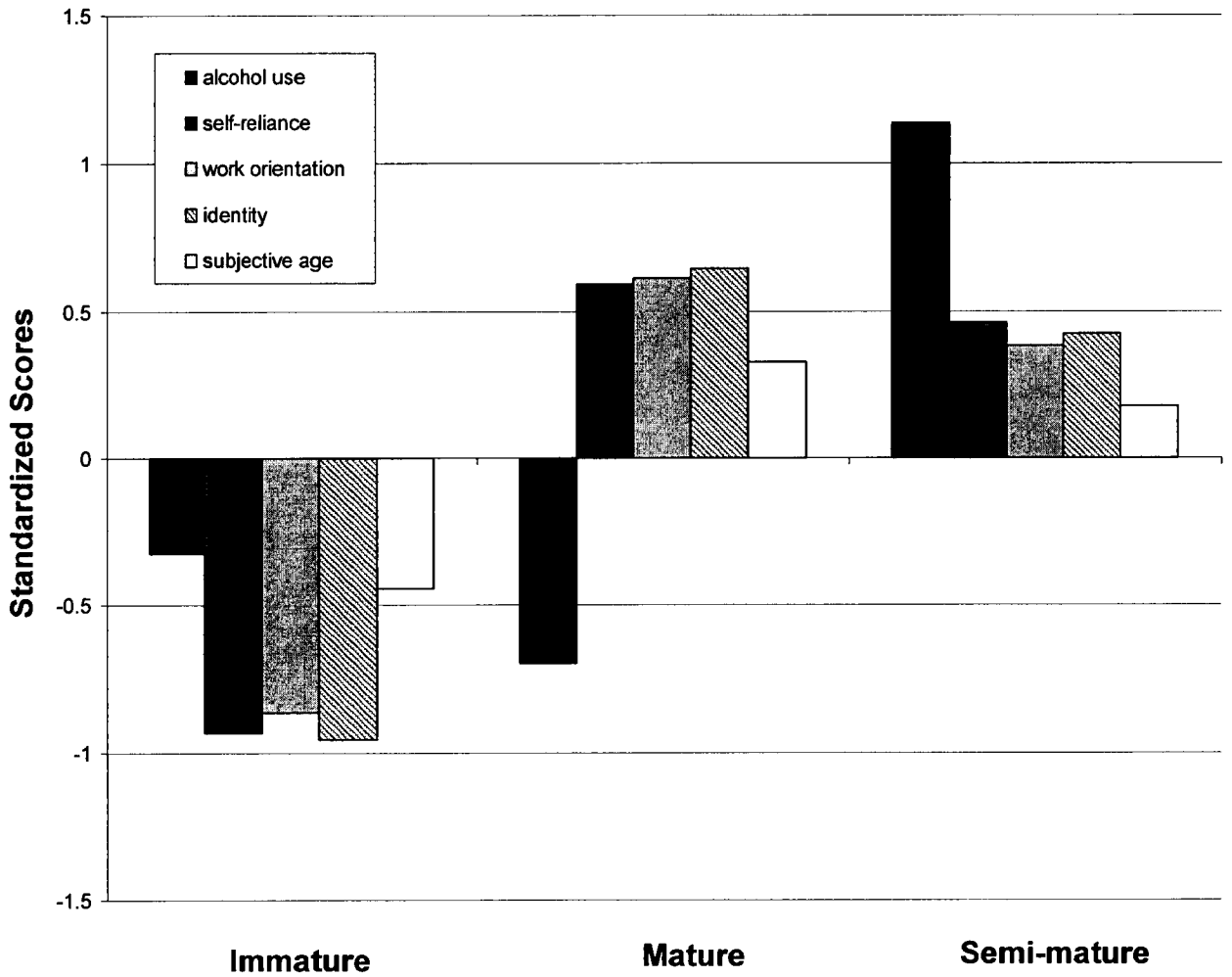
clusters, data in the present study were sorted using Ward's (1963) hierarchical agglomerative method followed by an iterative, *k*-means cluster analysis.

Potential solutions of two to five clusters were investigated using Ward's (1963) method. An examination of the fusion coefficients indicated that the clearest jumps occurred when three clusters were merged into two (607.43 to 712.13) and when two clusters were merged into one (712.13 to 973.48). Large increases in fusion coefficients such as these indicate that the merging clusters are dissimilar. By contrast, fusion coefficient jumps between five and four clusters (472.64 to 524.17) and between four and three clusters (524.17 to 607.43) were less substantial. As a result, solutions of two and three clusters were considered for the next phase of analysis.

Ward's (1963) method provided squared Euclidean distances that were used as seed values for a *k*-means cluster analysis. Seed values estimate the centroids of each cluster, and every *k*-means iteration reassigns cases to their nearest cluster centroids until no further iterations improve the solution (Aldenderfer & Blashfield, 1984). Figure 3 shows the results of the three-cluster solution. The mature and immature clusters are similar to those identified in adolescents (Galambos & Tilton-Weaver, 2000). However, the third cluster (previously labeled *pseudomature* by Galambos and Tilton-Weaver) did not follow the expected pattern: Although problematic alcohol use is high among participants in this group, psychological maturity and subjective age scores are comparable to those of the mature group. It appears that the distinguishing feature of these students relative to mature students is their alcohol use.

Results for the two-cluster solution indicated that mature and immature participants were sorted on the basis of above-average (mature) and below-average

Figure 3. Three-cluster solution: Standardized scores on five measures by cluster



(immature) levels of psychological maturity and subjective age. Alcohol use in both clusters was virtually average. Since alcohol use appeared to be a strong factor in distinguishing "pseudomature" students from mature and immature students, and likewise, in distinguishing mature from immature students, the two-cluster solution masked the impact of this variable by eliminating it as a distinguishing property of the identified clusters. Thus, the three-cluster solution was retained for this reason, even though features of the pseudomature cluster were different than those described in earlier research on adolescent samples (Galambos, Barker, & Tilton-Weaver, 2003; Galambos & Tilton-Weaver, 2000). However, the pseudomature cluster was renamed *semi-mature*, to account for these participants' similarities to the mature cluster in terms of psychological maturity and subjective age. The cluster analysis distributed participants evenly across all three maturity statuses. 34% of participants were identified as genuinely mature (n = 62), 35% were identified as immature (n = 63), and 31% were identified as semi-mature (n = 57).

Descriptive Statistics

Means and standard deviations for all participants' scores on sexual beliefs measures are presented in Table 1. Average ratings of intentions to have sex were below the midpoint of the measure, indicating that participants perceived their chances of having sex as somewhat unlikely during their first year of university. Scores on attitudes toward sexual behaviour were above the midpoint, indicating that participants' attitudes are generally more liberal than conservative.

The percentage of participants who engaged in penetrative and oral sex each month are presented in Table 2. Also in Table 2 are the means, standard deviations, and

Table 1

Means and Standard Deviations for Measures of Sexual Beliefs

Variable	*M*	*SD*
Sexual Beliefs		
Intentions to have sex[a]	1.96	1.79
Attitudes toward sexual behaviour[b]	1.88	.79

Note. $N = 182$. [a]possible range: 0 to 6. [b]possible range: 0 to 3.

Table 2

Percent Engagement in Penetrative and Oral Sex each Month, and Means, Standard Deviations, and Ranges for Occasions of Penetrative Sex each Month.

	Penetrative Sex	Oral Sex	Occasions of Penetrative sex				
	% Yes	%Yes	*M*	*SD*	*Range*	*Skew*	*Kurtosis*
November	20	24	1.46	4.77	0 – 35	24.81	67.86
December	19	25	1.59	5.22	0 – 35	25.07	50.54
January	18	20	1.84	6.38	0 – 52	26.25	77.80
February	20	25	2.18	6.34	0 – 35	19.00	33.51
March	20	27	1.94	5.34	0 – 30	17.26	31.19
April	22	25	2.13	5.83	0 – 40	19.87	43.02
6-month Average	20	24	1.85	5.66	0 – 52	53.01	126.30
Behaviour reported at least once	30	37	-	-	-	-	-

Note. Skewness and kurtosis values are presented as standardized scores.

ranges of occasions of penetrative sex per month. Most participants did not engage in penetrative and oral sex in any month across the first year of university. However, for all six months, more participants reported engaging in oral sex on average versus penetrative sex, $t(181) = 3.23, p < .05$.

Means and standard deviations for days of positive and negative affect reported over a two-week period each month are presented in Table 3. On average, participants reported twice as many feelings of positive affect in a 2-week period compared to feelings of negative affect.

Table 4 presents correlations among the between-persons predictors of variation in trajectories of sexual behaviours and within-time associations between affect and sexual behaviours. Greater intentions to have sex are associated with more liberal attitudes toward sexual behaviour. Immature status is associated with fewer intentions to have sex during the academic year, while semi-mature status is associated with greater intentions. In addition, semi-mature status is associated with more liberal attitudes toward sexual behaviour. No correlations between gender and other predictors emerged.

Multilevel Modeling

Analyses were conducted via multilevel modeling, a data analysis technique that allows the researcher to account for nested structure within the population of interest by calculating separate regression models at the participant level and at any subsequent levels for which participants are organized into groups (e.g., students nested within classrooms and schools). This technique also applies to researchers interested in accounting for the nested structure of repeated measures within individuals over time. In this case, multilevel modeling allows the researcher to model behavioural trajectories,

Table 3

Means and Standard Deviations for Positive and Negative Affect Each Month Reported for a Two-Week Period

	Positive Affect		Negative Affect	
	M	*SD*	*M*	*SD*
November (*n*=169)	63.08	29.44	35.95	23.71
December (*n*=175)	63.40	30.95	34.08	23.31
January (*n*=164)	72.26	32.24	24.23	18.92
February (*n*=168)	66.58	31.77	30.22	21.37
March (*n*=151)	65.86	32.92	30.55	23.33
April (*n*=165)	62.78	32.32	31.81	25.66
6-month Average	65.64	31.69	31.19	23.04

Note. $N = 182$. Possible range of positive and negative affect scores = 0 – 140.

Table 4

Intercorrelations Among Gender, Sexual Beliefs, and Psychosocial Maturity Status

	Measure	1	2	3	4	5
1.	Gender[a]	--				
2.	Intentions to have sex	-.00	--			
3.	Attitudes toward sexual behaviour	.12	.65*	--		
4.	Mature vs. immature[b]	.10	-.21*	-.08	--	
5.	Mature vs. semi-mature[c]	-.13	.40*	.32*	-.50*	--

Note. * $p < .05$. [a]Female = 0, Male = 1. [b] Mature = 0, Immature = 1. [c] Mature = 0, Semi-mature = 1.

and to evaluate the impact of between-persons predictors on individual trajectories, rather than on outcome variables assessed at one or two times. It also allows the researcher to model time-varying relationships among multiple outcome variables, and to evaluate the moderating impact of between-persons predictors on these relationships. Data from the present study were analyzed using the HLM 6.02 software program (Hierarchical Linear Modeling; Raudenbush & Bryk, 2002) to account for the nested structure of monthly repeated measures within individuals.

Multilevel models in HLM are presented conceptually as separate regression equations for each level of analysis. In the present study, two levels were used. The first level of analysis (Level 1) models data collected over repeated occasions of measurement (monthly checklists) for each person. The second level of analysis (Level 2) includes time-invariant predictors expected to differentiate between participants, such as gender. In their simplest form, these levels of analysis can be expressed in two separate equations:

$$\text{Level 1: } Y_{ti} = \pi_{0i} + e_{ti} \quad (1)$$

$$\text{Level 2: } \pi_{0i} = \beta_{00} + r_{0i} \quad (2)$$

Equation 1 expresses the outcome variable, Y_{ti}, for each participant in terms of the score on that variable at the first occasion of measurement (Time 0), π_{0i}, plus a random error component, e_{ti} . Equation 2 models the initial score for each participant as a function of the grand mean of all participants' scores at Time 0, β_{00}, plus a random error component, r_{0i}. In the present study, multilevel models were calculated separately for each of three measures of sexual behaviour: monthly engagement in penetrative sex, monthly engagement in oral sex, and occasions of penetrative sex per month. By adding a

time component to equations 1 and 2 above, occasions of penetrative sex can be modeled as follows:

$$\text{Level 1: Occasions penetrative sex}_{ti} = \pi_{0i} + \pi_{1i}(\text{Month}) + e_{ti} \quad (3)$$

$$\text{Level 2: } \pi_{0i} = \beta_{00} + r_{0i} \quad (4)$$

$$\pi_{1j} = \beta_{10} + r_{1i} \quad (5)$$

Equation 3 shows that a given participant's number of occasions of penetrative sex per month can be modeled as a function of the number of occasions of penetrative sex at Time 0, π_{0i}, the individual's rate of change across months, π_{1i}, and a random error component e_{ij}. Time 0 occasions – the intercept – for each participant is modeled at level 2 as a function of average occasions of penetrative sex at Time 0 across all participants, β_{00}, and error, r_{0i} (equation 4). Rate of change in occasions of penetrative sex per month – the time slope – for each participant is modeled at level 2 as a function of the average rate of change across all participants, β_{10}, and error, r_{1i} (equation 5). The fixed (β_{00} and β_{10}) and random(r_{0i} and r_{1i}) components of variability in the intercept and slope are thus modeled separately. In ordinary least squares regression, it is assumed that all random components of variability are equivalent and can thus be modeled as one error term in the regression equation.

The two remaining measures of sexual behaviour (monthly engagement in penetrative sex and oral sex) are modeled similarly, but because their distributions are dichotomous, a multilevel modeling equivalent of logistic regression must be used. The HLM software program contains a function for this purpose: Hierarchical Generalized Linear Modeling (HGLM). In this case, level 1 equations express the predicted log-odds of engaging in penetrative and oral sex for each person *i* across *t* months. The complete

equations used to model trajectories of change in each of penetrative and oral sex are as follows:

$$\text{Level 1: Penetrative sex}_{ti} = \pi_{0i} + \pi_{1i}(\text{Month}) \quad (6)$$

$$\text{Level 2: } \pi_{0i} = \beta_{00} + \beta_{01}(\text{gender}) + \beta_{02}(\text{intentions}) + \beta_{03}(\text{attitudes}) + \beta_{04}(\text{immature}) + \beta_{05}(\text{semi-mature}) + r_{0i} \quad (7)$$

$$\pi_{1i} = \beta_{10} + \beta_{11}(\text{gender}) + \beta_{12}(\text{intentions}) + \beta_{13}(\text{attitudes}) + \beta_{14}(\text{immature}) + \beta_{15}(\text{semi-mature}) + r_{1i} \quad (8)$$

$$\text{Level 1: Oral sex}_{ti} = \pi_{0i} + \pi_{1i}(\text{Month}) \quad (9)$$

$$\text{Level 2: } \pi_{0i} = \beta_{00} + \beta_{01}(\text{gender}) + \beta_{02}(\text{intentions}) + \beta_{03}(\text{attitudes}) + \beta_{04}(\text{immature}) + \beta_{05}(\text{semi-mature}) + r_{0i} \quad (10)$$

$$\pi_{1i} = \beta_{10} + \beta_{11}(\text{gender}) + \beta_{12}(\text{intentions}) + \beta_{13}(\text{attitudes}) + \beta_{14}(\text{immature}) + \beta_{15}(\text{semi-mature}) + r_{1i} \quad (11)$$

Equations 6 and 9 are similar to equation 3, with one exception: no random error component is included because the variance of dichotomous outcomes is fixed. For example, equation 6 expresses an individual's predicted log-odds of engaging in penetrative sex in a given month as a function of engagement in penetrative sex at Time 0 and rate of change in odds of engaging in penetrative sex across the remaining months. In the current study, a participant's odds of having sex in a given month are expressed as a function of whether the participant had sex in November, plus the rate of change in their odds of having sex across all months.

Equations 7 and 10 express the log-odds of engaging in penetrative and oral sex, respectively, for person *i* at Time 0 as a function of average engagement in penetrative and oral sex at Time 0 across all participants, β_{00}, plus gender, intentions to have sex,

attitudes toward sexual behaviour, having immature status, having semi-mature status, and random error. For example, the odds that a given individual had penetrative sex in November depends on the average participant's odds of engaging in penetrative sex in November, the given individual's gender, intentions, attitudes, maturity status, and their remaining deviation from the grand mean.

Equations 8 and 11 model the rate of change in log-odds of engaging in penetrative and oral sex, respectively, for person *i* across all months as a function of the average participant's log-odds of engaging in penetrative and oral sex across all months, β_{10}, plus gender, intentions to have sex, attitudes toward sexual behaviour, having immature vs. mature status, having semi-mature vs. mature status, and random error. That is, the rate of change in a given individual's odds of engaging in penetrative sex during the first year of university depends on the average participant's odds of having sex during the year, the given individual's gender, intentions, attitudes, maturity status, and their remaining deviation from the grand mean. As continuous variables, intentions and attitudes were centered to improve interpretability and reduce multicollinearity.

Time-varying relationships between positive/negative affect and three measures of sexual behaviour were also tested in the present study. In this case, equation 12 models the within-person association between sexual behaviour and affect experiences in a given month, and equations 13 and 14 model the moderating impact of between-persons predictors on these within-person associations. The complete equations for the association between positive affect and penetrative sex are as follows:

$$\text{Level 1: Positive affect}_{ti} = \pi_{0i} + \pi_{1i}\,(\text{penetrative sex}) + e_{ti} \quad (12)$$

$$\text{Level 2: } \pi_{0i} = \beta_{00} + \beta_{01}(\text{gender}) + \beta_{02}(\text{immature})$$

$$+ \beta_{03}(\text{semi-mature}) + r_{0i} \quad (13)$$

$$\pi_{1i} = \beta_{10} + \beta_{11}(\text{gender}) + \beta_{12}(\text{intentions}) + \beta_{13}(\text{attitudes})$$

$$+ \beta_{14}(\text{immature}) + \beta_{15}(\text{semi-mature}) + r_{1i} \quad (14)$$

Equation 12 expresses each person's level of positive affect on occasion *t* as a function of his or her average level of positive affect in months when he or she did not engage in penetrative sex, π_{0i} (the intercept), the within-person association of positive affect and engagement in penetrative sex, π_{1i} (the slope), plus error. Equation 13 calculates the impact of gender, immature status, and semi-mature status on average levels of positive affect during months of no penetrative sex, as a function of the average participant's level of positive affect during these months, β_{00}, plus error, r_{0i}. Equation 14 calculates the impact of gender, intentions to have sex, attitudes toward sex, immature status, and semi-mature status on the monthly association between positive affect and having sex. In other words, the average participant's change in positive affect, β_{10}, plus between-persons effects (gender, intentions, etc.), plus error, r_{1i} determines a given individual's level of positive affect during months when he or she is sexually active.

Trajectories of Change in Sexual Behaviour

Figure 1 (see Chapter II) illustrates the expected relations between gender, sexual beliefs, and psychosocial maturity status on average trajectories of engagement in three measures of sexual behaviour during the first year of university. Results of analyses associated with the first two research questions asked in Chapter II are presented here for each type of sexual behaviour. These questions addressed two goals: (1) To determine the average trajectories of change in penetrative sex, oral sex, and monthly occasions of

penetrative sex across the first year of university, and (2) To reveal the impact, if any, of selected between-persons characteristics on these trajectories.

Penetrative sex

A preliminary analysis, known as the *unconditional growth model* (see equation 6), revealed no significant increase or decrease in odds of engaging in penetrative sex across all months. That is, participants had equal odds of engaging in penetrative sex in any month across the first year of university. The unconditional model also showed that insufficient random variance was present in the time slope to justify modeling it separately as a random slope at level 2 (i.e., r_{1i} in equation 8 was omitted). Therefore, the random component of the slope was excluded from subsequent analyses and time was treated as a non-randomly varying effect. Table 5 shows the results of the HGLM analysis that tested for effects of between-persons predictors of variation in the average trajectory of change in the odds of engaging in penetrative sex each month (gender, intentions, attitudes, and psychosocial maturity).

Results of this analysis (see equations 7 and 8) indicate significant effects of gender, intentions to have sex, and attitudes toward sexual behaviour on participants' odds of engaging in penetrative sex in November (initial status), and a significant effect of intentions to have sex on the average trajectory of change in odds of engaging in penetrative sex during the first year. The gender effect for initial status showed that males' odds of having engaged in penetrative sex in November of their first year of university were 81% lower compared to females. Moreover, participants were 4.37 times as likely to have had sex in November, for every unit increase in intentions to have sex. In other words, participants who reported that they were *very likely* to engage in

Table 5

HGLM Results Testing Effects of Gender, Sexual Beliefs, and Psychosocial Maturity on the Odds of Engaging in Penetrative Sex

	Engagement in Penetrative Sex	
Variable	OR	CI
Initial Status (intercept)	*.14*	*(.05, .42)*
Gender[a]	.19*	(.08, .45)
Intentions to have sex	4.37*	(3.07. 6.22)
Attitudes toward sexual behaviour	.48*	(.25, .92)
Mature vs. immature[b]	.70	(.17, 2.92)
Mature vs. semi-mature[c]	.92	(.31, 2.67)
Rate of Change (slope)	*1.23*	*(.99, 1.53)*
Gender[a]	1.15	(.99, 1.53)
Intentions to have sex	.88*	(.81, .96)
Attitudes toward sexual behaviour	1.17	(.98, 1.38)
Mature vs. immature[b]	.96	(.69, 1.32)
Mature vs. semi-mature[c]	.83	(.64, 1.07)

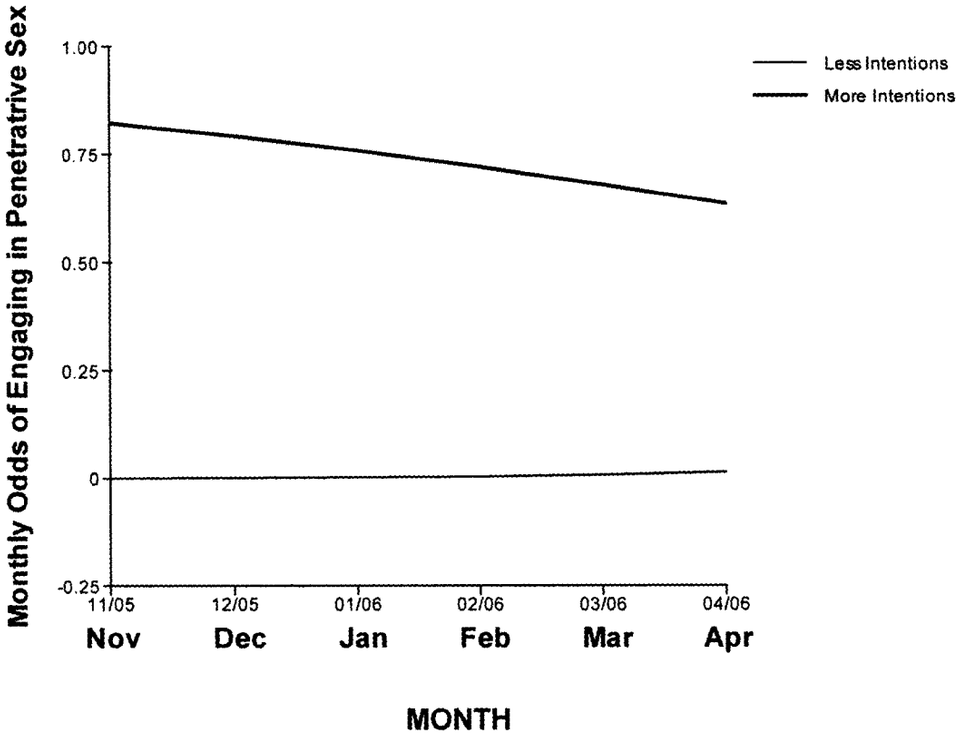
Note. OR = odds ratio. CI = 95% confidence interval of the odds ratio.

* $p < .05$. [a]Female = 0, Male = 1. [b] Mature = 0, Immature = 1. [c] Mature = 0, Semi-mature = 1.

penetrative sex during the year were 4.37 times more likely to have had sex in November than participants who reported that they were only *somewhat likely* to engage in penetrative sex, for example. Finally, participants whose attitudes toward sexual behaviour were more liberal also had odds of having engaged in penetrative sex in November that were 52% lower for every unit increase in liberality of attitudes. For example, participants who reported that they *agreed* with statements indicating that sexual behaviour is acceptable had odds of engaging in penetrative sex in November that were 52% lower than participants who reported that they *disagreed* with these statements. There were no differences in odds of having engaged in penetrative sex in November among mature, immature, and semi-mature participants.

Although the average trajectory of change in odds of engaging in penetrative sex was not upward or downward in the first year of university, one effect was observed that impacted this trajectory: The odds of engaging in penetrative sex each month were reduced by 12% for every unit increase in intentions to have sex during the academic year. In other words, participants whose initial intentions to have sex during the academic year were higher reduced their odds of actually having sex by 12% each month relative to participants whose initial intentions to have sex were lower. It is important to note, however, that participants with greater intentions to have sex were substantially more likely to engage in penetrative sex than participants without such intentions, as indicated by the impact of intentions on the intercept, above. This effect on the average trajectory is illustrated in Figure 4. Contrary to expectations, gender, attitudes, and psychosocial maturity status had no impact on the average trajectory.

Figure 4. The effect of intentions to have sex during the academic year on monthly odds of engaging in penetrative sex



Oral sex

The unconditional growth model (see equation 9) revealed no significant increase or decrease in odds of engaging in oral sex across all months. As with penetrative sex, participants also had equal odds of engaging in oral sex in any month across the first year of university. The unconditional model again showed that insufficient random variance was present in the time slope, so the random component was excluded from subsequent analyses (i.e., r_{1i} was omitted from equation 11). Table 6 shows the results of the HGLM analysis that tested for effects of between-persons predictors of variation in the average trajectory of change in the odds of engaging in oral sex each month (gender, sexual beliefs, and psychosocial maturity).

Results from this analysis indicate significant effects of gender and intentions to have sex on participants' odds of engaging in oral sex in November. The analysis also shows significant effects of intentions to have sex, attitudes toward sexual behaviour, and semi-mature status on the average trajectory of change in odds of engaging in oral sex during the first year. In addition, the average trajectory displays an increasing trend after accounting for all between-persons predictors: An average participant who is female, psychosocially mature, and with average intentions and attitudes toward sex has odds of engaging in oral sex that increase by 15% each month. In other words, after controlling for person-level factors, the average participant becomes more likely to engage in oral sex every month across the first year of university.

The gender effect for initial status showed that males' odds of having engaged in oral sex in November of their first year of university were 66% lower compared to females. Moreover, participants were 3.16 times as likely to have had oral sex in

Table 6

HGLM Results Testing Effects of Gender, Sexual Beliefs, and Psychosocial Maturity on the Odds of Engaging in Oral Sex

	Engagement in Oral Sex	
Variable	OR	CI
Initial Status (intercept)	*.24*	*(.12, .46)*
Gender[a]	.34*	(.17, .69)
Intentions to have sex	3.16*	(2.43, 4.11)
Attitudes toward sexual behaviour	.68	(.43, 1.09)
Mature vs. immature[b]	.99	(.38, 2.59)
Mature vs. semi-mature[c]	1.14	(.47, 2.77)
Rate of Change (slope)	*1.15**	*(1.02, 1.28)*
Gender[a]	1.00	(.85, 1.18)
Intentions to have sex	.93*	(.86, .99)
Attitudes toward sexual behaviour	1.13*	(1.01, 1.27)
Mature vs. immature[b]	1.00	(.81, 1.24)
Mature vs. semi-mature[c]	.82*	(.69, .99)

Note. OR = odds ratio. CI = 95% confidence interval of the odds ratio.

* $p < .05$. [a]Female = 0, Male = 1. [b] Mature = 0, Immature = 1. [c] Mature = 0, Semi-mature = 1.

November, for every unit increase in intentions to have sex. In other words, participants who reported that they were *very likely* to engage in penetrative sex during the year were 3.16 times more likely to have had oral sex in November than participants who reported that they were only *somewhat likely* to engage in penetrative sex, for example. Three effects were observed that impacted the average trajectory of change in odds of engaging in oral sex across the first year of university. The odds of engaging in oral sex were reduced by 7% each month for every unit increase in intentions to have sex during the academic year. That is, participants who had stronger intentions to have sex reduced their odds of actually engaging in oral sex during the year by 7% per month, relative to participants whose intentions were lower (see Figure 5). The odds of engaging in oral sex were 13% higher each month for every unit increase in liberality of attitudes toward sexual behaviour. Participants whose attitudes toward sexual behaviour were more liberal increased their odds of engaging in oral sex during the academic year by 13% per month, relative to participants whose attitudes were more conservative. For example, participants who reported that they *agreed* with statements indicating that sexual behaviour is acceptable increased their odds of engaging in oral sex by 13% each month, relative to participants who reported that they *disagreed* with these statements. This effect is illustrated in Figure 6. Finally, semi-mature participants' odds of engaging in oral sex were reduced by 18% each month, compared to mature participants. That is, while mature participants' average trajectory increased over time, semi-matures' average trajectory decreased. This effect is illustrated in Figure 7. Gender and immature status had no impact on the average trajectory.

Figure 5. The effect of intentions to have sex during the academic year on monthly odds of engaging in oral sex

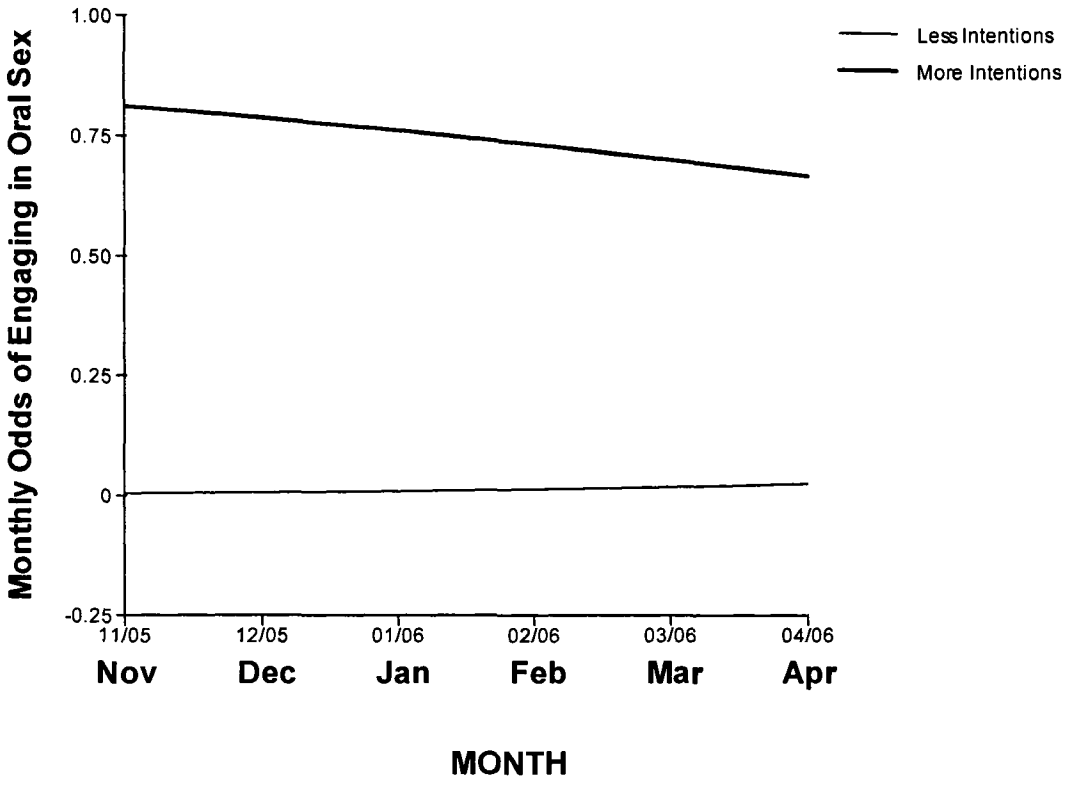


Figure 6. The effect of attitudes toward sexual behaviour on monthly odds of engaging in oral sex.

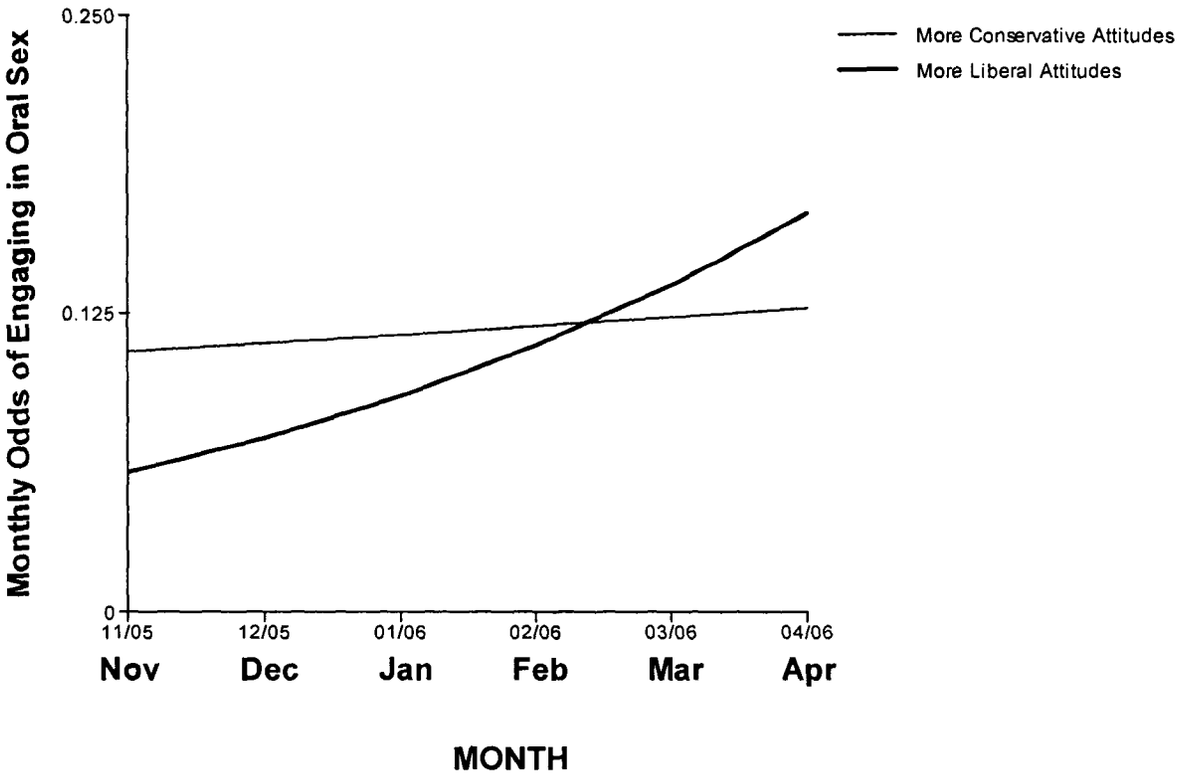
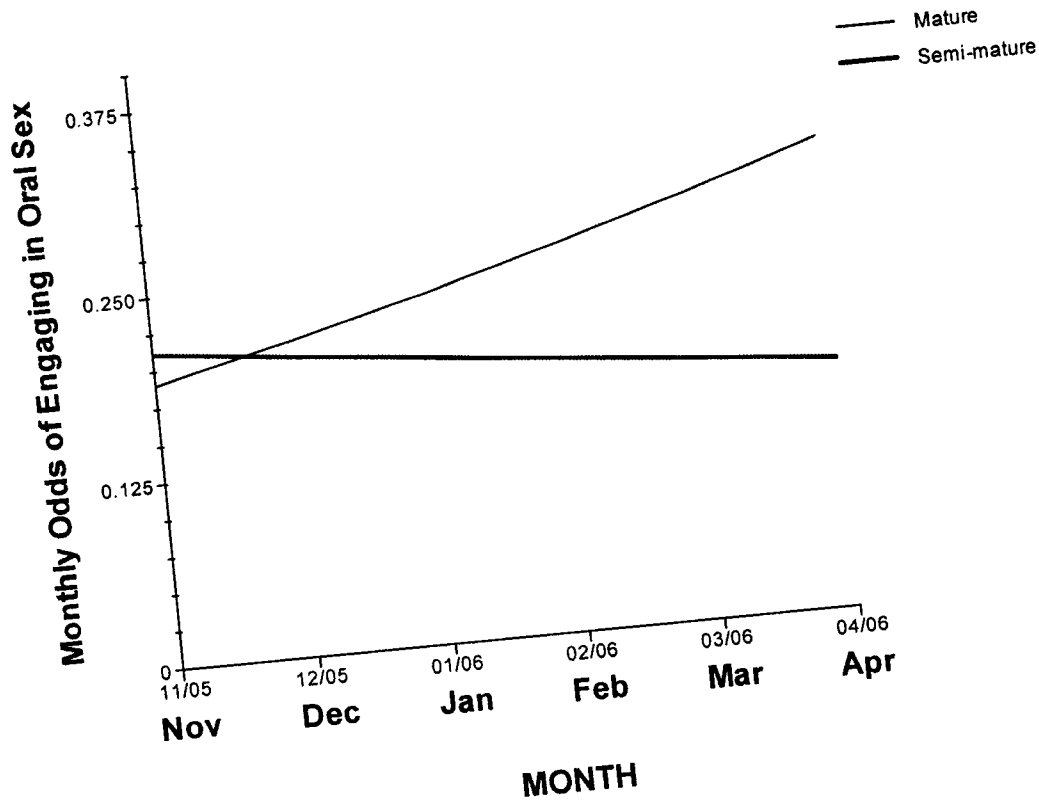


Figure 7. The effect of mature vs. semi-mature status on monthly odds of engaging in oral sex.



Occasions of penetrative sex

Because occasions of penetrative sex is a highly positively skewed variable (typical of count data), a Poisson distribution of the outcome variable was assumed. As a result, it was necessary to employ HGLM, rather than ordinary HLM, for these analyses. The unconditional growth model (equation 3, with error term e_{ti} omitted) revealed that no significant change was present in occasions of penetrative sex per month. For every additional month spent in university, participants' expected number of occasions of penetrative sex remained the same. That is, participants did not engage in more or less occasions of sex in any month across their first year. However, sufficient random variation was present in the time slope to justify modeling time at level 2 as a random effect. In contrast to previous effects of between-persons predictors on initial status and trajectories of penetrative and oral sex, no effects were found for monthly occasions of penetrative sex. Table 7 shows the results of the HGLM analysis that tested for effects of between-persons predictors of variation in the average trajectory of change in number of occasions of penetrative sex per month (gender, sexual beliefs, and psychosocial maturity).

Monthly Change in Positive and Negative Affect as a Function of Engagement in Sexual Behaviour

In line with the expected relationships among variables outlined in Figure 2 (see Chapter II), the next set of analyses addressed two goals: (1) to determine the within-time associations of sexual behaviours with experiences of positive and negative affect across the first year of university, and (2) to reveal the impact, if any, of selected between-persons characteristics on these associations.

Table 7

HGLM Results Testing Effects of Gender, Sexual Beliefs, and Psychosocial Maturity on Monthly Occasions of Penetrative Sex

	Occasions of Penetrative Sex		
Variable	B	SE	*exp*(B)
Initial Status (intercept)	*.67*	*2.58*	*1.95*
Gender[a]	-.98	1.39	.38
Intentions to have sex	.78	.59	2.18
Attitudes toward sexual behaviour	.84	.75	2.32
Mature vs. immature[b]	-1.55	2.36	.21
Mature vs. semi-mature[c]	-1.81	1.70	.16
Rate of Change (slope)	*-.15*	*.53*	*.86*
Gender[a]	.17	.17	1.18
Intentions to have sex	.01	.12	1.01
Attitudes toward sexual behaviour	-.06	.11	.94
Mature vs. immature[b]	.54	.41	1.71
Mature vs. semi-mature[c]	.18	.31	1.19

Note. B = unstandardized beta coefficient. SE = standard error. *exp*(B) = event rate ratio.

[a]Female = 0, Male = 1. [b] Mature = 0, Immature = 1. [c] Mature = 0, Semi-mature = 1.

Multilevel models were calculated in three steps for these analyses. First, *unconditional models*, containing no covariates at level 1 and no predictors at level 2 were calculated for positive and negative affect, respectively. The function of the unconditional models is to determine whether enough variation is present at each level of analysis to justify modeling effects at separate between- and within-person levels. The unconditional model for positive affect determined that 28% of the variation in positive affect scores was due to between-persons factors (72% within-persons). The average positive affect rating in a two-week period was 65.48 (SE = 2.07). The reliability of this estimate was high, at .92. The unconditional model for negative affect determined that 36% of the variation in days of negative affect was due to between-persons factors, while 64% was due to within-person factors. The average negative affect rating in a two-week period was 30.96 (SE = 1.44). The reliability of this estimate was high, at .89.

Second, *individual models*, containing sexual behaviour covariates at level 1 but no predictors at level 2, were calculated. There were six models in total: Individual models predicting positive affect included: (1) engagement in penetrative sex as a covariate, (2) engagement in oral sex as a covariate, and (3) monthly occasions of penetrative sex as a covariate. Individual models predicting negative affect included: (4) engagement in penetrative sex as a covariate, (5) engagement in oral sex as a covariate, and (6) monthly occasions of penetrative sex as a covariate. The function of the individual models is to determine whether the within-time associations between affect outcomes and each of their covariates display sufficient random variation to justify modeling separate random effects of these associations at level 2, using chi-square tests of the variance components of the outcome variables. Third, *full models*, containing

sexual behaviour covariates at level 1 and between-persons predictors at level 2 were calculated. The function of these models is to test the impact of person-level factors on the outcome variable, and to test the impact of cross-level interactions between person-level factors at level 2 and within-person covariates at level 1 on the outcome variable. Between-persons predictors were added to the intercept and slope terms of each of the six individual models to create full models (see equations 13 and 14, for examples).

Model 1: Positive Affect and Engagement in Penetrative Sex

The individual model indicated that participants' levels of positive affect during months when they are having sex do not differ from their positive affect in months when they are not having sex. However, there was significant variation in participants' levels of positive affect during months when they are having penetrative sex, χ^2 (37, N = 182) = 66.54, $p < .05$, justifying the inclusion of a random component when the within-time association of monthly engagement in penetrative sex and positive affect is modeled at level 2.

Table 8 shows the results of the HLM analysis that tested for effects of between-persons predictors of variation on the within-time associations between positive affect and penetrative sex, (gender, sexual beliefs, and psychosocial maturity). Two differences were observed in participants' positive affect during months in which they did not engage in penetrative sex (i.e., effects on the intercept): Males' positive affect scores were 9.51 points higher than females' (see Figure 8), and immature participants' positive affect scores were 19.34 points lower than genuinely mature participants'.

There were also three effects of between-persons predictors on the within-time association between positive affect and engagement in penetrative sex (i.e., effects on the

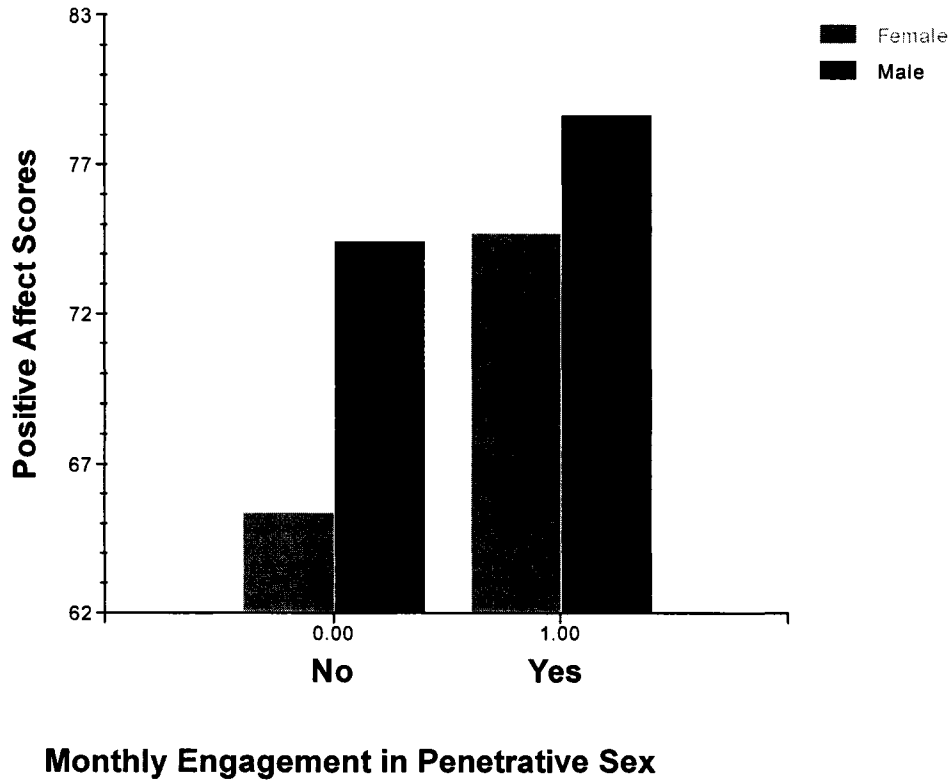
Table 8

HLM Results Testing the Effects of Gender, Sexual Beliefs, and Psychosocial Maturity Status on the Within-Time Association Between Positive and Negative Affect and Engagement in Penetrative Sex

	Monthly PA		Monthly NA	
Variable	B	SE	B	SE
Level of affect during months without penetrative sex (intercept)	*65.27*	*4.36*	*27.20*	*2.39*
Gender[a]	9.51*	4.08	-3.80	3.07
Mature vs. immature[b]	-19.34*	4.84	11.23*	3.61
Mature vs. semi-mature[c]	8.72	5.29	6.46	3.39
Level of affect during months with penetrative sex (slope)	*9.73*	*6.56*	*-8.14**	*3.02*
Gender[a]	-5.36	4.87	5.41	4.68
Intentions to have sex	-.63	1.87	-1.31	1.36
Attitudes toward sexual behaviour	11.70*	4.94	1.54	5.07
Mature vs. immature[b]	-16.73*	6.54	14.79*	5.32
Mature vs. semi-mature[c]	-13.51*	6.71	5.41	4.10

Note. PA = positive affect. NA = negative affect. B = unstandardized coefficient. SE = standard error. * $p < .05$. [a]Female = 0, Male = 1. [b] Mature = 0, Immature = 1. [c] Mature = 0, Semi-mature = 1.

Figure 8. The effect of gender on the within-time association between positive affect and monthly engagement in penetrative sex.



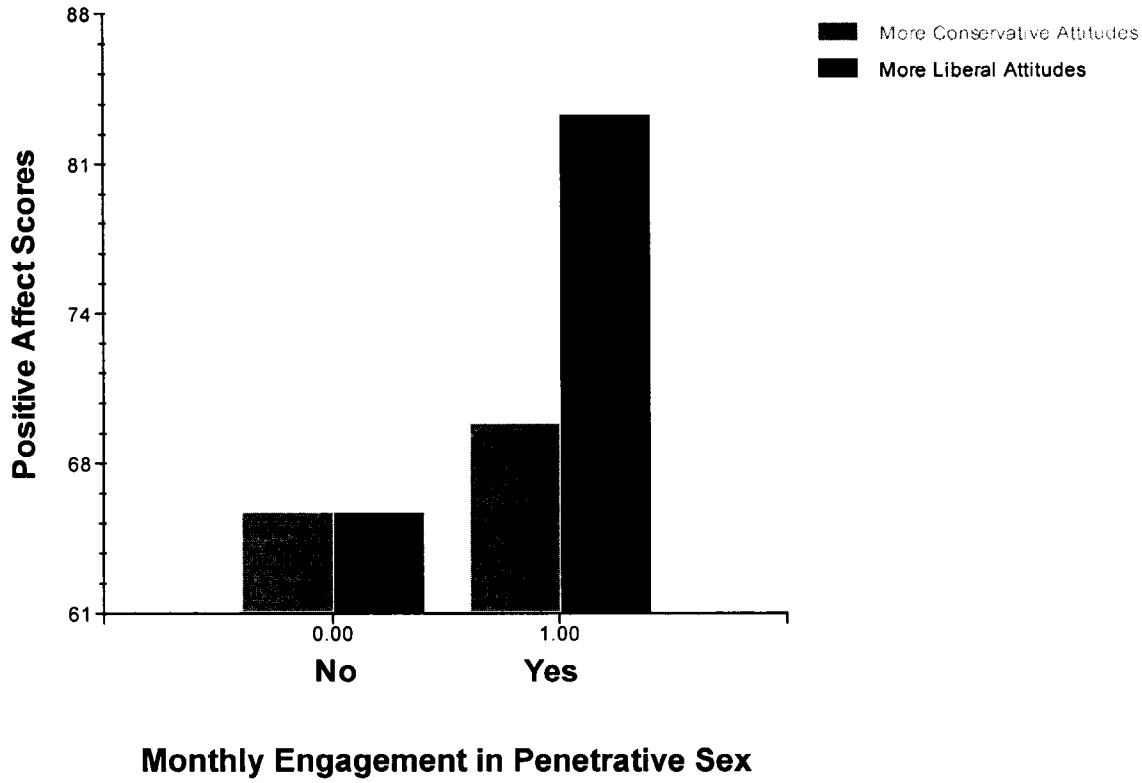
slope). For every unit increase in liberality of attitudes toward sexual behaviour, participants rated their positive affect 11.7 points higher during months in which they engaged in penetrative sex. For example, participants who reported that they *agreed* with statements indicating that sexual behaviour is acceptable also rated their positive affect 11.7 points higher during months when they reported penetrative sexual experiences than participants who reported that they *disagreed* with these statements and had penetrative sex anyway. This relationship is illustrated in Figure 9.

Unstandardized coefficients are taken directly from Table 8 to interpret the results of HLM analyses in terms of the original units of measurement in two cases: For predictors that impact levels of affect during months in which participants did not engage in penetrative sex (the intercept) and for predictors whose effects are tested only for months in which participants engaged in penetrative sex (the slope). However, for predictors whose effects are modeled on both the intercept and slope (i.e., gender, psychosocial maturity), interpretation is more complex. The level-1 and level-2 equations 12, 13, and 14 (see pages 61-62) are presented separately to aid in conceptual understanding. However, for actual calculations these equations are combined into the following form:

$$\text{Positive affect}_{ti} = [\beta_{00} + \beta_{01}(\text{gender}) + \beta_{02}(\text{immature}) + \beta_{03}(\text{semi-mature}) + r_{0i}] + [\beta_{10} + \beta_{11}(\text{gender}) + \beta_{12}(\text{intentions}) + \beta_{13}(\text{attitudes}) + \beta_{14}(\text{immature}) + \beta_{15}(\text{semi-mature}) + r_{1i}](\text{penetrative sex}) + e_{ti} \quad (15)$$

Therefore, the impact of gender, for example, on positive affect scores at occasion *t* for person *i* is a function of their scores during months in which they engaged in penetrative sex, in addition to their scores during months in which they did not engage in penetrative

Figure 9. The effect of attitudes toward sexual behaviour on the within-time association between positive affect and monthly engagement in penetrative sex.



sex. From Table 8, the equation for the average impact of gender during months in which participants engaged in penetrative sex, controlling for all other predictors, becomes:

Positive affect = [65.27 + 9.51(gender)] + [9.73 – 5.36(gender)](1) (16)

Females' (gender = 0) positive affect = 75

Males' (gender = 1) positive affect = 79.15

Thus, females' positive affect scores are 4.15 points lower than males' during months in which they engaged in penetrative sex (a nonsignificant difference).

Using equations of the same form, immature participants rated their positive affect 36.07 points lower than matures during months in which they engaged in penetrative sex. This relationship is illustrated in Figure 10. Semi-mature participants also rated their positive affect 4.79 points lower than matures during months in which they engaged in penetrative sex. This relationship is illustrated in Figure 11.

Model 2: Positive Affect and Engagement in Oral Sex

The individual model indicated that participants' levels of positive affect during months when they engaged in oral sex are marginally higher compared to months when they are not, $p < .06$. There was also only marginal variation in participants' levels of positive affect during months when they engaged in oral sex, χ^2 (45, N = 182) = 60.77, p =.058. The random component of the monthly engagement in oral sex slope was not modeled at level 2.

Table 9 shows the results of the HLM analysis that tested for effects of between-persons predictors of variation on the within-time associations between positive affect and oral sex, (gender, sexual beliefs, and psychosocial maturity). Three differences were observed among participants' positive affect scores during months in which they did not

Figure 10. The effect of mature vs. immature status on the within-time association between positive affect and monthly engagement in penetrative sex.

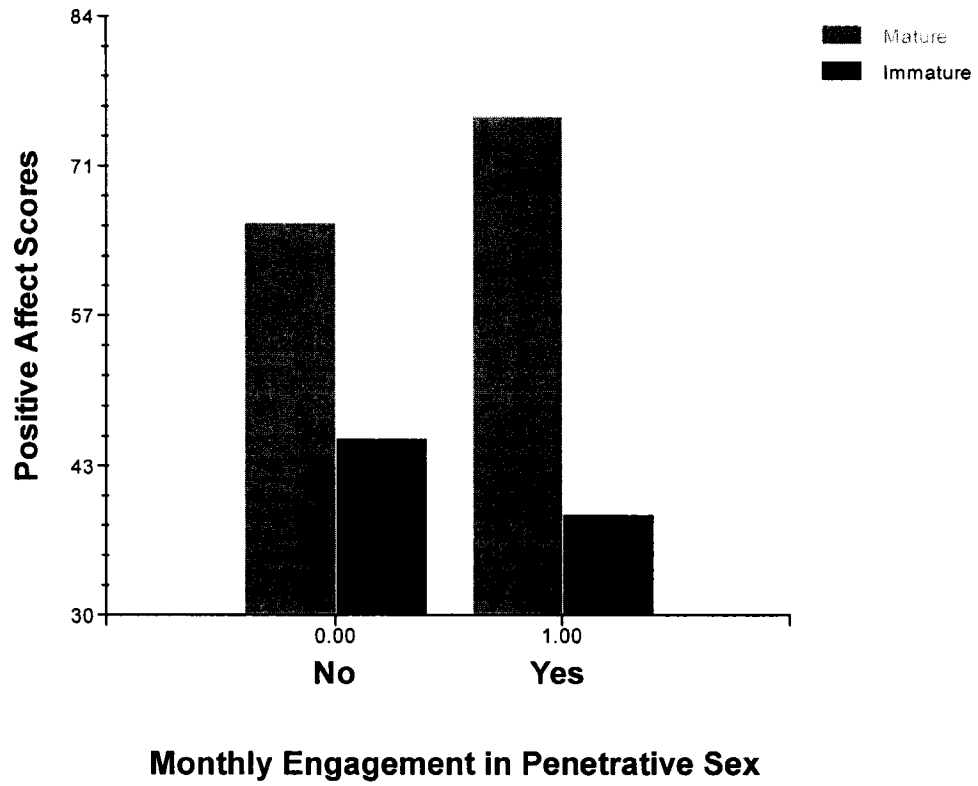


Figure 11. The effect of mature vs. semi-mature status on the within-time association between positive affect and monthly engagement in penetrative sex.

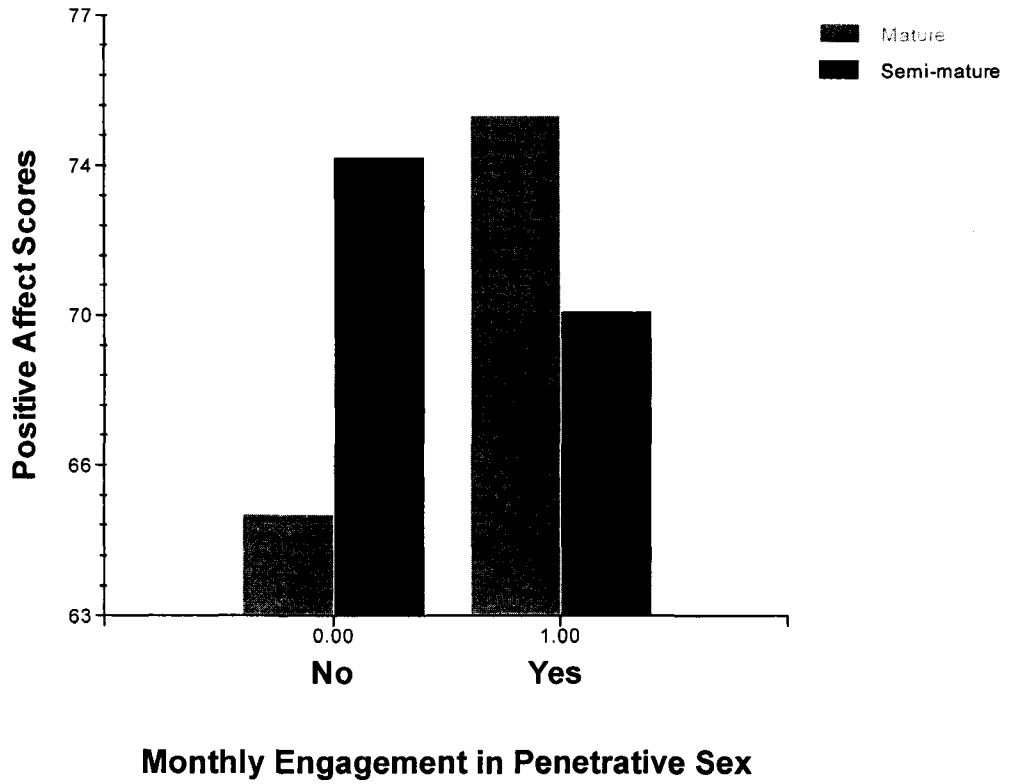


Table 9

HLM Results Testing the Effects of Gender, Sexual Beliefs, and Psychosocial Maturity Status on the Within-Time Association Between Positive and Negative Affect and Engagement in Oral Sex

	Monthly PA		Monthly NA	
Variable	B	SE	B	SE
Level of affect during months without oral sex (intercept)	*63.77*	*4.06*	*27.14*	*2.41*
Gender[a]	10.30*	3.97	-4.01	3.11
Mature vs. immature[b]	-18.97*	4.70	11.37*	3.67
Mature vs. semi-mature[c]	10.13*	4.94	5.96	3.44
Level of affect during months with oral sex (slope)	*18.50**	*6.41*	*-6.11*	*3.59*
Gender[a]	-5.59	4.88	5.88	4.45
Intentions to have sex	-1.28	1.48	-1.33	1.14
Attitudes toward sexual behaviour	4.15	4.93	4.19	5.25
Mature vs. immature[b]	-16.81*	6.55	7.57	5.81
Mature vs. semi-mature[c]	-17.40*	6.32	3.26	3.97

Note. PA = positive affect. NA = negative affect. B = unstandardized coefficient. SE = standard error. * $p < .05$. [a]Female = 0, Male = 1. [b] Mature = 0, Immature = 1. [c] Mature = 0, Semi-mature = 1.

engage in oral sex (i.e., effects on the intercept): Males rated their positive affect 10.30 points higher than females (see Figure 12). Immature participants rated their positive affect 18.97 points lower than matures, and semi-matures rated their positive affect 10.13 higher than matures (see Figure 13).

After adding predictors to the full model, the within-time association between positive affect and engagement in oral sex (the slope) became significant. That is, positive affect scores were 18.5 points higher during months when participants engaged in oral sex, controlling for person-level factors. Two effects of psychosocial maturity status were observed on the within-time association between positive affect and monthly engagement in oral sex. Immatures' positive affect was 35.78 points lower than matures' during months in which they engaged in oral sex, and semi-matures' positive affect was 7.27 points lower than matures' during those months. These relationships are depicted in Figures 13 and 14, respectively.

Model 3: Positive Affect and Monthly Occasions of Penetrative Sex

The individual model indicated that participants' levels of positive affect do not increase with increasing occasions of penetrative sex per month. However, there was significant variation in levels of positive affect with increasing numbers of occasions of penetrative sex, χ^2 (52, N = 182) = 79.39, $p < .05$. The random component of this variable was modeled at level 2.

Table 10 shows the results of the HLM analysis that tested for effects of between-persons predictors of variation on the within-time associations between positive affect and monthly occasions of penetrative sex, (gender, sexual beliefs, and psychosocial maturity). Two differences were observed among participants' positive affect scores

Figure 12. The effect of gender on the within-time association between positive affect and monthly engagement in oral sex.

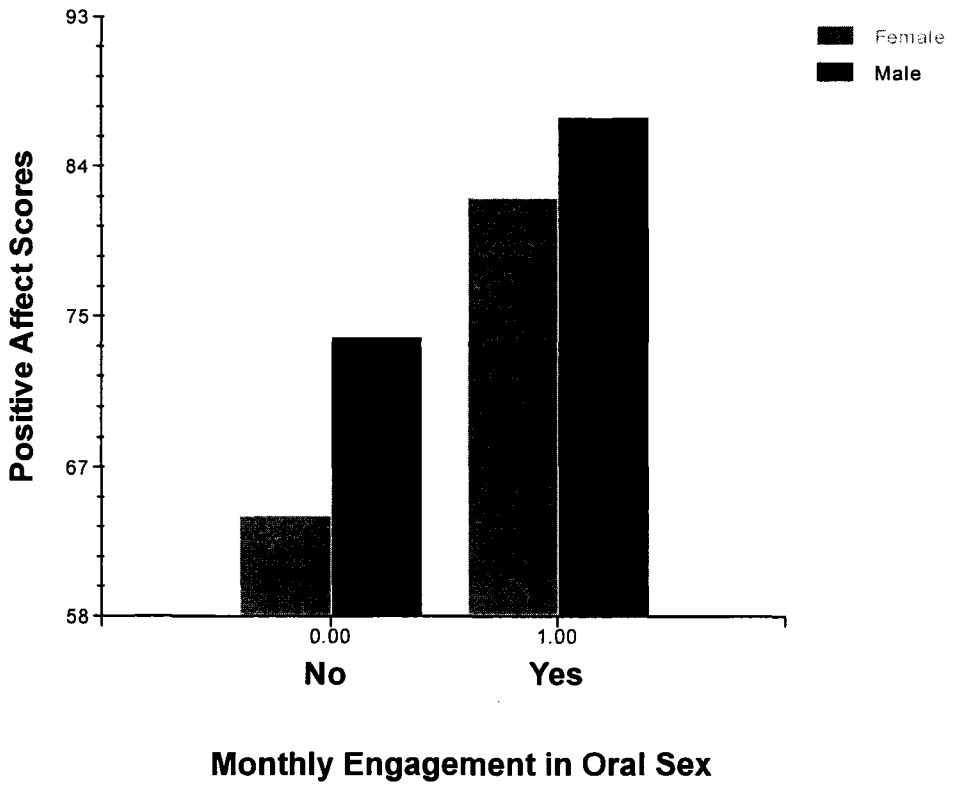


Figure 13. The effect of mature vs. immature status on the within-time association between positive affect and monthly engagement in oral sex.

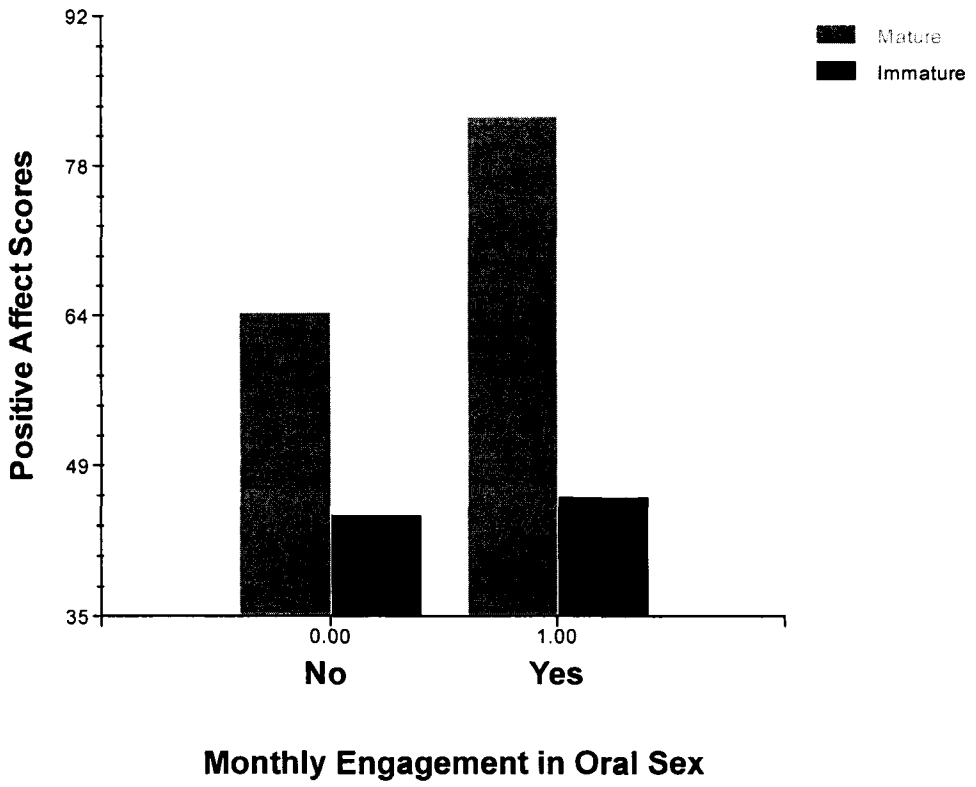


Figure 14. The effect of mature vs. semi-mature status on the within-time association between positive affect and monthly engagement in oral sex.

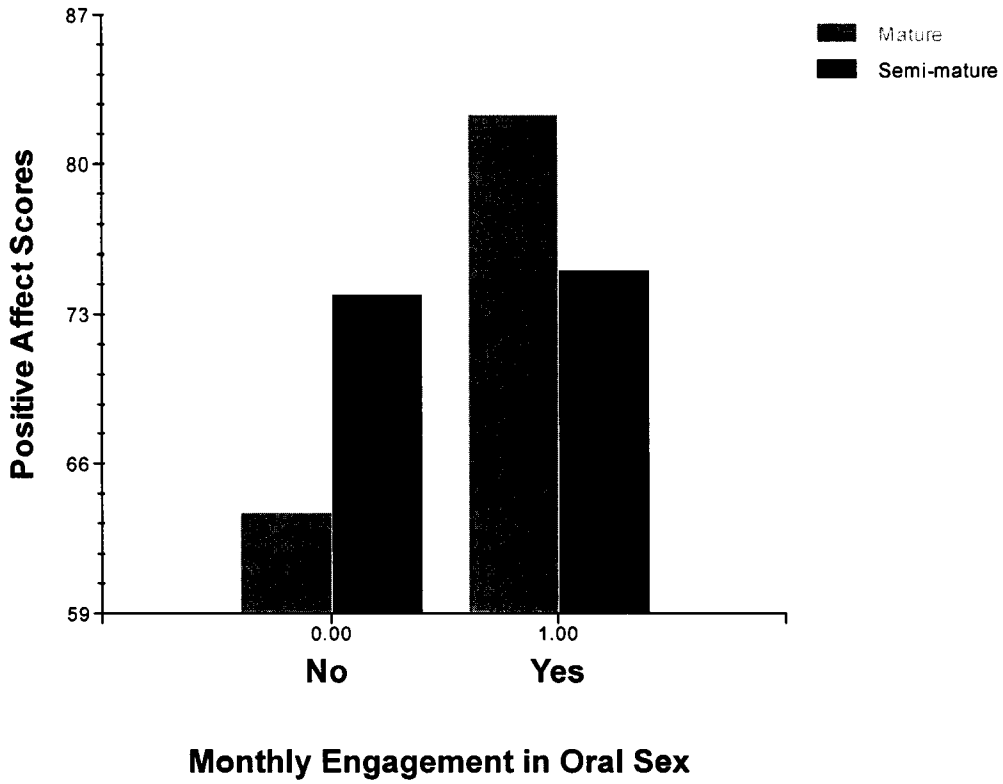


Table 10

HLM Results Testing the Effects of Gender, Sexual Beliefs, and Psychosocial Maturity Status on the Within-Time Associations of Positive and Negative Affect with Monthly Occasions of Penetrative Sex

	Monthly PA		Monthly NA	
Variable	B	SE	B	SE
Level of affect during months with no occasions of penetrative sex (intercept)	*66.41*	*4.17*	*26.09*	*2.73*
Gender[a]	10.14*	3.89	-3.41	2.91
Mature vs. immature[b]	-21.52*	4.65	12.75*	3.40
Mature vs. semi-mature[c]	6.84	5.05	7.23*	3.54
Level of affect for every additional monthly occasion of penetrative sex (slope)	*.42*	*.34*	*-.35*	*.38*
Gender[a]	-1.28*	.33	.36	.46
Intentions to have sex	.001	.12	-.15	.14
Attitudes toward sexual behaviour	.64*	.24	.29	.34
Mature vs. immature[b]	-.09	.39	.63	.47
Mature vs. semi-mature[c]	-.66	.34	.22	.38

Note. PA = positive affect. NA = negative affect. B = unstandardized coefficient. SE = standard error. * $p < .05$. [a]Female = 0, Male = 1. [b] Mature = 0, Immature = 1. [c] Mature = 0, Semi-mature = 1.

during months in which they did not engage in any occasions of penetrative sex (i.e., effects on the intercept): Males rated their positive affect 10.14 points higher than females, and immature participants rated their positive affect 21.52 points lower than matures.

Two effects of between-persons predictors on the within-time association between positive affect and monthly occasions of penetrative sex (i.e., effects on the slope) were also observed. First, males' positive affect decreased by 1.28 points with each additional occasion of penetrative sex per month (see Figure 15). In other words, with increasing occasions of penetrative sex in a given month, males experienced less positive affect relative to females. Second, for every unit increase in liberality of attitudes toward sexual behaviour, participants rated their positive affect .64 points higher with each additional occasion of penetrative sex per month (see Figure 16). For example, participants who reported that they *agreed* with statements indicating that sexual behaviour is acceptable also rated their positive affect .64 points higher for every additional occasion of penetrative sex per month than participants who reported that they *disagreed* with these statements. There were no effects of gender, intentions to have sex, or psychosocial maturity on the association between occasions of penetrative sex per month and positive affect.

Model 4: Negative Affect and Engagement in Penetrative Sex

The individual model indicated that participants' ratings of negative affect were not significantly different in months when they engaged in penetrative sex, compared with months in which they did not engage in penetrative sex. There was insignificant

Figure 15. The effect of gender on the within-time association between positive affect and occasions of penetrative sex per month.

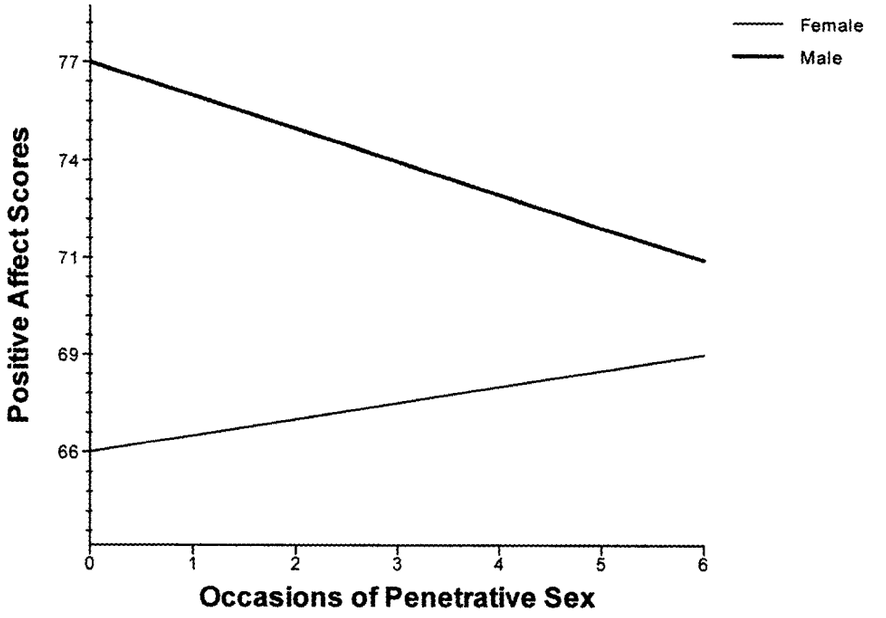
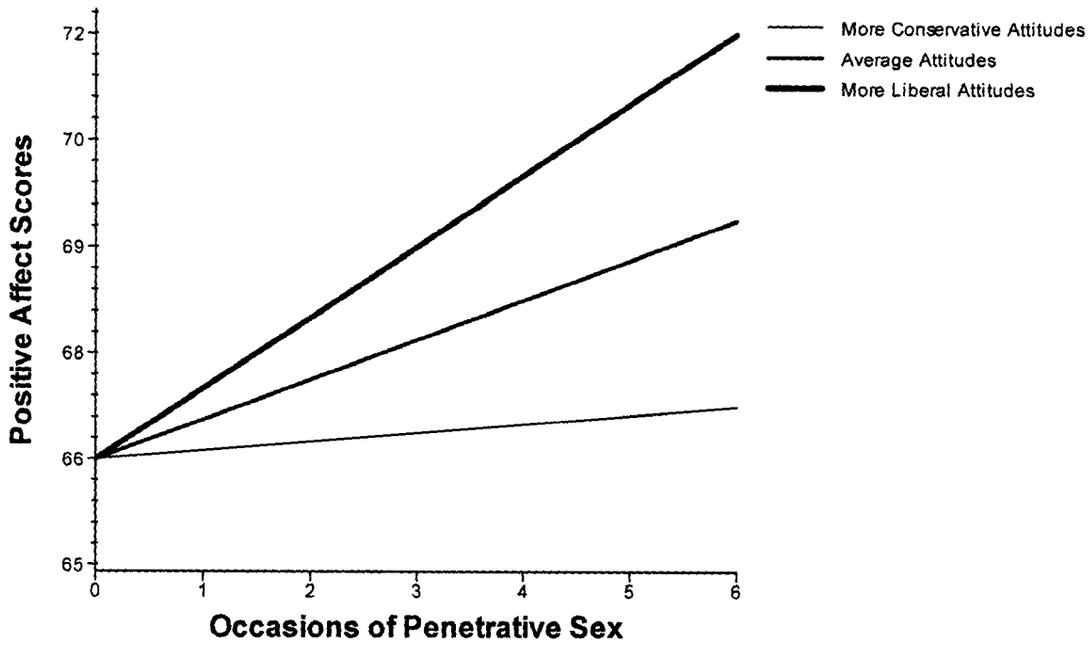


Figure 16. The effect of attitudes toward sexual behaviour on the within-time association between positive affect and occasions of penetrative sex per month.



variation in negative affect during months of penetrative sex to justify modeling it as a random effect at level 2, χ^2 (36, N = 182) = 44.71, p = .15.

Table 8 shows the results of the HLM analysis that tested for effects of between-persons predictors of variation on the within-time associations between negative affect and penetrative sex, (gender, sexual beliefs, and psychosocial maturity). One difference was observed in participants' negative affect ratings during months in which they did not engage in penetrative sex (i.e., effect on the slope): Immature participants' scores were 11.23 points higher than matures.

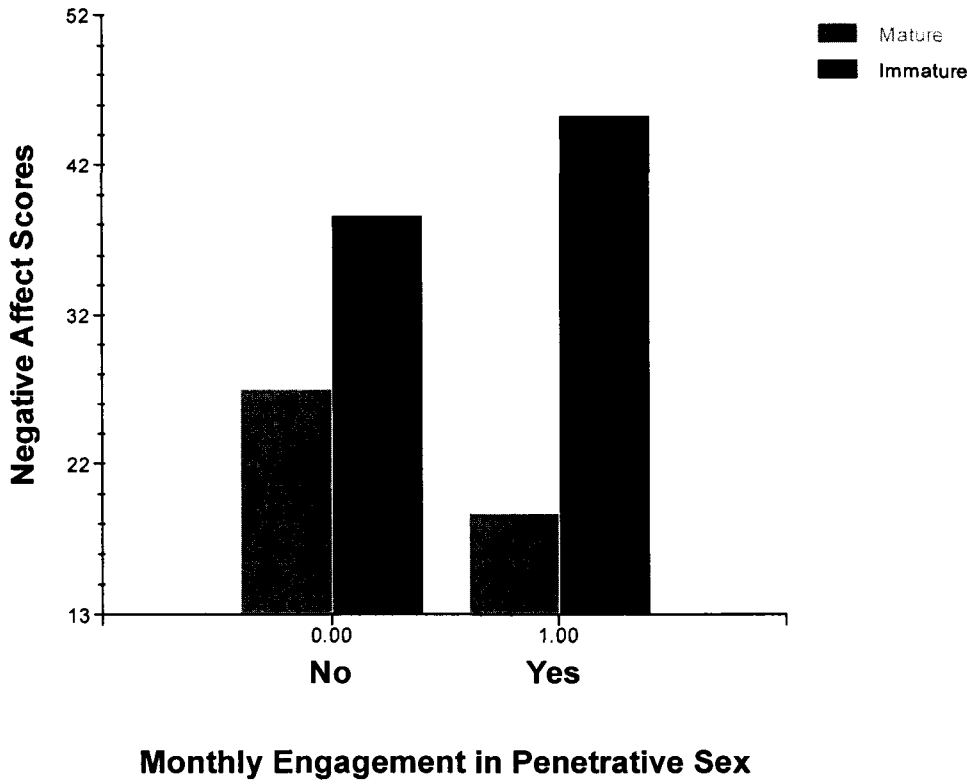
After adding predictors to the full model, the within-time association between negative affect and engagement in penetrative sex (the slope) became significant. That is, negative affect scores were 8.14 points lower during months when participants engaged in penetrative sex, controlling for person-level factors. One effect of maturity status impacted this slope. Immatures' negative affect scores were 26.02 points higher than matures during these months. This relationship is illustrated in Figure 17. No other significant effects of person-level variables on the slope were found.

Model 5: Negative Affect and Engagement in Oral Sex

The individual model indicated that participants' ratings of negative affect were not significantly different in months when they engaged in oral sex, compared with months in which they did not engage in oral sex. However, there was significant variation in negative affect during months of oral sex to justify modeling it as a random effect at level 2, χ^2 (44, N = 182) = 69.11, $p < .05$.

Table 9 shows the results of the HLM analysis that tested for effects of between-persons predictors of variation in the intercepts and slopes for negative affect (gender,

Figure 17. The effect of mature vs. immature status on the within-time association between negative affect and monthly engagement in penetrative sex.



sexual beliefs, and psychosocial maturity). The only significant finding appeared in immatures' ratings of negative affect during months in which they did not engage in oral sex (i.e., effect on the intercept). Immatures' scores were 11.37 points higher than matures' during these months. No other significant effects of person-level variables were found, nor was the slope significant.

Model 6: Negative Affect and Monthly Occasions of Penetrative Sex

The individual model indicated that participants' ratings of negative affect did not change with increasing numbers of occasions of penetrative sex per month. There was insufficient variation in levels of negative affect during months in which participants engaged in occasions of penetrative sex to justify modeling the random component of the slope at level 2, χ^2 (51, N = 182) = 52.9, p = .40.

Table 10 shows the results of the HLM analysis that tested for effects of between-persons predictors of variation on the within-time associations between negative affect and monthly occasions of penetrative sex, (gender, sexual beliefs, and psychosocial maturity). Two differences were observed in participants' negative affect ratings during months in which they did not engage in any occasions of penetrative sex (i.e., effects on the intercept). Immature and semi-mature participants rated their negative affect 12.75 and 7.23 points higher than matures during these months. No other significant effects of person-level variables were found. The within-time association between occasions of penetrative sex and negative affect (the slope) was not significant, and no between-persons predictors moderated this relationship.

CHAPTER V

DISCUSSION

The purpose of the present study was to search for trajectories of change in sexual behaviour across the first year of university, to determine whether person-level characteristics predicted variation in those trajectories, and whether those same characteristics moderated the within-time associations between engagement in sexual behaviour and experiences of positive and negative affect. This chapter summarizes the results of these analyses, provides interpretations of expected and unexpected results, and discusses the ways in which this study fits into a broader literature of sexuality research based on a lifespan approach. Strengths, limitations, and future directions for research in this area are also presented.

Trajectories of Change in Sexual Behaviour

The first two research questions of the current study were concerned with determining the average trajectories of change in odds of engaging in sexual behaviour across the first year of university, and whether selected person-level predictors had an impact on these trajectories. Engaging in sexual activities such as oral and penetrative sex is normative in emerging adulthood (Lefkowitz & Gillen, 2006), and cross-sectional surveys of emerging adults have shown that rates of engagement are typically higher with increasing age, through the twenties (e.g., Maticka-Tyndale et al., 2000). Results of the current study show that, in general, rates of engaging in penetrative and oral sex did not change across the first year of university. However, rates of engaging in oral sex increase across the first year of university, after accounting for the influence of gender, attitudes toward sexual behaviour, intentions to have sex, and psychosocial maturity status. This

finding highlights the importance of taking person-level characteristics into account in determining rates at which university students engage in sexual activities. After controlling for several individual differences in the present sample, an increasing trajectory was revealed that had been obscured by the unconditional growth model.

Adolescents and emerging adults in several studies have demonstrated increasing rates of engagement in sexual behaviour over time. In a cross-sectional sample of American university students, Siegel et al. (1999) showed that 52% of first-year students reported ever having engaged in oral or penetrative sex, compared to 75% of second-year students. These figures are comparable to rates of lifetime engagement in penetrative sex among students at a Canadian university. In a sample of 358 primarily first-year university students (mean age = 19.4; range = 17-38), Tsui and Nicoladis (2004) found that 56% of participants reported ever having engaged in penetrative sex. However, rates of sexual activity reported by participants in these studies may not be comparable to rates reported in the present study. This study used intensive repeated measures over a period of six months to measure first-year students' reports of engagement in penetrative and oral sex. Across all months, 30% of students reported engaging in penetrative sex, and 37% reported engaging in oral sex. In any given month, 18-20% of students engaged in penetrative sex and 20-27% of students engaged in oral sex. On the baseline questionnaire, only 28% of students reported ever having engaged in penetrative sex. That rates of engagement in sexual activities in the present study are not totally consistent with rates previously obtained in cross-sectional research is likely due to a combination of factors: (1) a limited sample of participants who engaged in sexual behaviours, likely due to (2) sampling restrictions such as age, (3) specific criteria denoting what kinds of

behaviour qualified as penetrative and oral sex, and (4) the limited time frame of the current study in which to measure change.

Participants in the present study were younger than typical university student samples. Recruitment restrictions limited our sample to participants aged 19 and under. Indeed, mean ages of students in other studies (Siegel et al., 1999; Tsui & Nicoladis, 2004) were 19 and above. Tsui and Nicoladis also found that sexually active students were significantly more likely to be older than students who reported never having engaged in penetrative sex.

Students in the current study were also asked in very specific terms to identify whether or not they had engaged in penetrative sex and oral sex, and were given explicit definitions as to the nature of these activities. It is possible that rates of engagement in sexual intercourse reported in other studies obscure actual rates, due to students' misunderstanding of the nature of "sex" and "sexual intercourse." For example, Siegel et al. (1999) allowed their definition of sex to include vaginal, oral, and anal sex. Other studies have provided no definition. Indeed, Sanders and Reinich (1999) found that university students consider that a variety of behaviours apply to the definition of "having sex." The authors surveyed a sample of 599 university students and asked, "Would you say you 'had sex' with someone if the most intimate behavior you engaged in was..." Virtually all participants agreed that penile-vaginal intercourse fit with their definition of having sex, but 40% also agreed that oral sex fit with this definition, and approximately 15% agreed that genital fondling also applied. Finally, about 2-3% of students agreed that if they had engaged in behaviours such as kissing and touching above the waist, they would say they had sex. In the current study, participants were specifically asked about

engagement in penile-vaginal or penile-anal intercourse, in addition to engagement in oral-genital sex. Given the findings of Sanders and Reinich, the explicit and restrictive definitions of sex provided in the present study were likely to have had an impact on rates of engagement in sexual activities reported by first-year students making the transition to university.

Finally, it is important to consider whether increasing rates of participation in all sexual activities should be anticipated in the present study. Participants were asked to report on their sexual behaviours over a period of six months, a relatively limited time frame to display substantial changes in all sexual activities. The present study demonstrated that this time frame is sufficient to record changes in rates of engagement in oral sex, but not penetrative sex. Previous studies of adolescents and emerging adults have shown differences in rates of sexual activities in cross-sectional samples of individuals aged one or more years apart (e.g., Maticka-Tyndale et al., 2000; Siegel et al., 1999), or have shown change in rates of sexual activities over periods of at least one year (e.g., Porter, Oakley, Guthrie, & Killion, 1999). The present study is the first to use an intensive repeated-measures design to capture change in sexual behaviours at one-month intervals. The finding that rates of engagement in oral sex increase while rates of penetrative sex do not highlights the importance of considering varieties of sexual behaviours in studies of emerging adult sexuality, and provides evidence to support the notion that emerging adults, as well as adolescents, may apply different reasons to their decisions to engage in oral versus penetrative sex (Cornell & Halpern-Felsher, 2006; Halpern-Felsher et al., 2005).

Impact of Person-Level Predictors on Sexual Behaviour Trajectories

A number of between-persons predictors, based on the second research question, revealed deviations from the average trajectories. The average trajectory of change in odds of engaging in penetrative sex showed a decline with greater baseline intentions to have sex during the academic year. It appears that students whose initial expectations were higher became less likely each month to engage in penetrative sex. However, students with greater intentions were still more likely to engage in penetrative sex, compared to students with fewer intentions. This result is interesting, because it indicates that students who perceive themselves as more likely to have sex during the academic year actually become less likely to do so over the course of the first year of university. Although greater intentions to have sex certainly correspond with greater actual rates of engagement in sexual behaviour, these intentions do not contribute to increasing trajectories of engagement in penetrative or oral sex, as expected. Only one previous study evaluated the impact of intentions to have sex on actual behaviour over time. Stanton et al. (1996) measured sexual activity in an adolescent sample at two time points, six months apart, and found that the intentions of adolescents who were not yet sexually active at Time 1 predicted their actual behaviour. However, among adolescents who were already sexually active at Time 1, intentions to have sex had no impact on actual rates of sexual activity by Time 2. The results of the present study highlight the importance of measuring sexual behaviour across multiple occasions. The six monthly measures used in the present study permitted the calculation of trajectories of change, which clarified the findings reported by Stanton et al. That is, while intentions predict odds of engaging in sexual behaviours at a given point in time, they do not predict increases in sexual activity

over time. Analyses of trajectories of penetrative and oral sex revealed that intentions are related to slight decreases in sexual activity over time.

It is possible that first-year students with greater initial intentions to have sex overestimate their prospects of having sexual experiences during the first year of university. Indeed, these students were already more likely to have ever had penetrative sex, as indicated by a correlation of $r = .74$ between intentions and baseline sexual experience. In other words, students who had already had at least one experience with penetrative sex saw themselves as more likely to engage in penetrative sex during the academic year. Over time, perhaps students' perceptions of sexual opportunities become more realistic, as do their odds of engaging in penetrative and oral sex. For example, opportunities such as social events and parties associated with initiation to university may be more frequent during the first months of the academic year, and become less frequent over time, thereby hindering chances of finding a sexual partner. Alternatively, students' academic responsibilities may prevent them from attending as many social events. Although these reasons apply equally to students with higher and lower intentions to have sex, students with greater initial intentions to have sex may also have been more likely to pursue opportunities to seek out potential sexual partners. As a result, fewer social events or the interference of academic demands with social activities may have impacted these students more strongly.

It is also possible that students' intentions change over the course of the academic year. Students with initially high intentions to have sex may change their views after spending some time in the university environment. In the present study, intentions were measured on the baseline questionnaire, and once again in January. However, the

correlation between these two responses was high, at $r = .82$, indicating that participants' intentions to have sex after spending three months in university were very similar to their initial intentions. Further research will be needed to determine the factors involved in producing this negative trajectory.

Three between-persons predictors impacted the average, increasing trajectory of change in odds of engaging in oral sex. First, the relation between intentions to have sex and actual engagement in oral sex followed the same pattern as above, for penetrative sex. However, odds were reduced by only 7% per month, indicating that students' intentions to engage in penetrative sex impacted their odds of engaging in oral sex to a lesser extent that their odds of engaging in penetrative sex. Second, the average trajectory showed an increase that corresponded to having more liberal attitudes toward sexual behaviour. This finding is in line with the hypothesis that students with more liberal attitudes toward sex are also more likely to engage in sexual behaviour, and supports the results of several studies that have determined a positive link between liberal attitudes and engagement in sexual behaviour (e.g., Herlitz & Ramstedt, 2005; Wells & Twenge, 2005).

Third, an effect of psychosocial maturity status was observed on trajectories of engagement in oral sex. The odds of engaging in oral sex during the first year of university decreased over time for semi-mature students, relative to mature students. In other words, mature students were more likely than semi-matures to engage in oral sex in any given month. This finding provides some evidence that involvement in sexual behaviour during emerging adulthood is intertwined with a positive personal characteristic: being mature. Adolescents classified as pseudomature (e.g., Galambos &

Tilton-Weaver, 2000) were more involved with problem behaviours, had underdeveloped psychological maturity, and felt older than their chronological ages. The picture of pseudomaturity changes to semi-maturity among emerging adults making the transition to university, but still classifies semi-matures as individuals who need to catch up to matures in terms of more reasonable alcohol consumption. The finding that semi-matures' odds of engaging in oral sex decrease over time while matures' odds increase over time supports the hypothesis presented by Zimmer-Gembeck et al. (2004), in reference to adolescents, that individuals who are more capable of forming intimate friendships (e.g., those who are more mature) may feel more confident in initiating romantic relationships and, as is evidenced in the current study, sexual activities.

Results of the analyses depicted in Figure 1 supplement the limited existing literature on sexual behaviour development, and highlight the importance of pursuing research on sexuality from a positive-outcomes perspective. One finding was consistent with existing literature: that students with more liberal attitudes toward sex are more likely to engage in oral sex. One finding was unexpected: that students with greater intentions to have sex become less likely over time to have engaged in penetrative and oral sex. A variety of explanations may apply to this finding, but further research is needed to explore the significance and impact of emerging adults' intentions to have sex on their actual behaviour. Finally, one finding provided important evidence that engagement in sexual behaviour is associated with positive development: Students classified as psychosocially mature were more likely to engage in oral sex during the first year of university. Indeed, those students classified as semi-mature – individuals who report greater involvement in heavy alcohol use (a health-risk behaviour) – were actually

less likely to engage in oral sex during the first year of university. However, a single finding is insufficient to connect positive developmental achievements with greater engagement in sexual behaviour. Findings associated with the relationship between sexual behaviour and affective experiences provide more detailed evidence to support this link.

Monthly Change in Positive and Negative Affect as a Function of Engagement in Sexual Behaviour

The third and fourth research questions of the current study, depicted in Figure 2 (see Chapter II), were concerned with determining the existence of a within-time association between engagement in sexual behaviours and experiences of positive and negative affect. Predictors of variation in this association were also sought. Results of the current study show that monthly engagement in penetrative sex, oral sex, and occasions of penetrative sex per month are not associated with monthly positive or negative affect scores in absence of any person-level predictors. However, after accounting for several predictors of this relationship (gender, sexual beliefs, and psychosocial maturity status), it was revealed that engagement in oral sex was significantly associated with higher positive affect scores in a given month. In addition, engagement in penetrative sex was significantly associated with lower negative affect scores in a given month. On average, participants experienced improved positive affect during months in which they engaged in oral sex, and reduced negative affect during months in which they engaged in penetrative sex. These findings are consistent with the results of several *daily* diary studies of affect and sexual behaviour conducted by Shrier and colleagues (e.g., Shrier et al., 2005; Shrier & de Moor, 2006) and Fortenberry and colleagues (Fortenberry et al.,

2003; Skiba et al., 1997). These studies showed that, in general, engagement in sexual activities was associated with increased positive affect and decreased negative affect surrounding individual sexual events. In the current study, this relationship was replicated on a larger (i.e., monthly) time scale.

The majority of between-persons effects on the relationship between affect and sexual behaviour appeared for positive affect. Only one effect was found to moderate the within-time association of sexual behaviour and negative affect: Immature students reported higher negative affect scores during months in which they engaged in penetrative sex, compared to matures. This result corresponds to several results of the moderating impact of psychosocial maturity on the association between positive affect and sexual behaviour. Immature and semi-mature students were found to have lower positive affect scores than mature students during months in which they engaged in penetrative sex, and during months in which they engaged in oral sex. Mature students' positive affect ratings did not depend on whether or not they had engaged in penetrative sex in a given month, but the scores of immature and semi-mature students decreased substantially during months in which they had engaged in penetrative sex. Mature students' positive affect ratings were significantly higher during months in which they had engaged in oral sex, while the scores of immature and semi-mature students were significantly lower in these months. Immatures' positive affect ratings were already lower than matures' during months in which they did not engage in penetrative or oral sex. Interestingly, however, semi-matures' positive affect ratings were significantly higher than matures' during months in which they did not engage in oral sex and trended in the

direction of being higher than matures' during months in which they did not engage in penetrative sex.

These results supplement the initial finding that odds of engaging in oral sex were higher among mature students relative to semi-matures. However, these findings are consistent with the idea that engagement in sexual activities during the first year of university is related to positive experiences among students whose psychosocial maturity development is optimal, but may be related to negative experiences for students who have not achieved maturity. Based on these findings, there is no reason to believe that genuinely mature students should be discouraged from experimenting with sexual activities during their first year of university. A possible interpretation of these findings that generalizes to emerging adults and adolescents is that optimal experiences with sexual activities occur in the context of developmentally-appropriate levels of psychosocial maturity. Efforts to delay the sexual activities of genuinely mature adolescents and emerging adults may conflict with normal sexual development.

The within-time associations between sexual behaviour and positive affect were also moderated by sexual beliefs. Among students whose attitudes toward sexual behaviour were more liberal, positive affect scores were higher during months in which participants engaged in penetrative sex, and during months in which they engaged in more occasions of penetrative sex. In other words, participants with above-average attitudes had increased feelings of positive affect, but participants with below-average attitudes had reduced feelings of positive affect during months in which they engaged in penetrative sex and more occasions of penetrative sex. No previous research has explored this relationship nor any similar relationship. However, at least one study of adolescent

girls aged 14-18 showed the opposite trend: that greater depressed affect was associated with having more liberal attitudes toward sexual behaviour one year later (Whitbeck et al., 1993). The results of the current study suggest that holding conservative views about sex (e.g., that casual sex and premarital sex are unacceptable) may produce poorer emotional states during periods in which these individuals engage in behaviours that are inconsistent with their attitudes. Given that only two students in the current study were married, the majority of students with conservative attitudes toward sex who were engaging in sexual activities must have been doing so outside of the marriage context. On the other hand, holding more liberal attitudes toward sex may improve emotional states during periods of engagement in sexual behaviours. These findings suggest that it may be important to engender liberal attitudes toward sexual behaviour among first-year university students. Whether this finding replicates in samples of adolescents and emerging adults outside of university should be of particular interest to sexual health practitioners. It is not possible to determine from the results of the current study whether reduced feelings of positive affect among these students represent only a general mood state, or whether students also feel less positive about themselves. Future research should investigate the possibility that attitudes toward sexual behaviour may moderate the within-time association of engagement in sexual behaviour and feelings of self-esteem.

One predictor was found to moderate the association between positive affect and occasions of penetrative sex per month in an unexpected way: Males experienced reduced positive affect with each additional occasion of penetrative sex per month, relative to females. Males' positive affect scores were already more than 10 points higher during months in which they did not engage in any occasions of penetrative sex, but males' and

females' scores appear to converge with increasing occasions of penetrative sex per month. This finding is particularly intriguing because it follows the opposite pattern to that described by Oliver and Hyde (1993) in a meta-analysis of 177 studies of gender differences in sexuality. Although studies of affective experiences were not reviewed, the authors did find that males tended to report less anxiety, fear, or guilt associated with engaging in sexual activities and generally more liberal attitudes toward such activities as premarital sex and casual sex, and they engaged in sexual activities more frequently than females. By exploring the relationships between gender and sexual behaviour over time in the current study, the opposite trend has emerged. It is possible that males who engage in penetrative sex more frequently may have less fulfilling or positive experiences than females. Indeed, it appears that females' feelings of positive affect are not impacted by the frequency with which they engage in penetrative sex. Future research should investigate the reasons behind males' decisions to engage in sexual activities, compared to females, and determine what factors contribute to this reduction in positive feelings associated with more frequent engagement in sexual behaviour. It is possible that males' sexual experiences in general tend to be less positive. In the current study, gender was not significantly associated with less positive affect or greater negative affect during months of engagement in penetrative and oral sex, but in all cases, males' scores tended in this direction.

Several results of the current study contradict existing findings in the adolescent and emerging adult sexuality literature. Gender differences in the present study placed women, rather than men, at a greater advantage with respect to the association between occasions of penetrative sex and positive affect over time. In addition, women had

unexpectedly greater odds of engaging in penetrative and oral sex over the course of the academic year, compared to men, though these odds did not change for either gender. Greater intentions to have sex also predicted reduced odds of engaging in sexual activities across the first year of university, though the odds were still higher in general among students with greater, rather than lesser, intentions to have sex. Readers are reminded that other developmental studies have found results that are more complex than had been revealed in cross-sectional research (e.g., Bingham & Crockett, 1996; Feldman et al., 1995; Zimmer-Gembeck et al., 2004). Indeed, the application of a lifespan perspective to any research program should reveal findings that are more complex and potentially inconsistent with the findings of studies that have not accounted for individual embeddedness within multiple contexts and across time. Such studies are concerned with revealing relations between behavioural and psychosocial characteristics of individuals, irrespective of context. However, Lerner and Castellino (2002) have argued that research taking a lifespan perspective must be concerned with depicting the changing relations between the individual (or any other unit of analysis) and variables representing the multiple contexts that impact that individual's development. The current study has depicted the changing nature of relations between affect and sexual behaviour, and has depicted the ways in which engagement in sexual behaviours change over time among first-year university students. The person-level context has been taken into account by searching for predictors of intraindividual variation in these changing relations. Whereas previous studies have revealed relationships between sexual behaviour and a variety of psychosocial outcomes at a single point in time, the current study relates sexual

behaviour to outcomes across time and thus, according to the lifespan perspective, provides a more accurate picture of emerging adult sexual development.

Strengths and Limitations

Some limitations of the research conducted in the current study should be noted. Although students were assessed in terms of change across the first year of university, a complete picture of the transition to university is not possible because measures of students' sexual behaviour and person-level characteristics were not taken prior to students' arrival at the University of Alberta. Given that over 40% of Canadian high school students in grade 11 report ever having engaged in sexual intercourse (CAAH, 2006) while just 28% of students in the present sample reported ever having engaged in penetrative sex, data collection across both school contexts would undoubtedly have been informative.

It is important to note that only 28% of the eligible population of students agreed to participate in this study. Although participants represented a range of ethnicities and faculties at the University of Alberta, a major consequence of failing to recruit more participants from the eligible population is that selection biases cannot be ruled out. It is possible that participants in the current study share one or more characteristics associated with willingness to participate in research, such as the desire to receive the honorarium, general interest in volunteerism, or greater academic ability.

By overestimating the extent to which students were expected to engage in intimate sexual activities, no measures of less intimate sexual behaviours were taken (e.g., kissing, touching). Given students' lower rates of engagement in oral and penetrative sex, multilevel analyses of monthly engagement in other sexual behaviours

may have provided further insights into the results obtained here. Future studies of first-year students' sexual behaviours should anticipate rates of sexual activities similar to those obtained here, if restrictive selection criteria are employed.

Furthermore, a different or broader selection of dependent variables may have provided a richer source of information from which to draw conclusions in the present study. For example, monthly measures of condom and contraceptive use could be used to model trajectories and within-time associations of *safe* sexual behaviour, rather than general engagement in sexual behaviour. In addition, a more direct measure of positive development could be used in place of affect ratings to provide better evidence of a within-time association between sexual behaviour and positive development. Examples of possible measures are self-esteem and confidence, though it may be difficult to detect fluctuations in these measures on a monthly time scale.

Although the effects of several between-persons predictors were modeled on trajectories of change and within-time associations, no person-level interactions were tested, and it is possible that the impact of interactions between person-level predictors would provide insight into the models tested in this study. For example, the unexpected finding that odds of engaging in penetrative sex decline for individuals with greater initial intentions to have sex may apply to men but not women, or vice versa. This kind of relation may be revealed by testing person-level interactions.

Finally, it should be emphasized that this study focused exclusively on emerging adults making the transition to university. Emerging adults who attend university may place a greater value on intellectual achievement compared to emerging adults who choose training for skilled trades. They may also represent a more affluent cross-section

of emerging adults, given the high cost of tuition. Although university students are a substantial subpopulation of all emerging adults, caution should be observed in applying the results of this study to emerging adults in general.

Strengths of the current study mark this research as important to the developmental literature on adolescent and emerging adult sexuality. First, this study included multiple measures of sexual behaviour. Students were asked to report on their engagement in penetrative sex, oral sex, and to report their frequency of engagement in penetrative sex per month. Furthermore, explicit definitions of these behaviours were provided to ensure that students had a common understanding of the questions. Second, this study used a cutting-edge statistical technique to evaluate students' engagement in sexual behaviours at the individual level and across time. This allowed for the exploration of intraindividual variation and change in sexual activities. Third, this study collected a representative sample of first-year students making the transition to university. Thus, results can be safely generalized to first-year students at the University of Alberta. Finally, the current study has taken an explicitly positive development approach to the study of sexual behaviour. Instead of focusing on the risks inherent in sexual behaviour and the importance of prevention efforts, this study has focused on determining how engagement in sexual behaviour may be related to markers of positive development (e.g., maturity) and more generally, to positive outcomes (e.g., positive affect).

Future Directions

Studies of sexual development that wish to build on this research model should follow adolescents through the transition to university, starting from high school. More generally, adolescents may be followed from high school through their variety of

transitions to emerging adulthood that occur after graduation. More detailed assessments of sexual behaviours are also warranted.

Students' intentions to have sex and maturity status appear to be significantly related to engagement in sexual activities and the quality of these experiences. Several questions remain for future research on sexuality development in adolescence and emerging adulthood: How are intentions to have sex in high school related to students' intentions to have sex during the first year of university? Are the sexual experiences of genuinely mature adolescents comparably positive to the experiences of genuinely mature university students? Does the relationship between positive affect and sexual behaviour as moderated by maturity status hold for university students at all levels? Does this relationship hold for emerging adults in general? It is important to search for other markers of positive development and determine whether these are also predictive of more positive experiences associated with engaging in sexual activities. Markers of positive development should also be used to determine whether individual differences exist in other within-time associations of sexual behaviour and such state-dependent measures as self-esteem, depressive symptoms, stress, and well-being.

The current study has highlighted the importance of taking a developmental perspective and, more specifically, of taking a positive development approach to the study of sexual behaviour. Experimentation with sexual activities is a distinguishing feature of emerging adulthood (Arnett, 2000), and should be considered normative (Lefkowitz & Gillen, 2006). Although such experimentation carries some degree of risk, sexual behaviour should not be considered risky out of context (Michaud, 2006). Indeed, adolescents and emerging adults are not discouraged from engaging in a variety of

activities that carry substantial risks, such as driving and playing contact sports. As ages of marriage and first intercourse remain temporally distant, it is essential to the well-being of society's youth that sexual behaviour is acknowledged to be a normal and necessary component of adolescent, emerging adult, and adult development, and not necessarily to be discouraged. Given that youths' rates of engaging in sexual behaviours have remained relatively constant (e.g., Boyce et al., 2003) despite public policy and intervention efforts to the contrary, it is inefficient to direct efforts solely toward risk prevention. Discouraging safe, consenting sexual activity among adolescents and emerging adults in particular by failing to make a clear distinction between safe and unsafe sexual behaviours does a disservice to youth. Such messages may be carried through adulthood, and to a period of time during which inhibited sexual development may have negative consequences for healthy sexuality throughout adulthood.

REFERENCES

Aldenderfer, M.S., & Blashfield, R.K. (1984). *Cluster analysis*. Beverly Hills, CA: Sage.

Arnett, J.J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist, 55,* 469-480.

Baltes. P.B., Lindenberger, U., & Staudinger, U.M. (1998). Life-span theory in developmental psychology. In W. Damon (Series Ed.) & R.M. Lerner (Vol. Ed.) *Handbook of child psychology: Vol. 1. Theoretical models of human development* (5th ed., pp. 1029 – 1143). New York: Wiley.

Ben-Zur, H. (2003). Happy adolescents: The link between subjective well-being, internal resources, and parental factors. *Journal of Youth and Adolescence, 32,* 67-79.

Bingham, C.R., & Crockett, L.J. (1996). Longitudinal adjustment patterns of boys and girls experiencing early, middle, and late sexual intercourse. *Developmental Psychology, 32,* 647-658.

Bolger, N., Davis, A., & Rafaeli, E. (2003). Diary methods : Capturing life as it is lived. *Annual Review of Psychology, 54,* 579-616.

Boyce, W., Doherty, M., Fortin, C., & Mackinnon, D. (2003). *Canadian Youth, Sexual Health and HIV/AIDS Study: Factors Influencing Knowledge, Attitudes and Behaviours.* Toronto, ON: Council of Ministers of Education.

Brackney, B.E., & Westman, A.S. (1992). Relationships among hope, psychosocial development, and locus of control. *Psychological Reports, 70,* 864-866.

Brooks-Gunn, J., & Furstenberg, F.F. (1989). Adolescent sexual behavior. *American Psychologist*, 44, 249-257.

Bronfenbrenner, U. (1977). Toward an experimental ecology of human development. *American Psychologist, 32,* 513-531.

Brown, N.R., Williams, R.L., Barker, E.T., & Galambos, N.L. (2006). Estimating frequencies of emotions and actions: A web-based diary study. *Applied Cognitive Psychology.*

CAAH (2006). See Canadian Association for Adolescent Health.

Canadian Association for Adolescent Health (2006). *Sexual behaviours and attitudes: Canadian teenagers and mothers*. Retrieved February 23, 2006, from http://www.acsa-caah.ca

Carvajal, S.C., Parcel, G.S., Basen-Engquist, K., Banspach, S.W., Coyle, K.K., Kirby, D., & Chan, W. (1999). Psychosocial predictors of delay of first sexual intercourse by adolescents. *Health Psychology, 18,* 443-452.

Chilman, C.S. (1990). Promoting healthy adolescent sexuality. *Family Relations, 39,* 123-131.

Cornell, J.L., & Halpern-Felsher, B.L. (2006). Adolescents tell us why teens have oral sex. *Journal of Adolescent Health, 38,* 299 – 301.

Crepaz, N., & Marks, G. (2001). Are negative affective states associated with HIV sexual risk behaviors? A meta-analytic review. *Health Psychology, 20,* 291-299.

DeLamater, J., & Friedrich, W.N. (2002). Human sexual development. *Journal of Sex Research, 39,* 10-14.

Deptula, D.P., Henry, D.B., Shoeny, M.E., & Slavick, J.T. (2006). Adolescent sexual behavior and attitudes: A costs and benefits approach. *Journal of Adolescent Health, 38,* 35-43.

Doherty, M. (1995). University of Alberta Student Sexual Behaviour Survey. Unpublished questionnaire.

Epstein, J.A., Dusenbury, L., Botvin, G.J., Diaz, T., & Schinke, S.P. (1994). Determinants of intentions of junior high school students to become sexually active and use condoms: Implications for reduction and prevention of AIDS risk. *Psychological Reports, 75,* 1043-1053.

Erikson, E.H. (1963). *Childhood and Society* (2nd ed.). New York: W.W. Norton & Company.

Feldman, S.S., Rosenthal, D.R., Brown, N.L., & Canning, R.D. (1995). Predicting sexual experience in adolescent boys from peer rejection and acceptance during childhood. *Journal of Research on Adolescence, 5,* 387-411.

Fine, M. (1988). Sexuality, schooling, and adolescent females: The missing discourse of desire. *Harvard Educational Review, 58,* 29-53.

Fortenberry, J., Temkit, M.H., Tu, W., Katz, B., & Orr, D. (2003). Mood, mood change, sexual activity and condom use among adolescent women. *Journal of Adolescent Health, 32,* 157.

Fujita, F., Diener, E., & Sandvik, E. (1991). Gender differences in negative affect and well-being: The case for emotional intensity. *Journal of Personality and Social Psychology, 61,* 427-434.

Galambos, N.L., Barker, E.T., & Tilton-Weaver, L.C. (2003). Who gets caught at maturity gap? A study of pseudomature, immature, and mature adolescents. *International Journal of Behavioral Development, 27,* 253 – 263.

Galambos, N.L., & Tilton-Weaver, L.C. (2000). Adolescents' psychosocial maturity, problem behavior, and subjective age: In search of the adultoid. *Applied Developmental Science, 4,* 178-192.

Gowen, L.K., Feldman, S.S., Diaz, R., & Yisrael, D.S. (2004). A comparison of the sexual behaviors and attitudes of adolescent girls with older vs. similar-aged boyfriends. *Journal of Youth and Adolescence, 33,* 167-175.

Graber, J.A., & Brooks-Gunn, J. (1996). Transitions and turning points: Navigating the passage from childhood through adolescence. *Developmental Psychology, 32,* 768-776.

Greenberger, E., Josselson, R., Knerr, C., & Knerr, B. (1975). The measurement and structure of psychosocial maturity. *Journal of Youth and Adolescence, 4,* 127-143.

Greenberger, E., & Sorensen, A.B. (1974). Toward a concept of psychosocial maturity. *Journal of Youth and Adolescence, 3,* 329-358.

Greenberger, E., & Steinberg, L. (1986). *When teenagers work: The psychological and social costs of adolescent employment.* New York: Basic Books.

Guzmán, B.L., Schlehofer-Sutton, M.M., Villanueva, C.M., Stritto, M.E.D., Casad, B.J., & Feria, A. (2003). Let's talk about sex: How comfortable discussions about sex impact teen sexual behavior. *Journal of Health Communication, 8,* 583-598.

Halpern, C.T., Joyner, K., Udry, J.R., & Suchindran, C. (2000). Smart teens don't have sex (or kiss much either). *Journal of Adolescent Health, 26,* 213 – 225.

Halpern-Felsher, B.L., Cornell, J.L., Kropp, R.Y., & Tschann, J.M. (2005). Oral versus vaginal sex among adolescents. Perceptions, attitudes, and behavior. *Pediatrics, 115,* 845 – 851.

Herlitz, C., & Ramstedt, K. (2005). Assessment of sexual behavior, sexual attitudes, and sexual risk in Sweden (1989-2003). *Archives of Sexual Behavior, 34,* 219-229.

Hyde, J.S. (2005). The gender similarities hypothesis. *American Psychologist, 60,* 581-592.

Impett, E.A., Peplau, L.A., & Gable, S.L. (2005). Approach and avoidance sexual motives: Implications for personal and interpersonal well-being. *Personal Relationships, 12,* 465 – 482.

Kalichman, S.C., & Weinhardt, L. (2001). Negative affect and sexual risk behavior: Comment on Crepaz and Marks (2001). *Health Psychology, 20,* 300-301.

Kuo, M., Adlaf, E.M., Lee, H., Gliksman, L., Demers, A., & Wechsler, H. (2002). More Canadian students drink but American students drink more: Comparing college alcohol use in two countries. *Addiction, 97,* 1583 – 1592.

Lammers, C., Ireland, M., Resnick, M., & Blum, R. (2000). Influences on adolescents' decision to postpone onset of sexual intercourse: A survival analysis of virginity among youths aged 13 to 18 years. *Journal of Adolescent Health, 26,* 42 – 48.

Lefkowitz, E.S. (2005). "Things have gotten better": Developmental changes among emerging adults after the transition to university. *Journal of Adolescent Research, 20,* 40-63.

Lefkowitz, E.S., & Gillen, M.M. (2006). "Sex is just a normal part of life": Sexuality in emerging adulthood. In J.J. Arnett & J.L. Tanner (Eds.) *Emerging adults in America: Coming of age in the 21st century.* (pp.235-255). Washington, D.C.: American Psychological Association.

Lerner, R.M. (1998). Theories of human development: Contemporary perspectives. In W. Damon (Series Ed.) & R.M. Lerner (Vol. Ed.) *Handbook of child psychology: Vol. 1. Theoretical models of human development* (5th ed., pp. 1 – 24). New York: Wiley.

Lerner, R.M., Almerigi, J.B., Theokas, C., & Lerner, J.V. (2005). Positive youth development: A view of the issues. *Journal of Early Adolescence, 25,* 10-16.

Lerner, R.M., & Castellino, D.R. (2002). Contemporary developmental theory and adolescence: Developmental systems and applied developmental science. *Journal of Adolescent Health, 31,* 122 – 135.

MacDonald, T.K., & Martineau, A.M. (2002). Self-esteem, mood, and intentions to use condoms: When does low self-esteem lead to risky health behaviors? *Journal of Experimental Social Psychology, 38,* 299-306.

Maticka-Tyndale, E., Barrett, M., & McKay, A. (2000). Adolescent sexual and reproductive health in Canada: A review of national data sources and their limitations. *Canadian Journal of Human Sexuality, 9(1),* 41 – 65.

McBride, C.K., Paikoff, R.L., & Holmbeck, G.N. (2003). Individual and familial influences on the onset of sexual intercourse among urban African American adolescents. *Journal of Consulting and Clinical Psychology, 71,* 159-167.

McKay, A. (2004). Adolescent sexual and reproductive health in Canada: A report card in 2004. *Canadian Journal of Human Sexuality, 13,* 67-81.

Michaud, P.-A. (2006). Adolescents and risks: Why not change our paradigm? [Editorial]. *Journal of Adolescent Health, 38,* 481 – 483.

Oliver, M.B., & Hyde, J.S. (1993). Gender differences in sexuality: A meta-analysis. *Psychological Bulletin, 114,* 29-51.

Paul, C., Fitzjohn, J., Herbison, P., & Dickson, N. (2000). The determinants of sexual intercourse before age 16. *Journal of Adolescent Health, 27,* 136 – 147.

Raudenbush, S.W., & Bryk, A.S. (2002). *Hierarchical linear models: Applications and data analysis methods* (2nd ed). Thousand Oaks, CA: Sage.

Reid, A. (2004). Gender and sources of subjective well-being. *Sex Roles, 51,* 617-629.

Rosenthal, D.A., Gurney, R.M., & Moore, S.M. (1981). From trust to intimacy: A new inventory for examining Erikson's stages of psychosocial development. *Journal of Youth and Adolescence, 10,* 525-537.

Rosenthal, S.L., von Ranson, K.M., Cotton, S., Biro, F.M., Mills, L., & Succop, P.A. (2001). Sexual initiation: Predictors and developmental trends. *Sexually Transmitted Diseases, 28,* 527 – 532.

Sanders, S.A., & Reinich, J.M. (1999). Would you say you "had sex" if...? *Journal of the American Medical Association, 281,* 275 – 277.

Shrier, L.A., & de Moor, C. (2006, March). *Trajectories of affect surrounding coitus in adolescents*. Paper presented at the meeting of the Society for Adolescent Medicine, Boston, MA.

Shrier, L.A., Shih, M.-C., & Beardslee, W.R. (2005). Affect and sexual behavior in adolescents: A review of the literature and comparison of momentary sampling with diary and retrospective self-report methods of measurement. *Pediatrics, 115,* 573-581.

Siegel, D.M., Klein, D.I., & Roghmann, K.J. (1999). Sexual behavior, contraception, and risk among college students. *Journal of Adolescent Health, 25,* 336 – 343.

Skiba, A., Fortenberry, J., & Blythe, M. (1997). Daily mood and behavioral correlates of coitus and condom use. *Journal of Adolescent Health, 20,* 145.

Stanton, B.F., Li, X., Black, M.M., Ricardo, I., Galbraith, J., Feigelman, S., & Kaljee, L. (1996). Longitudinal stability and predictability of sexual perceptions, intentions, and behaviors among early adolescent African-Americans. *Journal of Adolescent Health, 18,* 10-19.

Statistics Canada (2001). *Education in Canada: School Attendance and Levels of Schooling* (Cat. No. 97F0017XCB2001001). Available from http://www12.statcan.ca/english/census01/home/index.cfm

Taris, T.W., & Semin, G.R. (1999). Sexual efficacy of adolescents, permissiveness, and the transition toward nonvirginity: From intention to behavior. *Journal of Applied Social Psychology, 29,* 903-917.

Tsui, L., & Nicoladis, E. (2004). Losing it: Similarities and differences in first intercourse experiences of men and women. *Canadian Journal of Human Sexuality, 13,* 95 – 106.

Ward, J. (1963). Hierarchical grouping to optimize an objective function. *Journal of the American Statistical Association, 58,* 236-244.

Watson, D., Clark, L.A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54,* 1063-1070.

Wells, B.E., & Twenge, J.M. (2005). Changes in young people's sexual behavior and attitudes, 1943-1999: A cross-temporal meta-analysis. *Review of General Psychology, 9,* 249-261.

Whitbeck, L.B., Conger, R.D., & Kao, M-.Y. (1993). The influence of parental support, depressed affect, and peers on the sexual behaviors of adolescent girls. *Journal of Family Issues, 14,* 261-278.

Widdice, L.E., Cornell, J.L., Liang, W., & Halpern-Felsher, B.L. (in press). Having sex and condom use: Potential risks and benefits reported by young, sexually inexperienced adolescents. *Journal of Adolescent Health.*

Udry, J.R., Kovenock, J., Morris, N.M., & van den Berg, B.J. (1995). Childhood precursors of age at first intercourse for females. *Archives of Sexual Behavior, 24,* 329-337.

Zimmer-Gembeck, M.J., Siebenbruner, J., & Collins, W.A. (2004). A prospective study of intraindividual and peer influences on adolescents' heterosexual romantic and sexual behavior. *Archives of Sexual Behavior, 33,* 381-394.

APPENDIX A

Demographic Information

BACKGROUND

Please read the following questions. Check or circle the appropriate response, or fill in the blanks. You are free to refuse to answer any item.

Birthdate _____/_____/_____
Day Month Year

Sex (circle one) Female Male

Height _____ feet, _____ inches **OR** _____ cm

Weight _____ pounds **OR** _____ kilos

How would you describe your general living situation growing up (birth through high school)? (check one)

____ Lived with both parents most of the time

____ Lived with a single parent most of the time

____ Lived in a combination of two-parent, single-parent, and/or step-parent situations

____ Other (please specify) _____

Mother Education

Circle the **highest** level of education your MOTHER (female parent you spent most time with growing up) **completed**

Elementary school High school College or technical school University

Father Education

Circle the **highest** level of education your FATHER (male parent you spent most time with growing up) **completed**

Elementary school High school College or technical school University

What city and province did you live in when you graduated from high school?

_____ _____
City/Town **Province**

Your marital status (circle one) Never married Married Divorced Cohabiting

Where do you live now? (check one)

_____ With parent(s)
_____ With relative(s) other than parent
_____ In residence at the U of A
- Which residence? _____

_____ In own place, individually or with roommates (e.g., apartment)
_____ Other (please specify) _____

Ethnicity (please check all that apply)

_____ Asian (e.g., Chinese, Korean)
_____ Latino (e.g., Mexican, Puerto Rican)
_____ Black
_____ Caucasian
_____ Aboriginal (First Nation, Métis, etc.)
_____ Arabic/Middle Eastern
_____ Indo-Canadian (e.g., Indian, Pakistani)
_____ Other (please specify) _____

What Faculty at the U of A are you currently in? (Please check one)

_____ Agriculture/Forestry/Home Economics
_____ Arts
_____ Engineering
_____ Medicine and Dentistry
_____ Native Studies
_____ Nursing
_____ Physical Education and Recreation
_____ Rehabilitation Medicine
_____ Science
_____ Other: please specify _____

APPENDIX B

Consent Form

Research Information and Participant's Consent Form

Purpose. You are invited to participate in a study (***Making the Transition II***) conducted by Dr. Nancy Galambos of the Department of Psychology, University of Alberta, and Dr. Jennifer Maggs of the Department of Human Development and Family Studies, Pennsylvania State University. This study examines how first-year students make the transition to university. We are interested in (1) *feelings* that students have as they go about their lives, *experiences* that occur in university (e.g., stress, changes in relationships with parents, friends, romantic partners) and *behaviors* that might change in university like drinking and sexual activity; (2) whether *personal characteristics* such as level of maturity affect students' feelings, experiences, and behaviors; and (3) the long-term impact of feelings, experiences, behaviors, and personal characteristics on academic performance. To explore these important issues, we ask students to report to us at the beginning of each month from November through April via a web-based checklist.

Your participation involves

- completing some questionnaires today that ask about the ways that you deal with stress, your general health habits, personal characteristics and behaviours, and height and weight;
- completing a web-based checklist once a month (*Monthly Checklist*) indicating how often you experienced various feelings (e.g., felt active) and behaviors (e.g., slept well) that month. You are requested to log on to the computer at the beginning of each month from November through April and complete the checklist. Your email address will be used to send you reminders to complete the checklist. Completing the checklist will take about 10 minutes each time you do it;
- completing a short set of one-time-only questions that appear on-line occasionally after you have completed the *Monthly Checklist*;
- granting us access to the following confidential student records (based in the Office of the Registrar) so that we may track your academic performance from now through winter (April) 2010.
    - high school GPA used for admission
    - U of A term GPA and individual final grades for each course (from fall 2005 through winter 2010), along with course weight/units
    - # of courses taken per term, including courses completed, audited, and withdrawn
    - program
    - academic standing/comment (i.e., Dean's list; academic probation)
    - registration status (enrolled, withdrawn)
    - degrees and awards granted
    - award, ceremony, and withdrawal dates, if appropriate

As compensation for the time spent completing online checklists and questions, you will receive $10 for each month that you submit a checklist (to a maximum of $60). You will collect your compensation in person twice: (1) once in December up to a maximum of $20 for the November and December checklists; (2) once in April to a maximum of $40 for the January through April checklists.

Your rights. Your participation in this study is voluntary, and you may decide at any time to withdraw. Discontinuation will not affect your academic status or access to services from the University of Alberta. If you choose to participate, it is desirable that you complete as many months and items as possible. However, you may skip months and any items on the checklists or questionnaires. The computerized data file will NOT contain any personal identifiers (i.e., names or student ID numbers) other than the meaningless ID number we assign at the start of the study. Thus, your responses in the datafile will be anonymous. Only researchers and assistants associated with the project will have access to the data. A list linking your name and student ID number with the meaningless ID number (necessary to track academic performance) will be kept in a locked room. Confidentiality will be maintained. The results of this study may be presented at

scholarly conferences, published in professional journals, or presented in class lectures. Only grouped (aggregate) data will be presented. The data will be securely stored by Dr. Galambos for a minimum of five years until the data are destroyed.

It is important to remember that consent to participate means that we will track your academic performance through April 2010 unless you inform Dr. Galambos (via email, mail, or phone) that you withdraw permission to access your records. If you withdraw, no academic data will be collected from that point forward. Data collected prior to withdrawal will be retained for analysis.

Benefits and risks. This research can potentially contribute to our understanding of how university students experience and cope with their lives through the first year of university, and how we can promote health and well-being during this transition. There are no foreseeable risks to this study, but if any risks should arise, the researcher will inform the participants immediately. If you should experience any adverse effects, please contact Dr. Galambos immediately.

Contact information. If you have any questions or comments on the study, or if you wish a clarification of your rights as a research participant, you can contact Dr. Galambos or the Research Ethics Board at the number and address below.

Nancy Galambos, Ph.D.
Department of Psychology
University of Alberta
Edmonton, AB T6G 2E9
(780) 492-4607
galambos@ualberta.ca

Tom Johnson, Ph.D.
Arts, Science & Law Research Ethics Board
Department of Psychology, University of Alberta
Edmonton, AB T6G 2E9
(780) 492-2834

How did you hear about this study? (check one)
~ signed up for it in English class
~ signed up for it in Engineering class
~ heard about it from a friend
~ other _____ (specify)

Signatures. Please sign below to indicate that you have read and understood the nature and purpose of the study. Your signature acknowledges the receipt of a copy of the consent form as well as indicates your willingness to participate in this study. It also indicates your willingness to have us contact you via email.

Participant's Name (PLEASE PRINT NAME AS IT APPEARS ON YOUR ONECARD)

Participant's e-mail address (PLEASE PRINT CLEARLY, AND DISTINGUISH BETWEEN UPPER- AND LOWER-CASE LETTERS). This address will be used to send a few email reminders, and we need this address if you are to participate in the study.

Participant's Student ID (AS IT APPEARS ON ONECARD). This ID will be used to contact the Registrar for your student records.

Participant's Signature Date

Researcher's Signature Date

~ Verified with OneCard

APPENDIX C

Erikson Psychosocial Inventory Scale

Self Reliance Subscale

WHO I AM

Indicate how much you feel each statement below is true for you.

		Hardly Ever True		Sometimes True		Almost Always True
1.	I am able to take things as they come	1	2	3	4	5
2.	I can't make sense of my life	1	2	3	4	5
3.	I can't make up my own mind about things	1	2	3	4	5
4.	I'm never going to get on in this world	1	2	3	4	5
5.	I know when to please myself and when to please others	1	2	3	4	5
6.	I really believe in myself	1	2	3	4	5
7.	I am ashamed of myself	1	2	3	4	5
8.	I like to make my own choices	1	2	3	4	5
9.	I don't feel confident of my judgment	1	2	3	4	5
10.	I can stand on my own two feet	1	2	3	4	5
11.	I find it hard to make up my mind	1	2	3	4	5
12.	I like my freedom and don't want to be tied down	1	2	3	4	5

Reverse-scored items: 2, 3, 4, 7, 9, 11

Identity Subscale

WHO I AM

Indicate how much you feel each statement below is true for you.

		Hardly Ever True		Sometimes True		Almost Always True
1.	I change my opinion of myself a lot	1	2	3	4	5
2.	I've got a clear idea of what I want to be	1	2	3	4	5
3.	I feel mixed up	1	2	3	4	5
4.	The important things in life are clear to me	1	2	3	4	5
5.	I've got it together	1	2	3	4	5
6.	I know what kind of person I am	1	2	3	4	5
7.	I can't decide what I want to do with my life	1	2	3	4	5
8.	I have a strong sense of what it means to be female/male	1	2	3	4	5
9.	I like myself and am proud of what I stand for	1	2	3	4	5
10.	I don't really know what I'm all about	1	2	3	4	5
11.	I find I have to keep up a front when I'm with people	1	2	3	4	5
12.	I don't really feel involved	1	2	3	4	5

Reverse-scored items: 1, 3, 7, 10, 11, 12

Work Orientation Subscale

WHO I AM

Indicate how much you feel each statement below is true for you.

		Hardly Ever True		Sometimes True		Almost Always True
1.	I don't seem to be able to achieve my ambitions	1	2	3	4	5
2.	I don't enjoy working	1	2	3	4	5
3.	I'm a hard worker	1	2	3	4	5
4.	I feel I am a useful person to have around	1	2	3	4	5
5.	I'm trying hard to achieve my goals	1	2	3	4	5
6.	I'm good at my work	1	2	3	4	5
7.	I can't stand lazy people	1	2	3	4	5
8.	I waste a lot of my time messing around	1	2	3	4	5
9.	I'm not much good at things that need brains or skill	1	2	3	4	5
10.	I stick with things until they're finished	1	2	3	4	5
11.	I don't get things finished	1	2	3	4	5
12.	I don't get much done	1	2	3	4	5

Reverse-scored items: 1, 2, 8, 9, 11, 12

APPENDIX D

The Positive and Negative Affect Schedule

Positive Affect Subscale

Monthly Checklist

Think back and answer the following questions:

Over the last **14 days**, on how many days did you feel:

Interested	_____days
Proud	_____days
Strong	_____days
Inspired	_____days
Excited	_____days
Enthusiastic	_____days
Alert	_____days
Determined	_____days
Attentive	_____days
Active	_____days

Monthly Checklist

Think back and answer the following questions:

Over the last **14 days**, on how many days did you feel:

Upset	_____days
Scared	_____days
Ashamed	_____days
Distressed	_____days
Hostile	_____days
Irritable	_____days
Guilty	_____days
Nervous	_____days
Jittery	_____days
Afraid	_____days