January 2015

Parental Involvement during the College Transition: Trajectories and Associations with Academic Success, Well-Being, and Individuation

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Graduate School Form 30
Updated 1/15/2015

PURDUE UNIVERSITY
GRADUATE SCHOOL
Thesis/Dissertation Acceptance

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By Katie E. Lowe

Entitled

PARENTAL INVOLVEMENT DURING THE COLLEGE TRANSITION: TRAJECTORIES AND ASSOCIATIONS WITH ACADEMIC SUCCESS, WELL-BEING, AND INDIVIDUATION

For the degree of Doctor of Philosophy

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PARENTAL INVOLVEMENT DURING THE COLLEGE TRANSITION: TRAJECTORIES AND ASSOCIATIONS WITH ACADEMIC SUCCESS, WELL-BEING, AND INDIVIDUATION

A Dissertation

Submitted to the Faculty

of

Purdue University

by

Katie Elizabeth Lowe

In Partial Fulfillment of the

Requirements for the Degree

of

Doctor of Philosophy

December 2015

Purdue University

West Lafayette, Indiana

ACKNOWLEDGEMENTS

From conception to completion, the dissertation is truly a communal process and thus this work is the result of much help, encouragement, and support from multiple people.

While this dissertation reflects the pinnacle of my six-year career at Purdue University, I would not have achieved the academic milestone of a doctorate degree without a strong educational foundation. Following, I am ever grateful for all of my teachers across my years in school for challenging me to think critically and pursue excellence. Specifically, I would like to acknowledge Dr. Samuel Mathews for helping me realize and actualize my potential to become a scholar during my time with him as a Masters student at the University of West Florida. Without his wise guidance and unconditional support, I would not have made it to this point. I would like to thank my advisor, Dr. Aryn Dotterer, for the abundance of knowledge, patience, and support that she has shown me throughout my tenure at Purdue. I would also like to acknowledge my entire dissertation committee members for willingly sharing their valuable time, expertise, and feedback.

Social support is integral to competing a dissertation, and as such I would also like to thank my very dear friends for sticking by my side throughout the many ups and downs of trying to balance the demands of acquiring a dissertation amidst coping with the

personal challenges that life has thrown my way. Thank you all (you know who you are) for helping me maintain that balance, break through barriers, and keep it real.

I am indebted to my parents, for they single-handedly instilled a love of life-long learning within me that has propelled me to obtain my doctorate. Thank you for always believing in me when I did not believe in myself, and for reminding me to be "a good listener and be Katie" every day. You are my heroes, and your demonstration of quality parenting continues to inspire me to pursue my research.

Last, but not least, I need to thank God because through Him all things are possible. God's presence in my life continues to help me garner strength and perspective. I am very grateful that He brought my husband, Dr. John William Boley, and me together during our time at Purdue. Thank you, Will, for your encouragement and for your unconditional love. I am humbled to be your wife and am so grateful that we share an understanding of the gradualness, passion, and modesty that the pursuit of science demands (Pavlov, 1936).

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ABSTRACT

Lowe, Katie E. Ph.D., Purdue University, December 2015. Parental Involvement During the Transition to College: Trajectories and Associations with Academic Success, Well-Being, and Individuation. Major Professor: Aryn M. Dotterer.

Guided by the developmental theory of emerging adulthood (Arnett, 2004) and life course theory (Elder, 1984), the goals of the current study were to investigate changes in parent involvement, changes in student outcomes, and links between changes in involvement and student outcomes across the first year in college. Parental involvement was defined as a multidimensional construct that included parent support, contact, and academic engagement. Purdue University domestic freshmen (N = 1279; 55% female; 84% Caucasian) participated in this study that included four online surveys that were evenly distributed across the first year. Through this design and the use of latent growth curve modeling (LGM) in Mplus (Muthén & Muthén, 2010), the current study estimated trajectories (intercepts, linear slopes, and quadratic slopes) of parent involvement, student outcomes, and their joint associations. Fixed and random effects were examined to determine intraindividual and interindividual change. Joint association models involved regressing the student outcome slopes onto the involvement slopes. Covariates were included (e.g., student sex), and fit indices were assessed to evaluate models (e.g., Confirmatory Fit Index). Overall results supported hypotheses, and indicated nonlinear

declines in parent involvement, changes in student outcomes (exceptions: academic persistence and depression), and links between changes in involvement and student outcomes. Notable findings from joint models indicated increases in involvement were related to increases in depression, steeper increases in risky behaviors, and steeper decreases in individuation across freshman year. Findings contribute to literature on the characteristics of involvement during emerging adulthood and within the context of college, especially how changes in involvement are linked to changes in student outcomes, and offer practical guidance for college parent programming.

INTRODUCTION

Statement of the Problem

Emerging adulthood (Arnett 2000; 2004) has been distinguished as a developmental period that bridges the end of adolescence and the beginning of young adulthood (approximately ages 18-25). During this time, emerging adults focus on increasing responsibility for themselves, increasing independence in their decision-making, and increasing financial independence to progress toward adulthood. Development of this self-sufficiency entails a gradual separation from parents. As youth gain more confidence and experience with their endeavors they transition from parental dependence to self-dependence (Arnett, 2004; Tanner, 2006). As the beginning age for emerging adulthood matches the traditional age of incoming college freshmen, the transition to college provides a unique opportunity to study parents' involvement behaviors during this process. The maintenance of connections to parents in emerging adulthood may pose challenges for renegotiating the type and level of parent involvement during this developmental stage. However, little is known about the characteristics and impact of parent involvement during emerging adulthood in the context of the transition to college.

A recent working definition identified parent involvement in the college context as a multidimensional construct, including parent support giving, parent-student contact

and parental academic involvement (Wartman & Savage, 2008). Research on these parenting constructs indicate that parents provide support to emerging adults undergoing transitions to foster progress across the transition to adulthood and withdraw support as youth progress toward stability in adult roles (e.g., Swartz, Kim, Uno, Mortimer, & O'Brien, 2011), parents and students primarily utilize cell phones to communicate on a frequent basis (e.g., Hofer, 2008), and parents engage in higher levels of academic involvement with freshmen compared to seniors (e.g., Wolf, Sax, & Harper, 2009). Research is needed to investigate how these dimensions of parental involvement change as youth transition to college, and the extent to which parental involvement is associated with a broad range of student outcomes.

The transition to college involves a salient ecological shift in emerging adults' lives that has important implications for shaping student outcomes, specifically academic success, well-being, and individuation. The stress associated with encountering higher academic demands and adjusting to moving away from home can place freshmen's academic success and psychological well-being at risk. For example, researchers have documented that freshman year GPA is significantly lower than high school GPA (e.g., Elias & MacDonald, 2007), and that freshmen report high levels of depression (e.g., Dyson & Renk, 2006). Transitioning to college provides youth with the opportunity to develop individuation, which is a gradual process whereby youth become less dependent on emotional (e.g., need for approval) and functional (e.g., managing daily affairs) support from parents (Arnett, 2000; 2004; Hoffman, 1984). Upperclassmen report higher levels of individuation than lowerclassmen (e.g., Wachs & Cooper, 2002). Longitudinal

research is also needed to investigate how student outcomes change across the first year in college.

Regarding connections between parental involvement and college student outcomes, researchers have found that freshmen who frequently communicate with their parents and whose parents frequently contact the university to intervene on their behalf have lower GPAs (Shoup, Gonyea, & Kuh, 2009). Conversely, a high provision of emotional support has been positively linked to academic outcomes (e.g., Cutrona, Cole, Colangelo, Assouline, & Russell, 1994). Studies have also documented that high levels of support and communication with parents is related to lower levels of depression and engagement in risky behaviors, such as binge drinking, during college (e.g., Mounts, Valentiner, Anderson, & Boswell, 2006; Small, Morgan, Abar, & Maggs, 2011). Little research has explored links between parent involvement variables and individuation, which is surprising considering that individuation is a central concept in theories of college student development (e.g., Chickering & Reisser, 1993).

A key limitation to the previously reviewed research on the links between parental involvement and student outcomes is that most of this literature did not assess involvement factors beyond one measurement occasion. Thus, the ability to determine how changes in involvement may be linked to changes in student outcomes was not captured in this body of research. In accordance with life course theory and Elder's (1984) dual dynamic model of family relationships, the current study empirically assessed links between changes in parental involvement and changes student outcomes. By modeling associations between the change trajectories of parent involvement and

student outcomes, the current study fills a gap in the literature on the role of parent involvement across the first year in college.

Considering that a recent national study of universities and colleges in the United States reported that from 2003 to 2013 the percentage of colleges providing a parent website increased from 9% to 99% over the course of this 10 years period (Savage & Petree, 2013), it is clear institutions of higher education have developed parent programs to cater toward parent involvement in the college transition. With a current record high of about 70% of 2011 high school graduates attending college in the US (U.S. Department of Labor, 2012), the role of parental involvement during the first year of college represents an important issue concerning a large proportion of the emerging adult population. However, this increase in college's parent programming has not been matched with empirical research on parental involvement factors and their connections to freshmen's outcomes. This mismatch between program implementation and empirical research could have serious practical implications for shaping the design, content, and implementation of parent programs' services on college campuses. The current study addressed this mismatch and contributed to the literature on parental involvement during college. The current study employed a prospective longitudinal design with four measurement occasions to assess changes in parent involvement factors, changes in student outcomes, and associations between changes in parent involvement and changes in student outcomes across the first year in college.

LITERATURE REVIEW

Framework and Guiding Theories

Several theoretical perspectives guided the current study. The theory of emerging adulthood (Arnett, 2000; 2004) provided a broad conceptual framework for the current study. Arnett (2000; 2004) contends that parents continue to represent key socialization agents during emerging adulthood because the developmental task of attaining self-sufficiency involves youths' reliance on parents for support as they undergo the gradual process of becoming autonomous. In other words, the process of attaining self-sufficiency happens in relation to parents, as emerging adults gradually seek to become more responsible for themself versus relying on parents to regulate their behaviors, make more independent decisions versus having parents make or influence their decisions, and become more financially independent versus needing parents to pay for some or all their bills. Thus, the theory of emerging adulthood provides a broad lens to view how parents are tied to their offspring's development during this time, and how development of self-sufficiency incorporates a gradual decrease in reliance on parents. However, this theory does not offer a clear explanation of the processes underlying how changes in parenting may be associated with changes in emerging adults' development.

In an effort to fill this gap in the theory of emerging adulthood, Tanner (2006) articulated recentering as the main process underlying emerging adults' attainment of self-sufficiency:

> Recentering is the critical and dynamic shift between individual and society that takes place across emerging adulthood during which other-regulated behavior (i.e., behavior regulated by parents, teachers, and society) is replaced with self-regulated behavior toward the goal of adult sufficiency, the ability to meet the demands of adulthood. (p. 22)

Essentially, recentering entails a gradual separation from parents, in which youth gain more confidence and experience with their endeavors as they transition from parental dependence to self-dependence. Emerging adults propel the first stage of recentering (i.e., the transition from adolescence to emerging adulthood) by seeking out contexts that support development of self-sufficiency and autonomy. Pertinent to the current study, Tanner noted that college represents a main context for emerging adulthood development, in that it structures an environment that supports learning how to become independent from parents and serves as the primary educational vehicle for developing the skills and capacities that are necessary for obtaining careers in the 21st century.

As emerging adults incorporate themselves into autonomy-supportive environments, they begin to rely less on parents and begin to develop more adult-like relationships with their parents. This transition reflects stage 2 of recentering, emerging adulthood proper, in which Tanner stated emerging adults "remain connected to, but no longer embedded within, his or her family-of-origin and contexts of adolescence" (Tanner, 2006, p. 29). In the context of the current study, freshman year reflects a key

time during which parents and students renegotiate the level and type of parental involvement to match the developmental needs of students. For example, stage 2 of recentering suggests that parents may become less involved as students become more autonomous over the first year in college. The recentering process concludes with stage 3 in which emerging adults make choices to commit to adult roles that support complete self-sufficiency (e.g., career). The current study draws from Tanner's concept of recentering as an underlying process that assists with explaining linkages between parent involvement factors and emerging adults' development over the first year in college. While this concept helps with understanding how shifts in contexts may contribute to emerging adults' development, it does not provide clear, testable hypotheses about the relationship between ongoing family processes and emerging adults' development.

To address the limitations of the concept of recentering, life course theory was selected as the guiding theory for the current study because it emphasizes the interdependence of family members' life trajectories and clearly articulates how family processes and individual development are associated (Elder, 1984; 1994). Interdependence is the process by which transitions in one person's life often involve transitions for other people. Interdependence is also known as the principle of linked lives. Elder's (1984; 1994) model of the dual dynamic of family development expands the principle of linked lives by specifying that family relationships change in response to individual development, and that changes in family relationships also have the capacity to shape individual development. The current study tested the dual dynamic model of family development by examining how changes in parent involvement factors were associated with changes in emerging adults' development over the first year in college.

Specifically, the current study examined how changes in parent support giving, contact frequency, and academic involvement behaviors were linked to changes in freshmen students' academic success, well-being, and individuation over the first year in college.

Emerging Adulthood: A New and Distinct Developmental Stage

In a seminal paper in 2000, Arnett proposed that because the traditional markers of adulthood had become delayed and lost their relevance in defining adulthood, the time period in between adolescence and adulthood reflected more than just a brief transition, and thus merited a new developmental stage that he named *Emerging Adulthood* [emphasis added]. These delays in traditional markers of adulthood include the delay of marriage and parenthood, the rise of participation in higher education, and the increase in the length of time devoted to obtaining postsecondary education (Arnett, 2000). For example, from 1950 to 2000 the median age of first marriage in the US increased from 22.8 to 26.8 for men and 20.3 to 25.1 for women (U.S. Census Bureau, 2011), and the average age of mothers at first birth hit a peak of 25.4 in 2010 compared to 21.4 in 1970 (Martin et al., 2012). Additionally, from 1950 to 2011 the number of students attending college full time in the US jumped from 2.3 million to a record high of 21 million, and about 60% of students today complete their undergraduate degree in six years, rather than four (Snyder & Dillow, 2012). Arnett argued that delaying these traditional markers of adulthood offered young people the opportunity and flexibility to change their life course during the late teens and twenties before settling into the commitments required by adult roles, and thus changed the nature of development during this time period.

Arnett (2000) contended that emerging adulthood was both empirically and theoretically distinct from the adolescence that precedes it and young adulthood that

follows it. In completing puberty and secondary schooling, obtaining the legal status of an adult, and living independently from parents, Arnett noted most emerging adults were not 'late adolescents.' Similarly, Arnett (2000) suggested that emerging adults were not 'young adults,' as most 18-25 year olds had not undergone the discrete role transitions typically associated with adulthood and felt in-between adolescence and adulthood. Arnett (2000) characterized emerging adulthood as a normative period of time in industrialized countries in which young people have "relative independence from social roles and normative expectations" (p. 469), and thus engage in explorations of life's possible directions to gradually arrive at the enduring roles of adulthood. During this time, emerging adults focus on attaining self-sufficiency, which includes increasing responsibility for themselves, increasing independence in their decision-making, and increasing financial independence to progress toward adulthood. This process entails a gradual separation from parents, where as youth gain more confidence and experience with their endeavors they transition from parental dependence to self-dependence (Arnett, 2000; Tanner, 2006).

In 2004, Arnett proposed a full theory on emerging adulthood and articulated five distinguishing features: (a) The age of identity explorations, especially in the areas of love, work, and worldviews, (b) The age of instability, (c) The age of possibilities, (d) The age of feeling in-between, and (e) The self-focused age. Arnett highlighted identity explorations as the central feature of emerging adulthood, because being simultaneously free from adult roles and mostly independent from parents facilitates young people with the most opportunity to self-explore. Extending Erikson's (1968) idea of a "prolonged adolescence" (p. 150) in which industrialized societies grant young people time to engage

in a psychosocial moratorium, Arnett (2004) argued that most identity exploration takes place in emerging adulthood. Compared to adolescence, however, identity explorations during this stage are characterized as being more serious, focused, and deliberate, because these explorations are geared toward preparation for adult roles. For example, attending college affords youth exposure to multiple educational choices and advanced training for a career once a major is selected. College also provides youth with opportunities for developing more intimate and lasting romantic relationships and reframing ones' beliefs and values outside of the supervision and influence of parents.

The freedom associated with the identity explorations of emerging adulthood can make this period a time of instability, a time of possibility, and a time of feeling in-between. For example, emerging adults are optimistic about their future because they have the chance to "transform their lives, to free themselves from an unhealthy family environment, and to turn their lives in a new and better direction" (Arnett, 2006, p. 13). Emerging adults also report feeling instable because they view themselves as being in-between adolescence and adulthood. For instance, Arnett (2001) found that 46% of emerging adults (aged 20-29) reported they felt they had reached adulthood compared to 86% of midlife adults (aged 30-55) and 19% of adolescents (aged 13-19). The ambiguity emerging adults feel from maturing out of adolescence but not quite attaining full adult status stems from the "intangible quality of the characteristics they consider to be the most important in marking the transition to adulthood" (Arnett, 2001; p. 142), specifically accepting responsibility for oneself, making independent decisions, and becoming financially independent. Because emerging adults are committed to developing self-sufficiency, emerging adulthood is also a self-focused age. Through self-

focus “emerging adults develop skills for daily living, gain a better understanding of who they are and what they want from life, and begin to build a foundation for their adult lives” (Arnett, 2004, p. 13).

Other scholars have also written prolifically about the transition from adolescence to young adulthood (Settersten, Furstenberg, & Rumbaut, 2008; Settersten, 2012; Shanahan, 2000). Similar to Arnett (2004), these scholars note how the passage to adulthood has assumed a new meaning for those on the journey as well as the socialization agents, especially parents, who assist with facilitating a successful passage. Recently, Settersten (2012) discussed three hallmarks that distinguish the young adult years today: (a) The need to manage uncertainty, (b) the need for fluid self-definitions, and (c) the need for interdependence. He noted the need to manage uncertainty was the most important developmental aspect of the young adult years today, as the ability to flexibly and constructively negotiate one’s responses to the “changing opportunity structures, limited support of the welfare state, and the absence of normative controls and clear life scripts” (p. 12) that dominate the young adult years is important for a successful transition to adulthood. In other words, the recently individualized nature of the transition to adulthood provides youth with the chance to sink or swim with the freedom to articulate a personalized journey to adulthood. This hallmark is very similar to Arnett’s (2004) feature of emerging adulthood as an age of instability. Settersten (2012) defined the need for fluid self-definitions as “being open and committed to the exploration of a range of ‘possible selves’ and to experimentation of many kinds as long as it is not too deviant or unconventional” (p. 13). By striving for fluidity in identity, he argued that youth would increase their likelihood to maximize their opportunities for

success in the fluctuating social and economic spheres of the young adult years. This hallmark closely resembles Arnett's (2004) feature of emerging adulthood as an age of identity explorations and an age of possibilities.

Contrary to historical perspectives on the need for independence to transition to adulthood, Settersten (2012) argued that attainment of interdependence is the more pertinent and appropriate criteria for a successful transition to adulthood today: "Interdependent ties can foster development and provide a set of supports that can be activated as needed" (p. 13). This hallmark resembles Arnett's contention that parents continue to represent key socialization agents during emerging adulthood because the developmental task of attaining self-sufficiency involves youths' reliance on parents for support as they undergo the gradual process of becoming autonomous. Furthermore, Settersten (2012) argued that it is crucial and necessary to provide support to youth as they transition to adulthood due to the complexity and instability that accompanies this time period:

> One could argue, in fact, that the sheer number and density of experiences that accompany the transition to adulthood, and the degree to which this juncture also involves movement into and out of multiple social institutions, leave it unparalleled in its significance relative to other life periods – and in its power to shape the subsequent life course (p. 22).

Settersten (2012) identified parents as an important support system for the process of launching youth into adulthood, especially in the Westernized nation of the USA in which the government emphasizes personal responsibility and thus provides few institutions and policies to assist with structuring the transition to adulthood. Taken

together, this literature indicates that multiple scholars acknowledge the existence of common developmental features of emerging adulthood that facilitate viewing this period of development as "a new life stage rather than as a generational shift that will soon shift again" (Arnett & Schwab, 2012, p. 2).

Defining Parental Involvement in College

Theories of college student development: where do parents fit?

Some college student development theories place parents at the periphery of socialization influences, and instead focus on students' interactions with the university environment (e.g., Pascarella, 1985). This focus reflects the historical time when these theories were constructed. The abandonment of the model of *in loco parentis* and the implementation of the Family Educational Rights and Privacy Act (FERPA) during the 1960s and 1970s redefined the relationship among students, parents, and institutions of higher education, in which students gained independence from institutional control and rights to control dissemination of their educational records to families. These shifts left little room for parents' roles in college student development theory, as students were to be viewed as adults (Henning, 2007). For example, Pascarella's (1985) model of college impact acknowledges parents among background characteristics that contribute to students' development, but does not specify the ongoing role that parents may play in students' development during college. Cohen's (1985) book entitled *Working with the Parents of College Students* reiterated this perspective from the vantage point of student affairs professionals at that time: "We do not consider parents part of our client population" (p. 3).

In concert with the cultural and demographic shifts that brought about the developmental stage of emerging adulthood and thus an extension of active parenting throughout the transition to adulthood, college student development theories have increasingly incorporated the role of parents in students' development. There has been tension, however, between theories regarding parent's role. Chickering (Chickering & Reisser, 1993) articulated the acquisition of autonomy, which begins with separation from parents, as a necessary developmental task for college students. This process of separation-individuation has been the prevailing theory of college student development and postulates that developing emotional and functional independence from parents is integral to meeting the demands of the college context. In contrast, Perna and Thomas (2008) specified the family as the second of four layers of influence in their model of college student development, and considered the family's ongoing role to be positively related to student development. Application of Bowlby's (1988) developmental theory of attachment to the study of college student development has also challenged the separation-individuation model, as attachment theory postulates that a secure connection to parents is conducive to promoting autonomy across the lifespan. Findings from this work indicate that secure attachment relationships between students and parents enable student's confidence to explore the college environment and offer support during stressful times (Kenny, 1987; Larose & Boivin, 1998; Sorokou & Weissbrod, 2005).

This debate has mostly been resolved as researchers have proposed and validated a model that views attachment and separation-individuation as complimentary and interrelated processes that facilitate college student development (Mattanah, Hancock, & Brand, 2004; Schwartz & Buboltz, 2004). Succinctly summed up in earlier work by

Josselson (1987), this perspective reflects "the problem of not only becoming different but of becoming different and maintaining connection [to parents] at the same time" (p. 171). In sum, the parental role has transitioned from an external background factor to a core component in college student developmental theory. Absent, however, from this theory is a clear definition of parental involvement during college, a proposed trajectory of how parental involvement changes throughout college, and an articulation of processes that link parental involvement to college student development.

Research efforts in higher education to define parent involvement.

Parental involvement has become a focal research topic in higher education over the past decade, as universities have sought to cater to the increasing presence of parents in college student's lives (Wartman & Savage, 2008; Sax & Wartman, 2010). Since 2003, the University of Minnesota Parent Program has conducted a biannual survey of parent programs in colleges and universities across the US to document trends in the types of structures and services provided. In general, parent programming is a broad term that captures many different types of services offered by colleges for parents and family members of enrolled students, and multiple different areas within higher education can house these services (e.g., student affairs, enrollment management). Most of these services revolve around the admissions and college transition process or facilitating communication with parents about common issues their children experience and on-campus resources their children can utilize to help them handle these issues; however, little is known about the developmental content of the information provided in these programs about how parents can best help their transitioning or continuing student achieve and adjust in college (Savage, 2003). The most recent report revealed a drastic

increase in the percentage of universities providing a variety of parent/family services from 2003 to 2013 (Savage & Petree, 2013). For example, in 2005 75% of colleges reported offering a handbook for parents compared to only 12% of colleges in 2003. Ongoing parent services beyond initial transitional activities have also become more commonplace across universities in the US. For instance, from 2003 to 2013 the percentage of colleges coordinating a family day/weekend rose from 74% to 97%. There has also been an increasing trend of reliance on electronic forms of communication with parents, as evidenced by 99%, 96% and 74% of programs reporting having a parent website, parent email newsletter, and parent Facebook page in 2013, respectively. While this research is important for documenting structural changes in parent programs, it more so reflects a proxy for quantifying and describing parental involvement during college. In fact, Tierney and Auerbach (2005) noted that "parent involvement is a floating term that is poorly defined in empirical studies and policy talk" (p. 32) in the field of higher education.

In an effort to address this gap in the research, three well-known and established surveys of college students added items on parent involvement to their surveys over the past ten years. In 2007 the Cooperative Institutional Research Program's (CIRP) annual Freshmen Survey included six items to examine incoming freshmen's perceptions of their satisfaction with their parent's involvement in college-related decisions. A sample of over 500 colleges and 375,000 students participated. Despite popular contentions of the over-involved "helicopter parent," overall results indicated most students reported their parents were involved the "right amount" in their college decisions (Pryor, Hurtado, Sharkness, & Korn, 2007). For example, 84% of students reported their parents were

involved the "right amount" in their decision to go to college, and 74% of students reported their parents were involved the "right amount" in assisting them with college applications. Beyond these college preparatory involvement behaviors, once enrolled, about three quarters of students reported their parents were involved the "right amount" in dealings with their college's officials (78%), choosing college courses (73%), and choosing college activities (74%). Interestingly, there were sizeable proportions of students who reported their parents were involved "too little" in choosing courses (24%) and activities (23%). While the CIRP's involvement items added valuable insight into students' perceptions of the appropriateness of their parent's involvement, it is important to note that they elicited information from *incoming* freshmen students, and thus did not represent a portrayal of parental involvement while students were currently enrolled during freshman year. Additionally, because these items focused on satisfaction with involvement, they provided a narrow perspective on the characteristics and actual amount of parental involvement

In 2007 the National Survey of Student Engagement (NSSE) added items to tap into more dimensions of parental involvement, including frequency and method of parent-student contact, topic of discussion, likelihood of following parental advice, parent-institution interactions, and the quality of the parent-child relationship. A total of about 9,000 randomly selected freshmen and senior students at 24 colleges participated. Regarding parent-child contact, about 70% of students reported they communicated "very often" with their parents throughout the academic year, and the majority of this communication was conducted via electronic media. Students reported that personal issues, academic performance, and family matters were the most common topics of these

communications, and about 75% of students reported following through with their parent's advice. Students also reported a modest level of parent-university interactions. For example, 13% of freshmen reported their parents "frequently" intervened with college officials to help them solve problems, and 25% reported their parents "sometimes" intervened. Regarding relationship quality, almost all students reported positive, supportive, and emotionally close relationships with parents. Interestingly, students who reported higher levels of parental institutional interventions also reported higher levels of support in relationships with parents (NSSE, 2007).

The 2006 University of California Undergraduate Experience Study (UCUES) incorporated items assessing the frequency of parent contact via different communication modalities (i.e., telephone, text message, email/instant message, or in-person) and items assessing parental involvement in students' academic decision-making. A report by Wolf and colleagues (Wolf et al., 2009) on the UCUES parent involvement data indicated that students reported they communicated with their parents most frequently (i.e., "a few times a week") via telephone. Regarding academic involvement behaviors, most students "agreed" or "strongly agreed" their parents were interested in their academic progress (67%) and emphasized obtaining good grades (60%). Similarly, about 51% of students reported they talked with their parents about their course material. The authors created a composite measure of academic involvement and parental contact. An exploratory factor analysis yielded a four-item scale of academic involvement (i.e., assistance with course selection, discussion of course material, interest in academic progress, and emphasis on good grades). The parent contact measure reflected "students' highest frequency of parental contact, regardless of the mode of contact" (p. 341). Importantly, the authors

found freshmen students' ratings for parental academic involvement were significantly higher than seniors. Similarly, seniors also reported the lowest level of parental contact.

These large-scale investigations represent significant advancements in characterizing parent involvement in college at a descriptive level. In sum, this research conveys that parents and students communicate frequently, especially about academic and personal issues, and that parent-institutional interactions are somewhat commonplace. Absent from this literature is a consensus on the conceptual definition of parental involvement within the college context (Wartman & Savage, 2008; Sax & Wartman, 2010). Wartman and Savage (2008) recently provided a working definition of parent involvement to fill this gap:

> For our purposes, the phenomenon of parental involvement includes parents showing interest in the lives of their students in college, gaining more information about college, knowing when and how to appropriately provide encouragement and guidance to their student connecting with the institution, and potentially retaining that institutional connection beyond the college years. (p. 5)

It is clear that the authors conceptualized parent involvement as a multidimensional construct, composed of parental support giving, parent-child contact, and parental academic engagement (both parent-student and parent-institution interactions). Research is needed, however, to investigate this multidimensional definition of parent involvement to determine how each involvement strategy may change over the transition to college, and most importantly, to identify how changes in involvement strategies may be related to a broad range of student outcomes across the freshman year. Following, the current study abides by Wartman and Savage's (2008) multidimensional definition of parental

involvement, and considers parental involvement during college to be represented by three involvement constructs: parental support giving, parent-student contact, and parental academic engagement. To assess how each of these involvement strategies may have changed (linear and nonlinear) across the freshman year in college, the current study employed a prospective longitudinal design with four measurement occasions.

It is important to acknowledge that emerging adulthood marks a developmentally significant time period for intergenerational familial relationships, in which the parent-child relationship undergoes a fundamental transformation into one that is mostly characterized by mutuality. The large body of literature on parent-child relationships during emerging adulthood suggests that while there is some continuity in relationship qualities, "parents and adult children are not locked into the styles of interaction that may have characterized the earlier periods of their relationship" (Aquilino, 1997, p. 681), and generally develop more intimate and less conflictual relationships across emerging adulthood (e.g., Aquilino, 2006; Shanahan, McHale, Osgood, & Crouter, 2007a; Shanahan, McHale, Osgood, & Crouter, 2007b; Whiteman, McHale, & Crouter, 2011). Because parenting practices, such as parental involvement, happen within the emotional climate of the parent-child relationship (Darling & Steinberg, 1993), the changes in relationship quality that occur during emerging adulthood may have implications for shaping changes in parent involvement and their contribution to a broad range of student outcomes. Thus, the current study included parent-emerging adult relationship quality as a correlate of parental involvement.

Parental support giving.

Parents remain a source of tangible (e.g., financial, technical) and nontangible (e.g., advice, emotional, listening) support during emerging adulthood. For example, studies have found that parents provide considerable financial support to offspring (Schoeni & Ross, 2005; Yelowitz, 2007) and frequently listen to their children and give them advice, typically around a few times a month, during emerging and young adulthood (Fingerman et al., 2014; Fingerman, Miller, Birditt, & Zarit, 2009; Fingerman et al., 2010; Pettit, Roberts, Lewinsohn, Seeley, & Yaroslavsky, 2011). Theories of intergenerational support (Antonucci & Akiyama, 1987; Becker, 1981) identify four reasons why parents continue to provide assistance across the transition to adulthood: (a) to assist children in need (altruism), (b) to maximize reproductive success (evolution), (c) to derive support from children in older adulthood (exchange), and (d) to improve children's chances for success (investment). Fingerman and colleagues (2009) found parents provide more support to young adults in need (e.g., experienced financial or health problems, younger in age) and young adults viewed as more successful (e.g., educational or career achievement). More specifically, parents provided more financial and practical support to children in need, more listening and advice support to successful children, and overall more support for younger children. Extensions of this work illustrate the importance of assessing parents' and childrens' appraisals of the appropriateness of support (Fingerman, Cheng, Tighe, Birditt, & Zarit, 2012a; Fingerman et al., 2012b). For example, Fingerman et al. (2012b) found that youth and parents who reported receiving and giving (respectively) intense levels of support, operationalized as

providing tangible and intangible support several times a week, were more likely to view this support giving as non-normative and excessive.

Longitudinal research has demonstrated that parents provide support to youth undergoing transitions to foster progress across the transition to adulthood, and that parent-child relationship qualities also play a key role in determining provision of support (Mortimer, 2012; Swartz et al., 2011). Swartz and colleagues (2011) found that parents acted as "scaffolding" and "safety-nets" to assist children with gains in independence and buffer negative setbacks en route to adulthood. For example, school attendance increased parents' provision of financial support by 52% and housing support by 36%, and marriage decreased the odds of providing financial and housing support by 50% and 35%, respectively. Higher levels of maternal closeness increased the odds of providing economic and residential support at age 24, and closeness with mothers negatively predicted support from age 24 to 32, leading the researchers to conclude that "those who were closer to their mothers also received other types of parental aid…that could have contributed to their ability to become self-sufficient" (p. 426). A prospective longitudinal study by Levitt, Silver, and Santos (2007) utilized two cohorts of high school students (sophomores and seniors) to assess the extent to which changes in parent relationships and parental support could be attributed to the transition from high school. Changes in parent support post-transition positively predicted and accounted for the most variance in post-transition relationship satisfaction. Because post- and not pre-transition support was related to relationship satisfaction, the authors concluded that the high school transition provided impetus for changes in family relationships. Levitt and colleagues (2007) also noted the integral nature of support for sustaining positive parent-child relationships into

emerging adulthood: “The provision of additional parental support at this time thus enhances the young person’s satisfaction with the parental relationship, whereas failure to provide needed support diminishes relationship satisfaction” (p. 61).

Across the board, though, researchers have documented a general decrease in both tangible and intangible support from late adolescence, through emerging adulthood, and into young adulthood (Cooney & Uhlenberg, 1992; Hartnett, Furstenberg, Birditt, & Fingerman, 2012). A recent study by Harnett and colleagues (2012) provided an important contribution to this literature by investigating if the declining age pattern of financial support was mediated by offspring needs, acquisition of adult identity, geographical distance, and emotional closeness. As hypothesized, declines in the frequency and amount of financial support accelerated from the late 20s to early 30s, and parents engaged in more frequent transfers of higher amounts of money to younger offspring (i.e., 18-22 year olds received $1,000 over the past 12 months). Age of the child continued to be a strong predictor of these declines, even after controlling for parent and offspring background characteristics and including alternative explanations (i.e., adult identity statuses, geographical distance, and emotional closeness) linking age to changes in financial support. Offspring needs (e.g., employment and student statuses), however, did slightly attenuate the effect of age on financial support, leading the authors to conclude that while age remained the strongest predictor of declines in financial support, “this decline [was] partially explained by the fact that the needs of offspring decline with age” (p. 27).

In sum, this body of research suggests that while parents may provide high levels of support to children across the transition to adulthood, this support also depends on

youths' age, transitions, needs, and relationships with parents, indicating that parents typically provide appropriate support to facilitate a smooth transition to adulthood, and withdraw support as youth progress toward stability in adult roles. In accordance with this literature, the current study assessed changes in parental support giving over the transition to college, and predicted that parent support giving will decrease across freshman year.

Parent-student contact.

Rapid advances in communication technologies, such as email, cell phones, Skype, texting, and social networking sites, have likely facilitated families the opportunity to maintain good relationships and provide support, even when geographically distant (Lefkowitz, Vukman, & Loken, 2012). Case in point, recent reports by the Pew Internet and American Life Project (Duggan & Rainie, 2012; Smith, 2010) found that 90% of 18-29 year olds in America own a cell phone and 97% of them use their phones primarily to send and receive text messages with friends and family. Older adults in America are not far behind in their mobile phone usage, as 85% of 30-64 year olds own a cell phone and 82% of them also primarily use their phones to text. The ubiquitous nature of these modern technologies, especially the cell phone, has provided parents and emerging adults with a relatively inexpensive means to engage in immediate and frequent communication. This point is especially relevant for college students, who are most often living away from home for the first time in their lives (Arnett, 2006). A growing body of literature has documented that college students and their parents utilize the Internet and the cell phone to communicate on a frequent basis, and that most students

use communication technologies to support positive family relationships (Aoki & Downes, 2003; Chen & Katz, 2009; Fingerman et al., 2014; Fingerman et al., 2012a; Gentzler, Oberhauser, Westermann, & Nadorff, 2011; Stafford & Hillyer, 2012; Smith, Nguyen, Lai, Leshed, & Baumer, 2012).

Regarding frequency of communication, Hofer (2008) found that on average first and second year students communicated with their parents 13 times a week, mostly via cell phone, which led the author to call the cell phone an "electronic tether" between students and their parents. Sorokou and Weissbroad (2005) found that freshmen students utilized the cell phone and Internet to initiate need-based contact (e.g., material and emotional needs) a few times a semester and non-need based contact (e.g., touching base to maintain connections) up to a few times a week. Qualitative studies have provided insight into how and why students use communication technology to stay connected to their families. For example, Chen and Katz (2009) found that students reported their cell phone was the most important tool for keeping in touch with their parents because it enabled direct and instantaneous contact, despite geographical distance. Students also reported the cell phone facilitated better relationships with their parents, as it provided an avenue to share experiences and garner emotional and material support when needed without infringing upon their independence.

Studies have also found a link between contact frequency and parental support giving and parent-emerging adult relationship quality. Gentzler and colleagues (Gentzler et al., 2011) found that students' reports of phone conversations predicted higher levels of support and aid received from parents and higher levels of satisfaction and intimacy in relationships with parents. Similarly, Gordon, Juang, and Syed's (2007) results indicated

students' use of the Internet to email family positively predicted family cohesion (e.g., higher levels of closeness and integrated decision making). This literature evidences that emerging adults in college utilize communication technology to stay in frequent contact with their parents, which seems to be conducive to promoting positive family relationships and provide a means to exchange support. With one exception (Hofer, 2008), there have been no investigations of how parent-student contact may change throughout college. While Hofer's (2008) study did not find a significant difference between freshmen and sophomores' reports of contact frequency, the cross-sectional design precluded the ability to determine if, for example, a consistent level of parent-student contact across freshman explained the similar level of contact frequency. On the contrary, the similar level of contact frequency could also be explained by a u-shaped pattern of change, in which contact frequency is high at the beginning of freshman year, decreases toward the end of freshman year, and then peaks again at the beginning of sophomore year. To address this limitation, the current study longitudinally assessed parent-student contact across freshman year, and predicted that parent-student contact will decrease over the first year in college.

Parental academic engagement.

A study by Wolf and colleagues (Wolf et al., 2009) described parental academic engagement during college as a factor consisting of parents' assistance with course selection, discussion of course material, interest in academic progress, and emphasis on good grades. Results from this study revealed freshmen reported the highest level of parental academic engagement and seniors reported the lowest levels of parental

academic engagement. Although this difference suggests parental academic involvement declines from freshman to senior year, this conclusion is premature for two reasons: (a) This study represents the sole investigation of differences in parental academic engagement by year in school, and (b) the cross-sectional design negated the ability to describe the true pattern of change in parental academic involvement across years in school. To address these limitations, the current study longitudinally assessed parental academic involvement across freshman year, and predicted that parental academic involvement will decline over the first year in college.

Correlates of parent involvement.

As previously mentioned, the current study controlled for parent-emerging adult relationship quality given its association with parental involvement, notably parental support giving (e.g., Swartz et al., 2011) and parent-student contact (e.g., NSSE, 2007). The current study also controlled for other key demographic factors that have been associated with parent involvement: (a) emerging adult's gender, (b) emerging adult's race/ethnicity, (c) emerging adult's housing situation, (d) parental socioeconomic status (SES; i.e., maternal and paternal education level), and (e) parental financial support for college education. For example, daughters typically receive more support (e.g., Fingerman et al., 2009) and have more frequent contact with their parents than sons (e.g., Wolf et al., 2009). Student's race/ethnicity has also been associated with variability in parental involvement. For example, Caucasian emerging adults typically receive more support than Black emerging adults (e.g., Fingerman, VanderDrift, Dotterer, Birditt, & Zarit, 2011) and Hispanic college students report high levels of parent contact but low levels of parental academic engagement (Wolf et al., 2009). Furthermore, students who

live on campus and/or geographically farther away from parents also tend to report lower levels of contact frequency and higher levels of relationship quality with parents (Bradley-Geist & Olson-Buchanan, 2014; Dubas & Peterson, 1996). Regarding socioeconomic status, students whose parents have a higher level of education usually report higher levels of support, contact, and academic engagement (e.g., Fingerman et al., 2012ab; Wolf et al., 2009). Finally, a higher level of parental financial support for college education has also been associated with higher levels of parental involvement (e.g., Hamilton, 2013; Lowe, Dotterer, Francisco, 2015).

Student Outcomes in College

Academic Success.

Academically, college is more rigorous than high school, as coursework requires more time to complete and the utilization of advanced critical thinking skills (Pascarella & Terenzini, 1991; 2005). Freshmen report high levels of academic stress due to adjusting to these new academic demands (Misra, McKean, West, & Russo, 2000; Rayle & Chung, 2007). This stress can have negative implications for academic achievement (Struthers, Perry, & Menec, 2000; Wintre & Yaffe, 2000). Studies have found first year college GPA to be significantly lower than high school GPA (Elias & MacDonald, 2007; Wesley, 1994). For instance, Wintre and colleagues (2011) found that 73% of first year students experienced a decrease of at least one letter grade from their high school GPA. While this literature indicates a general decline in GPA during freshmen year, longitudinal research is needed to test this assertion because the previously reviewed literature did not include multiple measurements of GPA. It is possible that the college transition represents an acute stressor in which an initial decline in GPA may occur,

followed by a gradual increase as students become more adjusted to the demands of college academia. This idea is supported by evidence indicating freshmen report improvements in academic adjustment as stress decreases over the first year (Gall, Evans, & Bellerose, 2000; Friedlander, Reid, Shupak, & Cribble, 2007), and that upper level students have higher GPAs than freshmen (Wilczenski, 1993; Strage & Brandt 1999). Gathering from this literature, the current study will assess the trajectory of GPA across freshman year, and expects that GPA will increase over the course of the first year in college.

Although negative associations between stress and academic self-efficacy have also been reported (Hackett, Betz, Casas, & Rocha-Singh, 1992; Zajacova, Lynch, & Espenshade, 2005), research investigating change in college student's academic self-efficacy, commonly defined as one's confidence and belief in his/her abilities to perform academic tasks at a desired level (Bandura, 1997; Pajares, 1996; Schunk, 1991), is sparse. This omission is surprising, considering the robust body of literature documenting strong positive links between this motivational achievement construct and achievement, persistence, and graduation above and beyond standardized test scores, high school GPA, and demographic background characteristics (Chemers, Hu, & Garcia, 2001; Multon, Brown, & Lent, 1991; Robbins et al., 2004). There is, however, one notable exception (Larose, Ratelle, Guay, Senécal, & Harvey, 2006) that utilized data from three occasions (i.e., high school, freshman, and sophomore year) and identified three distinct science self-efficacy trajectory groups: (a) 50% of students were "high-stable," as they showed sustained positive beliefs from high school to sophomore year, (b) 30% of students were "declining," as they showed a drop in efficacy from high school to freshman year that

was maintained in sophomore year, and (c) 20% of students were "increasing," as they showed a strong increase in beliefs from high school to freshman year that slightly increased again in sophomore year. While this study documented heterogeneity in student's efficacy beliefs across the college transition, its generalizability is limited because it evaluated a domain specific facet of self-efficacy. Thus, it is unknown if trajectories of broader academic self-efficacy would operate in a similar pattern for first year students. In alignment with Bandura's (1997) model of self-efficacy, it is possible that academic efficacy beliefs increase and become more accurate as students experience academic accomplishments, or mastery experiences, over the course of the first year. Based on this literature, the current study assessed the trajectory of academic self-efficacy across freshman year, and predicted that academic self-efficacy increases over the first year in college.

Academic persistence, or one's intentions to remain in college until degree-attainment (Bean, 1980; 1982; Tinto, 1975; 1988), also represents an important construct of academic success that has been found to be strongly predictive of future graduation (Longwell-Grice & Longwell-Grice, 2008). Though academic persistence is commonly measured as a dichotomous variable (i.e., whether or not a student enrolls for the upcoming academic year), academic persistence in this study is operationalized as a continuous variable to facilitate the ability to assess if students' academic persistence changes over time and if parental involvement is related to different levels of persistence across the freshmen year. Moreover, researchers have documented that cognitive intentions to persist are related to behavioral persistence (Cabrera, Castañeda, Nora, & Hengstler, 1992; Okun, Benin, & Brandt-Williams, 1996). Although the major theories

of college student persistence (Bean, 1980; 1982; Tinto, 1975; 1988) view the process of student departure from college as longitudinal, a thorough search of the literature revealed no longitudinal assessment of students' academic persistence. Guided by these theories of college student persistence, it is possible that freshmen students' intentions to remain in school will increase as they make gains in adjusting to and engaging in the college environment. In other words, students' integration in their college environment across the freshmen year will likely increase their intentions and commitments to persist and graduate from college. The current study aimed to fill this gap in the literature by longitudinally assessing freshmen students' academic persistence, and hypothesized that academic persistence increases across the first year in college.

Well-being.

Navigating the multiple changes that occur during the college transition, including moving away from home, encountering challenging classes, and making new friendships, can place freshmen's psychological well-being at risk. Researchers have found that freshmen report high levels of stress and anxiety (Dyson & Renk, 2006), especially during the first few months post transition (Baker, McNeil, & Siryk, 1985), and that increases in stress associated with the college transition have been linked to increases in depression across the first year in college (Wintre & Yaffe, 2000; Friedlander et al., 2007). A recent study by Conley, Kirsch, Dickson, and Bryant (2014) used three waves of data to estimate latent growth curves of psychosocial adjustment and found steep declines in mental health that occurred from one week before the start of the freshman year to the middle of the freshman year that remained stable towards the end of the freshman year. On a positive note, other studies have documented that students report

increases in mental health (Gall et al., 2000) and decreases in depression over the first year (Friedlander et al., 2007). Further, it has been reported that depression continues to decline into the senior year (Wolf, Scurria, & Webster, 1998). The pattern of improvement in psychological well-being among university students is supported by evidence from numerous longitudinal studies that have modeled decreasing trajectories of depression and increasing trajectories of self-esteem and well-being across emerging adulthood and into young adulthood (Galambos, Barker, & Krahn, 2006; Meadows, Brown, & Elder, 2006; Pettit et al., 2011; Schulenberg & Zarrett, 2006). Because the aforementioned studies on university freshmen did not include more than two measurement occasions (i.e., Friedlander et al., 2007) or did not utilize statistical techniques that investigate intra- and interindividual change over time (i.e., Gall et al., 2000), their conclusions about improvement in well-being must be interpreted with caution. Longitudinal research that includes multiple waves of data is needed to accurately describe the process of change in depression across the first year of college. Only through this research can true change in depression be distinguished from its measurement error (Singer & Willett, 2003). The current study addressed these limitations by estimating the trajectory of depression across freshman year, and predicted that the level of depressive symptoms decreases over the first year in college.

A large body of research has also documented that risky behaviors, including engaging in unprotected sex, binge drinking, and illegal drug use, increase throughout emerging adulthood and stabilize and decline into young adulthood (Arnett, 2005; Fergus, Zimmerman, & Caldwell, 2007; Johnston, O'Malley, Bachman, & Schulenberg, 2010; Lam & Lefkowitz, 2012; Schulenberg & Maggs, 2002). College students have been

found to report high levels of risky behaviors, especially binge drinking and condom use inconsistency (American College Health Association [ACHA], 2012; Johnston et al., 2010). Researchers have also found that engagement in risky behaviors increases as students transition from high school to college (Fromme, Corbin, & Kruse, 2008; O'Malley & Johnston, 2002; Wetherill, Neal, & Fromme, 2010). Gathering from this literature, the current study estimated trajectories of risky behaviors across freshman year, and predicted that engagement in risky behaviors increases across the first year in college.

Individuation.

Development of individuation, often defined as the process of gaining self-definition, self-governance, and autonomy from parents, is a key developmental task for emerging adults (Arnett, 2000; 2004; Blos, 1979; Chickering & Reisser, 1993; Hoffman, 1984). Individuation involves a gradual separation from parents, in which emerging adults become less dependent on a high level of emotional support from parents (i.e., emotional autonomy), and less dependent on parental assistance with managing daily practical and personal affairs (i.e., functional autonomy). Similarly, according to the theory of emerging adulthood (Arnett, 2000; 2004), the process of individuation entails gains in three criteria, specifically the abilities to make independent decisions, take responsibility for oneself, and become financially independent from parents. Empirical investigations of these theoretical propositions have documented age-related differences in individuation (Arnett, 2001; Arnett & Schwab, 2012; Gottlieb, Still, Newby-Clark, 2007; Rice, FitzGerald, Whaley, & Gibbs, 1995). For example, Shulman and Ben-Artzi1 (2003) found that emerging adults (aged 21-23 years old) reported higher levels of self-governance and practical independence than adolescents (aged 16-18 years old), and

lower levels of practical independence compared to young adults (aged 26-29 years old). Researchers have also found an increasing pattern of attainment of the criteria for emerging adulthood over time, especially amongst emerging adults who feel like they have achieved more of an adult status (Nelson & Barry, 2005; Kins & Beyers, 2010).

As the college context provides a supportive environment in which emerging adults can gain confidence in their abilities to become autonomous (Zarrett & Eccles, 2006), cross-sectional research also suggests that individuation tends to increase across the college years (Jones & Watt, 2001; Kuh, 1993; Rice et al., 1995; Wachs & Cooper, 2002). Together, this literature indicates freshmen students may experience increases in individuation across the college transition. However, because most of this research is cross-sectional and focused on mean differences between different age groups, the ability to describe the process of change in individuation was not possible. Considering the process of individuation in emerging adulthood is a key tenant of developmental theory, longitudinal research is needed to capture fluctuations in the process of individuation. The current study addressed these limitations by estimating trajectories of individuation (i.e., emotional/functional autonomy, criteria for adult status) across freshman year, and predicted that emerging adults' levels of individuation increases over the first year in college.

Linking Parental Involvement to Student Outcomes in College

Academic success.

Given that the attrition rate among US freshmen stands firm at 28% (Snyder & Dillow, 2012), researchers have been exploring parental involvement factors that may promote college GPA, academic self-efficacy, and academic persistence as all of these

academic outcomes are strong predictors of freshmen attrition (e.g., Zajacova et al., 2005). Parental support for academic success has been positively associated with GPA and academic self-efficacy (Fulton & Turner, 2008). Strage and Brandt (1999) found that students who reported more emotional support and encouragement for academic success from their parents had higher levels of confidence in their ability to complete college and higher GPAs. Cutrona and colleagues (1994) estimated a structural model examining the contribution of parental social support to GPA. Parental social support, especially emotional support, positively predicted GPA beyond family conflict, family achievement orientation, and social support from peers and romantic partners. Similarly, Cabrera, Nora, Terenzini, Pascarella, and Hagedorn (1999) found that parental encouragement had the strongest positive association with freshmen students' intentions to persist at college. In a more recent prospective longitudinal study (Ratelle, Larose, Guay, & Senécal, 2007), perceived parental support for academic decisions and parental involvement in academic pursuits positively predicted students' feelings of competence and confidence in their science major, and in turn persistence in their science major.

Despite these positive implications, some studies have found negative associations between high levels of parental involvement strategies and academic success. A recent study by Hamilton (2013) found parental financial support had a negative effect on GPA, indicating parental funding enabled satisficing among students, or "the ability to meet the criteria for [academic] adequacy on multiple fronts, rather than optimizing their chances for [academic success]" (p. 1). The NSSE (2007) reported that students who frequently communicated with their parents and whose parents frequently contacted the

university to intervene on their behalf had lower GPAs. This association was found to be especially salient for freshmen students (Shoup et al., 2009).

In sum, this literature reflects that different involvement factors may have different associations with academic outcomes. Additionally, while this research suggests that a continuation of parental involvement may have negative implications for freshmen students' academic outcomes across the first year in college, longitudinal research is needed to test this assertion. The current study addressed these limitations by investigating how changes in parent involvement were associated with changes in academic outcomes, and predicted that declines in involvement would be associated with increases in academic success (i.e., GPA, academic self-efficacy, and academic persistence) across the freshman year.

Well-being.

As depression and engaging in risky behaviors in first year students have been linked to a host of negative outcomes, including poor physical health and lower academic success (Adams, Wharton, Quilter, & Hirsch, 2008; Andrews & Wilding, 2004; Arnett, 2005; Schulenberg & Maggs, 2002), researchers have identified parental involvement as a source of support for freshmen's well-being. For example, researchers found that parental support was linked with less depression and higher levels of life satisfaction among college students (Fingerman et al., 2012a; Holahan, Valentiner, & Moos, 1994; Mounts, 2004; Nelson, Padilla-Walker, Christensen, Evans, & Carroll, 2011). Mounts and colleagues (2006) found that more parental support during the college transition (i.e., social, financial, and academic support) was associated with less loneliness and depression among freshmen. Similarly, Aseltine and Gore (1993) found that increases in

parental emotional support from 12th grade to the end of freshman year were associated with decreases in depression. Although researchers have documented that increases in parental support are associated with declines in depression across emerging adulthood (Galambos et al., 2006; Meadows et al., 2006; Pettit et al., 2011), it is unclear whether changes in parental involvement factors are associated with changes in depression among freshmen since almost all of the college research previously reviewed did not assess parenting across more than two time points. Longitudinal research is warranted to investigate how changes in parental involvement are related to depression trajectories among freshmen. The current study aimed to address these gaps by examining how changes in parental involvement were associated with changes in depression across freshman year, and hypothesized that declines in involvement would be associated with declines in depression across the freshman year.

Regarding links between parental involvement and engaging in risky behaviors, a recent study by Small and colleagues (2011) utilized freshmen students' reports of daily communication with parents over 14 days, and found that the amount of time talking with parents predicted students' drinking behaviors. Notably, talking with parents for at least 30 minutes was associated with a 32% decrease in the likelihood of engaging in heavy drinking (i.e., more than 4 or 5 drinks). Emotional support from parents at the end of high school has also been linked with less risky sexual behaviors at the end of the first semester in college (Wetherill et al., 2010) and lower levels of alcohol use at the end of freshman year (Abar & Turrisi, 2008). Because freshmen are at risk for increases in risky behaviors across college, longitudinal research is also warranted to investigate how trajectories of parental involvement are linked to risky behavior trajectories among

freshmen. The current study thus aimed to examine how changes in parental involvement were associated with changes in risky behaviors across freshman year. Gathering from the literature reviewed above, the current study hypothesized that declines in involvement would be associated with increases in risky behaviors across the freshman year.

Individuation.

Individuation from parents does not imply a complete separation and severing of ties with parents (Arnett, 2000; 2004; Blos, 1979; Chickering & Reisser, 1993; Hoffman, 1984; Mattanah et al., 2004). The college transition provides a unique time to study how parental involvement factors may contribute to emerging adults' development of individuation, as this transition will expose youth to significant ecological changes for the first time in their lives (e.g., living on their own) that may challenge the balance between their desires for independence and their reliance on parents for support. With a few exceptions (Kolkhorst, Yazedjian, & Toews, 2010; Cullaty, 2011), however, there is no research exploring the links between parental involvement and individuation. For example, qualitative research (Cullaty, 2011; Kolkhorst et al., 2010) has found that students' reports of a high level of parental support facilitated their autonomy development, but that students accessed their parents for support more often than they thought they would. Given that there is discontinuity in parental involvement factors across emerging adulthood, and that parents are integral to the process of individuation, longitudinal research is needed to identify how changes in involvement are associated with changes in individuation across the transition to college. The current study investigated how changes in parental involvement were associated with changes in individuation across freshman year, and predicted that declines in parent involvement

would be associated with increases in individuation (i.e., emotional/functional independence, attainment of adult criteria) across the freshman year.

The Current Study

The overall objective of the current study was to investigate the role of parental involvement during the freshman year of college. The current study adopted a multidimensional definition of parental involvement during college that included parental support giving, parent-student contact, and parental academic engagement. By utilizing a prospective longitudinal design that included four measurement occasions, the current study assessed changes in parental involvement factors and changes in student outcomes (i.e., academic success, well-being, and individuation) across the freshman year. Assessing how changes in parental involvement factors are related to student outcomes provided the opportunity to empirically assess the dual dynamic of family relationships, which suggests that these trajectories will be associated (Elder, 1984; 1994). Thus, the final aim of the current study was to investigate how changes in parental involvement were tied to changes in students' academic success, well-being, and individuation across the first year in college.

RESEARCH QUESTIONS AND HYPOTHESES

Changes in Parental Involvement

The first research question put forth by this study was: Does parental involvement, specifically parental support giving, parent-student contact, and parental academic engagement, change across the first year in college after controlling for key variables (i.e., parent-emerging adult relationship quality, student gender, race/ethnicity, and residential status, and parental education level and parental financial support for college education)?

- Hypothesis 1: Parental support giving decreases across the first year in college.
- Hypothesis 2: Parent-student contact decreases across the first year in college.
- Hypothesis 3: Parental academic engagement decreases across the first year in college.

Changes in Student Outcomes

The second research question put forth by this study was: Do student outcomes, specifically academic success, well-being, and individuation, change across the first year in college after controlling for key variables (i.e., parent-emerging adult relationship quality, student gender, race/ethnicity, and residential status, and parental education level and parental financial support for college education)?

- Hypothesis 4: Academic success increases across the first year in college.
    - Hypothesis 4.1: GPA increases across the first year in college.

    - Hypothesis 4.2: Academic self-efficacy increases across the first year in college.
    - Hypothesis 4.3: Academic persistence increases across the first year in college.
- Hypothesis 5: Well-being changes across the first year in college.
    - Hypothesis 5.1: Depressive symptoms decrease across the first year in college.
    - Hypothesis 5.2: Engagement in risky behaviors increases across the first year in college.
- Hypothesis 6: Individuation increases across the first year in college.
    - Hypothesis 6.1: Emotional and functional autonomy increase across the first year in college.
    - Hypothesis 6.2: Attainment of adult status criteria increases across the first year in college.

Linking Changes in Parental Involvement and Student Outcomes

The third research question put forth by this study was: Are changes in parent involvement associated with changes in student outcomes across freshman year after controlling for key variables (i.e., parent-emerging adult relationship quality, student gender, race/ethnicity, and residential status, and parental education level and parental financial support for college education)?

- Hypothesis 7: Changes in parent support giving are associated with changes in student outcomes across the freshman year.

  - Hypothesis 7.1: Declines in parent support will be associated with increases in increases in academic success (i.e., GPA, academic self-efficacy, and academic persistence) across the freshman year.
  - Hypothesis 7.2: Declines in parent support will be associated with declines in depression and increases in risky behaviors across the freshman year.
  - Hypothesis 7.3: Declines in parent support will be associated with increases in individuation (i.e., emotional autonomy, functional autonomy, and attainment of adult status criteria) across the freshman year.
- Hypothesis 8: Changes in parent-student contact are associated with changes in student outcomes across the freshman year.
  - Hypothesis 8.1: Declines in contact will be associated with increases in academic success (i.e., GPA, academic self-efficacy, and academic persistence) across the freshman year.
  - Hypothesis 8.2: Declines in contact will be associated with declines in depression and increases in risky behaviors across the freshman year.
  - Hypothesis 8.3: Declines in contact will be associated with increases in individuation (i.e., emotional autonomy, functional autonomy, and attainment of adult status criteria) across the freshman year.
- Hypothesis 9: Changes in parental academic engagement are associated with changes in student outcomes across the first year in college.
  - Hypothesis 9.1: Declines in academic engagement will be associated with increases in academic success (i.e., GPA, academic self-efficacy, and academic persistence) across the freshman year.

- Hypothesis 9.2: Declines in academic engagement will be associated with declines in depression and increases in risky behaviors across the freshman year.
- Hypothesis 9.3: Declines in academic engagement will be associated with increases in individuation (i.e., emotional autonomy, functional autonomy, and attainment of adult status criteria) across the freshman year.

METHODOLOGY

Participants

The Office of Enrollment Management at Purdue University provided a contact list of all incoming domestic and traditional freshman for fall 2013 (N = 5,284), once the current study received IRB approval. This contact list, which included student's names and Purdue email addresses, was integral to tracking student's participation in the study since survey distribution occurred via email. Students were recruited throughout the summer before the first wave of data collection (i.e., the beginning of the fall semester) and across the entire data collection period to decrease the likelihood of a small sample size at each measurement occasion due to attrition. Recruitment methods consisted of the following: (a) A recruitment booth manned by graduate students was set up in the Main Lounge at the Purdue Memorial Union (PMU) during the Summer Transition, Advising, and Registration (STAR) program from June 17 - July 11, 2013 in which graduate students handed out flyers and discussed the upcoming study with the incoming domestic freshmen and their families attending STAR, (b) Emails with recruitment flyers were sent to target students from the project's email (fit@purdue.edu) throughout the data collection, (c) Online recruitment flyers were placed in Purdue Group X Program newsletters and on PurdueBoard, and (d) Undergraduate Academic Advisors were informed of the study and encouraged to recommend their domestic freshmen advisees

participate in the study. All recruitment materials, flyers, and study documents (e.g., informed consent form) referred to the current study as the "Freshmen In Transition (FIT) Project." The FIT acronym was developed to succinctly represent the title of the current study. Please see Appendix A for an example of a FIT recruitment flyer.

Student consent for participation was obtained electronically by a survey created with Qualtrics Survey Software (Qualtrics Labs Inc., Provo, UT). Since participants were allowed to join the study at any of the four measurement occasions, an electronic consent form was included as the initial page of the online survey at each measurement occasion unless consent had already been obtained. A reminder of informed consent was then included as the initial page of the online survey once consent was obtained. There were three consent options: (a) "I agree that I am 18 years of age and I consent to participate in the FIT Project," (b) I am under 18 years of age and cannot participate in the FIT Project at this time," and (c) "I am 18 years old, but I decline to participate in the FIT Project." These consent options allowed freshmen who were too young the opportunity to participate at future measurement occasions once they turned 18 and became eligible. If students consented to participate, the next page of the online survey was a Registrar Consent Form, in which students were asked to consent to release their official grades (i.e., high school GPA, SAT and/or ACT scores, and Fall 2013, Spring 2014, and cumulative GPAs from Purdue) and basic demographic information (i.e., sex, age, race, college affiliation). Students were informed that refusing to release their grades would not be held against them, and would not alter their ability to participate in the study in any way. A Data Agreement with the Office of the Registrar was completed to obtain

students' official grades and basic demographic information at the completion of the current study.

The population sample was 5,284 incoming, domestic, and traditional freshmen students enrolled at Purdue for the 2013 to 2014 academic year. At the first measurement occasion, 954 students consented to participate, 95 students declined to participate, and 31 students were under 18. At the second measurement occasion, 207 students consented to participate, 13 declined, and three were under 18. At the third measurement occasion, 195 students consented to participate, 12 declined, and one was under 18. At the fourth and final measurement occasion, 104 students consented to participate, seven declined, and one was under 18. Merging across data sets from the four measurement occasions, the total number of consented freshmen was 1,460. There was a small portion of students (N = 181) who consented but did not answer any survey questions across the entire duration of the study, and were removed from the data set for the current study. Thus, the total sample size for the current study included 1,279 freshmen (i.e., Wave 1 = 858 consented, Wave 2 = 179 consented, Wave 3 = 152 consented, and Wave 4 = 90 consented) that consented and participated in the FIT Project (response rate = 24%). Within this sample, 1,096 freshmen consented to release their information from the registrar, 175 declined, and eight did not respond to this question. Across measurement occasions, the most frequent recruitment activity freshmen reported experiencing (see Table 1) was an emailed advertisement from fit@purdue.edu (the current project's email).

Sample sizes for each wave of data collection were influenced by the sampling strategy, in that students could consent and participate in the study at any of the four measurement occasions. For instance, a possible total of 1,037 freshmen were eligible to

participate in Wave 2 (i.e., Wave 1 consents [858] + Wave 2 consents [179]), but 528 freshmen actually answered survey questions at Wave 2 (i.e., 1,037 eligible students at Wave 2 – 509 students who answered 0 survey questions at Wave 2). Thus, calculation of each wave's overall sample size was determined by subtracting the number of students who did not answer any survey questions at that wave from the grand total of students who had consent and were eligible to participate at that wave. Following this logic, the sample sizes for each wave of data collection were as follows: (a) Wave 1 N = 818; (b) Wave 2 N = 528; (c) Wave 3 N = 662; (d) Wave 4 N = 540. Retention rates were also influenced by the sampling strategy of the current study, which resulted in the generation of 15 total possible combinations of participation or retention groups. For example, two students could have completed three waves of data collection but their patterns of participation could have been different: time 1, time 2, and time 3 versus time 2, time 3, and time 4. As can be seen in Table 2, 17% of the sample participated in all four measurement occasions. Summing across participation patterns, a total of 15% of the sample participated in three measurement occasions, 19% participated in two measurement occasions, and 49% participated in one measurement occasion.

Table 1

Breakdown of Recruitment Experiences by Measurement Occasion

	Informed Consent Obtained				
Recruitment Method Experienced	Wave 1 (N = 858)	Wave 2 (N = 179)	Wave 3 (N = 152)	Wave 4 (N = 90)	TOTAL (N = 1279)
FIT information booth during STAR at the PMU	171	25	30	16	242
Email advertisement from fit@purdue.edu	553	108	99	67	827
Advertisement in the Purdue Group X newsletter	146	34	26	14	220
Advertisement on PurdueBoard	14	3	5	1	23
Information from academic advisor	4	2	6	2	14
TOTAL	888	172	166	100	1326

Notes. The total number of students who consented and participated at each wave is reported in parentheses. Students were allowed to select as many methods of recruitment that they experienced; thus, the total number of students that reported their recruitment experiences is larger than the actual number of students who consented and participated across all waves.

Table 2

Breakdown of Retention Groups Across Study

Retention Group	N	Percentage
All Waves (T1 – T4)	213	17%
3 Waves		
T1, T2, T3	49	4%
T1, T3, T4	73	6%
T1, T2, T4	14	1%
T2, T3, T4	48	4%
2 Waves		
T1, T2	69	5%
T1, T3	67	5%
T1, T4	27	2%
T2, T3	32	2%
T2, T4	12	1%
T3, T4	54	4%
1 Wave Only		
T1 Only	306	24%
T2 Only	90	7%
T3 Only	126	10%
T4 Only	99	8%
Grand Total	1279	100%

Demographic characteristics for the current study's sample of 1,279 freshmen are reported in Table 3. Overall, about 55% of the students were female and a majority reported their race was Caucasian/White (84%), 3% identified as Black or African American, 4% identified as Hispanic or Latino, 7% identified as Asian, 1% identified as Native American or Alaskan Native, and 1% identified as Native Hawaiian or Pacific Islander. The majority of freshmen (92%) reported living on-campus, while 6% reported living off-campus and 2% reported living off campus with their parents. On average, freshmen reported their mother (M = 3.74, SD = .99) and father (M = 3.76, SD = 1.09) had a college degree. The mean level of parental payment for educational expenses indicated parents paid for half of freshmen's college education (M = 3.05, SD = 1.43). On average, freshmen reported a moderately high level of relationship quality with their parents (M = 3.57, SD = .75) across the study. Lastly, the sample's mean HSGPA was about an A (M = 3.76, SD = .28), and the sample's average SAT percentile was about 76% (M = 75.63, SD = 18.88) that reflects a composite SAT score of 1730 (range = 600 – 2400). Please see Table 3 for the response scale options for mother's and father's education level, parental payment for college education, relationship quality, HSGPA, and SAT percentile.

The demographic characteristics of the current study's sample (i.e., sex, race, HSPGA, and SAT percentile) are very similar to the entire 2013 incoming freshman class at Purdue (including international students; N = 6,283) with the exception of sex: The current study's sample had a higher percentage of females (55%) than the entire incoming freshman class of 2013 at Purdue (44%; Office of Enrollment Management, 2013). Furthermore, Purdue has 11 different colleges that students are enrolled and one

of these is specific to freshmen: Exploratory Studies. The majority of freshmen in the current study were in the College of Engineering (33%), and the College of Health and Human Sciences (HHS) and the College of Science both had the second largest membership (12% for both colleges). Following, 10% of the sample was in the College of Agriculture, 9% was in Exploratory Studies, 6% was in the College of Liberal Arts, and 5% were in either the School of Management or the College of Pharmacy. Lastly, 2% of the sample was in the College of Education and 1% was in the College of Veterinary Medicine. The distribution of college for the current study also reflected the entire incoming freshmen class of 2013 at Purdue. For instance, 28% of the entire 2013 freshmen class was in the College of Engineering, 11% was in HHS, and 13% was in the college of Science (Office of Enrollment Management, 2013).

Table 3

Time Invariant Demographic Characteristics of Freshmen Students

Variables	*M*	*SD*	Range	α	N
Sex[a]	.55	.50	0 – 1		1276
Race[b]	.16	.36	0 – 1		1272
Housing Status[c]	.08	.27	0 – 1		1262
Mother's Education	3.74	.99	1 – 5		1257
Father's Education	3.76	1.09	1 – 5		1260
Parental Payment	3.05	1.43	1 – 5		1257
Relationship Quality	3.57	.75	1 – 5	.96	1229
HSGPA	3.76	.28	2.7 – 4.0		1271
SAT Percentile	75.63	18.88	3 – 100		992
	Proportions				
Male	.45				
Caucasian	.84				
On-Campus	.92				
Mother's Education					
< High School	.01				
High School or GED	.14				
Some College	.15				
College Degree	.47				
Advanced Degree	.23				
Father's Education					
< High School	.02				
High School/GED	.16				
Some College	.14				
College Degree	.39				
Advanced Degree	.29				
Parental Payment					
None (0%)	.20				
Some (25%)	.17				
Half (50%)	.16				
Most (75%)	.24				
All (100%)	.23				
Relationship Quality					
Not at All	.01				
A Little	.03				
Some	.18				
A Lot	.50				
Very Much	.28				

Table 3 Cont'd.

Time Invariant Demographic Characteristics of Freshmen Students

Variables	Proportions
HSGPA	
B- (2.7)	.01
B (3.0)	.02
B+ (3.3)	.08
A- (3.7)	.25
A/A+ (4.0)	.64
SAT Percentile	
< 20 (< 1230)	.01
20 – 40 (1230 – 1410)	.05
40 – 60 (1410 – 1570)	.14
60 – 80 (1570 – 1780)	.30
80 – 100 (1780 – 2400)	.50

Notes. SAT percentile ranges were selected to succinctly describe the percentile distribution for the sample, and corresponding SAT score ranges are within parentheses. [a] Male = 0. [b] Caucasian = 0. [c] On-Campus = 0. [d]HSGPA = High School Grade Point Average.

Procedures

Students were sent emails from fit@purdue.edu with embedded links to individualized surveys (created with Qualtrics) at four time points: (a) one month into the Fall 2013 semester, (b) two weeks before finals of the Fall semester, (c) one month into the Spring 2014 semester, and (d) two weeks before finals of the Spring 2014 semester. These relatively equally spaced time points were selected to optimize response rates, as it was unlikely that one month into the fall/spring semesters (i.e., Wave 1 and Wave 3) and two weeks prior to finals in the fall/spring semesters (i.e., Wave 2 and Wave 4) students would be consumed with taking exams and would thus be more likely to respond to the surveys. Survey links remained active for three weeks post-distribution to allow students time to respond and to prevent students from participating in any surveys outside of each survey's specific data collection time point. Reminder emails to complete the surveys were sent twice during the assessment weeks. The order of the presentation of the measures included in the surveys was randomly decided at each measurement occasion to control for item response bias and practice effects. The demographics questionnaire was included at each measurement occasion to maximize the chances of obtaining complete demographic information for participants. Please see Appendix B for a paper copy of all measures included in the online survey.

The current study acquired total of $2,400 from awards to assist with participant compensation. All participants who completed at least 75% of the online survey at each measurement occasion were entered into a raffle drawing to win cash prizes. Each participant received a completion score via Qualtrics that was exported as part of the data set for each measurement occasion. Out of the pool of students who met the 75%

completion requirement, 26 were randomly selected to win cash prizes at each measurement occasion (N = 104 students cash prize winners). The cash prizes increased in monetary value across collection points to incentivize retention, where the prize was $5 at Wave 1, $10 at Wave 2, $20 at Wave 3, and $50 at Wave 4. This scheme resulted in a total of $130 distributed at Wave 1, $260 distributed at Wave 2, $520 distributed at Wave 3, $1,300 at Wave 4, and a grand total of $2,210 for participant compensation. If the same student were drawn at each measurement occasion, he/she would win a total of $85; however, no students were drawn more than once. Winning participants were contacted via email to obtain their mailing addresses to send compensation prizes. The remaining $190 in the compensation budget was used to purchase mailing materials (e.g., stamps, envelopes).

All electronic data (including records of informed consent and the contact list provided by Enrollment Services) were password protected and only the principal investigator had access to the data. Students received identification numbers to preserve confidentiality and anonymity. Data from Qualitrics was exported to Excel 2011, and then transformed into a SAS (Version 9.2; SAS, 2008) data file for data management and preliminary data analyses.

Measures

Parental involvement.

Measures of parent involvement included scales that obtained student reports of parent support giving, parent-student contact, and parental academic engagement. Parent support giving assessed how often parents provided six types of support: emotional, practical, socializing, advice, financial, and discussion about daily events (Vaux, 1988;

Fingerman et al., 2009; 2010). The traditional response format for this scale is an eight-point Likert scale: 1 (*less than once a year or not at all),* 2 (*once a year),* 3 (a *few times a year),* 4 (*monthly*), 5 (a *few times a month),* 6 (*weekly*), 7 (a *few times a week),* and 8 (*daily*). Researchers using this scale with young adult samples have reported moderately strong reliability estimates ranging from .87 to .89 (Fingerman et al., 2009; 2010). The current study modified the aforementioned response format to correspond to the time-scale of the present study and thus capture perceptions of recent levels of support giving. The modified response format was a seven-point Likert scale: 1 (*not at all*), 2 (*once every few months*), 3 (*once a month*), 4 (*a few times a month*), 5 (*weekly*), 6 (*a few times a week*), and 7 (*daily*). Based on previous' researchers recommendations for utilization of this measure (e.g., Fingerman et al., 2009; 2010), mean scores were calculated, with higher scores indicating higher levels of parent support giving across the domains assessed. The current study's measure of parent support giving obtained moderately high levels of internal consistency across time points (α = .84 – .85).

Parent-student contact assessed how often parents and students communicated with each other via five modes of communication, including in-person, email, phone, texting, and social media, such as Facebook (Hofer, 2008; Wolf et al., 2009). Responses were scored on the same modified Likert scale discussed above and ranged from 1 (*not at* all) to 7 (*daily*). Total sums were calculated, where higher scores indicated higher levels of parent-student contact frequency. Because this measure reflected an index of contact frequency and not a scale of contact, assessment of internal consistency was not required since engaging in one mode of contact does not necessarily predict engagement in another mode.

Parental academic engagement was assessed with four items from the UCUES survey by Wolf et al. (2009), who derived this construct from factor analyses and reported moderate reliability for this construct ($\alpha = .71$). An example item was "My parents and I discuss what classes I should take," and responses were scored on a Likert scale that ranged from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*). Mean scores were calculated, where higher scores indicated higher levels of parental academic engagement. The current study also obtained moderate levels of internal consistency for parental academic engagement across time points ($\alpha = .69 – .73$).

Academic success.

Academic success was indicated by students' self-reported GPAs and measures of academic self-efficacy and academic persistence. GPA was assessed by asking students to list their courses, the number of hours for each course, and to estimate the letter grade (i.e., A through F) they were currently earning in each course. Estimated letter grades were converted to a corresponding numeric scale (e.g., A+/A = 4.0, B = 3.0, C = 2.0, D = 1.0, F = 0.0). To calculate GPA, the number of course credit hours was multiplied by the estimated grade received in each corresponding course, then a sum of these values was computed, and lastly this sum was divided by the total number of credit hours. Correlation analyses between the registrar data for Fall 2013 and Spring 2014 GPAs (among students who consented to release their information) and the current study's measure of Time 2 (i.e., end of the Fall 2013 semester; $r = .82$, $p < .001$) and Time 4 (i.e., end of the Spring 2014 semester; $r = .84$, $p < .001$) GPAs, respectively, revealed the current study's method for estimating GPA was reliable. Academic self-efficacy was measured with five items from the Academic Efficacy subscale of the Patterns of

Adaptive Learning Scales (Midgley et al., 2000). Items assessed students' beliefs that they have the abilities and tools to be academically successful. An example item was "I'm certain I can master the skills taught in my classes this year," and responses were scored on a Likert scale that ranged from 1 (*Not at All True*) to 5 (*Very True*). Mean scores were calculated, where higher scores indicated higher levels of academic self-efficacy. Researchers utilizing this scale with undergraduates have reported strong Cronbach alphas ranging from .88 to .96 (Hsieh, Sullivan, Sass, & Guerra, 2012; Reeve, 2013). The current study obtained high levels of internal consistency for academic self-efficacy across time points (α = .92 – .94).

Academic persistence was measured with an adapted version of the six-item Institutional and Goal Commitment subscale from the Persistence/Voluntary Dropout Decisions Survey (P/VDD; Pascarella & Terenzini, 1980). French and Oakes (2004) modified this subscale by rewriting items to increase their clarity and make all items positively worded. The current study used French and Oakes' (2004) modified version, and then re-worded items to refer to Purdue University (e.g., "I will most likely register at Purdue next Fall"). Responses were scored on a Likert scaled that ranged from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*), and mean scores were calculated, such that higher scores indicated higher levels of academic persistence. Researchers using this scale with college freshmen samples have reported moderate Cronbach's alphas ranging from .71 to .76 (French & Oakes, 2004; Pascarella & Terenzini, 1980). The current study also obtained moderate levels of internal consistency for academic persistence across time points (α = .71 – .75).

Well-being.

Measures of wellbeing included scales assessing depression and engagement in risky behaviors. The short version of the Center for Epidemiological Studies—Depression Scale (CES-D; Kohout, Berkman, Evans, & Cornoni-Huntley, 1993) was used to assess how often youth felt depressive symptoms (e.g., sadness, restless sleep) over the past week. Students responded to these 11 items via a Likert scale that ranged from 0 (*Rarely or None of the Time [less than 1 day]*) to 3 (*Most or All of the Time [5-7 days]*). Some items were reverse scored so that total summed scores represented higher levels of depressive symptoms. Previous researchers have reported adequate internal consistency (α range = .76 – .85) for this shortened version of the CES-D with college samples (Kohout et al., 1993; Wei, Russell, & Zakalik, 2005). The current study obtained moderate levels of internal consistency for CESD across time points (α = .84 – 87).

Six items based on questions from the Monitoring the Future Study (Bachman, Johnston, O'Malley, & Schulenberg, 1996) and Add Health (Udry, 1998) were used to measure how often youth engaged in risky behaviors over the past month. Two items assessed each of the following risky behavior domains: Risky sexual behaviors (e.g., "Had sexual intercourse with more than one partner"), risky drinking behaviors (e.g., "Engaged in binge drinking [4-5 drinks on one occasion]", and risky drug use behaviors (e.g., "Used marijuana"). Responses were scored on a Likert scale that ranged from 0 (*None*) to 6 (*Almost Every Day*). A total sum score was calculated, where higher scores indicated higher levels of engaging in risky behaviors. Researchers utilizing risky behavior items from the Monitoring the Future Study and Add Health have reported

moderately high Cronbach's alphas, such as .90 for the risky drinking items (Nelson et al., 2011). The current study obtained moderate levels of internal consistency for the overall risky behaviors measure across time points (α = .63 – .85).

Individuation.

Measures of individuation included youths' reports of their feelings of emotional and functional independence from their parents (Hoffman, 1984) and their perceptions of the extent to which they have achieved the criteria integral for the adulthood transition (Arnett, 2000; 2004). Emotional independence reflects youths' "freedom from an excessive need for approval, closeness, togetherness, and emotional support" (p. 171) from parents, and an example from the 16-item scale was "I sometimes call home just to hear my parents' voices." Functional independence encompasses the ability to organize and carry out practical and personal affairs without parents' assistance, and a sample item from the 13-item scale was "I ask for my parents' advice when I am planning my vacation time." Emotional and functional items were rated on the same five-point Likert scale that ranged from 1 (*Not at All True of Me*) to 5 (*Very True of Me*). All items were reverse scored, such that higher mean scores indicated higher levels of emotional and functional independence. Previous researchers have reported adequate levels of internal consistency (α range = .69 – 92) for these two scales (Hoffman, 1984; Kenyon & Koerner, 2009). The current study obtained high levels of internal consistency across time points for both emotional (α = .92 – .93) and functional (α = .92) independence.

Aligning with the theory of emerging adulthood (Arnett 2000; 2004), items assessing youths' perceptions of their attainment of the primary criteria for the adulthood transition were also included as a measure of individuation. Students rated their

perception of the extent to which they attained of the following criteria on a scale from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*): Accepting responsibility for one's self, engaging in independent decision-making, and assuming financial independence. Mean scores were calculated, where higher scores indicated higher levels of individuation. The traditional response format for rating achievement of these criteria is a three-point Likert scale: 1 (*No*), 2 (*In Some Respects Yes and in Some Respects No*), and 3 (*Yes*). However, the limited range of this response scale was not appropriate for studying the development of individuation because it does not facilitate the ability to capture the gradual process of individuation, especially over a short time scale. For example, this scale assumes that all emerging adults who report a score of 2.0 are exactly the same, when in fact some individuals may more closely align to a score of a 1.5 or a score of a 2.5, which reflect fundamentally different levels of individuation. The current study thus chose to increase the range of this response scale to enhance assessing variability in the development of individuation over the course of one year. Researchers (Arnett, 2003; Kins & Beyers, 2010) utilizing the traditional response format have reported low to moderately low reliability estimates (α range = .33 – .53) on a subscale entitled "independence" that has included the three criteria listed above. The current study's measure of the attainment of adult criteria obtained moderate levels of internal consistency across time points (α = .58 – .65).

Control variables.

Student sex (Male = 0; Female = 1), race (Caucasian = 0; Minority = 1), and housing status (On-campus = 0; Off-campus = 1), along with mother's and father's highest level of education and amount of parental financial support for college education

were the six main demographic covariates. Models estimating academic success outcomes included two measures of previous academic achievement, specifically HSGPA and SAT percentile, and thus included a total of eight covariates. All control variables were mean centered for analyses. ACT percentile was not used as a covariate for models estimating academic success outcomes because it had the most amount of missingness (N = 429 missing reports) compared to HSGPA (N = 8 missing reports) and SAT (N = 287 missing reports). Across all demographic variables, a student's first self-report of his/her demographic information upon entry into the study was used as the primary covariate data. In cases where missingness occurred upon entry into the study, students' self-report data from subsequent waves of participation were used to populate the covariate data. If missingness occurred across all waves, then available demographic data from the registrar (i.e., sex, race) was used to populate the covariate data (among students who consented to release their demographic information from the registrar). The only exceptions to this procedure involved HSGPA and SAT, in which the registrar data was used as the primary covariate data because these variables are objective achievement measures for which the registrar must obtain accurate reports. Furthermore, the registrar transformed the HSGPA to have a ceiling of 4.0 and thus eliminated the occurrence of weighted HSGPAs. In cases where self-report of HSGPA and SAT were used to populate this covariate data, any HSGPAs above 4.0 were transformed to be 4.0, and any SAT scores outside the possible range for a composite score (600 – 2400) were coded as missing. Lastly, students' composite SAT scores were transformed to percentile scores that reflected the National Norms for the 2013 college-bound seniors (The College Board,

2013) to facilitate interpretation of this standardized achievement measure in analyses and results.

Considering a large proportion of freshmen reported their race as Caucasian/White (84%), the other five race groups were combined into a "Minority" race category (16%) to preserve parsimony and reduce multiple comparisons. Similarly, student's housing status was modified to be a dichotomous categorical variable in which the "off-campus with parents" and "off campus" groups were combined into an "Off-campus" category composed of 8% of the sample, and the other 92% of the sample represented the "On-campus" category. While mother's and father's highest level of education were positively correlated ($r = .52$, $p < .001$), they were not collapsed into a mean parent education level for two reasons: (a) The effect size for the correlation was not strong enough to indicate they were overlapping constructs, and (b) Mother's and father's education level may have differing associations with the study variables. The item "How much are your parents paying for your college education" was used to assess the amount of parental financial support for college education (1 = 0% [*None*] to 5 = 100% [*All*]). Since mother's and father's education level and parental payment were assessed at each of the four measurement occasions, a grand mean was calculated for each variable to create time invariant measures of these covariates.

The emotional quality of the parent-emerging adult relationship was assessed with an eight-item scale developed by Blyth, Hill, and Thiel (1982). Students reported on the level of intimacy and acceptance in their parental relationships on a scale ranging from 1 (*Not at All*) to 5 (*Very Much*). An example item was "How much do your parents understand what you're really like?" Average scores were calculated, with higher scores

indicating higher levels of emotional quality. Relationship quality was measured at each time point to provide for the ability to include it as a time-varying covariate (i.e., creating deviation scores from the mean of relationship quality at each wave). However, due to a high amount of missingness in this variable across each measurement occasion, the inclusion of relationship quality as a time-varying covariate was not possible. Thus, a time invariant measure of relationship quality was created by taking the grand mean of the four measures of relationship quality (see Table 2). Researchers utilizing this scale with emerging adult samples have reported modest reliability estimates ranging from .73 to .89 (Shanahan et al., 2007b; Whiteman et al., 2011), and the current study's internal consistency for this measure was strong ($\alpha = .96$).

Analytic Plan

To examine the trajectories (linear and nonlinear) of parent involvement factors, student outcomes, and associations between changes in involvement and changes in student outcomes, latent growth models (LGM) were estimated in Mplus Version 6 (Muthén & Muthén, 2010). LGM is the covariance structural equation model (SEM) representation of the multilevel model (MLM) for change, and as such is able to account for the nested nature of the current study's data (i.e., time within individuals) by fitting a growth model with fixed (i.e., average level) and random (i.e., variability around the average) effects and estimating correctly adjusted standard errors. In other words, both frameworks are more advanced, flexible, and powerful methodological tools that estimate growth curve models to test hypotheses about within-person change over time (i.e., intraindividual change) and between-person differences in change over time (i.e., interindividual change)(Bollen, 2014; Ram & Grimm, 2007; Raudenbush & Bryk, 2002;

Singer & Willett, 2003). LGM with constrained error variances over time and MLM fit the exact same statistical model, obtain estimates for parameter coefficients (e.g., intercept and slope) that are either identical or very similar, and are robust to missing data because they do not require complete data for participants at every time point to estimate reliable parameter coefficients (Chou, Bentler, & Pentz, 1998; Ferrer, Hamagami, & McArdle, 2004; Willett, 2004).

LGM in Mplus was chosen because of some distinct advantages that better fit the current study's analytical needs: (a) the ability to handle item missing data on both the outcomes and the predictors via utilization of full-information maximum likelihood (FIML) estimation; (b) the ability to assess model fit via global fit statistics (e.g., Confirmatory Fit Index [CFI]) to analytically evaluate and determine the best-fitting growth model; (c) the ability to model and analyze changes in multiple variables, and relationships among multiple variables, simultaneously (Chou et al., 1998; Diallo, Morin, & Parker, 2014; Ferrer et al., 2004; Willett, 2004).

LGM takes a multivariate approach to growth modeling, and as such the data set is in a wide format so that each row corresponds to a single participant and each column corresponds to a variable's occasion of measurement (versus MLM's univariate approach in which the data set is in a long format whereby each row depicts a participant's measurements at each time point, so each participant has multiple rows of data). The wide format facilitates LGM's estimation of the sample covariance matrix that is needed to compare to the model predicted covariance matrix to determine if the hypothesized model fits the data (Willett, 2004). Within this data structure, the values associated with the passage of time (intraindividual change) are programmed directly into the LGM, and

are thus specific, fixed parameters in the growth model that correspond to a particular occasion of an outcome variable's measurement so that the growth function can be estimated. Given that the current study aimed to test linear and quadratic growth models to best characterize the growth models of parent involvement and student outcomes, models were estimated that included a latent intercept (*I*), latent linear slope (*S*), and latent quadratic slope (*Q*) that influenced the repeated, observed measures of the outcome variables via fixed factor loadings that represented the passage of time (Figure 1).

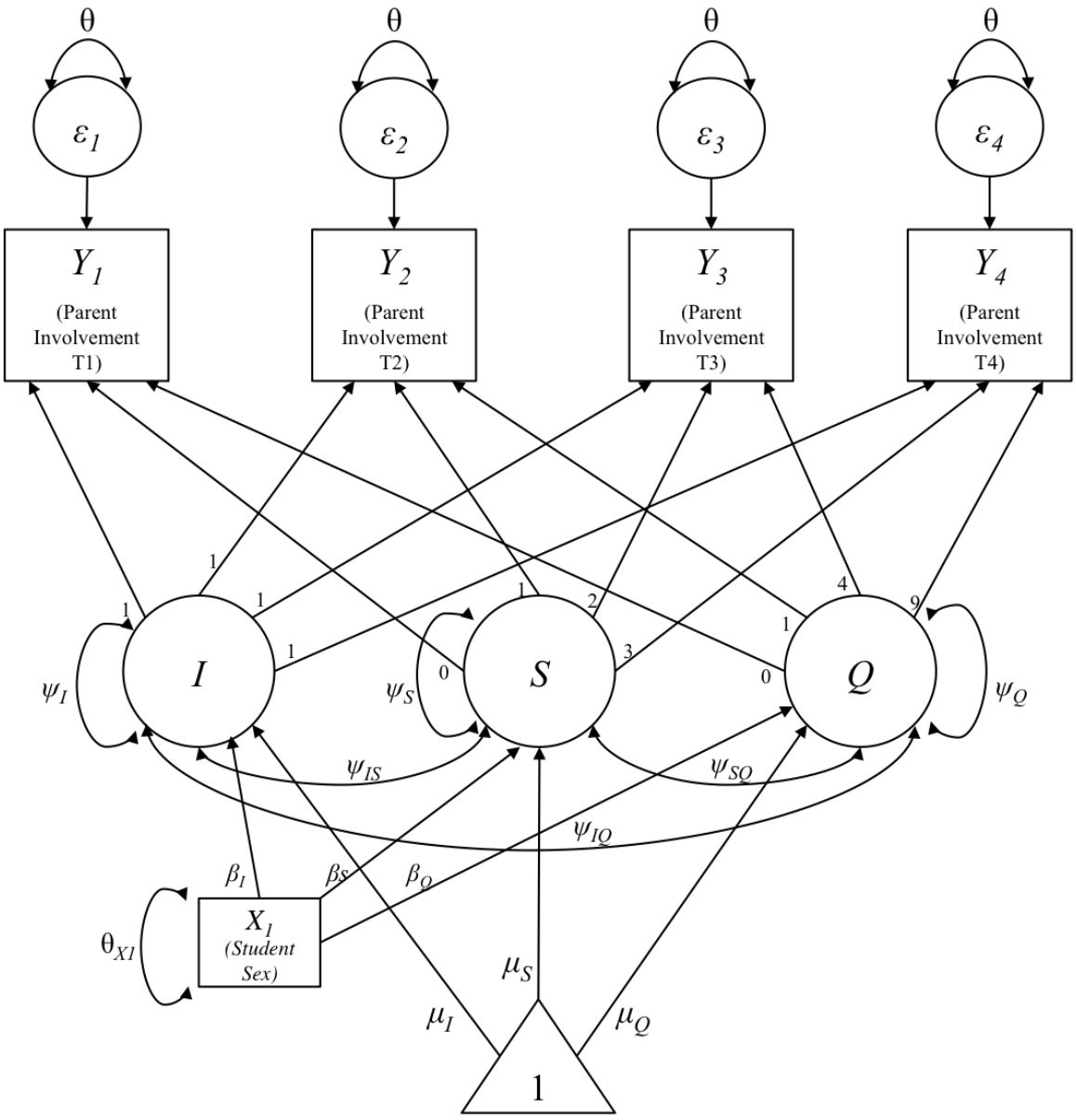

Figure 1. Example SEM model of a quadratic LGM for the current study, including a time-invariant covariate.

As depicted in Figure 1, the intercept latent variable was identified by constant loadings of 1.0, the linear slope latent variable was identified by fixing factor loadings to 0, 1, 2, and 3 to reflect the four equally spaced measurement occasions in the current study, and the quadratic slope latent variable was identified by fixing factor loadings to 0, 1, 4, and 9 to reflect the squares of the linear slope factor loadings. Time was fixed to 0 at the first measurement occasion so that the intercept could be estimated at the beginning of the study (i.e., one month into the fall semester). The means of the latent variables are akin to the fixed effects, and represent the sample's mean or average values on each aspect of intraindividual change (i.e., intercept = μ_I, linear slope = μ_S, and quadratic slope = μ_Q in Figure 1). Detecting significant fixed effects would indicate that on average, the sample's intercept, linear change, and quadratic change are all different from zero. In other words, there would be a growth curve for the sample that captures an average starting value, average positive or negative linear slope, and average acceleration or deceleration that characterizes the shape of the growth curve over time.

Individual variation around the intercept, linear slope, and quadratic slope latent variables is represented by the residual variance factors ψ_I, ψ_S, and ψ_Q, respectively, in Figure 1. These factors are akin to the random effects, and represent interindividual or between-persons differences around the sample's average intercept, linear slope, and quadratic slope. Detecting significant variation in these factors indicates that individuals in the sample have higher or lower initial levels than the mean intercept, have flatter or steeper slopes than the mean linear slope, and have greater or less acceleration/deceleration in the quadratic slope than the mean quadratic slope. Significant random effects are integral to proceed with estimating more complex growth

curve models that introduce covariates that may explain the observed variability around the sample's mean intercept, linear slope, and quadratic slope. The current study investigated the influence of time-invariant demographic covariates (e.g., student sex, race, and housing status) on the growth curve components. Detecting significant associations between covariates and the growth curve components would indicate that, for example, there was a significant difference between male and female college freshmen in their starting level of parent involvement. An example of a time-invariant covariate in Figure 1 is represented by the observed independent variable X1 and the arrow from this variable to the latent factors depicts the linear regressions of the growth factors on the time-invariant covariate.

Covariances between the residual variance factors of the growth components are also estimated in the LGM (ψ_{IS}, ψ_{IQ}, and ψ_{SQ} in Figure 1), and indicate how interindividual differences in each factor of intraindividual change are associated with one another (e.g., a positive ψ_{IS} indicates that individuals with higher intercepts are likely to have steeper linear slopes). Lastly, the ε_1 through ε_4 in Figure 1 represent time-specific residuals, or error terms, for each measurement occasion of the observed outcome variables. The residual variances of each outcome variable in the current study for which a growth model was estimated (i.e., parent involvement and student outcomes) were constrained to be equal over the four measurement occasions (In Figure 1, the four Θ represent the variances of the time-specific residuals of the repeated observed outcome variables, $Y_1 - Y_4$). The current study implied this constraint to abide by the MLM model assumption of homoscedasticity (i.e., time-dependent residuals are assumed to have a mean of 0 and the same variance across time).

The quadratic latent growth model depicted in Figure 1, sans the covariate X_1, can be expressed by the following equation for Y, the vector of repeated, observed dependent variables: $Y = \Lambda\eta + \varepsilon$. In this equation, Λ ("lambda") is the vector of factor loadings or coefficients that reflect the passage of equally spaced time points and connects the latent growth factors to the observed repeated dependent variables, η ("eta") is the vector of latent growth factors, and ε ("epsilon") is the vector of residuals or error associated with the observed repeated dependent variables. This equation corresponds to

$$\begin{bmatrix} Y_1 \\ Y_2 \\ Y_3 \\ Y_4 \end{bmatrix} = \begin{bmatrix} 1 & 0 & 0 \\ 1 & 1 & 1 \\ 1 & 2 & 4 \\ 1 & 3 & 9 \end{bmatrix} \begin{bmatrix} I \\ S \\ Q \end{bmatrix} + \begin{bmatrix} \varepsilon_1 \\ \varepsilon_2 \\ \varepsilon_3 \\ \varepsilon_4 \end{bmatrix}.$$

Growth models for research question one.

Research question one investigated if parental involvement, specifically parental support giving, parent-student contact, and parental academic engagement changed across the first year in college after controlling for key demographic background factors (i.e., student's sex, race, and housing status, parent's education level, and parental financial support for college education). To test research question one, the current study first estimated a model for each involvement construct that investigated the significance of (a) the fixed effects for the intercept, linear slope, and quadratic slope latent variables and (b) the random effects for the three aforementioned growth components. Significant fixed effects for the growth components would indicate that, for example, the sample's starting level of parent support, linear change in parent support, and quadratic change in parent support were significantly different from zero. Significant variation in any of the growth components was required to proceed with examining the time-invariant

demographic control variables as predictors of the variation in the mean intercept, linear slope, and quadratic slope. Overall model fit was assessed via the obtained chi-square (χ^2), Confirmatory Fit Index (CFI), Tucker Lewis Index (TLI), and root mean square error of approximation (RMSEA). CFI and TLI values above .95 and RMSEA values below .05 are generally considered to indicate good fit (Bentler & Bonett, 1980; Browne & Cudeck, 1993).

If significant random effects were found in these initial models, the current study then estimated a second model for each parent involvement construct that included the six key demographic control variables listed above as predictors of the growth components. These models thus investigated if (a) control variables explained any variance in the intercept, linear slope, and quadratic slope of each parent involvement construct, and (b) if the growth model remained significant while controlling for the background factors. A significant negative linear slope coefficient was considered to support hypotheses 1 through 3, and indicated that parent support, contact, and academic engagement linearly declined over the freshman year while controlling for background factors. Model fit statistics were compared between the initial and second models described above to determine the best fitting model. Given that these models were nested, use of the χ^2 difference test to compare models was used to determine the best-fitting model along with the fit statistics (i.e., higher CFI and TLI values, and lower RMSEA values) (Bollen, 2014; Browne & Cudeck, 1993).

Growth models for research question two.

To test the second research question, which investigated if student outcomes (i.e., academic success, well-being, and individuation) changed across the first year in college

after controlling for key demographic background factors, the current study followed the exact steps for model estimation explained above. The only difference in these models was that the dependent variables changed to the eight student outcomes that were modeled separately. Specifically, the outcome variables for academic success were GPA, academic self-efficacy, and academic persistence, the outcome variables for well-being were depression and engaging in risky behaviors, and the outcome variables for individuation were emotional and functional independence and attainment of adult status criteria.

A significant positive linear slope coefficient was considered to support hypothesis 4, and indicated that GPA (hypothesis 4.1), academic self-efficacy (hypothesis 4.2), and academic persistence (hypothesis 4.3) increased across the first year in college while controlling for background factors. Models examining change in academic outcomes also controlled for students' previous levels of achievement (e.g., high school GPA and SAT percentile). A significant negative linear slope for depressive symptoms was considered to support hypothesis 5.1, and a significant positive linear slope for engagement in risky behaviors was considered to support hypothesis 5.2. A significant positive linear slope coefficient was considered to support hypothesis 6, and indicated that emotional and functional autonomy (hypothesis 6.1) and attainment of adult status criteria (hypothesis 6.2) increased across the first year in college while controlling for background factors.

Growth models for research question three.

The third research question of the current study investigated if changes in parental involvement were associated with changes in student outcomes across freshman year

after controlling for key demographic background factors. To test this question, the slope of each academic success indicator (i.e., GPA, academic self-efficacy, and academic persistence), well-being indicator (depression, engagement in risky behaviors), and individuation indicator (i.e., emotional autonomy, functional autonomy, and attainment of adult status criteria) was regressed onto the slope of each parent involvement indicator (i.e., support giving, contact, and academic engagement) in separate models. A significant association between the linear slopes of parent involvement and student outcomes was considered evidence for hypotheses 7 through 9. For instance, a significant positive association between the linear slope of parent support and student's academic outcomes was considered to support hypothesis 7, and indicated that for each one-unit increase in parent support, there was a steeper increase in student's GPA, academic self-efficacy, and academic persistence across the freshman year.

Across these models, the slope of each student outcome was also regressed onto the intercept of each parent involvement indicator to assess if the starting levels of parent involvement were related to changes in student outcomes. In addition, the intercept of each student outcome was regressed onto the intercept of each parent involvement indicator in these models to determine if the starting levels of parent involvement were related to the starting levels of student outcomes. Across these models, the best-fitting growth model that was identified for the parent involvement indicators and student outcome indicators was estimated. Thus, these models were considered joint growth curve models as they simultaneously estimated the growth curves for each parent involvement and student outcome indicator. Student and parent background characteristics were included as covariates in the growth model for each student outcome

indicator. Prior levels of academic achievement (i.e., HSGPA and SAT percentile) were also included as covariates in the academic success models. Model fit statistics (i.e., obtained χ^2, CFI, TLI, and RMSEA) were also examined to assess the quality of the joint models.

RESULTS

Descriptive Statistics

Descriptive statistics and correlations for all study variables at each wave of data collection are presented in Tables 4 through 7. Parental support giving, parent-student contact, and parental academic engagement were all significantly positively correlated with one another across all four time points, indicating these three variables collectively represented parental involvement in the lives of freshmen college students well. Key bivariate relationships between parent involvement and student outcomes revealed the following: (a) Parental academic engagement was significantly and positively correlated with students' reports of academic self-efficacy and academic persistence across all four waves of data; (b) There were few correlations between parent involvement variables and well-being outcomes across measurement occasions, with the exception of a significant and negative association between parental academic engagement and student's depression at waves 1 and 4; (c) The only occurrence of a significant correlation involving risky behaviors occurred at wave 4 and revealed a positive association between parent-student contact and engagement in risky behaviors; (d) All three parent involvement variables had significant and strong negative associations with emotional and functional independence across all four waves of data.

Univariate statistics for nearly all study variables revealed normal distributions and moderate to high levels of internal consistency at each measurement occasion (see Tables 3 through 6). Exceptions to this trend included academic persistence, which had a slightly leptokurtic (i.e., positive kurtosis) distribution at each wave, and risky behaviors, which had an extremely positively skewed and leptokurtic distribution at each wave. Considering the mean of academic persistence at each wave was toward the upper limit of the scale, the slightly leptokurtic distribution indicated that most freshmen reported higher scores on academic persistence across time points. Similarly, the distribution of scores for engagement in risky behaviors revealed that the majority of students (i.e., leptokurtic) reported very low levels (i.e., positively skewed) of risky behaviors across time points. Considering the high level of skewness and kurtosis of risky behaviors, the normality of the residuals for each measure of risky behaviors was assessed. Analyses revealed that the residuals met the assumption of a normal distribution, and as such the growth curve models of risky behaviors were estimated without performing transformations on these variables. The only other incidence of a non-normal distribution was GPA at wave 1, in which the distribution was leptokurtic, indicating most freshmen estimated their GPA one month into the fall semester averaged an "A."

Table 4

Wave 1 Descriptive Statistics (N = 818)

Variables	1	2	3	4	5	6	7	8	9	10	11
1. Parental Support Giving	–										
2. Parent-Student Contact	.59***	–									
3. Parental Academic Engagement	.50***	.39***	–								
4. GPA	-.04	-.05	.06	–							
5. Academic Self-Efficacy	.05	.06	.15***	.45***	–						
6. Academic Persistence	.03	.02	.13***	.16***	.30***	–					
7. Depression	-.08*	-.04	-.13***	-.14***	-.28***	-.35***	–				
8. Risky Behaviors	-.03	.04	-.01	-.10*	-.08*	-.06	.18***	–			
9. Emotional Independence	-.55***	-.44***	-.43***	.06	-.01	.01	.02	.01	–		
10. Functional Independence	-.56***	-.42***	-.52***	-.01	-.10**	-.06	.08*	.04	.72***	–	
11. Attaining Adult Criteria	-.06	.00	-.01	-.00	.21***	.21***	-.16***	.04	-.04	.04	–
N	805	805	800	679	764	762	757	757	754	749	756
M	4.24	19.12	3.81	3.37	4.07	4.61	7.98	.94	3.60	3.34	4.10
SD	1.31	4.55	.76	.50	.79	.47	5.46	2.26	.84	.90	.72
Observed Range	1 – 7	5 – 35	1 – 5	.24 – 4.0	1 – 5	2.17 – 5	0 – 30	0 – 36	1 – 5	1 – 5	1 – 5
Possible Range	1 – 7	5 – 35	1 – 5	0 – 4.0	1 – 5	1 – 5	0 – 33	0 – 36	1 – 5	1 – 5	1 – 5
Skewness	-.08	.28	-.96	-1.75	-1.03	-1.56	.96	6.65	-.58	-.10	-.61
Kurtosis	-.49	.41	1.31	5.95	1.15	2.98	.86	82.33	-.27	-.73	.44
Shapiro-Wilk (W)	.99	.99	.94	.88	.91	.81	.93	.45	.96	.98	.92
α	.85	–	.73	–	.92	.71	.84	.71	.93	.92	.65

Notes. Acceptable skewness and kurtosis values are generally considered to be ± 2.0, and W-statistics ≥.90 are generally considered to represent relatively normal distributions (Tabachnick & Fidell, 2013). Cronbach's alpha (α) values ≥ 0.90 are considered to represent excellent levels of internal consistency, α values from .70 and .90 are considered good levels of internal consistency, α values from .60 and .70 are considered adequate levels of internal consistency, and α values below .50 are considered to represent low levels of internal consistency (Cronbach, 1990).
*$p < .05$, **$p < .01$, ***$p < .001$.

Table 5

Wave 2 Descriptive Statistics (N = 528)

Variables	1	2	3	4	5	6	7	8	9	10	11
1. Parental Support Giving	–										
2. Parent-Student Contact	.58***	–									
3. Parental Academic Engagement	.51***	.39***	–								
4. GPA	.02	.01	.12**	–							
5. Academic Self-Efficacy	.09	.08	.15***	.47***	–						
6. Academic Persistence	.07	.04	.12**	.17***	.35***	–					
7. Depression	.00	-.03	-.05	-.20***	-.30***	-.39***	–				
8. Risky Behaviors	.02	-.05	-.02	-.10*	-.11*	-.18***	.21***	–			
9. Emotional Independence	-.63***	-.49***	-.46***	-.01	-.05	-.04	-.05	.03	–		
10. Functional Independence	-.66***	-.46***	-.57***	-.07	-.07	-.13**	.03	.06	.71***	–	
11. Attaining Adult Criteria	.00	.04	.02	-.03	.22***	.25***	-.15***	-.11*	-.12**	.02	–
N	486	496	492	467	492	491	491	483	497	487	491
M	3.68	18.38	3.71	3.39	4.22	4.62	7.78	1.05	3.46	3.22	4.14
SD	1.26	4.41	.78	.48	.74	.48	5.79	2.80	.85	.93	.69
Observed Range	1 – 7	5 – 31.25	1 – 5	1.68 – 4.0	1.40 – 5	2.50 – 5	0 – 28	0 – 36	1 – 5	1 – 5	1.33 – 5
Possible Range	1 – 7	5 – 35	1 – 5	0 – 4.0	1 – 5	1 – 5	0 – 33	0 – 36	1 – 5	1 – 5	1 – 5
Skewness	.29	.16	-.69	-.97	-.95	-1.69	1.05	6.62	-.48	-.13	-.45
Kurtosis	-.11	-.02	.66	.61	.48	2.99	.81	63.33	-.25	-.64	-.40
Shapiro-Wilk (W)	.99	.99	.96	.92	.89	.78	.92	.40	.98	.98	.92
α	.85	–	.73	–	.93	.72	.86	.82	.93	.92	.63

Notes. Acceptable skewness and kurtosis values are generally considered to be ± 2.0, and W-statistics ≥.90 are generally considered to represent relatively normal distributions (Tabachnick & Fidell, 2013). Cronbach's alpha (α) values ≥ 0.90 are considered to represent excellent levels of internal consistency, α values from .70 and .90 are considered good levels of internal consistency, α values from .60 and .70 are considered adequate levels of internal consistency, and α values below .50 are considered to represent low levels of internal consistency (Cronbach, 1990).
*$p < .05$, **$p < .01$, ***$p < .001$.

Table 6

Wave 3 Descriptive Statistics (N = 662)

Variables	1	2	3	4	5	6	7	8	9	10	11
1. Parental Support Giving	–										
2. Parent-Student Contact	.67***	–									
3. Parental Academic Engagement	.48***	.41***	–								
4. GPA	.01	.02	.05	–							
5. Academic Self-Efficacy	.00	.04	.12**	.49***	–						
6. Academic Persistence	.11**	.11**	.19***	.14***	.30***	–					
7. Depression	-.03	-.02	-.05	-.29***	-.29***	-.25***	–				
8. Risky Behaviors	-.04	-.05	.02	-.10*	-.14***	-.11**	.07	–			
9. Emotional Independence	-.57***	-.51***	-.40***	.03	.02	-.15***	-.00	.11*	–		
10. Functional Independence	-.62***	-.54***	-.52***	-.07	-.08	-.19***	.03	.05	.70***	–	
11. Attaining Adult Criteria	-.03	.04	-.04	.02	.17***	.25***	-.10*	-.06	-.06	.06	–
N	655	656	593	556	593	593	654	592	639	625	634
M	3.92	18.07	3.59	3.43	3.99	4.61	7.85	1.10	3.62	3.28	3.96
SD	1.20	4.51	.76	.47	.85	.49	5.68	2.21	.80	.88	.69
Observed Range	1 – 7	5 – 35	1 – 5	1.0 – 4.0	1 – 5	1 – 5	0 – 30	0 – 21	1 – 5	1 – 5	1 – 5
Possible Range	1 – 7	5 – 35	1 – 5	0 – 4.0	1 – 5	1 – 5	0 – 33	0 – 36	1 – 5	1 – 5	1 – 5
Skewness	.15	.20	-.60	-1.17	-.86	-1.92	.93	3.39	-.53	-.18	-.59
Kurtosis	-.13	.19	.64	1.94	.31	6.02	.64	17.39	-.20	-.50	1.41
Shapiro-Wilk (W)	.99	.99	.97	.91	.92	.78	.93	.56	.97	.99	.93
α	.84	–	.69	–	.94	.74	.86	.63	.92	.92	.63

Notes. Acceptable skewness and kurtosis values are generally considered to be ± 2.0, and W-statistics ≥.90 are generally considered to represent relatively normal distributions (Tabachnick & Fidell, 2013). Cronbach's alpha (α) values ≥ 0.90 are considered to represent excellent levels of internal consistency, α values from .70 and .90 are considered good levels of internal consistency, α values from .60 and .70 are considered adequate levels of internal consistency, and α values below .50 are considered to represent low levels of internal consistency (Cronbach, 1990).
*$p < .05$, **$p < .01$, ***$p < .001$.

Table 7

Wave 4 Descriptive Statistics (N = 540)

Variables	1	2	3	4	5	6	7	8	9	10	11
1. Parental Support Giving	–										
2. Parent-Student Contact	.56***	–									
3. Parental Academic Engagement	.40***	.28***	–								
4. GPA	-.01	.03	.06	–							
5. Academic Self-Efficacy	.01	-.05	.17***	.52***	–						
6. Academic Persistence	.07	.06	.20***	.20***	.27***	–					
7. Depression	-.04	.03	-.17***	-.22***	-.38***	-.34***	–				
8. Risky Behaviors	.07	.09*	-.06	-.12*	-.16***	-.12**	.21***	–			
9. Emotional Independence	-.60***	-.49***	-.34***	-.03	-.05	-.10*	.03	-.07	–		
10. Functional Independence	-.58***	-.48***	-.40***	-.02	-.08	-.18***	.01	-.01	.73***	–	
11. Attaining Adult Criteria	-.06	-.03	.01	.00	.09*	.19***	-.05	-.03	.00	.09*	–
N	521	486	533	462	536	490	485	492	510	485	486
M	3.93	18.18	3.71	3.32	3.91	4.59	7.82	1.78	3.52	3.26	4.12
SD	1.20	4.32	.75	.50	.88	.52	5.88	3.80	.81	.87	.66
Observed Range	1.17 – 7	6 – 35	1 – 5	.80 – 4.0	1 – 5	2 – 5	0 – 29	0 – 36	1 – 5	1 – 5	2 – 5
Possible Range	1 – 7	5 – 35	1 – 5	0 – 4.0	1 – 5	1 – 5	0 – 33	0 – 36	1 – 5	1 – 5	1 – 5
Skewness	.21	.20	-.75	-.95	-.73	-1.72	1.02	4.24	-.46	-.20	-.26
Kurtosis	-.12	.34	.76	1.33	.07	3.53	.89	24.94	-.20	-.60	-.75
Shapiro-Wilk (W)	.99	.99	.96	.94	.93	.79	.92	.52	.98	.99	.93
α	.84	–	.71	–	.94	.75	.87	.85	.93	.92	.58

Notes. Acceptable skewness and kurtosis values are generally considered to be ± 2.0, and W-statistics ≥.90 are generally considered to represent relatively normal distributions (Tabachnick & Fidell, 2013). Cronbach's alpha (α) values ≥ 0.90 are considered to represent excellent levels of internal consistency, α values from .70 and .90 are considered good levels of internal consistency, α values from .60 and .70 are considered adequate levels of internal consistency, and α values below .50 are considered to represent low levels of internal consistency (Cronbach, 1990).
*p < .05, **p < .01, ***p < .001.

Changes in Parental Involvement

Parental support giving.

A nonlinear growth model was chosen as the best-fitting growth model for parental support giving. The fixed effect for the intercept was 4.19 ($p < .001$), meaning that the average level of parental support freshmen reported receiving at the beginning of the fall semester (wave one of data collection) was "a few times a month." On average, there was a linear decline in support over time ($\gamma = -.40$, $p < .001$), indicating freshmen reported a .40 decrease in parental support about every 2.5 months across the first year in college. However, this decline was steepest earlier in the year and slowed down after that as indicated by a statistically significant, positive quadratic term ($\gamma = .11$, $p < .001$) (Figure 1). There were inter-individual differences in the initial level (*SD* of intercept = 1.11, $p < .001$) and rate of change in support giving (*SD* of slope = .20, $p < .001$); however, there were not inter-individual differences in the quadratic effect so the quadratic random effect was removed from the model. According to global model fit indices, the curvilinear growth model was an adequate representation of the change in parental support giving across the freshman year, χ^2 (7, 1237) = 111.49, $p < .001$, RMSEA = .11, CFI = .88, TLI = .86.

Next, covariates were introduced into the curvilinear growth model to assess if student and parent background characteristics predicted individual differences in the intercept and slope of support giving. Student sex, housing status, parental payment of college educational expenses, and parent-emerging adult relationship quality predicted inter-individual differences in the initial level of parental support giving (Table 8). Female students and freshmen that lived off-campus reported higher levels of parental

support giving at the beginning of the fall semester. Higher levels of parental payment for educational expenses and higher levels of relationship quality were also related to higher levels of parental support giving at the first measurement occasion. None of the covariates interacted with the slope, meaning that the rate of change in parental support giving was the same across the student and parent background characteristics. Results also revealed the curvilinear growth model remained significant while controlling for background characteristics, indicating the sample's average growth curve for parental support giving was characterized by a moderate initial level of support ($\gamma = 4.17$, $p < .001$) and a linear decline ($\gamma = -.38$, $p < .001$) that slowed ($\gamma = .11$, $p < .001$) towards the end of the freshman year. This linear decline was slight, as mean estimates for parental support giving did not fall below "once a month" (3.0). Variance estimates for the intercept and slope remained significant (Table 8). Covariates explained about half of the individual differences in the starting level of freshmen's reports of parental support giving, as indicted by the decline in the intercept residual variance from the baseline curvilinear growth model (1.24 - .62). Covariates did not explain inter-individual differences in the slope; however, considering there were no significant interactions between the covariates and the slope, this was expected. According to global fit indices, the curvilinear growth model with covariates was a good representation of the change in parental support giving across the freshman year, χ^2 (28, 1279) = 139.59, $p < .001$, RMSEA = .06, CFI = .93, TLI = .91, which provides support for Hypothesis 1.

Parent-student contact.

A nonlinear growth model was chosen as the best-fitting growth model for parent-student contact. The fixed effect for the intercept was 19.04 ($p < .001$), meaning that the

average level of communication freshmen reported having with their parents at the beginning of the fall semester (wave one of data collection) was "a few times a month." On average, there was a linear decline in contact over time (γ = -.72, p < .001), indicating freshmen reported a .72 decrease in communication frequency with their parents about every 2.5 months across the first year in college. However, this decline was steepest earlier in the year and slowed down after that as indicated by a statistically significant, positive quadratic term (γ = .14, p < .01) (Figure 1). There were inter-individual differences in the initial level (*SD* of intercept = 3.97, $p < .001$) and rate of change in contact (*SD* of slope = .73, $p < .001$); however, there were not inter-individual differences in the quadratic effect so the quadratic random effect was removed from the model. According to global model fit indices, the curvilinear growth model was a good representation of the change in parent-student contact across the freshman year, χ^2 (7, 1230) = 29.15, $p < .001$, RMSEA = .05, CFI = .98, TLI = .98.

Next, covariates were introduced into the curvilinear growth model to assess if student and parent background characteristics predicted individual differences in the intercept and slope of parent contact. Student sex, housing status, and parent-emerging adult relationship quality predicted inter-individual differences in the initial level of parent-student contact (Table 8). Female students and freshmen that lived off-campus reported higher levels of communication with parents at the beginning of the fall semester. Higher levels of relationship quality were also related to higher levels of communication frequency at the first measurement occasion. Student race/ethnicity was the only covariate that had a significant interaction with the slope, revealing minority students (γ = -1.02, $p < .001$) had steeper declines in contact with their parents across the

freshman year compared to Caucasian students (γ = -.66, p < .001). Results also showed the curvilinear growth model remained significant while controlling for background characteristics, indicating the sample's average growth curve for parent-student contact was characterized by a moderate initial level of communication frequency (γ = 19.03, p < .001) and a linear decline (γ = -.66, p < .001) that slowed (γ = .12, p < .05) towards the end of the freshman year. This linear decline was slight, as mean estimates for contact frequency did not fall below "once a month" (15.0). Variance estimates for the intercept and slope remained significant (Table 8). Covariates explained about 28% of the individual differences in the starting level of freshmen's reports of parent-student contact, as indicted by the decline in the intercept residual variance from the baseline curvilinear growth model (15.77 - 11.32). Covariates did not explain inter-individual differences in the slope; however, considering there was only one significant interaction between a covariate and the slope, this was expected. According to global fit indices, the curvilinear growth model with covariates was a good representation of the change in parent-student contact across the freshman year, χ^2 (28, 1279) = 45.94, p < .05, RMSEA = .02, CFI = .99, TLI = .98, which provides support for Hypothesis 2.

Parental academic engagement.

A nonlinear growth model was chosen as the best-fitting growth model for parental academic engagement. The fixed effect for the intercept was 3.81 (p < .001), meaning that on average freshmen "agreed" their parents engaged in moderately high levels of academic engagement at the beginning of the fall semester (wave one of data collection). On average, there was a linear decline in academic engagement over time (γ = -.22, p < .001), indicating freshmen reported a .22 decrease in their parents' academic

engagement about every 2.5 months across the first year in college. However, this decline was steepest earlier in the year and slowed down after that as indicated by a statistically significant, positive quadratic term ($\gamma = .06$ $p < .001$) (Figure 1). There were inter-individual differences in the initial level (*SD* of intercept = .64, $p < .001$), but not the rate of change, in parental academic engagement. No inter-individual differences were detected in the quadratic effect, so the quadratic random effect was removed from the model. According to global model fit indices, the curvilinear growth model was a good representation of the change in parental academic engagement across the freshman year, χ^2 (7, 1212) = 15.12, $p < .05$, RMSEA = .03, CFI = .99, TLI = .99.

Next, covariates were introduced into the curvilinear growth model to assess if student and parent background characteristics predicted individual differences in the intercept of academic engagement. Given no significant inter-individual differences were detected in the slope and quadratic effects, both of these random effects were removed from the model and thus no associations between the covariates and these fixed effects were estimated. Mother's education level, father's education level, parental payment of college education, and parent-emerging adult relationship quality predicted inter-individual differences in the initial level of parental academic engagement (Table 8). Higher levels of maternal and paternal education, parental payment of educational expenses, and relationship quality were all related to higher levels of parental academic engagement at the first measurement occasion. Results also showed the curvilinear growth model remained significant while controlling for background characteristics, indicating the sample's average growth curve for parental academic engagement was characterized by a moderately high initial level of academic engagement ($\gamma = 3.80$, *p*

< .001) and a slight linear decline (γ = -.19, p < .001) that slowed (γ = .06, p < .001) towards the end of the freshman year. The variance estimate for the intercept remained significant (Table 8). Covariates explained about 39% of the individual differences in the starting level of freshmen's reports of parental academic engagement, as indicted by the decline in the intercept residual variance from the baseline curvilinear growth model (.41 - .24). According to global fit indices, the curvilinear growth model with covariates was a good representation of the change in parental academic engagement across the freshman year, χ^2 (37, 1278) = 40.23, p > .05, RMSEA = .01, CFI = .99, TLI = .99, which provides support for Hypothesis 3.

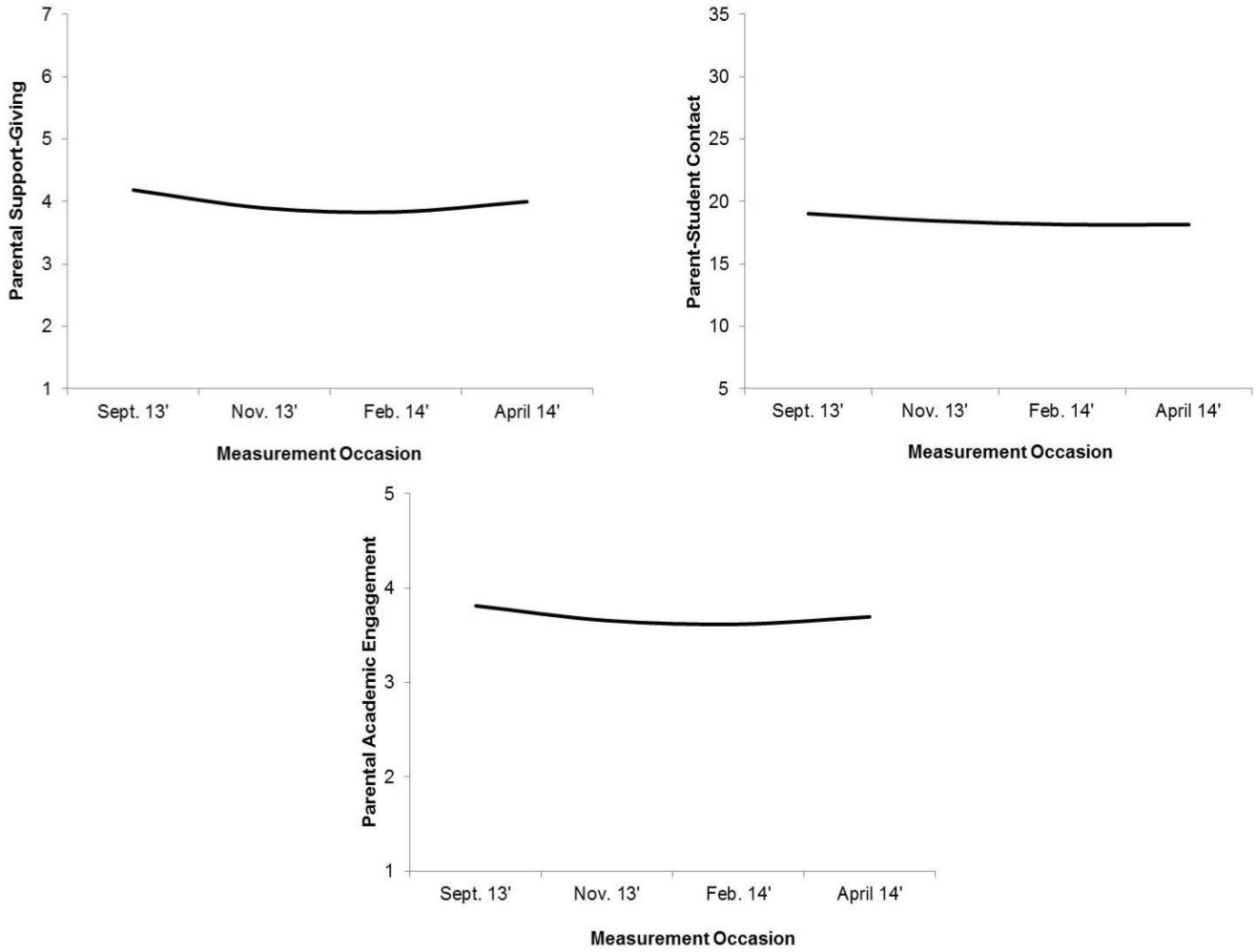

Figure 2. Changes in parent involvement.

Table 8. *Final growth model results for parent involvement variables.*

	Support-Giving			Parent-Student Contact			Academic Engagement		
	Intercept (*SE*)	Slope (*SE*)	Quadratic (*SE*)	Intercept (*SE*)	Slope (*SE*)	Quadratic (*SE*)	Intercept (*SE*)	Slope (*SE*)	Quadratic (*SE*)
Fixed Effects									
Controls									
Sex[a]	.33*** (*.07*)	-.03 (*.03*)	–	.90*** (*.26*)	.05 (*.12*)	–	.01 (*.04*)	–	–
Race/Ethnicity[b]	.08 (*.09*)	.02 (*.05*)	–	-.04 (*.36*)	-.36* (*.17*)	–	-.001 (*.05*)	–	–
Housing[c]	.30* (*.13*)	.09 (*.06*)	–	1.59*** (*.50*)	.03 (*.23*)	–	.05 (*.07*)	–	–
Mother's Education	-.01 (*.04*)	.001 (*.02*)	–	-.08 (*.15*)	.02 (*.07*)	–	.06** (*.02*)	–	–
Father's Education	.01 (*.04*)	-.03 (*.02*)	–	.12 (*.15*)	.00 (*.06*)	–	.08*** (*.02*)	–	–
Parental Payment	.11*** (*.03*)	.01 (*.01*)	–	.13 (*.10*)	-.01 (*.05*)	–	.05*** (*.01*)	–	–
Relationship Quality	.96*** (*.05*)	-.02 (*.02*)	–	2.58*** (*.18*)	.06 (*.08*)	–	.45*** (*.02*)	–	–
Mean	4.17*** (*.04*)	-.38*** (*.05*)	.11*** (*.02*)	19.03*** (*.13*)	-.66*** (*.16*)	.12* (*.05*)	3.80*** (*.02*)	-.19*** (*.03*)	.05*** (*.01*)
Random Effects									
Variance	.62*** (*.06*)	.04** (*.01*)	–	11.32*** (*.80*)	.60*** (*.15*)	–	.24*** (*.02*)	–	–
$Covariance_{i,s}$	-.07** (*.02*)			-.99*** (*.28*)			–		
Model Fit Statistics									
χ^2	139.59			45.94			40.23		
df	28			28			37		
N	1279			1279			1278		
p-value	.00			.02			.33		
CFI	.93			.99			.99		
TLI	.91			.98			.99		
RMSEA	.06			.02			.01		
90% CI RMSEA	.05 – .07			.01 – .03			.00 – .02		
R^2	.50***	.05	–	.28***	.03	–	.39***	–	–

Notes. Across all models the quadratic random effect (variance) was set to zero; thus, no associations between covariates and the quadratic effects we estimated. Given no variability in the slope of academic engagement, the slope random effect was also set to zero and thus no associations between covariates and the slope were estimated. All control variables were mean centered. [a] Male = 0. [b] Caucasian = 0. [c] On-Campus = 0.
*$p < .05$, **$p < .01$, ***$p < .001$.

Changes in Student Outcomes

Academic success.

A nonlinear growth model was chosen as the best-fitting growth model for GPA. The fixed effect for the intercept was 3.35 ($p < .001$), meaning that on average freshmen estimated their GPA to be in between a B+ and A- (3.3 to 3.7, respectively) at the beginning of the fall semester (wave one of data collection). On average, there was a linear increase in GPA over time ($\gamma = .07$, $p < .001$), indicating freshmen reported a .07 increase in their overall GPA about every 2.5 months across the first year in college. However, this increase was steepest earlier in the year and slowed down after that as indicated by a statistically significant, negative quadratic term ($\gamma = -.03$ $p < .001$) (Figure 2). There were inter-individual differences in the initial level (SD of intercept = .42, $p < .001$) and the rate of change in GPA (*SD* of slope = .13, $p < .001$); however, no inter-individual differences were detected in the quadratic effect, so the quadratic random effect was removed from the model. According to global model fit indices, the curvilinear growth model was an adequate representation of the change in GPA across the freshman year, χ^2 (7, 1101) = 54.32, $p < .001$, RMSEA = .08, CFI = .92, TLI = .93.

Next, covariates were introduced into the curvilinear growth model to assess if student and parent background characteristics predicted individual differences in the intercept and slope of GPA. Measures of prior levels of academic achievement, specifically HSGPA and SAT percentile, were included as controls in all academic success growth models. Higher levels of paternal education, HSGPA, and SAT percentile were related to higher levels of GPA at the beginning of the fall semester (Table 9). None of the covariates interacted with the slope, meaning that the rate of

change in GPA was the same across the student and parent background characteristics. Results also showed the curvilinear growth model remained significant while controlling for background characteristics, indicating the sample's average growth curve was characterized by a moderately high initial GPA level ($\gamma = 3.34$, $p < .001$) and a linear increase ($\gamma = .07$, $p < .001$) that slowed ($\gamma = -.03$, $p < .001$) towards the end of the freshman year. This linear increase was slight, as mean estimates for freshmen's reports of their overall GPA did not rise above an A- average (3.70 GPA). Variance estimates for the intercept and slope remained significant (Table 9). Covariates explained about 20% of the individual differences in the starting level of freshmen's reports of GPA, as indicted by the decline in the intercept residual variance from the baseline curvilinear growth model (.17 - .14). Covariates did not explain inter-individual differences in the slope; however, this was expected since there were no significant interactions between the covariates and the slope. According to global fit indices, the curvilinear growth model with covariates was a good representation of the change in GPA across the freshman year, χ^2 (34, 1278) = 93.17, $p < .001$, RMSEA = .04, CFI = .93, TLI = .91, which provides support for Hypothesis 4.1.

A nonlinear growth model was also chosen as the best-fitting growth model for academic self-efficacy, and followed the same pattern as GPA. The fixed effect for the intercept was 4.08 ($p < .001$), meaning that on average freshmen reported moderately high levels of academic self-efficacy (scale range 1 – 5) at the beginning of the fall semester (wave one of data collection). On average, there was a trend toward a linear increase in academic self-efficacy over time ($\gamma = .07$, $p = .06$), indicating freshmen reported a .07 increase in their academic self-efficacy about every 2.5 months across the

first year in college. However, this increase was steepest earlier in the year and slowed down after that as indicated by a statistically significant, negative quadratic term (γ = -.05 $p < .001$) (Figure 2). There were inter-individual differences in the initial level (SD of intercept = .61, $p < .001$) and the rate of change in academic self-efficacy (*SD* of slope = .19, $p < .001$); however, no inter-individual differences were detected in the quadratic effect, so the quadratic random effect was removed from the model. According to global model fit indices, the curvilinear growth model was an adequate representation of the change in academic self-efficacy across the freshman year, χ^2 (7, 1191) = 34.68, $p < .001$, RMSEA = .06, CFI = .95, TLI = .96.

Next, covariates were introduced into the curvilinear growth model to assess if student and parent background characteristics predicted individual differences in the intercept and slope of academic self-efficacy. Females reported lower levels of academic self-efficacy at the beginning of the fall semester, while higher levels of relationship quality, HSGPA, and SAT percentile were related to higher levels of academic self-efficacy at the beginning of the fall semester (Table 9). None of the covariates interacted with the slope, meaning that the rate of change in academic self-efficacy was the same across the student and parent background characteristics. Results also showed the curvilinear growth model remained significant while controlling for background characteristics, indicating the sample's average growth curve was characterized by a moderately high initial level of academic self-efficacy (γ = 4.07, $p < .001$) and a statistically significant linear increase (γ = .08, $p < .05$) that slowed (γ = -.05, $p < .001$) towards the end of the freshman year. This linear increase was slight, meaning that across the first year in college, freshmen feel moderately, but not overly, confident in

their abilities to be successful in their academic courses. Variance estimates for the intercept and slope remained significant (Table 9). Covariates explained about 17% of the individual differences in the starting level of freshmen's reports of academic self-efficacy, as indicted by the decline in the intercept residual variance from the baseline curvilinear growth model (.37 - .30). Covariates did not explain inter-individual differences in the slope; however, this was expected since there were no significant interactions between covariates and the slope. According to global fit indices, the curvilinear growth model with covariates was a good representation of the change in academic self-efficacy across the freshman year, χ^2 (34, 1278) = 59.10, $p < .01$, RMSEA = .02, CFI = .96, TLI = .96, which provides support for Hypothesis 4.2.

A linear growth model was chosen as the best-fitting growth model for academic persistence. The fixed effect for the intercept was 4.63 ($p < .001$), meaning that on average freshmen reported they "strongly agreed" with their intentions for academic persistence at the beginning of the fall semester (wave one of data collection). On average, there was a slight linear decrease in academic persistence over time ($\gamma = -.02$, $p < .05$), indicating freshmen reported a .02 decline in their reports of academic persistence about every 2.5 months across the first year in college (Figure 2). There were inter-individual differences in the initial level (SD of intercept = .37, $p < .001$) and the rate of change in academic persistence (*SD* of slope = .13, $p < .001$). According to global model fit indices, the linear growth model was a good representation of the change in academic persistence across the freshman year, χ^2 (8, 1175) = 15.02, $p = ns$, RMSEA = .03, CFI = .99, TLI = .99.

Next, covariates were introduced into the linear growth model to assess if student and parent background characteristics predicted individual differences in the intercept and slope of academic persistence. Higher levels of parent-emerging adult relationship quality and HSGPA were related to higher levels of academic persistence at the beginning of the fall semester (Table 9). The only covariate that interacted with the slope was relationship quality, revealing that the rate of change in academic persistence varied across levels of relationship quality with parents. Results also showed the linear decline in academic persistence did not remain significant while controlling for background characteristics; however, given the small effect size of the slope from the baseline linear model, this non-significant slope was expected. Thus, these results mean that on average the sample's high level of academic persistence remained stable across the freshman year. Despite a non-significant fixed effect for the slope, variance estimates for the intercept and slope remained significant (Table 9). Covariates explained about 7% of the individual differences in the starting level of freshmen's reports of academic self-efficacy, as indicted by the slight decline in the intercept residual variance from the baseline curvilinear growth model (.14 - .13). Covariates did not explain inter-individual differences in the slope; however, this was expected since there was only one significant interaction between a covariate and the slope. According to global fit indices, the linear model with covariates was an adequate representation of the stability in academic persistence across the freshman year, χ^2 (35, 1278) = 56.69, $p < .05$, RMSEA = .02, CFI = .97, TLI = .96. The results from this model and the baseline growth model (i.e., linear decline and stability in academic persistence) are in contrast to Hypothesis 4.3, which predicted increases in academic persistence across the freshman year.

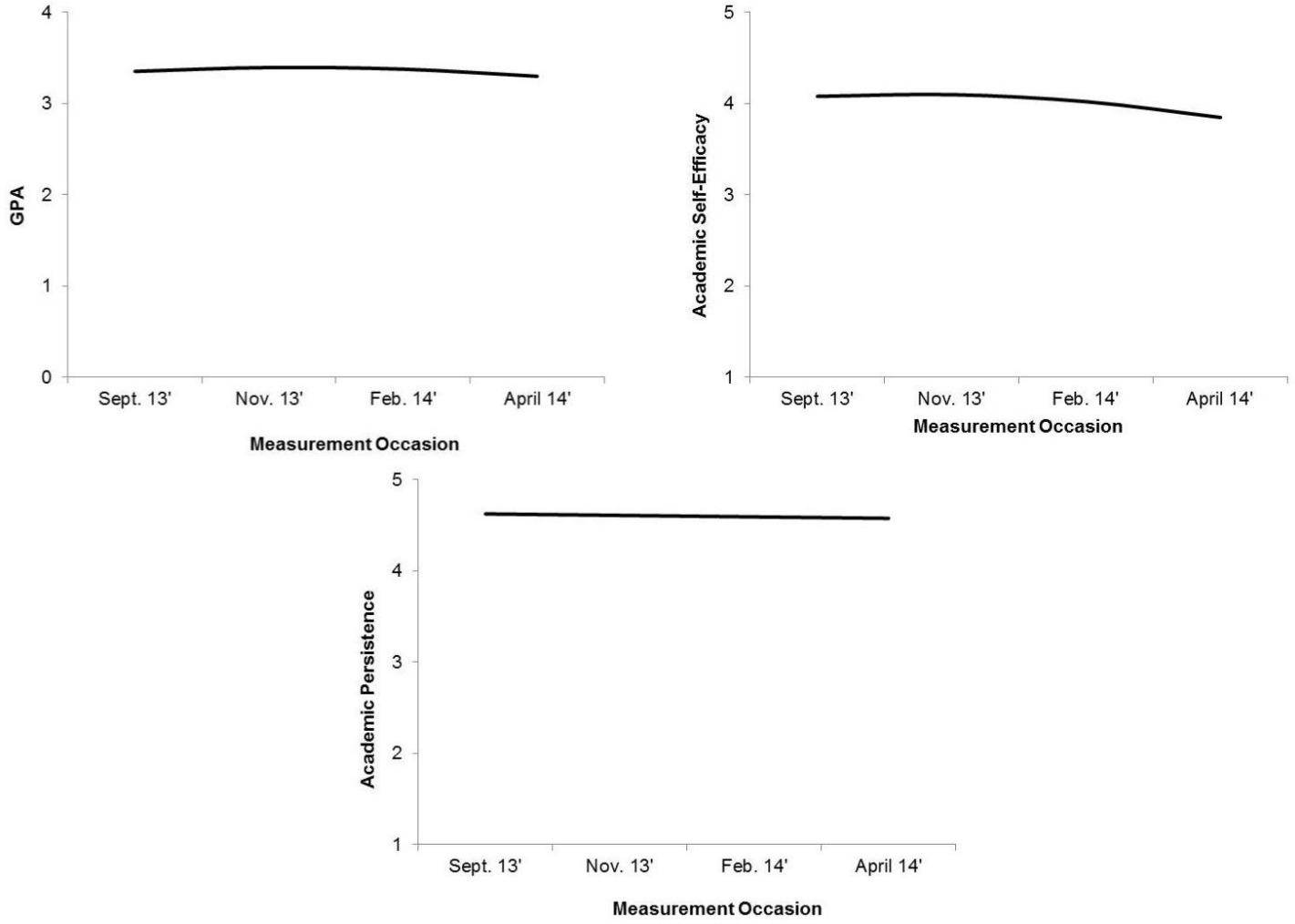

Figure 3. Changes in student academic success.

Table 9. *Final growth model results for student academic success.*

	GPA			Academic Self-Efficacy			Academic Persistence	
	Intercept (*SE*)	Slope (*SE*)	Quadratic (*SE*)	Intercept (*SE*)	Slope (*SE*)	Quadratic (*SE*)	Intercept (*SE*)	Slope (*SE*)
Fixed Effects								
Controls								
Sex[a]	-.01 (*.03*)	.004 (*.02*)	–	-.14** (*.05*)	-.03 (*.03*)	–	.04 (*.03*)	.01 (*.02*)
Race/Ethnicity[b]	.004 (*.05*)	-.01 (*.02*)	–	-.03 (*.07*)	.01 (*.04*)	–	-.05 (*.04*)	.03 (*.02*)
Housing[c]	-.05 (*.06*)	.04 (*.03*)	–	-.11 (*.09*)	.07 (*.05*)	–	.02 (*.06*)	-.04 (*.03*)
Mother's Education	.02 (*.02*)	-.002 (*.01*)	–	.05 (*.03*)	-.02 (*.02*)	–	-.001 (*.02*)	-.001 (*.01*)
Father's Education	.04* (*.02*)	-.01 (*.01*)	–	.02 (*.03*)	.01 (*.02*)	–	-.01 (*.02*)	.001 (*.01*)
Parental Payment	-.01 (*.01*)	-.004 (*.01*)	–	-.04 (*.02*)	.01 (*.01*)	–	-.01 (*.01*)	-.004 (*.01*)
Relationship Quality	.04 (*.02*)	.02 (*.01*)	–	.20*** (*.03*)	.03 (*.02*)	–	.11*** (*.02*)	.03* (*.01*)
HSGPA[d]	.38*** (*.07*)	.05 (*.04*)	–	.21* (*.10*)	.08 (*.05*)	–	.14* (*.06*)	-.03 (*.03*)
SAT Percentile	.01*** (*.001*)	.00 (*.001*)	–	.01*** (*.002*)	.00 (*.01*)	–	.001 (*.001*)	.00 (*.001*)
Mean	3.34*** (*.02*)	.07*** (*.02*)	-.03*** (*.01*)	4.07*** (*.03*)	.08* (*.04*)	-.05*** (*.01*)	4.62*** (*.02*)	-.01 (*.01*)
Random Effects								
Variance	.14*** (*.01*)	.02*** (*.003*)	–	.30*** (*.03*)	.04*** (*.01*)	–	.13*** (*.01*)	.02*** (*.003*)
Covariance$_{i,s}$	-.03*** (*.01*)			-.02 (*.01*)			-.01** (*.004*)	
Model Fit Statistics								
χ^2	93.17			59.10			56.69	
df	34			34			35	
N	1278			1278			1278	
p-value	.00			.01			.01	
CFI	.93			.96			.97	
TLI	.91			.96			.96	
RMSEA	.04			.02			.02	
90% CI RMSEA	.03 – .05			.01 – .03			.01 – .03	
R^2	.20***	.04	–	.17***	.05	–	.07***	.04

Notes. Across the GPA and academic self-efficacy models the quadratic random effect was set to zero; thus, no associations between covariates and the quadratic effects were estimated. The growth model for academic persistence was linear. [a] Male = 0. [b] Caucasian = 0. [c] On-Campus = 0. [d] HSGPA = High School Grade Point Average.
*$p < .05$, **$p < .01$, ***$p < .001$.

Well-being.

There was no significant change detected in depression across the first year in college, indicating on average freshmen were stable in their feelings of depressive symptoms and mood. The fixed effect for the intercept was 8.05 ($p < .001$), meaning that on average freshmen reported they experienced depressive symptoms "some of the time (1-2 days in the past week)" at the beginning of the fall semester (wave one of data collection). Although the fixed effect for the slope was non-significant, there were inter-individual differences in both the initial level (SD of intercept = 4.51, $p < .001$) and the rate of change in depressive symptoms (*SD* of slope = .91, $p < .001$). According to global model fit indices, the linear model was a good representation of the stability in depressive symptoms across the freshman year, χ^2 (8, 1197) = 19.38, $p < .05$, RMSEA = .03, CFI = .99, TLI = .99.

Next, covariates were introduced into the linear growth model to assess if student and parent background characteristics predicted individual differences in the intercept and slope of depression. Parent-emerging adult relationship quality was the only covariate that explained individual differences in the intercept, such that for every one-unit increase in relationship quality, freshmen's reports of depressive symptoms at the beginning of the fall semester decreased by 1.83 points ($B = 1.83$, $p < .001$). No covariates interacted with the slope, meaning that the background characteristics did not explain any individual differences in the rate of change in depression. Results also showed the fixed effect for the slope in the covariate model remained non-significant, indicating that the sample's initial low level of depression ($\gamma = 8.05$, $p < .001$) remained stable across the freshman year. Variance estimates for the intercept and slope also

remained significant (Table 10). Covariates explained about 10% of the individual differences in the starting level of freshmen's reports of depressive symptoms, as indicted by the decline in the intercept residual variance from the baseline growth model (20.35 - 18.49). Covariates did not explain inter-individual differences in the slope; however, this was expected as no covariates interacted with the slope. According to global fit indices, the linear model with covariates was a good representation of the stability in depression across the freshman year, χ^2 (29, 1279) = 36.18, *p* = *ns*, RMSEA = .01, CFI = .99, TLI = .99. The results from this model and the baseline growth model (i.e., stability in depression) are in contrast to Hypothesis 5.1, which predicted decreases in depressive symptoms across the freshman year.

A linear growth model was chosen as the best-fitting growth model for risky behaviors. The fixed effect for the intercept was .96 ($p < .001$), meaning that on average freshmen reported they engaged in risky behaviors "once in the past month" at the beginning of the fall semester (wave one of data collection). On average, there was a linear increase in risky behaviors over time ($\gamma = .27$, $p < .001$), indicating freshmen reported a .27 increase in their reports of risky behaviors about every 2.5 months across the first year in college (Figure 3). There were inter-individual differences in the initial level (*SD* of intercept = 1.89, $p < .001$) and the rate of change in risky behaviors (*SD* of slope = 1.02, $p < .001$). According to global model fit indices, the linear growth model was a sufficient representation of the change in risky behaviors across the freshman year, χ^2 (8, 1169) = 255.32, $p < .001$, RMSEA = .16, CFI = .53, TLI = .65.

Next, covariates were introduced into the linear growth model to assess if student and parent background characteristics predicted individual differences in the intercept

and slope of risky behaviors. Female freshmen reported lower levels of risky behaviors than males at the beginning of the fall semester, and higher levels of parent-emerging adult relationship quality were related to lower levels engagement in risky behaviors at the beginning of the fall semester (Table 10). No covariates interacted with the slope, meaning that the rate of change in risky behaviors was the same across the student and parent demographic characteristics. Results also showed the linear increase in risky behaviors remained significant while controlling for background characteristics, indicating the sample's average growth trajectory was characterized by a low initial level of risky behaviors ($\gamma = .97$, $p < .001$) and a linear increase ($\gamma = .26$, $p < .001$) over the freshman year. Variance estimates for the intercept and slope stayed significant (Table 10). Covariates explained about 5% of the individual differences in the starting level of freshmen's reports of engaging in risky behaviors, as indicted by the slight decline in the intercept residual variance from the baseline growth model (3.58 - 3.39). Covariates did not explain inter-individual differences in the slope; however, this was expected since there were no significant interactions between covariates and the slope. According to global fit indices, the linear growth model with covariates was an adequate representation of the change in risky behaviors across the freshman year, χ^2 (29, 1278) = 278.85, $p < .001$, RMSEA = .08, CFI = .56, TLI = .49. The results from this model and the baseline growth model (i.e., linear increase in risky behaviors) support Hypothesis 5.2, which predicted increases in freshmen's engagement in risky behaviors across the first year in college.

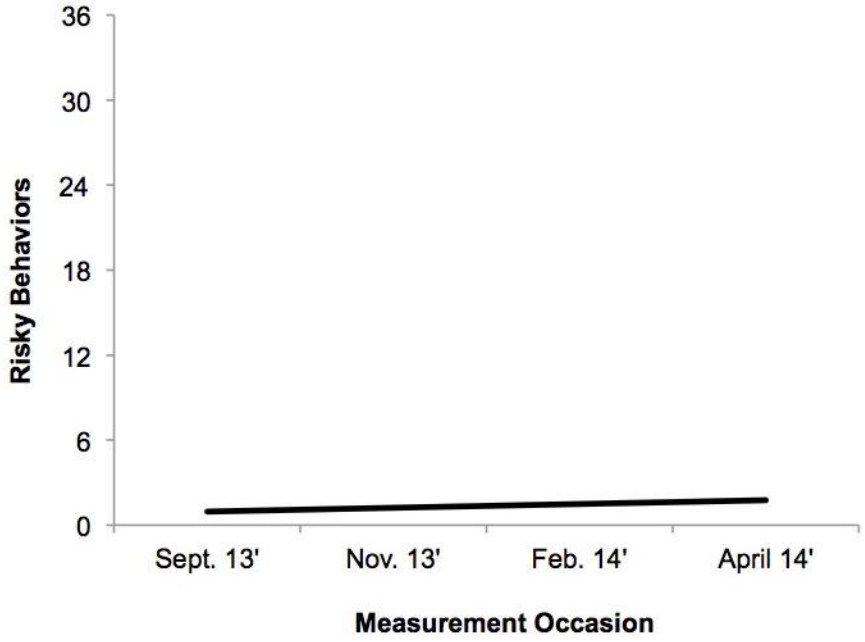

Figure 4. Changes in student well-being.

Table 10. *Final growth model results for student well-being.*

	Depression		Risky Behaviors	
	Intercept (*SE*)	Slope (*SE*)	Intercept (*SE*)	Slope (*SE*)
Fixed Effects				
Controls				
Sex[a]	.09 (*.34*)	-.08 (*.16*)	-.54*** (*.16*)	.03 (*.11*)
Race/Ethnicity[b]	.20 (*.48*)	.42 (*.23*)	-.15 (*.23*)	.002 (*.15*)
Housing[c]	.16 (*.65*)	.21 (*.31*)	-.36 (*.31*)	-.16 (*.21*)
Mother's Education	-.19 (*.20*)	-.06 (*.09*)	-.02 (*.10*)	.01 (*.06*)
Father's Education	-.16 (*.19*)	.08 (*.09*)	-.16 (*.09*)	.03 (*.06*)
Parental Payment	.14 (*.13*)	.03 (*.06*)	.09 (*.06*)	.07 (*.04*)
Relationship Quality	-1.83*** (*.24*)	.04 (*.11*)	-.25* (*.11*)	-.09 (*.07*)
Mean	8.05*** (*.17*)	-.05 (*.08*)	.97*** (*.08*)	.26*** (*.05*)
Random Effects				
Variance	18.49*** (*1.35*)	.79*** (*.24*)	3.39*** (*.36*)	1.05*** (*.13*)
$Covariance_{i,s}$	-.32 (*.44*)		-.47* (*.19*)	
Model Fit Statistics				
χ^2	36.18		278.85	
df	29		29	
N	1279		1278	
p-value	.17		.00	
CFI	.99		.56	
TLI	.99		.49	
RMSEA	.01		.08	
90% CI RMSEA	.00 – .03		.07 – .09	
R^2	.10***	.04	.05*	.02

Notes. The quadratic fixed and random effects were not significant for both depression and risky behaviors, and were thus not estimated. [a] Male = 0. [b] Caucasian = 0. [c] On-Campus = 0.
*$p < .05$, **$p < .01$, ***$p < .001$.

Individuation.

A linear growth model was chosen as the best-fitting growth model for emotional independence. The fixed effect for the intercept was 3.58 ($p < .001$), meaning that on average freshmen reported they felt moderate levels of emotional independence (scale ranged from 1 – 5) from their parents at the beginning of the fall semester (wave one of data collection). On average, there was a slight linear decrease in emotional independence over time ($\gamma = -.03$, $p < .01$), indicating freshmen reported a .03 decline in their reports of emotional independence from their parents about every 2.5 months across the first year in college (Figure 4). There were inter-individual differences in the initial level (*SD* of intercept = .77, $p < .001$) and the rate of change in emotional independence (*SD* of slope = .11, $p < .001$). According to global model fit indices, the linear growth model was an adequate representation of the change in emotional independence across the freshman year, χ^2 (8, 1201) = 93.64, $p < .001$, RMSEA = .09, CFI = .95, TLI = .96.

Next, covariates were introduced into the linear growth model to assess if student and parent background characteristics predicted individual differences in the intercept and slope of emotional independence. Female and minority freshmen reported lower levels of emotional independence at the beginning of the fall semester. Higher levels of maternal education were associated with higher levels of emotional independence at wave one, while parental payment of college educational expenses and parent-emerging adult relationship quality were related to lower levels of emotional independence at the beginning of the fall semester (Table 11). No covariates interacted with the slope, meaning that the rate of change in emotional independence was the same across the student and parent demographic characteristics. Results also showed the linear decrease

in emotional independence remained significant while controlling for background characteristics, indicating the sample's average growth trajectory was characterized by a moderate initial level of emotional independence ($\gamma = 3.58$, $p < .001$) and a slight linear decrease ($\gamma = -.03$, $p < .001$) over the freshman year. Variance estimates for the intercept and slope stayed significant (Table 11). Covariates explained about 54% of the individual differences in the starting level of freshmen's reports of emotional independence, as indicted by the decline in the intercept residual variance from the baseline curvilinear growth model (.60 - .28). Covariates did not explain inter-individual differences in the slope; however, this was expected since there were no significant interactions between covariates and the slope. According to global fit indices, the linear growth model with covariates was an adequate representation of the change in emotional independence across the freshman year, χ^2 (29, 1278) = 105.26, $p < .001$, RMSEA = .05, CFI = .97, TLI = .96. The results from this model and the baseline growth model (i.e., linear decrease in emotional independence) contrast Hypothesis 6.1, which predicted increases in emotional independence across the first year in college.

A nonlinear growth model was chosen as the best-fitting growth model for functional independence. The fixed effect for the intercept was 3.34 ($p < .001$), meaning that on average freshmen reported moderate levels (scale ranged from 1 – 5) of functional independence from their parents at the beginning of the fall semester (wave one of data collection). On average, there was a linear decline in functional independence ($\gamma = -.12$, $p < .001$), indicating freshmen reported a .12 decrease in functional independence from their parents about every 2.5 months across the first year in college. However, this decline was steepest earlier in the year and slowed down after that as indicated by a

statistically significant, positive quadratic term ($\gamma = .04$, $p < .001$) (Figure 4). There were inter-individual differences in the initial level (*SD* of intercept = .81, $p < .001$), but not the rate of change, in functional independence. No inter-individual differences were detected in the quadratic effect, so the quadratic random effect was removed from the model. According to global model fit indices, the curvilinear growth model was a good representation of the change in functional independence across the freshman year, χ^2 (7, 1180) = 13.92, *p* = *ns*, RMSEA = .03, CFI = .99, TLI = .99.

Next, covariates were introduced into the curvilinear growth model to assess if student and parent background characteristics predicted individual differences in the intercept of functional independence. Given no significant inter-individual differences were detected in the slope and quadratic effects, both of these random effects were removed from the model and thus no relationships between the covariates and these fixed effects were estimated. Higher levels of parental payment for college educational expenses and parent-emerging adult relationship quality were associated with lower levels of functional independence at the beginning of the fall semester (Table 11). Results also showed the sample's average growth curve for functional independence held across the covariates and was characterized by a moderate initial level of functional independence from parents ($\gamma = 3.35$, $p < .001$) and a slight linear decline ($\gamma = -.14$, $p < .001$) that slowed ($\gamma = .04$, $p < .001$) towards the end of the freshman year. The variance estimate for the intercept stayed significant (Table 10). Covariates explained about 47% of the individual differences in the starting level of freshmen's reports of functional independence, as indicted by the decline in the intercept residual variance from the baseline curvilinear growth model (.65 - .34). According to global fit indices, the

curvilinear growth model with covariates was a good representation of the change in parental academic engagement across the freshman year, χ^2 (37, 1278) = 31.08, *p* = *ns*, RMSEA = .00, CFI = 1.00, TLI = 1.00. The results from this model and the baseline model (i.e., declines in functional independence) contrast Hypothesis 6.1, which predicted increases in functional independence across the first year in college.

A nonlinear growth model was chosen as the best-fitting growth model for attainment of adult criteria. The fixed effect for the intercept was 4.11 ($p < .001$), meaning that on average freshmen reported they "agreed" they had attained the criteria necessary for the adulthood transition at the beginning of the fall semester (wave one of data collection). On average, there was a linear decline in attainment of adult criteria (γ = -.10, $p < .01$), indicating freshmen reported a .10 decrease in their perspectives of their attainment of adult criteria about every 2.5 months across the first year in college. However, this decline was steepest earlier in the year and slowed down after that as indicated by a statistically significant, positive quadratic term (γ = .03, $p < .01$) (Figure 4). There were inter-individual differences in the initial level (*SD* of intercept = .51, *p* < .001), but not the rate of change, in attainment of adult criteria. No inter-individual differences were detected in the quadratic effect, so the quadratic random effect was removed from the model. According to global model fit indices, the curvilinear growth model was an adequate representation of the change in attainment of adult criteria across the freshman year, χ^2 (7, 1189) = 48.20, $p < .001$, RMSEA = .07, CFI = .89, TLI = .91.

Next, covariates were introduced into the curvilinear growth model to assess if student and parent background characteristics predicted individual differences in the intercept of attainment of adult criteria. Given no significant inter-individual differences

were detected in the slope and quadratic effects, both of these random effects were removed from the model and thus no relationships between the covariates and these fixed effects were estimated. Higher levels of parental payment for college educational expenses were linked to lower levels of attainment of adult criteria at wave one, while higher levels relationship quality were associated with higher levels of attainment of adult criteria at the beginning of the fall semester (Table 11). Results also showed the sample's average growth curve for attainment of adult criteria held across the covariates and was characterized by a moderately high initial level of attainment of adult criteria ($\gamma = 4.11$, $p < .001$) and a slight linear decline ($\gamma = -.10$, $p < .01$) that slowed ($\gamma = .03$, $p < .01$) towards the end of the freshman year. The variance estimate for the intercept stayed significant (Table 11). Covariates explained about 10% of the individual differences in the starting level of freshmen's reports of their attainment of adult criteria, as indicted by the decline in the intercept residual variance from the baseline curvilinear growth model (.27 - .21). According to global fit indices, the curvilinear growth model with covariates was a good representation of the change in the attainment of criteria for adulthood across the freshman year, χ^2 (37, 1278) = 67.80, $p < .01$, RMSEA = .03, CFI = .93, TLI = .94. The results from this model and the baseline model (i.e., declines in attainment of adult criteria) contrast Hypothesis 6.2, which predicted increases in attainment of criteria for adulthood across the first year in college.

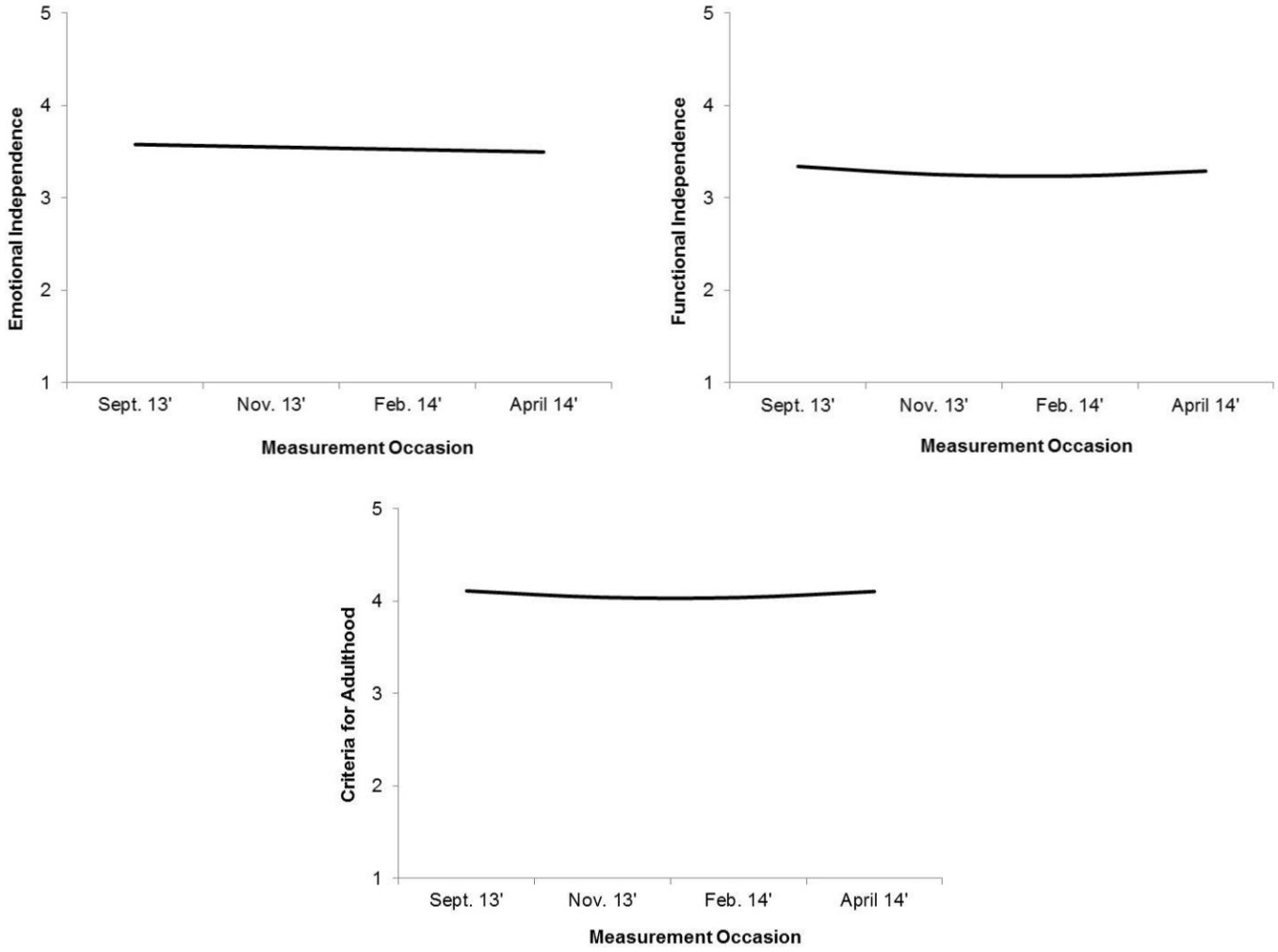

Figure 5. Changes in student individuation.

Table 11. *Final growth model results for student individuation.*

	Emotional Independence		Functional Independence			Attainment of Criteria for Adulthood		
	Intercept (*SE*)	Slope (*SE*)	Intercept (*SE*)	Slope (*SE*)	Quadratic (*SE*)	Intercept (*SE*)	Slope (*SE*)	Quadratic (*SE*)
Fixed Effects								
Controls								
Sex[a]	-.16 (*.04*)	.01 (*.02*)	-.08 (*.04*)	–	–	-.002 (*.04*)	–	–
Race/Ethnicity[b]	-.16 (*.06*)	-.01 (*.02*)	-.08 (*.06*)	–	–	-.06 (*.05*)	–	–
Housing[c]	-.07 (*.08*)	-.003 (*.03*)	-.04 (*.08*)	–	–	-.06 (*.07*)	–	–
Mother's Education	.08 (*.02*)	-.01 (*.01*)	-.01 (*.02*)	–	–	-.03 (*.02*)	–	–
Father's Education	.03 (*.02*)	.01 (*.01*)	.002 (*.02*)	–	–	-.03 (*.02*)	–	–
Parental Payment	-.05 (*.02*)	.002 (*.01*)	-.09*** (*.02*)	–	–	-.07*** (*.01*)	–	–
Relationship Quality	-.72 (*.03*)	-.01 (*.01*)	-.68*** (*.03*)	–	–	.13*** (*.02*)	–	–
Mean	3.58*** (*.02*)	-.03*** (*.01*)	3.35*** (*.02*)	-.14*** (*.03*)	.04*** (*.01*)	4.11*** (*.02*)	-.10** (*.03*)	.03** (*.01*)
Random Effects								
Variance	.28*** (*.02*)	.01*** (*.003*)	.34*** (*.02*)	–	–	.21*** (*.02*)	–	–
$Covariance_{i,s}$	-.02*** (*.01*)		–			–		
Model Fit Statistics								
χ^2	105.26		31.08			67.80		
df	29		37			37		
N	1278		1278			1278		
p-value	.00		.74			.00		
CFI	.97		1.00			.93		
TLI	.96		1.00			.93		
RMSEA	.05		.00			.03		
90% CI RMSEA	.04 – .06		.00 – .02			.02 – .04		
R^2	.54***	.01	.47***	–	–	.10***	–	–

Notes. Across the functional independence and attainment of adult criteria models the linear (slope) and quadratic random effects (variance) were set to zero; thus, no associations between covariates and the linear and quadratic fixed effects were estimated. All control variables were mean centered. [a] Male = 0. [b] Caucasian = 0. [c] On-Campus = 0.
*$p < .05$, **$p < .01$, ***$p < .001$

Linking Changes in Parent Involvement and Student Outcomes

Parental support giving and academic success.

Results from the joint parent support – GPA model revealed there was no significant relationship between the slope of parent support and the slope of GPA (Table 12). The intercept of parent support was also unrelated to the slope of GPA. The intercept of parent support was significantly and negatively associated with the intercept of GPA (B = -.06, p < .05), indicating a one standard deviation unit increase in the starting level of parent support was related to a .16 standard deviation unit decrease in freshmen's reports of GPA at the beginning of the fall semester (β = -.16, p < .05). Regarding covariates imposed on the growth model of GPA, associations were similar to the original growth curve model with the exception of parent-emerging adult relationship quality: Relationship quality was significantly and positively associated with the intercept of GPA, such that higher levels of relationship quality were related to higher GPA levels at the beginning of the fall semester (Table 12). Global fit indices for the joint parent support-GPA model reflected an adequate fit, χ^2 (72, 1279) = 245.38, p < .001, RMSEA = .04, CFI = .93, TLI = .90. This joint model explained a significant amount of variance in the intercept (R^2 = 21%), but not slope, of GPA. Given the non-significant association between the slope of parent support and GPA, the size of this effect was similar to the original covariate growth curve model (R^2 = 20%). Results from this joint model are in contrast to Hypothesis 7.1, which predicted that declines in support would be associated with increases in GPA across the freshman year.

Results from the joint parent support – academic self-efficacy model revealed there was no significant relationship between the slope of parent support and the slope of

academic self-efficacy (Table 12). The intercept of parent support was also unrelated to the slope and intercept of academic-self efficacy, indicating the starting level of parent support was not associated with the starting level or changes in freshmen's academic self-efficacy. Regarding covariates imposed on the growth model of academic self-efficacy, associations were similar to the original growth curve model with the exception of a significant interaction between parent-emerging adult relationship quality and the slope of academic self-efficacy ($B = .07$, $p < .05$). In other words, the rate of change in academic self-efficacy over the freshman year varied across levels of relationship quality with parents in the joint model (Table 12). Global fit indices for the joint parent support – academic self-efficacy model reflected a good fit, χ^2 (72, 1279) = 208.88, $p < .001$, RMSEA = .04, CFI = .94, TLI = .91. This joint model explained a significant amount of variance in the intercept (R^2 = 18%), but not slope, of academic self-efficacy. Given the non-significant association between the slope of parent support and academic self-efficacy, the size of this effect was similar to the original covariate growth curve model (R^2 = 17%). Results from this joint model are in contrast to Hypothesis 7.1, which predicted that declines in support would be associated with increases in academic self-efficacy across the freshman year.

Results from the joint parent support – academic persistence model revealed there was no significant relationship between the slope of parent support and the slope of academic persistence (Table 12). The intercept of parent support was also unrelated to the slope of academic persistence. The intercept of parent support was significantly and negatively associated with the intercept of academic persistence ($B = -.06$, $p < .05$), indicating that a one standard deviation unit increase in the starting level of parent

support was related to a .19 standard deviation unit decrease in freshmen's reports of academic persistence at the beginning of the fall semester ($\beta = -.19$, $p < .05$). Regarding covariates imposed on the growth model of academic persistence, associations were similar to the original growth curve model with the exception of a non-significant interaction between relationship quality and the slope of academic persistence. This result is likely due to power, as the effect size for this interaction in the original model was small. Global fit indices for the joint parent support – academic persistence model reflected an adequate fit, χ^2 (72, 1279) = 208.88, $p < .001$, RMSEA = .04, CFI = .94, TLI = .91. This joint model explained a significant amount of variance in the intercept (R^2 = 9%), but not slope, of academic persistence. Given the non-significant association between the slope of parent support and academic persistence, the size of this effect was similar to the original covariate growth curve model (R^2 = 7%). Results from this joint model are in contrast to Hypothesis 7.1, which predicted that declines in support would be associated with increases in academic persistence across the freshman year.

Table 12. *Joint model results for associations between parent support giving and freshmen's academic success.*

	GPA			Academic Self-Efficacy			Academic Persistence	
	Intercept (*SE*)	Slope (*SE*)	Quadratic (*SE*)	Intercept (*SE*)	Slope (*SE*)	Quadratic (*SE*)	Intercept (*SE*)	Slope (*SE*)
Fixed Effects								
Controls								
Sex[a]	.01 (*.03*)	.003 (*.02*)	–	-.11* (*.05*)	-.02 (*.03*)	–	.05 (*.03*)	.01 (*.02*)
Race[b]	.01 (*.05*)	-.01 (*.02*)	–	-.02 (*.07*)	.02 (*.04*)	–	-.05 (*.04*)	.03 (*.02*)
Housing[c]	-.03 (*.06*)	.04 (*.03*)	–	-.09 (*.10*)	.09 (*.05*)	–	.04 (*.06*)	-.03 (*.03*)
Mother's Education	.02 (*.02*)	-.002 (*.01*)	–	.05 (*.03*)	-.02 (*.02*)	–	-.002 (*.02*)	.00 (*.01*)
Father's Education	.04* (*.02*)	-.01 (*.01*)	–	.02 (*.03*)	.01 (*.02*)	–	-.01 (*.02*)	-.002 (*.01*)
Parental Payment	-.001 (*.01*)	-.004 (*.01*)	–	-.03 (*.02*)	.01 (*.01*)	–	-.001 (*.01*)	-.003 (*.01*)
Relationship Quality	.10** (*.03*)	.01 (*.02*)	–	.27*** (*.05*)	.07* (*.03*)	–	.17*** (*.03*)	.02 (*.02*)
HSGPA[d]	.37*** (*.07*)	.05 (*.04*)	–	.20* (*.10*)	.07 (*.05*)	–	.13* (*.06*)	-.03 (*.03*)
SAT Percentile	.01*** (*.001*)	.00 (*.001*)	–	.01*** (*.002*)	.00 (*.001*)	–	.001 (*.001*)	.00 (*.001*)
Parent Involvement								
Support Giving Intercept	-.06* (*.03*)	.01 (*.01*)	–	-.07 (*.04*)	-.04 (*.02*)	–	-.06* (*.03*)	-.001 (*.01*)
Support Giving Slope		.00 (*.09*)	–		-.10 (*.15*)	–		-.12 (*.09*)
Mean	3.59*** (*.11*)	.05 (*.06*)	-.03*** (*.01*)	4.37*** (*.17*)	.19 (*.10*)	-.05*** (*.01*)	4.89*** (*.10*)	-.06 (*.06*)
Random Effects								
Variance	.14*** (*.01*)	.02*** (*.003*)	–	.30*** (*.03*)	.03*** (*.01*)	–	.13*** (*.01*)	.02*** (*.003*)
Covariance$_{i,s}$ Outcome	-.03*** (*.01*)			-.02* (*.01*)			-.01** (*.004*)	
Covariance$_{i,s}$ Support	-.08** (*.03*)			-.08** (*.03*)			-.08** (*.03*)	
Model Fit Statistics								
χ^2	245.38			208.88			205.71	
df	72			72			73	
N	1279			1279			1279	
p-value	.00			.00			.00	
CFI	.93			.94			.94	
TLI	.90			.91			.92	
RMSEA	.04			.04			.04	
90% CI RMSEA	.04 – .05			.03 – .05			.03 – .04	
R^2	.21***	.04	–	.18***	.07	–	.09***	.07

Notes. The quadratic random effect was set to zero in the GPA and academic self-efficacy models; thus, no associations between covariates and the quadratic effects were estimated and no associations between the intercept and slope of parent support and the quadratic effects were estimated. The original growth model for academic persistence was linear. [a] Male = 0. [b] Caucasian = 0. [c] On-Campus = 0. [d] HSGPA = High School Grade Point Average.

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

Parental support giving and well-being.

Regarding the joint parent involvement and well-being models, although the fixed effect for the slope of freshmen's depression was not significant across the original growth model, the variance component for the slope was significant. This indicated there were interindividual differences in the rate of change in depression across the first year in college. Considering this, proceeding with estimating the joint parent involvement (i.e., support, contact, and academic engagement) – depression models was warranted.

Unstandardized model results revealed there was a positive trend between the slope of parent support and the slope of depression ($B = 1.89$, $p < .10$). Standardized model results, which are calculated slightly different and thus have slightly different p-values from the unstandardized model results, revealed a significant positive association for this effect: Each one standard deviation unit increase in the slope of parent support across the freshman year (i.e., less decline in parent support) was associated with a .40 standard deviation unit increase in student's reports of depressive symptoms across the freshman year ($\beta = .40$, $p < .05$). This finding is important, considering the original growth model's fixed effect for the slope of depression was not significant. Thus, while the sample's average trajectory for depression was characterized by stability, results from the joint model reveal that freshmen students who report more parental support across their first year in college are also likely to report increases in their experiences of depressive symptoms across the same time frame. The intercept of parent support was unrelated to the slope of depression. The intercept of parent support was significantly and positively associated with the intercept of depression ($B = 1.02$, $p < .001$), indicating that a one standard deviation unit increase in the starting level of parent support was

related to a .25 standard deviation unit increase in freshmen's reports of depressive symptoms at the beginning of the fall semester (β = .25, $p < .001$). Regarding covariates imposed on the growth model of depression, associations were similar to the original growth curve model (Table 12). Global fit indices for the joint parent support – depression model reflected a good fit, χ^2 (63, 1279) = 196.72, $p < .001$, RMSEA = .04, CFI = .95, TLI = .93. This joint model explained a significant amount of variance in the intercept, but not slope, of depressive symptoms (R^2 = 13%). This is a slight improvement over the original growth curve model's estimate for variance explained in the intercept, which was 10%. Results from this joint model are in contrast to Hypothesis 7.2, which predicted that declines in support would be associated with declines in depression across the freshman year.

Results from the joint parent support – risky behaviors model revealed there was a significant positive relationship between the slope of parent support and the slope of risky behaviors (B = 2.03, $p < .001$). Each one standard deviation unit increase in the slope of parent support across the freshman year (i.e., less decline in support) was associated with a .39 standard deviation unit increase in student's reports of engaging in risky behaviors across the freshman year (β = .39, SE = .13, $p < .01$). In other words, increases in parent support were linked to steeper increases in freshmen's reports of engaging in risky behaviors over the first year in college. The intercept of parent support was unrelated to the slope of risky behaviors (Table 13). However, the intercept of parent support was significantly and positively related to the intercept of risky behaviors (B = .26, $p < .05$), indicating that that a one standard deviation unit increase in the starting level of parent support was related to a .15 standard deviation unit increase in freshmen's reports of

engagement in risky behaviors at the beginning of the fall semester (β = .15, *SE* = .08, *p* < .05). Covariate associations were similar to the original growth curve model (Table 13). Global fit indices for the joint parent support – risky behaviors model reflected an adequate fit, χ^2 (63, 1279) = 441.15, *p* < .001, RMSEA = .07, CFI = .82, TLI = .76. Similar to the original covariate growth model, this joint model explained a significant amount of variance in the intercept of engagement in risky behaviors (R^2 = 6%). The explanation of slope variance in the joint model (R^2 = 14%, *p* < .10) is an improvement over the original growth curve model's, which was 2% and was not significant. This result is likely due to the significant association between the slope of parent support and the slope of risky behaviors. Results from this joint model are in contrast to Hypothesis 7.2, which predicted that declines in support would be associated with increases in risky behaviors across the freshman year.

Table 13. *Joint model results for associations between parent support giving and freshmen's well-being.*

	Depression		Risky Behaviors	
	Intercept (*SE*)	Slope (*SE*)	Intercept (*SE*)	Slope (*SE*)
Fixed Effects				
Controls				
Sex[a]	-.23 (*.35*)	-.05 (*.17*)	-.61*** (*.17*)	.05 (*.12*)
Race[b]	.14 (*.48*)	.36 (*.24*)	-.16 (*.23*)	-.05 (*.17*)
Housing[c]	-.13 (*.66*)	.01 (*.34*)	-.44 (*.31*)	-.36 (*.24*)
Mother's Education	-.19 (*.20*)	-.05 (*.10*)	-.02 (*.10*)	.01 (*.07*)
Father's Education	-.15 (*.19*)	.12 (*.09*)	-.16 (*.09*)	.08 (*.07*)
Parental Payment	.03 (*.14*)	.01 (*.07*)	.06 (*.07*)	.05 (*.05*)
Relationship Quality	-2.84*** (*.36*)	.002 (*.17*)	-.50** (*.17*)	-.13 (*.13*)
Parent Involvement				
Support Intercept	1.02*** (*.28*)	.07 (*.13*)	.26* (*.13*)	.09 (*.10*)
Support Slope		1.89 (*.99*)[†]		2.03* (*.82*)
Mean	3.79*** (*1.18*)	.37 (*.61*)	-.11 (*.55*)	.66 (*.49*)
Random Effects				
Variance	17.81*** (*1.34*)	.68** (*.25*)	3.33*** (*.36*)	.91*** (*.15*)
$Covariance_{i,s}$ Outcome	-.27 (*.44*)		-.43* (*.18*)	
$Covariance_{i,s}$ Support	-.08** (*.03*)		-.08** (*.03*)	
Model Fit Statistics				
χ^2	196.72		441.15	
df	63		63	
N	1279		1279	
p-value	.00		.00	
CFI	.95		.82	
TLI	.93		.76	
RMSEA	.04		.07	
90% CI RMSEA	.03 – .05		.06 – .08	
R^2	.13***	.18	.06**	.14*

Notes. The original best-fitting covariate growth models for depression and risky behaviors were linear. [a] Male = 0. [b] Caucasian = 0. [c] On-Campus = 0.
[†] $p < .10$, *$p < .05$, **$p < .01$, ***$p < .001$.

Parental support giving and individuation.

Results from the joint parent support – emotional autonomy model revealed there was a significant negative relationship between the slope of parent support and the slope of emotional autonomy (B = -.51, p < .001). Thus, each one standard deviation unit increase in the slope of parent support across the freshman year (i.e., less decline in support) was associated with a 1.03 standard deviation unit decrease in student's reports of emotional autonomy across the freshman year (β = -1.03, SE = .17, p < .001). In other words, increases in parent support were strongly linked to steeper decreases in freshmen's reports of emotional autonomy over the first year in college. The intercept of parent support was unrelated to the slope of emotional autonomy (Table 14). However, the intercept of parent support was significantly and negatively associated with the intercept of emotional autonomy (B = -.27, p < .001), indicating that a one standard deviation unit increase in the starting level of parent support was related to a .25 standard deviation unit decrease in freshmen's reports of emotional autonomy at the beginning of the fall semester (β = -.39, SE = .05, p < .001). Regarding covariates imposed on the growth model of emotional autonomy, associations were similar to the original growth curve model with the exception of a non-significant association between parental payment of college educational expenses and the intercept of emotional autonomy (Table 14). Global fit indices for the joint parent support – emotional autonomy model reflected an adequate fit, χ^2 (63, 1279) = 303.74, p < .001, RMSEA = .06, CFI = .94, TLI = .92. This joint model also explained a significant amount of variance in the intercept (R^2 = 61%) and slope (R^2 = 96%) of emotional independence, which is important considering the original covariate growth curve model explained 54% and 1% of the variance in the

intercept and slope of emotional independence, respectively. Results from this joint model are in contrast to Hypothesis 7.3, which predicted that declines in support would be associated with increases in emotional autonomy across the freshman year.

Results from the joint parent support – functional autonomy model revealed there was a significant negative relationship between the slope of parent support and the slope of functional autonomy (B = -.47, p < .001). Thus, each one standard deviation unit increase in the slope of parent support across the freshman year (i.e., less decline in parent support) was associated with a 1.02 standard deviation unit decrease in student's reports of functional autonomy across the freshman year (β = -1.02, SE = .04, p < .001). In other words, increases in parent support were strongly linked to steeper decreases in freshmen's reports of functional autonomy over the first year in college. The intercept of parent support was unrelated to the slope of functional autonomy. However, the intercept of parent support was significantly and negatively associated with the intercept of functional autonomy (B = -.42, p < .001), indicating that a one standard deviation unit increase in the starting level of parent support was related to a .58 standard deviation unit decrease in freshmen's reports of functional autonomy at the beginning of the fall semester (β = -.58, SE = .04, p < .001). Regarding covariates imposed on the growth model of functional autonomy, associations were similar to the original growth curve model (Table 13). Global fit indices for the joint parent support – functional autonomy model reflected a good fit, χ^2 (71, 1279) = 253.32, p < .001, RMSEA = .05, CFI = .95, TLI = .94. This joint model also explained a significant amount of variance in the intercept (R^2 = 63%) of functional independence, which is important considering the original covariate growth curve model explained 47% of the variance in the intercept of

functional independence (variance explained in the slope was not estimated because the random effect for the slope was fixed to zero). Results from this joint model are in contrast to Hypothesis 7.3, which predicted that declines in parent support would be associated with increases in functional autonomy across the freshman year.

Unstandardized model results from the joint parent support – attainment of criteria for adulthood model revealed there was a negative trend between the slope of parent support and the slope of attainment of adult criteria (B = -.19, p < .10). Standardized model results, which are calculated slightly different and thus have slightly different p-values from the unstandardized model results, revealed a significant negative association for this effect: Each one standard deviation unit increase in the slope of parent support across the freshman year (i.e., less decline in parent support) was associated with a .95 standard deviation unit decrease in student's reports of attainment of criteria for adulthood across the freshman year (β = -.95, SE = .15, p < .001). In other words, increases in parent support were linked to steeper decreases in freshmen's reports of attaining adult status criteria over the first year in college (Table 14). The intercept of parent support was unrelated to the slope of attainment of adult criteria. However, the intercept of parent support was significantly and negatively associated with the intercept of attainment of adult criteria (B = -.15, p < .001), indicating that a one standard deviation unit increase in the starting level of parent support was related to a .34 standard deviation unit decrease in freshmen's reports of emotional autonomy at the beginning of the fall semester (β = -.34, SE = .07, p < .001). Regarding covariates imposed on the growth model of attainment of criteria for adulthood, associations were similar to the original growth curve model (Table 14). Global fit indices for the joint parent support –

attainment of adult criteria model reflected a good fit, χ^2 (71, 1279) = 218.89, $p < .001$, RMSEA = .04, CFI = .93, TLI = .91. This joint model also explained a significant amount of variance in the intercept of attainment of adult status criteria (R^2 = 16%), which is a slight improvement over the original growth curve model's estimate for variance explained in the intercept, which was 10% (variance explained in the slope was not estimated because the random effect for the slope was fixed to zero). Results from this joint model are in contrast to Hypothesis 7.3, which predicted that declines in parent support would be associated with increases in attainment of adult status criteria across the freshman year.

Table 14. *Joint model results for associations between parent support giving and freshmen's individuation.*

	Emotional Autonomy		Functional Autonomy			Attainment of Adult Status Criteria		
	Intercept (*SE*)	Slope (*SE*)	Intercept (*SE*)	Slope (*SE*)	Quadratic (*SE*)	Intercept (*SE*)	Slope (*SE*)	Quadratic (*SE*)
Fixed Effects								
Controls								
Sex[a]	-.81* (*.04*)	.01 (*.02*)	.04 (*.04*)	–	–	.04 (*.04*)	–	–
Race[b]	-.14* (*.06*)	-.001 (*.03*)	-.05 (*.05*)	–	–	-.04 (*.05*)	–	–
Housing[c]	.01 (*.08*)	.05 (*.04*)	.14 (*.07*)	–	–	.01 (*.07*)	–	–
Mother's Education	.08*** (*.02*)	-.01 (*.01*)	-.01 (*.02*)	–	–	-.03 (*.02*)	–	–
Father's Education	.03 (*.02*)	-.01 (*.01*)	-.01 (*.02*)	–	–	-.03 (*.02*)	–	–
Parental Payment	-.02 (*.02*)	.01 (*.01*)	-.04** (*.02*)	–	–	-.06*** (*.01*)	–	–
Relationship Quality	-.46*** (*.04*)	-.01 (*.02*)	-.29*** (*.04*)	–	–	.27*** (*.04*)	–	–
Parent Involvement								
Support Giving Intercept	-.27*** (*.03*)	-.01 (*.02*)	-.42*** (*.04*)	-.004 (*.01*)	–	-.15*** (*.03*)	.004 (*.01*)	–
Support Giving Slope		-.51*** (*.11*)		-.47*** (*.07*)	–		.19† (.10)	–
Mean	4.71*** (*.14*)	-.17* (*.07*)	5.10*** (*.15*)	-.31*** (*.06*)	.04*** (*.01*)	4.74*** (*.14*)	-.19** (*.07*)	.03** (*.01*)
Random Effects								
Variance	.23*** (*.02*)	.001 (.004)	.25*** (*.02*)	–	–	.21*** (*.02*)	–	–
$Covariance_{i,s}$ Outcome	-.01 (.01)		–			–		
$Covariance_{i,s}$ Support	-.10*** (*.03*)		-.10*** (*.02*)			-.08*** (*.03*)		
Model Fit Statistics								
χ^2	303.74		253.32			218.89		
df	63		71			71		
N	1279		1279			1279		
p-value	.00		.00			.00		
CFI	.94		.95			.93		
TLI	.92		.94			.91		
RMSEA	.06		.05			.04		
90% CI RMSEA	.05 – .06		.04 – .05			.03 – .05		
R^2	.61***	.96***	.63***	–	–	.16***	–	–

Notes. The slope and quadratic random effects (i.e., variance) were set to zero in the functional autonomy and attainment of adult criteria models; thus, no associations between covariates and the slope and quadratic fixed effects were estimated and no associations between the intercept and slope of parent support and the quadratic fixed effect were estimated. The original growth model for emotional autonomy was linear. [a] Male = 0. [b] Caucasian = 0. [c] On-Campus = 0.

†$p < .10$, *$p < .05$, **$p < .01$, ***$p < .001$.

Parent-student contact and academic success.

Results from the joint parent contact – GPA model revealed there was no significant relationship between the slope of parent support and the slope of GPA (Table 15). The intercept of parent-student contact was also unrelated to both the slope and intercept of GPA. Regarding covariates imposed on the growth model of GPA, associations were similar to the original growth curve model (Table 14). Global fit indices for the joint parent contact – GPA model reflected a good fit, χ^2 (72, 1279) = 156.90, $p < .001$, RMSEA = .03, CFI = .96, TLI = .95. This joint model explained a significant amount of variance in the intercept (R^2 = 20%), but not slope, of GPA. Given the non-significant association between the slope of parent contact and GPA, the size of this effect was similar to the original covariate growth curve model (R^2 = 20%). Results from this joint model are in contrast to Hypothesis 8.1, which predicted that declines in contact would be associated with increases in GPA across the freshman year.

Results from the joint parent contact – academic self-efficacy model revealed there was no significant relationship between the slope of parent contact and the slope of academic self-efficacy (Table 15). The intercept of parent contact was significantly and negatively associated with the slope of academic-self efficacy (B = -.01, $p < .01$), indicating that a one standard deviation unit increase in the starting level of parent contact was related to a .29 decline in the slope of academic self-efficacy (β = -.29, SE = .10, $p < .01$). Considering the original growth curve model for academic self-efficacy was characterized by a positive slope, this finding indicates that higher levels of contact with parents at the beginning of the freshman year were linked with decreases (instead of increases) in academic self-efficacy across the first year in college. Covariate

associations were similar to the original growth curve model with the exception of a significant interaction between parent-emerging adult relationship quality and the slope of academic self-efficacy (B = .07, p < .01). Thus, the rate of change in academic self-efficacy over the freshman year varied across levels of relationship quality with parents in the joint model (Table 15). Global fit indices for the joint parent support – academic self-efficacy model reflected a good fit, χ^2 (72, 1279) = 120.47, p < .001, RMSEA = .02, CFI = .98, TLI = .97. This joint model explained a significant amount of variance in the intercept (R^2 = 17%) and the slope (R^2 = 10%) of academic self-efficacy. The explanation of slope variance in the joint model is an improvement over the original growth curve model's, which was 5% and was not significant. This result is likely due to the significant association between the intercept of parent contact and the slope academic self-efficacy. Results from this joint model are in contrast to Hypothesis 8.1, which predicted that declines in contact would be associated with increases in academic-self efficacy across the freshman year.

Results from the joint parent contact – academic persistence model revealed there was no significant relationship between the slope of parent-student contact and the slope of academic persistence (Table 15). The intercept of parent contact was also unrelated to both the slope and intercept of academic persistence. Regarding covariates imposed on the growth model of academic persistence, associations were similar to the original growth curve model with the exception of a non-significant interaction between relationship quality and the slope of academic persistence. This result is likely due to power, as the effect size for this interaction in the original model was small. Global fit indices for the joint parent support – academic persistence model reflected a good fit, χ^2

(73, 1279) = 117.68, $p < .001$, RMSEA = .02, CFI = .98, TLI = .97. This joint model explained a significant amount of variance in the intercept (R^2 = 8%), but not slope, of academic persistence. Given the non-significant association between the slope of parent contact and academic persistence, the size of this effect was similar to the original covariate growth curve model (R^2 = 7%). Results from this joint model are in contrast to Hypothesis 8.1, which predicted that declines in contact would be associated with increases in academic persistence across the freshman year.

Table 15. *Joint model results for associations between parent-student contact and freshmen's academic success.*

	GPA			Academic Self-Efficacy			Academic Persistence	
	Intercept (*SE*)	Slope (*SE*)	Quadratic (*SE*)	Intercept (*SE*)	Slope (*SE*)	Quadratic (*SE*)	Intercept (*SE*)	Slope (*SE*)
Fixed Effects								
Controls								
Sex[a]	-.01 (*.03*)	.01 (*.02*)	–	-.14** (*.05*)	-.02 (*.03*)	–	.04 (*.03*)	.01 (*.02*)
Race[b]	.003 (*.05*)	-.01 (*.03*)	–	-.03 (*.07*)	.01 (*.04*)	–	-.05 (*.04*)	.03 (*.02*)
Housing[c]	-.05 (*.06*)	.04 (*.03*)	–	-.11 (*.10*)	.09 (*.05*)	–	.03 (*.06*)	-.04 (*.03*)
Mother's Education	.02 (*.02*)	-.003 (*.01*)	–	.05 (*.03*)	-.02 (*.02*)	–	-.001 (*.02*)	-.001 (*.01*)
Father's Education	.04* (*.02*)	-.01 (*.01*)	–	.02 (*.03*)	.01 (*.02*)	–	-.01 (*.02*)	.001 (*.01*)
Parental Payment	-.01 (*.01*)	-.004 (*.01*)	–	-.04 (*.02*)	.01 (*.01*)	–	-.01 (*.01*)	-.004 (*.01*)
Relationship Quality	.04 (*.03*)	.02 (*.01*)	–	.19*** (*.04*)	.07** (*.02*)	–	.13*** (*.03*)	.02 (*.01*)
HSGPA[d]	.38*** (*.07*)	.04 (*.04*)	–	.22* (*.10*)	.06 (*.06*)	–	.12* (*.06*)	-.03 (*.04*)
SAT Percentile	.01*** (*.001*)	.00 (*.001*)	–	.01*** (*.002*)	.00 (*.001*)	–	.001 (*.001*)	.00 (*.001*)
Parent Involvement								
Contact Intercept	.00 (*.01*)	-.001 (*.003*)	–	.01 (*.01*)	-.01** (*.01*)	–	-.01 (*.01*)	.001 (*.003*)
Contact Slope		.01 (*.02*)	–		-.03 (*.03*)	–		-.002 (*.02*)
Mean	3.35*** (*.11*)	.10 (*.06*)	-.03*** (*.01*)	3.97*** (*.17*)	.33** (*.09*)	-.05*** (*.01*)	4.80*** (*.10*)	-.03 (*.06*)
Random Effects								
Variance	.14*** (*.01*)	.02*** (*.003*)	–	.30*** (*.03*)	.03*** (*.01*)	–	.13*** (*.01*)	.02*** (*.003*)
$Covariance_{i,s}$ Outcome	-.03*** (*.01*)			-.02 (*.01*)			-.01** (*.004*)	
$Covariance_{i,s}$ Contact	-.87** (*.30*)			-.87** (*.30*)			-.86** (*.30*)	
Model Fit Statistics								
χ^2	156.90			120.47			117.68	
df	72			72			73	
N	1279			1279			1279	
p-value	.00			.00			.00	
CFI	.96			.98			.98	
TLI	.95			.97			.97	
RMSEA	.03			.02			.02	
90% CI RMSEA	.02 – .04			.02 – .03			.01 – .03	
R^2	.20***	.04	–	.17***	.10*	–	.08***	.04

Notes. The quadratic random effect was set to zero in the GPA and academic self-efficacy models; thus, no associations between covariates and the quadratic effect were estimated and no associations between the intercept and slope of parent support and the quadratic effect were estimated. The original growth model for academic persistence was linear. [a] Male = 0. [b] Caucasian = 0. [c] On-Campus = 0. [d]HSGPA = High School Grade Point Average.
*$p < .05$, **$p < .01$, ***$p < .001$.

Parent-student contact and well-being.

Results revealed there was a significant and positive association between the slope of parent-student contact and the slope of depression ($B = .39$, $p < .05$). Thus, each one standard deviation unit increase in the slope of parent contact across the freshman year (i.e., less decline in parent contact) was associated with a .33 standard deviation unit increase in student's reports of depression across the freshman year ($\beta = .33$, $SE = .16$, $p < .05$). This finding is important, considering the original growth model's fixed effect for the slope of depression was not significant. Thus, while the sample's average trajectory for depression was characterized by stability, results from the joint model reveal that freshmen students who reported increases in parent-student contact across their first year in college were also likely to report increases in their experiences of depressive symptoms across the same time frame. The intercept of parent contact was unrelated to the slope of depression, but it was significantly and positively associated with the intercept of depression ($B = .19$, $p < .001$): A one standard deviation unit increase in the starting level of parent contact was related to a .17 standard deviation unit increase in freshmen's reports of depressive symptoms at the beginning of the fall semester ($\beta = .17$, $SE = .05$, $p < .01$). Covariate associations were similar to the original growth curve model, with the exception of a significant interaction between student race and the slope of depression ($B = .53$, $p < .05$). This finding revealed minority students had steeper declines in their reports of depressive symptoms across the freshman year compared to Caucasian students in the joint model (Table 16). Global fit indices for the joint parent contact – depression model reflected a good fit, χ^2 (63, 1279) = 98.45, $p < .01$, RMSEA = .02, CFI = .99, TLI = .98. This joint model explained a significant amount of variance

in the intercept, but not the slope, of depressive symptoms (R^2 = 12%). This is a slight improvement over the original growth curve model's estimate, which was 10%. Results from this joint model are in contrast to Hypothesis 8.2, which predicted that declines in contact would be associated with declines in depression across the freshman year.

Results from the joint parent contact – risky behaviors model revealed there was a significant positive relationship between the slope of parent contact and the slope of risky behaviors (B = .54, p < .001). Each one standard deviation unit increase in the slope of parent contact across the freshman year (i.e., less decline in contact) was associated with a .41 standard deviation unit increase in student's reports of engaging in risky behaviors across the freshman year (β = .41, SE = .10, p < .001). In other words, increases in parent-student contact frequency were linked to steeper increases in freshmen's reports of engaging in risky behaviors over the first year in college. The intercept of parent contact was unrelated to the slope of risky behaviors (Table 9). However, the intercept of parent contact was significantly and positively related to the intercept of risky behaviors (B = .09, p < .01), indicating that that a one standard deviation unit increase in the starting level of parent contact was related to a .19 standard deviation unit increase in freshmen's reports of engagement in risky behaviors at the beginning of the fall semester (β = .19, SE = .06, p < .001). Covariate associations were similar to the original growth curve model (Table 16). Global fit indices for the joint parent contact – risky behaviors model reflected an adequate fit, χ^2 (63, 1279) = 344.98, p < .001, RMSEA = .06, CFI = .86, TLI = .81. Similar to the original covariate growth model, this joint model explained a significant amount of variance in the intercept of engagement in risky behaviors (R^2 = 7%). The explanation of slope variance in the joint model (R^2 = 21%, p < .05) was an

improvement over the original growth curve model's, which was 2% and was not significant. This result is likely due to the significant association between the slope of parent contact and the slope of risky behaviors. Results from this joint model are in contrast to Hypothesis 8.2, which predicted that declines in contact would be associated with increases in risky behaviors across the freshman year.

Table 16. *Joint model results for associations between parent-student contact and freshmen's well-being.*

	Depression		Risky Behaviors	
	Intercept (*SE*)	Slope (*SE*)	Intercept (*SE*)	Slope (*SE*)
Fixed Effects				
Controls				
Sex[a]	-.08 (*.35*)	-.11 (*.16*)	-.62*** (*.17*)	.02 (*.12*)
Race[b]	.24 (*.48*)	.53* (*.24*)	-.13 (*.23*)	.19 (*.18*)
Housing[c]	-.12 (*.66*)	.16 (*.31*)	-.50 (*.31*)	-.13 (*.23*)
Mother's Education	-.19 (*.20*)	-.06 (*.10*)	-.02 (*.10*)	-.002 (*.07*)
Father's Education	-.17 (*.19*)	.07 (*.09*)	-.17 (*.09*)	.03 (*.06*)
Parental Payment	.12 (*.13*)	.03 (*.06*)	.07 (*.06*)	.08 (*.05*)
Relationship Quality	-2.33*** (*.28*)	-.04 (*.14*)	-.49*** (*.13*)	-.04 (*.10*)
Parent Involvement				
Contact Intercept	.19*** (*.06*)	.02 (*.03*)	.09** (*.03*)	-.03 (*.02*)
Contact Slope		.39* (*.19*)		.54*** (*.16*)
Mean	4.48*** (*1.14*)	-.17 (*.52*)	-.72 (*.54*)	1.10** (*.40*)
Random Effects				
Variance	18.10*** (*1.34*)	.73** (*.24*)	3.31*** (*.36*)	.88*** (*.15*)
$Covariance_{i,s}$ Outcome	-.34 (*.44*)		-.45* (*.18*)	
$Covariance_{i,s}$ Contact	-.85** (*.30*)		-.91** (*.31*)	
Model Fit Statistics				
χ^2	93.45		344.98	
df	63		63	
N	1279		1279	
p-value	.00		.00	
CFI	.99		.86	
TLI	.98		.81	
RMSEA	.02		.06	
90% CI RMSEA	.01 – .03		.05 – .07	
R^2	.12***	.13	.07**	.21*

Notes. The original best-fitting covariate growth models for depression and risky behaviors were linear. [a] Male = 0. [b] Caucasian = 0. [c] On-Campus = 0.
*$p < .05$, **$p < .01$, ***$p < .001$.

Parent-student contact and individuation.

Results from the joint parent contact – emotional autonomy model revealed there was a significant negative relationship between the slope of parent contact and the slope of emotional autonomy (B = -.11, p < .001). Thus, each one standard deviation unit increase in the slope of parent contact across the freshman year (i.e., less decline in parent contact) was associated with a .78 standard deviation unit decrease in student's reports of emotional autonomy across the freshman year (β = -.78, SE = .12, p < .001). In other words, increases in parent-student contact frequency were strongly linked to steeper decreases in freshmen's reports of emotional autonomy over the first year in college (Table 17). The intercept of parent contact was unrelated to the slope of emotional autonomy, but it was significantly and negatively associated with the intercept of emotional autonomy (B = -.05, p < .001), indicating that a one standard deviation unit increase in the starting level of parent contact was related to a .25 standard deviation unit decrease in freshmen's reports of emotional autonomy at the beginning of the fall semester (β = -.25, SE = .03, p < .001). Regarding covariates imposed on the growth model of emotional autonomy, associations were similar to the original growth curve model (Table 17). Global fit indices for the joint parent contact – emotional autonomy model reflected an adequate fit, χ^2 (63, 1279) = 187.88, p < .001, RMSEA = .04, CFI = .97, TLI = .96. This joint model also explained a significant amount of variance in the intercept (R^2 = 58%) and slope (R^2 = 60%) of emotional independence, which is important considering the original covariate growth curve model explained 54% and 1% of the variance in the intercept and slope of emotional independence, respectively. Results from this joint model are in contrast to Hypothesis 8.3, which predicted that

declines in contact would be associated with increases in emotional autonomy across the freshman year.

Results from the joint parent contact – functional autonomy model revealed there was a significant negative relationship between the slope of parent-student contact and the slope of functional autonomy (B = -.10, p < .001). Thus, each one standard deviation unit increase in the slope of parent contact across the freshman year (i.e., less decline in parent contact) was associated with a 1.03 standard deviation unit decrease in student's reports of functional autonomy across the freshman year (β = -1.03, SE = .03, p < .001). In other words, increases in parent-student contact were strongly linked to steeper decreases in freshmen's reports of functional autonomy over the first year in college (Table 17). The intercept of parent contact was unrelated to the slope of functional autonomy. However, the intercept of parent contact was significantly and negatively associated with the intercept of functional autonomy (B = -.06, p < .001), indicating that a one standard deviation unit increase in the starting level of parent contact was related to a .30 standard deviation unit decrease in freshmen's reports of functional autonomy at the beginning of the freshman year (β = -.30, SE = .04, p < .001). Covariate associations were similar to the original growth curve model with the exception of a significant association between student race and the intercept of functional autonomy (B = -.13, p < .05), revealing minority students reported lower levels of functional autonomy compared to Caucasian students at the beginning of the freshman year (Table 17). Global fit indices for the joint parent contact – functional autonomy model reflected a good fit, χ^2 (71, 1279) = 124.31, p < .001, RMSEA = .02, CFI = .98, TLI = .98. This joint model also explained a significant amount of variance in the intercept (R^2 = 53%) of functional

independence, which is important considering the original covariate growth curve model explained 47% of the variance in the intercept of functional independence (variance explained in the slope was not estimated because the random effect for the slope was fixed to zero). Results from this joint model are in contrast to Hypothesis 8.3, which predicted that declines in contact would be associated with increases in functional autonomy across the freshman year.

Results from the joint parent contact – attainment of criteria for adulthood model revealed there was no significant association between the slope of parent-student contact and the slope of attainment of adult criteria (Table 17). The intercept of parent contact was unrelated to both the slope and intercept of attainment of adult criteria. Regarding covariates imposed on the growth model of attainment of criteria for adulthood, associations were similar to the original growth curve model (Table 17). Global fit indices for the joint parent contact – attainment of adult criteria model reflected a good fit, χ^2 (71, 1279) = 117.92, $p < .001$, RMSEA = .02, CFI = .97, TLI = .97. This joint model also explained a significant amount of variance in the intercept of attainment of adult status criteria (R^2 = 11%), which was similar to the original growth curve model's estimate, which was 10% (variance explained in the slope was not estimated because the random effect for the slope was fixed to zero). Results from this joint model are in contrast to Hypothesis 8.3, which predicted that declines in contact would be associated with increases in attainment of adult status criteria.

Table 17. *Joint model results for associations between parent-student contact and freshmen's individuation.*

	Emotional Autonomy		Functional Autonomy			Attainment of Adult Status Criteria		
	Intercept (*SE*)	Slope (*SE*)	Intercept (*SE*)	Slope (*SE*)	Quadratic (*SE*)	Intercept (*SE*)	Slope (*SE*)	Quadratic (*SE*)
Fixed Effects								
Controls								
Sex[a]	-.12** (*.04*)	.02 (*.02*)	-.02 (*.04*)	–	–	.04 (*.04*)	–	–
Race[b]	-.17** (*.06*)	-.05 (*.03*)	-.13* (*.05*)	–	–	-.04 (*.05*)	–	–
Housing[c]	.003 (*.08*)	.002 (*.04*)	.06 (*.07*)	–	–	.01 (*.07*)	–	–
Mother's Education	.08*** (*.02*)	-.004 (*.01*)	-.01 (*.02*)	–	–	-.03 (*.02*)	–	–
Father's Education	.04 (*.02*)	.01 (*.01*)	.01 (*.02*)	–	–	-.03 (*.02*)	–	–
Parental Payment	-.04** (*.02*)	.003 (*.01*)	-.08*** (*.02*)	–	–	-.06*** (*.01*)	–	–
Relationship Quality	-.59*** (*.03*)	-.004 (*.02*)	-.51*** (*.03*)	–	–	.27*** (*.04*)	–	–
Parent Involvement								
Contact Intercept	-.05*** (*.01*)	.00 (*.003*)	-.06*** (*.01*)	-.002 (*.003*)	–	-.01 (*.01*)	.00 (*.003*)	–
Contact Slope		-.11*** (*.02*)		-.10*** (*.02*)	–		.001 (.02)	–
Mean	4.50*** (*.13*)	-.11 (*.06*)	4.49*** (*.15*)	-.16** (*.06*)	.04*** (*.01*)	4.36*** (*.14*)	-.10 (*.07*)	.03** (*.01*)
Random Effects								
Variance	.25*** (*.02*)	.01 (.003)	.30*** (*.02*)	–	–	.21*** (*.02*)	–	–
$Covariance_{i,s}$ Outcome	-.02*** (.01)		–			–		
$Covariance_{i,s}$ Contact	-.91** (*.31*)		-.97*** (*.30*)			-.88** (*.31*)		
Model Fit Statistics								
χ^2	187.88		124.31			117.92		
df	63		71			71		
N	1279		1279			1279		
p-value	.00		.00			.00		
CFI	.97		.98			.97		
TLI	.96		.98			.97		
RMSEA	.04		.02			.02		
90% CI RMSEA	.03 – .05		.02 – .03			.02 – .03		
R^2	.58***	.60***	.53***	–	–	.11***	–	–

Notes. The slope and quadratic random effects (i.e., variance) were set to zero in the functional autonomy and attainment of adult criteria models; thus, no associations between covariates and the slope and quadratic fixed effects were estimated and no associations between the intercept and slope of parent-student contact and the quadratic fixed effect were estimated. The original growth model for emotional autonomy was linear. [a] Male = 0. [b] Caucasian = 0. [c] On-Campus = 0.
*$p < .05$, **$p < .01$, ***$p < .001$.

Parental academic engagement and academic success.

Results from the joint parent academic engagement – GPA model were parallel to those from the joint parent support and contact models: There was no significant relationship between the slope of parental academic engagement and the slope of GPA (Table 18). The intercept of parental academic engagement was also unrelated to the slope and intercept of GPA. Covariate associations were similar to the original growth curve model, with the exception of a non-significant association between paternal education level and the intercept of GPA (Table 18). Global fit indices for the joint parental academic engagement – GPA model reflected a good fit, χ^2 (72, 1279) = 147.90, $p < .001$, RMSEA = .03, CFI = .96, TLI = .95. Similar to the original covariate growth model, this joint model explained a significant amount of variance in the intercept (R^2 = 20%), but not slope, of GPA. Results from this joint model are in contrast to Hypothesis 9.1, which predicted that declines in academic engagement would be associated with increases in GPA across the freshman year.

Results from the joint parental academic engagement – academic self-efficacy model were parallel to those from the joint parent support and contact models: There was no significant relationship between the slope of parental academic engagement and the slope of academic self-efficacy (Table 18). The intercept of parental academic engagement was unrelated to both the slope and intercept of academic-self efficacy. Covariate associations were similar to the original growth curve model for academic self-efficacy. Global fit indices for the joint parental academic engagement – academic self-efficacy model reflected a good fit, χ^2 (72, 1279) = 126.69, $p < .001$, RMSEA = .02, CFI = .97, TLI = .96. Similar to the original covariate growth model, this joint model

explained a significant amount of variance in the intercept (R^2 = 17%), but not the slope, of academic self-efficacy. Results from this joint model are in contrast to Hypothesis 9.1, which predicted that declines in academic engagement would be associated with increases in academic self-efficacy across the freshman year.

Results from the joint parental academic engagement – academic persistence model were parallel to those from the joint parent support and contact models: There was no significant relationship between the slope of parent academic engagement and the slope of academic persistence (Table 18). The intercept of parental academic engagement was unrelated the slope of academic persistence. However, the intercept of parental academic engagement was significantly and positively associated with the intercept of academic persistence (B = .09, p < .05), indicating that a one standard deviation unit increase in the starting level of parent's academic engagement was related to a .15 standard deviation unit increase in freshmen's reports of academic persistence at the beginning of the freshman year (β = .15, SE = .07, p < .05). Covariate associations were similar to the original growth curve model with two exceptions: (a) a non-significant interaction between relationship quality and the slope of academic persistence, likely due to a lack in power, as the effect size for this interaction in the original model was small, and (b) a significant negative association between parental payment for college educational expenses and the intercept of academic persistence, indicating higher levels of parental payment for educational expenses was related to lower levels of academic persistence at the beginning of the freshman year (Table 18). Global fit indices for the joint parent academic engagement – academic persistence model reflected a good fit, χ^2 (70, 1278) = 110.25, p < .01, RMSEA = .02, CFI = .98, TLI = .97. Similar to the

original covariate growth curve model, this joint model explained a significant amount of variance in the intercept (R^2 = 8%), but not slope, of academic persistence. Results from this joint model are in contrast to Hypothesis 9.1, which predicted that declines in academic engagement would be associated with increases in academic persistence across the freshman year.

Table 18. *Joint model results for associations between parental academic engagement and freshmen's academic success.*

	GPA			Academic Self-Efficacy			Academic Persistence	
	Intercept (*SE*)	Slope (*SE*)	Quadratic (*SE*)	Intercept (*SE*)	Slope (*SE*)	Quadratic (*SE*)	Intercept (*SE*)	Slope (*SE*)
Fixed Effects								
Controls								
Sex[a]	-.01 (*.03*)	.003 (*.02*)	–	-.14** (*.05*)	-.03 (*.03*)	–	.04 (*.03*)	.01 (*.02*)
Race[b]	.004 (*.05*)	-.01 (*.03*)	–	-.03 (*.07*)	.01 (*.04*)	–	-.05 (*.04*)	.03 (*.03*)
Housing[c]	-.05 (*.06*)	.05 (*.04*)	–	-.11 (*.09*)	.07 (*.06*)	–	.01 (*.06*)	-.04 (*.04*)
Mother's Education	.02 (*.02*)	-.001 (*.01*)	–	.05 (*.03*)	-.03 (*.02*)	–	-.01 (*.02*)	-.002 (*.01*)
Father's Education	.04 (*.02*)	-.01 (*.01*)	–	.01 (*.03*)	.01 (*.02*)	–	-.02 (*.02*)	-.01 (*.02*)
Parental Payment	-.01 (*.01*)	-.004 (*.01*)	–	-.04* (*.02*)	.01 (*.01*)	–	-.01 (*.01*)	-.01 (*.01*)
Relationship Quality	.03 (*.03*)	.03 (*.02*)	–	.17*** (*.04*)	.04 (*.03*)	–	.07* (*.03*)	.01 (*.03*)
HSGPA[d]	.38*** (*.07*)	.04 (*.04*)	–	.21* (*.10*)	.09 (*.06*)	–	.14* (*.06*)	-.03 (*.05*)
SAT Percentile	.01*** (*.001*)	.00 (*.001*)	–	.01*** (*.002*)	.00 (*.001*)	–	.001 (*.001*)	.00 (*.001*)
Parent Involvement								
AcaEng[e] Intercept	.02 (*.04*)	-.01 (*.02*)	–	.07 (*.06*)	-.02 (*.03*)	–	.09* (*.04*)	.03 (*.06*)
AcaEng Slope		-.22 (*.42*)	–		.43 (*.65*)	–		-.23 (*1.41*)
Mean	3.27*** (*.15*)	.08 (*.13*)	-.03*** (*.01*)	3.80*** (*.23*)	.23 (*.20*)	-.05*** (*.01*)	4.27*** (*.16*)	-.16 (*.49*)
Random Effects								
Variance	.14*** (*.01*)	.02*** (*.003*)	–	.30*** (*.03*)	.03*** (*.01*)	–	.13*** (*.01*)	.02*** (*.003*)
Covariance$_{i,s}$ Outcome	-.03*** (*.01*)			-.02 (*.01*)			-.01** (*.004*)	
Covariance$_{i,s}$ AcaEng	-.01 (*.01*)			-.01 (*.01*)			.003 (*.01*)	
Model Fit Statistics								
χ^2	147.90			126.69			110.25	
df	72			72			70	
N	1278			1278			1278	
p-value	.00			.00			.00	
CFI	.96			.97			.98	
TLI	.95			.96			.97	
RMSEA	.03			.02			.02	
90% CI RMSEA	.02 – .04			.02 – .03			.01 – .03	
R^2	.20***	.05	–	.17***	.08	–	.08***	.05

Notes. The quadratic random effect was set to zero in the GPA and academic self-efficacy models; thus, no associations between covariates and the quadratic effect were estimated and no associations between the intercept and slope of parental academic engagement and the quadratic effect were estimated. The original growth model for academic persistence was linear. [a] Male = 0. [b] Caucasian = 0. [c] On-Campus = 0. [d] HSGPA = High School Grade Point Average. [e] AcaEng = Parental Academic Engagement.
*$p < .05$, **$p < .01$, ***$p < .001$.

Parental academic engagement and well-being.

Contrary to the findings from the joint parent support and contact models, results revealed there was no association between the slope of parental academic engagement and the slope of depression (Table 19). The intercept of parental academic engagement was unrelated to both the slope and intercept of depression. Covariate associations were similar to the original growth curve model. Global fit indices for the joint parent academic engagement – depression model reflected a good fit, χ^2 (63, 1279) = 87.67, p < .05, RMSEA = .02, CFI = .99, TLI = .99. Similar to the original covariate growth model, this joint model explained a significant amount of variance in the intercept, but not the slope, of depressive symptoms (R^2 = 10%). Results from this joint model are in contrast to Hypothesis 9.2, which predicted that declines in academic engagement would be associated with declines in depression across the freshman year.

Contrary to the findings from the joint parent support and contact models, results from the joint parental academic engagement – risky behaviors model revealed there was no relationship between the slope of parental academic engagement and the slope of risky behaviors (Table 19). The intercept of parental academic engagement was unrelated to both the slope and intercept of risky behaviors. Covariate associations were similar to the original growth curve model, with the exception of a significant negative association between father's education level and the intercept of risky behaviors (B = -.19, p < .05), indicating higher levels of paternal education were linked to lower levels of risky behaviors reported by freshmen at the beginning of the first year (Table 19). Global fit indices for the joint parent academic engagement – risky behaviors model reflected an adequate fit, χ^2 (63, 1278) = 354.27, p < .001, RMSEA = .06, CFI = .84, TLI = .78.

Similar to the original covariate growth model, this joint model explained a significant amount of variance in the intercept (R^2 = 5%), but not the slope, of engagement in risky behaviors. Results from this joint model are in contrast to Hypothesis 9.2, which predicted that declines in academic engagement would be associated with increases in risky behaviors.

Table 19. *Joint model results for associations between parental academic engagement and freshmen's well-being.*

	Depression		Risky Behaviors	
	Intercept (*SE*)	Slope (*SE*)	Intercept (*SE*)	Slope (*SE*)
Fixed Effects				
Controls				
Sex[a]	.09 (*.34*)	-.10 (*.19*)	-.53*** (*.16*)	.02 (*.11*)
Race[b]	.21 (*.48*)	.45 (*.27*)	-.14 (*.23*)	.01 (*.15*)
Housing[c]	.16 (*.65*)	.31 (*.39*)	-.38 (*.31*)	-.14 (*.22*)
Mother's Education	-.19 (*.20*)	-.04 (*.11*)	-.03 (*.10*)	.01 (*.07*)
Father's Education	-.16 (*.20*)	.02 (*.12*)	-.19* (*.10*)	.03 (*.07*)
Parental Payment	.14 (*.14*)	-.01 (*.08*)	.07 (*.07*)	.07 (*.05*)
Relationship Quality	-1.83*** (*.30*)	-.06 (*.17*)	-.37* (*.15*)	-.06 (*.10*)
Parent Involvement				
AcaEng[d] Intercept	-.01 (*.42*)	.21 (*.23*)	.27 (*.20*)	-.06 (*.14*)
AcaEng Slope		-5.48 (*5.91*)		-.99 (*2.68*)
Mean	8.09*** (*1.61*)	-1.88 (*1.64*)	-.06 (*.77*)	.30 (*.85*)
Random Effects				
Variance	18.46*** (*1.35*)	.62* (*.32*)	.30*** (*.03*)	.03*** (*.01*)
$Covariance_{i,s}$ Outcome	-.30 (*.44*)		-.48* (*.19*)	
$Covariance_{i,s}$ AcaEng	-.01 (*.01*)		-.01 (*.01*)	
Model Fit Statistics				
χ^2	87.67		354.27	
df	63		63	
N	1279		1278	
p-value	.02		.00	
CFI	.99		.84	
TLI	.99		.78	
RMSEA	.02		.06	
90% CI RMSEA	.01 – .03		.05 – .07	
R^2	.10***	.24	.05*	.02

Notes. The original best-fitting covariate growth models for depression and risky behaviors were linear. [a] Male = 0. [b] Caucasian= 0. [c] On-Campus = 0. [d] AcaEng = Parental Academic Engagement.
*$p < .05$, **$p < .01$, ***$p < .001$.

Parental academic engagement and individuation.

Results from the joint parental academic engagement – emotional autonomy model were similar to the findings from the joint parent support and contact models: There was a negative trend for the association between the slope of parental academic engagement and the slope of emotional autonomy (B = -.54, p < .10). Standardized model results, which are calculated slightly different and thus have slightly different p-values from the unstandardized model results, revealed a significant negative association for this effect: Each one standard deviation unit increase in the slope of parent academic engagement across the freshman year (i.e., less decline in academic engagement) was associated with a .47 standard deviation unit decrease in student's reports of depressive symptoms across the freshman year (β = -.47, SE = 21, p < .05). In other words, increases in parent's academic engagement were linked to steeper decreases in student's reports of emotional autonomy over the freshman year (Table 20). The intercept of parent academic engagement was unrelated to the slope of emotional autonomy, but it was significantly and negatively associated with the intercept of emotional autonomy (B = -.27, p < .001): A one standard deviation unit increase in the starting level of parent's academic engagement was related to a .23 standard deviation unit decrease in freshmen's reports of emotional autonomy at the beginning of the fall semester (β = -.23, SE = .04, p < .001). Covariate associations were similar to the original growth curve model, with the exception of a significant and positive association between father's education level and the intercept of emotional autonomy (Table 20). Global fit indices for the joint parent academic engagement – emotional autonomy model reflected an adequate fit, χ^2 (63, 1278) = 192.22, p < .001, RMSEA = .04, CFI = .97, TLI = .95. Similar to the original

growth model, this joint model explained a significant amount of variance in the intercept (R^2 = 58%), but not the slope, of emotional autonomy. Results from this joint model are in contrast to Hypothesis 9.3, which predicted that declines in academic engagement would be associated with increases in emotional autonomy across the freshman year.

Results from the joint parental academic engagement – functional autonomy model were parallel to those from the parent support and contact models: There was a significant negative relationship between the slope of parental academic engagement and the slope of functional autonomy (B = -.51, p < .01). Each one standard deviation unit increase in the slope of parental academic engagement across the freshman year (i.e., less decline in academic engagement) was associated with a .93 standard deviation unit decrease in student's reports of functional autonomy across the freshman year (β = -.93, SE = .08, p < .001). In other words, increases in parent's academic engagement were strongly linked to steeper decreases in student's reports of functional autonomy over the freshman year (Table 20). The intercept of parental academic engagement was unrelated to the slope of functional autonomy, but it was significantly and negatively associated with the intercept of functional autonomy (B = -.57, p < .001): A one standard deviation unit increase in the starting level of parental academic engagement was related to a .45 standard deviation unit decrease in student's reports of functional autonomy at the beginning of the freshman year (β = -.45, SE = .04, p < .001). Covariate associations were similar to the original growth curve model with, the exception of a significant association between both student race (B = -.08, p < .05), and paternal education level (B = .05, p < .05) and the intercept of functional autonomy. These results indicate minority students reported lower levels of functional autonomy compared to Caucasian

students, and higher levels of father's education were related to higher levels of functional autonomy at the beginning of the freshman year in the joint model (Table 20). Global fit indices for the joint parent academic engagement – functional autonomy model reflected a good fit, χ^2 (71, 1278) = 131.42, $p < .001$, RMSEA = .03, CFI = .98, TLI = .98. This joint model also explained a significant amount of variance in the intercept (R^2 = 60%) of functional independence, which is important considering the original covariate growth curve model explained 47% of the variance in the intercept of functional independence (variance explained in the slope was not estimated because the random effect for the slope was fixed to zero). Results from this joint model are in contrast to Hypothesis 9.3, which predicted that declines in academic engagement would be associated with increases in functional autonomy across the freshman year.

Results from the joint parental academic engagement – attainment of criteria for adulthood model were parallel to those from the joint parent contact model: There was no significant association between the slope of parental academic engagement and the slope of attainment of adult criteria (Table 20). Also akin to the joint parent contact model, the intercept of parental academic engagement was unrelated to both the slope and intercept of attainment of adult criteria. Covariate associations were similar to the original growth curve model. Global fit indices for the joint parental academic engagement – attainment of adult criteria model reflected a good fit, χ^2 (71, 1278) = 121.74, $p < .001$, RMSEA = .02, CFI = .97, TLI = .96. Similar to the original covariate growth model, this joint model explained a significant amount of variance in the intercept of attainment of adult status criteria (R^2 = 12%). Results from this joint model are in

contrast to Hypothesis 9.3, which predicted that declines in academic engagement would be associated with increases in attainment of adult status criteria across the freshman year.

Table 20. *Joint model results for associations between parental academic engagement and freshmen's individuation.*

	Emotional Autonomy		Functional Autonomy			Attainment of Adult Status Criteria		
	Intercept (*SE*)	Slope (*SE*)	Intercept (*SE*)	Slope (*SE*)	Quadratic (*SE*)	Intercept (*SE*)	Slope (*SE*)	Quadratic (*SE*)
Fixed Effects								
Controls								
Sex[a]	-.16*** (*.04*)	.01 (*.02*)	-.08* (*.04*)	–	–	-.01 (*.04*)	–	–
Race[b]	-.16** (*.06*)	-.01 (*.03*)	-.09 (*.05*)	–	–	-.04 (*.05*)	–	–
Housing[c]	-.06 (*.08*)	.01 (*.04*)	-.004 (*.07*)	–	–	-.04 (*.08*)	–	–
Mother's Education	.09*** (*.02*)	-.004 (*.01*)	.03 (*.02*)	–	–	-.02 (*.02*)	–	–
Father's Education	.06* (*.02*)	-.001 (*.01*)	.05* (*.02*)	–	–	-.02 (*.03*)	–	–
Parental Payment	-.03* (*.02*)	-.002 (*.01*)	-.07*** (*.02*)	–	–	-.09*** (*.02*)	–	–
Relationship Quality	-.60*** (*.04*)	-.02 (*.02*)	-.44*** (*.03*)	–	–	.16*** (*.04*)	–	–
Parent Involvement								
AcaEng[d] Intercept	-.27*** (*.05*)	.03 (*.02*)	-.57*** (*.05*)	.02 (*.02*)	–	-.07 (*.05*)	.01 (*.03*)	–
AcaEng Slope		-.54† (*.30*)		-.51** (*.20*)	–		-1.07 (1.11)	–
Mean	4.62*** (*.19*)	-.25* (*.10*)	5.53*** (*.20*)	-.30*** (*.08*)	.04*** (*.01*)	4.36*** (*.21*)	-.35 (*.24*)	.03** (*.01*)
Random Effects								
Variance	.26*** (*.02*)	.01* (.004)	.27*** (*.02*)	–	–	.21*** (*.02*)	–	–
$Covariance_{i,s}$ Outcome	-.01** (.01)		–			–		
$Covariance_{i,s}$ AcaEng	-.01 (*.01*)		-.02* (*.01*)			-.003 (*.01*)		
Model Fit Statistics								
χ^2	192.22		131.42			121.74		
df	63		71			71		
N	1278		1278			1278		
p-value	.00		.00			.00		
CFI	.97		.98			.97		
TLI	.95		.98			.96		
RMSEA	.04		.03			.02		
90% CI RMSEA	.03 – .05		.02 – .03			.02 – .03		
R^2	.57***	.28	.60***	–	–	.12***	–	–

Notes. The random effect (i.e., variance) for the slope and quadratic terms were set to zero in the functional autonomy and attainment of adult criteria models; thus, no associations between covariates and both the slope and quadratic fixed effects were estimated and no associations between the intercept of parental academic engagement and both the slope and quadratic fixed effects were estimated. The original growth model for emotional autonomy was linear. [a] Male = 0. [b] Caucasian = 0. [c] On-Campus = 0. [d] AcaEng = Parental Academic Engagement.

†$p < .10$, *$p < .05$, **$p < .01$, ***$p < .001$.

DISCUSSION

Grounded in emerging adulthood theory (Arnett 2000; 2004; Tanner, 2006) and life course theory (Elder, 1984; 1994), the overall objective of the current study was to investigate the role of parental involvement in student's academic success, well-being, and individuation during the freshman year of college. Although the aforementioned theoretical perspectives argue that parents remain an important socialization influence during this developmental time period, little is known about the characteristics of parent's involvement strategies or how they are associated with changes in student outcomes across the college transition. Furthermore, previous researchers have found cross-sectional links between parenting and college student outcomes, but longitudinal research is warranted to determine if changes in parent involvement across the first year in college are associated with changes in student outcomes during the same period of time. To address the limitations present in this previous research linking parenting and student outcomes and to answer a call for researchers to systematically investigate parent involvement during college (Sax & Wartman, 2008; Tierney & Auerbach, 2005), the current study conducted a four-wave prospective longitudinal study to investigate changes in parent involvement (i.e., parent support, contact, and academic engagement), changes in student outcomes (i.e., academic success, well-being, and individuation), and

associations between changes in involvement and changes in student outcomes across the first year in college. Collectively, findings make a unique and integral contribution to literature on parent involvement within the college context during emerging adulthood, notably how parent involvement changes over the course of the freshman year and how those changes are differentially linked to changes in student outcomes.

Changes in Parent Involvement

Results from the current study supported the hypotheses associated with research question one, in that parental support giving, parent-student contact, and parental academic engagement declined across the first year in college while controlling for key demographic background factors. More specifically, all three aspects of parent involvement portrayed a similar nonlinear growth curve that was characterized by moderately high initial levels of involvement, small negative linear slopes, and small positive quadratic slopes. In other words, at the beginning of the freshman year, students reported their parents provided them with support and contacted them about a few times a month, and had moderately high levels of engagement in their academics. Towards the end of the first semester in college and into the beginning of the spring semester, freshmen reported slight declines in involvement in which provision of support and contact occurred about once a month, and engagement in academics was at a moderate level. These linear declines then leveled off and stabilized towards the end of the second semester of the freshman year in college.

These findings are important because they represent the first longitudinal evidence for characterizing the nature of parent involvement during emerging adulthood and within the context of the first year in college. As such, results extend recent

descriptive research efforts in higher education on parent involvement (NSSE, 2007; Pryor et al., 2007; Wolf et al., 2009) and provide support for Wartman and Savage's (2008) multidimensional definition of parent involvement by showing that students report parental support, contact, and academic engagement are prominent involvement strategies across freshman year. Although a strength of the current study was the estimation of separate growth curves to investigate differences in trajectories of involvement strategies, future research should build upon these findings in two complimentary ways: (a) utilize confirmatory factor analyses (CFA) to determine if a latent parent involvement construct (i.e., a measurement model) is indicated by parent support, contact, and academic engagement, and (b) utilize full SEM models incorporating the latent parent involvement variable as a predictor of student outcomes. Pursing these avenues of research will help clarify the conceptual and operational definition of parent involvement in college, and in turn offer more concrete information for college parent programming on what constitutes developmentally appropriate involvement strategies. Preliminary findings from a recent CFA using the first wave of the current study's data support the multidimensional construct of parent involvement (Lowe, Dotterer, & Christ, 2014). More specifically, Lowe et al. (2014) found that parent support, contact, and academic engagement positively predicted parent involvement while controlling for student's sex, race, and parent's education level, and that support giving had the strongest factor loading, indicating freshmen perceived support as a major component of parent involvement.

The decline in parent support found in the current study is consistent with previous research that has also documented declines in tangible and intangible support

from late adolescence through emerging adulthood, and into young adulthood (Cooney & Uhlenberg, 1992; Hartnett et al., 2012). However, results from the current study offer unique evidence for how parent support can change just over the course of one academic year (9 months). While a robust body of literature has identified that emerging adults in college, notably freshmen, primarily utilize communication technology to facilitate frequent contact with their parents (Hofer, 2008; Sorokou & Weissbroad, 2005), no research to date has investigated how contact frequency may change as students undergo the transition to college. Findings from the current study not only compliment this body of literature, as freshmen reported communicating with parents on a regular basis ("a few times a month"), but also contribute to this literature by discovering that slight reductions ("once a month") in contact frequency occur across the freshman year. Thus, despite popular conceptions that parents and college freshmen are "electronically tethered" (Hofer, 2008), results from the current study instead suggest that on average, freshmen report communicating less often with their parents across the first year in college. Lastly, despite the theoretical (Wartman & Savage, 2008; Sax & Wartman, 2010) and empirical acknowledgement (e.g., Wolf et al., 2009; Ratelle et al., 2007) of parent's engagement in the academic lives of college students, there has also been no longitudinal research to date solely investigating changes in parental academic engagement. Findings from the current study provide initial evidence that freshmen students report slight declines in their parent's academic engagement (moderately high – moderate) that tapers off towards the end of the first year in college, and align with generalized conclusions from Wolf et al.'s (2009) cross-sectional study that parental academic engagement decreases across years in college.

In addition to modeling average changes in parent involvement across the freshman year, the current study also assessed variability (i.e., random effects) around these average trends and explored if key demographic background factors explained variability in the growth curve components. All three aspects of parent involvement had significant random effects for the intercepts, but not the quadratic slopes, and significant random effects for the linear slope were found for parent support and contact, but not academic engagement. Interestingly, the demographic covariates explained a significant amount of variance in the intercepts of all three aspects of involvement, but not the linear slopes. This suggests that contextual factors beyond basic demographic variables, such as peer and teacher relationships, may better explain interindividual differences in the rate of change in parent involvement as these factors have been found to be very important for promoting college adjustment (Komarraju, Musulkin, & Bhattacharya, 2010; Swenson, Nordstrom, & Hiester, 2008). Nonetheless, overall results for covariate – intercept associations were consistent with previous research on individual differences in parenting during emerging and young adulthood and revealed: (a) female students reported higher levels of parent support and contact at the beginning of the freshman year (e.g., Fingerman et al., 2009); (b) higher levels of parental payment for education was related to higher levels of parent support and academic engagement at the beginning of the freshman year (e.g., Lowe et al., 2015); (c) higher levels of relationship quality were related to higher levels of all three aspects of parent involvement at the beginning of the freshman year (e.g., Swartz et al., 2011), (d) off-campus students reported higher levels of contact frequency at the beginning of the freshman year (e.g., Bradley-Geist & Olson-Buchanan, 2014), and (e) higher levels of maternal and paternal education were related to

higher levels of academic engagement at the beginning of the freshman year (e.g., Wolf et al., 2009). The only significant covariate – linear slope association was in the contact growth model, and revealed that minority freshmen reported steeper declines in contact frequency with their parents compared to Caucasian freshmen. While this finding aligns with previous research documenting ethnic differences in levels of parent involvement (Wolf et al., 2009; Fingerman et al., 2011), it should be interpreted with caution considering this is the first known investigation of associations between demographic factors and longitudinal changes in parent involvement.

In sum, although the observed declines in parent involvement across the freshman year were modest, these findings not only fill acknowledged gaps in literature on the characteristics and nature of parent involvement within the context of higher education (Sax & Wartman, 2010; Wartman & Savage, 2008), but also support the theory of emerging adulthood (Arnett, 2000; 2004) by providing quantitative evidence for how parents remain connected to their children during this developmental period. Although Arnett (2004; 2006) and other prominent scholars who specialize in the transition from adolescence to young adulthood (e.g., Settersten, 2012) have written at length about how interdependence between parents and children is integral to a successful transition to adulthood, absent from this body of work is the identification of specific parenting strategies that occur within this process of interdependence. Furthermore, although the theory of emerging adulthood claims that interdependence is characterized by a gradual decline in youths' reliance on parents that is brought about by their transition into other autonomy-supportive environments like college (i.e., recentering; Tanner, 2006), with few notable exceptions (e.g., Swartz et al., 2011), there is little evidence to support these

proposed longitudinal changes in parenting strategies during this developmental period. Following, the current study's findings illuminate these gaps and advance the theory of emerging adulthood by first identifying three distinct behavioral strategies parents may employ to connect to their child within the process of interdependence, and second by documenting declines in these strategies at the beginning of this developmental stage. It is important to note that the slight reductions in involvement observed in the current study lend credence to the idea that the process of interdependence is gradual and does slowly unfold across emerging adulthood. What remains to be explained, however, is if declines in parent involvement are explained, fully or in part, by increases in youths' self-dependence that is cultured within the autonomy-supportive context of college. In other words, it is unclear what is driving the observed declines in parent involvement: are parents withdrawing their support, contact, and academic engagement because they perceive their child to have made gains in self-sufficiency, or are parents withdrawing their involvement because, for example, they think they should regardless of their perceptions of their child's maturity. Pursuit of this research would help clarify the mechanisms underlying the observed changes in parent involvement, and as such would provide crucial evidence for Tanner's (2006) theory of recentering.

Changes in Student Outcomes

Academic success.

As predicted, there were increases in student's reports of their GPA and academic self-efficacy, but contrary to predictions results indicated stability in student's reports of academic persistence across the freshman year. More specifically, GPA and academic self-efficacy portrayed similar nonlinear growth curve models that were characterized by

moderately high initial levels of both academic outcomes, small positive linear slopes, and small negative quadratic slopes. In other words, at the beginning of the freshman year, students reported GPAs around a B+ to A- and moderately high levels of academic self-efficacy. Towards the end of the first semester and into the beginning of the spring semester, freshmen reported slight increases in their GPA and academic self-efficacy that reflected GPAs around an A- to A+ and high levels of efficacy. These linear increases then slowed down and leveled off towards the end of the second semester of the freshman year in college.

The current study's findings for academic success extend the existing cross-sectional literature on first year college GPA (e.g., Wintre et al., 2011), and contribute to the lack of longitudinal research on overall academic self-efficacy during college, provided one exception that measured domain-specific efficacy (i.e., science efficacy; Larose et al., 2006). For instance, although researchers have concluded that the college transition is a salient academic stressor via declines in GPA from the end of high school to the first semester in college, and that students tend to rebound from this initial acute stressor via increases in GPA from the first to second semester in college, a lack of longitudinal work limits these conclusions. Following, the positive nonlinear trajectory of GPA documented within the current study provides integral information to connect the dots on how academic achievement changes across the first year in college. Considering prior levels of academic achievement were controlled, notably HSGPA and SAT percentile which have both been found to be robust predictors of college achievement (Richardson, Abraham, & Boyd, 2012), a stronger level of confidence can be placed in the change trajectory for GPA identified in the current study. Results for academic self-

efficacy also provide key evidence for how freshmen's overall belief in their abilities to be academically successful changes over the first year in college, and align with theory on self-efficacy that suggests increases in efficacy will occur as youth obtain successful results with their academic efforts (Bandura, 1997). Future researchers should explore freshmen's acquisition of successful academic efforts, or mastery experiences, as a potential process underlying the observed increases in academic self-efficacy. Findings from this work would help identify if gradual increases in academic self-efficacy over the first year occur as a function of students becoming more adjusted to the rigors of college academics and thus more aware of their abilities within that context.

As mentioned, results for academic persistence did not align with the current study's hypothesis and instead demonstrated stability in this construct over the freshman year. While the initial model (without covariates) indicated the fixed effect for the linear slope was negative, this effect size was small and became non-significant in the model with covariates. Moreover, the intercept for academic persistence was towards the upper limit of the scale, meaning that there was little room to capture positive growth. While a strength of the current study was the assessment of academic persistence as a continuous variable to facilitate investigating changes in this construct, findings indicate that freshmen enter college feeling committed to their education and remain feeling this way throughout the entire first year. There were, however, significant random effects for the linear slope of persistence, meaning that there were individuals in the sample that reported increases or decreases in their persistence. These findings offer new insight into theory on student persistence, and as such offer longitudinal evidence to support the idea that the process of student departure from college is a long, and gradual process (Bean,

1980; 1982; Tinto, 1975; 1988). Future researches should track academic persistence beyond the freshman year to determine if academic persistence changes over the course of a college career, and explore what factors may explain those changes.

All three indicators of academic success had significant random effects for the intercepts and linear slopes, but not quadratic slopes, meaning that there were interindividual differences in the starting levels and linear rates of change in academic success. Results from the covariate academic models revealed that the demographic covariates explained a significant amount of variance in the intercept of GPA, self-efficacy, and persistence, but not their linear slopes. Interestingly, the main demographic covariates that explained variance in the intercepts of academic success were previous measures of academic achievement. This finding aligns with results from a meta-analysis by Richardson and colleagues (2012) that found three common demographic variables used as predictors of college GPA (i.e., sex, age, and socioeconomic status) explained very small variance in college GPA compared to prior levels of academic achievement, notably HSGPA. In conjunction, these findings imply that future researchers should continue to include high school achievement measures as covariates in analyses predicting college academic outcomes. Following, results for covariate – intercept associations were consistent with previous research on individual differences in academic outcomes during college and revealed (a) prior levels of academic success, notably HSGPA, had strong positive associations with all three academic outcomes at the beginning of the freshman year (e.g., Richardson et al., 2012) (b) higher levels of parental education were linked to higher GPAs at the beginning of the freshman year (e.g., Wolf et al., 2009); (c) female students reported lower levels of academic self-efficacy at the

beginning of the freshman year (Pajares, 2002); and (d) higher levels of relationship quality were linked to higher levels of academic self-efficacy and persistence at the beginning of the freshman year (Ratelle et al., 2007). The only significant covariate – linear slope association was in the persistence growth model, and revealed that the change in academic persistence varied across levels of relationship quality between parents and emerging adults. While this finding is interesting and conveys that the quality of the relationship between parents and emerging adults has implications for changes in freshmen's feelings of academic persistence, it should be interpreted with caution and needs replication especially considering the effect size for this association was small.

Well-being.

Results for depression were contrary to predictions and showed stability in student's reports of depressive symptoms across the freshman year, whereas results for risky behaviors aligned with predictions and demonstrated linear increases in student's engagement in risky behaviors across the freshman year. More specifically, freshmen reported experiencing a consistent level of depressive symptoms (i.e., one to two times a week) across their first year in college, and at the beginning of the freshman year students reported engaging in risky behaviors about once a month and then reported a slight, steady increase in risky behaviors across the first year in college (i.e., a few times in the past month).

Results for depression contrast a body of literature that suggests opposite perspectives on the trajectory of depression across the first year in college: Declines in depression (e.g., Gall et al., 2000) versus increases in depression (e.g., Conley et al.,

2014). While the average trajectory of depression in the current study reflected stability, there was variability around the growth components which meant that there were students who reported different starting levels and changes in their depression, either increasing or decreasing, across the freshman year. However, the model did not capture an overall average change trajectory and the covariates that were entered to explain variability around the growth components also did not explain any between-person differences in the linear slope for depression. There was, however, a strong negative association between relationship quality and the intercept of depression that aligns with previous research (e.g., Wintree & Yaffee, 2000), but these starting level differences did not persist over time as evidenced by a non-significant association between the linear slope of depression and relationship quality. Differences between the scales used in the current study and previous longitudinal research on mental health (e.g., Conley et al., 2014) may explain the contrasting findings. The timeframe for data collection in the current study compared to this previous work may also explain the contradictory findings. For example, Conley and colleagues' (2014) initial data were collected one week prior to the start of the freshman year. Results depicted a steep increase in psychological distress from this point to the middle of the freshman year, but a general plateau or stability in student's psychological distress from the middle to the end of the freshman year. Following, the consistent level of depressive symptoms reported by students in the current study align with Conley and colleagues' (2014) results, which suggests that perhaps freshmen are not able to recover from the stress of transitioning to college and as such become accustomed to a generalized moderate level of depressive symptoms across their first year in college.

Future longitudinal work is needed to test this idea and to investigate what predicts increases, decreases, or stability in student's mental health during the college transition.

More broadly, researchers who explore trajectories of depression have acknowledged the large heterogeneity of possible developmental patterns of the manifestation and maintenance, or lack thereof, of depressive symptoms from adolescence and into young adulthood (Cicchetti & Toth, 1998; Costello, Swendsen, Rose, & Dierker, 2008; Rodriguez, Moss, & Audrain-McGovern, 2005; Stoolmiller, Kim, & Capaldi, 2005). Furthermore, work from these scholars has documented different trajectory groups of depression. For instance, Costello and colleagues (2008) utilized a large sample from the National Longitudinal Study of Adolescent Health to investigate the continuity or discontinuity of depressed mood from age 12 to 25. Overall results indicated that there were four depression trajectory groups where about 60% of the sample was in "stable low depressed mood" group, about 29% was in the "no depressed mood" group, about 9% was in the "early high declining depression" group, and about 2% was in the "late escalating depressed mood" group. These findings convey that in a large, nationally representative sample most youth report a low, continuous level of depressed mood or no depressive symptoms at all. Results from the current study seem to align with this work, in that because there is variability in the developmental course of depression it may be inappropriate to conclude an overarching global pattern of depression across the freshman year in college. However, because the current study also found a low, stable level of depressive symptoms across the freshman year, it may be that this pattern reflects what most freshmen experience throughout their transition to college. Future research should expand upon this work by investigating if these subpopulation

trajectory groups are present among freshmen college students and if they persist across students' educational careers. Along with the results from the current study, findings from this line of future work have implications for college mental health prevention programs, notably the idea that providing information to first year students on steps to receive help with coping with the stress of their transition should occur well beyond the initial "welcome weeks" of college. In short, prevention messages and activities should be proactive and ongoing.

Results for risky behaviors, on the other hand, supported the current study's hypothesis and aligned with previous research (e.g., Fromme et al., 2008). While the change in risky behaviors was small, it did occur and supports developmental perspectives that engagement in risky behaviors during emerging adulthood is normative (Arnett, 2005). Covariates explained a small amount of variance in the intercept but not the linear slope, and covariate-intercept associations aligned with previous work: (a) females reported lower levels of risky behaviors at the beginning of the freshman year (ACHA, 2012), and (b) higher levels of relationship quality were linked to lower levels of risky behaviors at the beginning of the freshman year (Wetherill et al., 2010). Overall model fit for risky behavior's growth curve was, however, adequate at best, and there was a significant amount of intercept and slope variance unexplained. Based on work documenting strong links between personality factors and engagement in risky behaviors (Bogg & Roberts, 2004; Turiano, Whiteman, Hampson, Roberts, & Mroczek, 2015), future researchers should explore these personal characteristics as predictors of the variance in changes in risky behaviors. For instance, perhaps freshmen that report lower

levels of conscientiousness demonstrate steeper increases in their risky behaviors over the freshman year because they feel less worried about consequences and enjoy spontaneity.

Individuation.

Findings for individuation were contrary to predictions and found that emotional independence, functional independence, and attainment of adult criteria declined over the first year in college. More specifically, emotional independence demonstrated slight linear decreases across the freshman year, whereas functional autonomy and attainment of adult criteria portrayed similar nonlinear growth curve models that were characterized by moderately high initial levels of both individuation constructs, small negative linear slopes, and small positive quadratic slopes. In other words, at the beginning of the freshman year, students reported feeling moderately high levels of functional autonomy from their parents and attainment of adult criteria. Towards the end of the first semester in college and into the beginning of the spring semester, freshmen reported slight decreases in their emotional independence and attainment of adult criteria that reflected moderate to moderately low levels of both constructs that slowed down and leveled off towards the end of the second semester in college.

These results are novel, in that all research to date on individuation has been cross-sectional, and thus provide an important contribution to documenting the process of individuation during the beginning of emerging adulthood. While previous cross-sectional research is important (e.g., Shulman & Ben-Artzi1, 2003) and supports theories that propose increases in individuation across emerging adulthood (e.g., Hoffman, 1984), the large age span of groups compared in this literature (e.g., 16–18 versus 21–23 years old) precludes the ability to accurately capture the proposed gradual process of

individuation. Following, the current study's findings suggest that emerging adults enter college feeling rather confident in their autonomy, but over the course of the freshmen year they seem to reevaluate this perspective and discover that they may not have been as independent as they initially felt. In short, these trends may indicate emerging adults somewhat underestimate their reliance upon their parents and overestimate their attainment of adult criteria throughout their first year in college. An alternative explanation for these patterns could be that freshmen experience a "little fish in a big pond" effect, in that freshmen compare themselves to the larger peer group on campus and recognize the maturity and autonomy of juniors and seniors compared to themselves. Following, peer comparisons in maturation could also be driving the declines in individuation. While the overall model fit for all individuation models was excellent, indicating that the growth curve estimated for these constructs reflected the entire sample well, future work needs to replicate these trends to have confidence in these trajectories of individuation and include a measure of peer comparison in maturity to determine what is driving changes in individuation. Future researchers should also extend the assessment of individuation across years in college to determine if increases in individuation are made as emerging adults progress through their years in college.

The covariate-intercept associations revealed an interesting finding across two models: Higher levels of both parental payment of college education and relationship quality were linked to lower levels of emotional and functional individuation at the beginning of the freshman year. These associations align with previous literature on an over-involved parenting style among college students popularly known as helicopter parenting. This work documents positive links between parental payment of college

educational expenses and helicopter parenting (Lowe et al., 2015) and negative links between helicopter parenting and college student's feelings of autonomy (Schiffrin et al., 2014). In combination with this literature, the covariate-intercept associations may suggest that freshmen whose parents are more financially and emotionally invested at the onset of college may report lower levels of individuation because they may feel an overwhelming parental presence in their lives. Parental payment was also negatively associated with the intercept of attainment of adult criteria, however this association seems to reflect a developmentally appropriate perspective in that students understand they have not "gained financial independence" if their parents are paying for their college. Within the covariate model for emotional independence, there were two significant intercept associations that also aligned with previous research, that of gender and racial differences in emotional attachments (Gnaulati & Heine, 2001), and one final positive association with maternal education that is intriguing. Given more educated families tend to endorse greater expectations for academic success (Hill et al., 2004), which requires youth to develop higher levels of responsibility and emotional stability, it is possible this finding indicates highly educated mothers raised more emotionally independent emerging adults. However, given this association was not found for fathers, these results should be interpreted with caution and future researchers should further explore what is unique about mother's education level that explains emotional independence among freshmen students at the onset of college.

Linking Changes in Parental Involvement and Student Outcomes

Parent involvement and academic success.

Contrary to hypotheses, changes in parent support, contact, and academic engagement were unrelated to changes in freshmen's GPA, academic-self efficacy, and academic persistence across the freshman year. These findings were surprising, given previous studies have shown associations between parent involvement and student's academic outcomes (e.g., Cutrona et al., 1994; Strage & Brandt, 1999). However, this previous work utilized student's reports of parent's behaviors at one time point, either just prior to the college transition or at the beginning of the academic year, as a predictor of academic outcomes that were measured concurrently or at the end of the academic year. Given these design limitations, it is unfeasible to determine if the cross-sectional associations documented in this literature remain consistent or change over time. Although the current study's findings were contrary to hypotheses, its design and analytical methods provide strength to the findings. Following, overall results suggest that while parent involvement and academic outcomes are changing across freshman year, their longitudinal change processes may not be related. These findings extend the cross-sectional literature linking parent involvement and academic success by showing that the differences in outcomes that were predicted by parenting at the beginning of the year may minimize and level off towards the end of the academic year.

This conclusion is supported by results from the current study that found significant associations between the intercepts of parent involvement and student academic outcomes. More specifically, higher levels of parent support were related to lower levels of GPA and academic persistence at the beginning of the freshman year, and

higher levels of parental academic engagement were related to higher levels of academic persistence at the beginning of the freshman year. These starting level differences in academic outcomes are in agreement with previous literature (Hamilton, 2013; Ratelle et al., 2007), and provide evidence that parent involvement strategies are differentially related to freshmen's academic outcomes. Importantly, higher levels of parent contact at the beginning of the freshman year were related to decreases in academic self-efficacy over the first year, suggesting that parents' frequent efforts to remain in touch at the college transition may have diminishing returns for student's confidence in their academic skills across the freshman year. From a Self-Determination perspective (Ryan & Deci, 2000), perhaps frequent communication with parents at the onset of college creates a context that is not supportive of student's competence, which translates into freshmen feeling less efficacious about their academics over the course of the first year. If freshmen perceive their parents are omnipresent, they may be less inclined to internalize any academic successes as their own. This absence of mastery experiences may be detrimental for freshmen's academic self-efficacy (Bandura, 1997). Future researchers should explore this proposed mechanism by investigating if the negative link between parent involvement and academic self-efficacy is explained by reductions in student's autonomy. While these starting level differences in academic outcomes may have implications for college parent programming that focuses on first-year parents and students, including the suggestion that more involvement may not always benefit freshmen's academic success at the onset of college, future longitudinal work is needed to determine if this process is top-down or bottom-up. Following, because conclusions regarding the direction of effects can not be determined from the current study's design,

results from this study need further validation and replication before they can inform parent programming.

Parent involvement and well-being.

Results from the joint parent support and contact models supported the overall hypothesis linking changes in involvement and student well-being, but were in the opposite direction than was expected. Specifically, results from these models were parallel and showed increases in parent support and contact were associated with increases in freshmen's reports of depressive symptoms and engagement in risky behaviors across the first year in college. There were also starting level, or intercept, associations that showed higher levels of parent support and contact were related to more depression and risky behaviors among freshmen at the start of the academic year. These results were surprising and are divergent from previous literature that has concluded parent involvement during the college transition may be a protective factor based on negative associations between parent involvement and freshmen's depression (e.g., Mounts et al., 2006) and risky behaviors (e.g., Abar & Turrisi, 2008). While contrary to expectations, these results provide an interesting and important new perspective on links between parenting and well-being among freshmen college students as they demonstrate the importance of studying associations between the change processes of both constructs, rather than cross-sectional associations. Thus, the findings are notable and extend previous literature because they show the following: (a) although the trajectory for depressive symptoms demonstrated stability, increases in the frequency of parent support and contact over the freshman year were related to increases in depressive symptoms over the same period of time, and (b) although the trajectory for risky behaviors

demonstrated normative positive growth, increases in the frequency of parent support and contact over the freshman year were related to greater increases in risky behaviors over the same period of time and explained a significant amount of variance in that rate of change.

Results from a recent study by Taylor, Doane, and Eisenburg (2014) compliment the current study's findings, notably for depression, and support the idea that reciprocal effects may explain negative associations between parenting and well-being. Using three waves of data (end of high school, first semester, and second semester) Taylor et al. (2014) estimated a SEM to investigate concurrent and cross-lagged associations between internalizing symptoms (depression and anxiety), ego-resiliency, and social support (family and peers). Importantly, results found concurrent negative associations between internalizing symptoms and social support from family; however, the cross-lagged path for these variables was not supported, leading the researchers to conclude that there was "a possible undetected reciprocal effect" (p. 112). Additionally, results supported a cross-lagged path from ego-resiliency to social support from family, indicating freshmen with higher levels of resiliency (adaptability and resourcefulness) garnered more support from their families across the college transition. In conjunction with the current study's results, there is evidence that the relationship between parenting and well-being is bidirectional: In addition to the influence of parent involvement on depression and risky behaviors, freshmen's current mental health status and engagement in risky behaviors also influence parent's provision of involvement and student's perspectives on the amount of involvement they experience. Given that freshmen are at risk for higher levels of depression and risky behaviors during the transition to college (e.g., Wintre & Yaffe,

2000; ACHA, 2012), it may be that their manifestation of these characteristics influences parents to be more involved across the freshman year. This bidirectional hypothesis between social support and well-being is generally supported in the literature (e.g., Turner & Brown, 2010), but the direction of effects is difficult to unpack because most previous research has been cross-sectional and the current study did not control for prior levels (e.g., the end of high school) of parent involvement and well-being. Following, future researchers should attend to these limitations and pursue longitudinal research that not only investigates links between changes in parent involvement and well-being over time, but also accounts for prior levels of these constructs so that results can be viewed as predicting change over time. While the goal of the current study was to assess links between involvement and overall risky behaviors, future researchers should also investigate these links with domain specific risky behaviors, as different types of involvement strategies may have different associations with risky sexual, drug, and drinking behaviors. This point is especially relevant considering the current study found no evidence for links between parent's academic engagement and freshmen's depression or risky behaviors. Findings also have implications for the design of college prevention programs that focus on increasing student's knowledge and changing their attitudes about mental health and risky drug use, sexual activity, and drinking (DeJong & Lanford, 2002). These programs could benefit by accounting for the role of parents in the development of student's well-being by, for example, encouraging students to view their parent's involvement as supportive, rather than controlling, and helping students learn how to establish realistic and developmentally appropriate boundaries with their parents. Findings could also contribute to college parent programming by helping parents better

understand normative trends in student's well-being across the college transition and encouraging them to provide support and contact when they think their child might be feeling down or engaging in some risky behaviors. This parent program implication is supported by research showing protective effects of parental monitoring on college student's risky behaviors, especially within the context of a supportive relationship (Padilla-Walker, Nelson, Madsen, & Barry, 2008).

Parent involvement and individuation.

Results from the joint involvement-individuation models supported the overarching hypothesis that changes in involvement would be linked to changes in student individuation, but these associations were in the opposite direction than was predicted. Specifically, increases in parent support, contact, and academic engagement were related to decreases in freshmen's reports of emotional and functional independence, and increases in parent support were also linked to decreases in attainment of adult criteria. Intercept associations from these models also revealed similar results, in that higher levels of involvement were related to lower levels of individuation at the beginning of the freshman year. These findings were surprising, considering qualitative research (e.g., Cullaty, 2011) and longstanding theoretical perspectives on individuation (Blos, 1979; Chickering & Reisser, 1993; Hoffman, 1984) suggest that a supportive parental presence is integral to emerging adult's successful attainment of individuation. Although results were different than expected, they represent an enlightening and novel contribution to the literature linking parenting and individuation because they provide quantitative evidence documenting how parenting is related to the attainment (or lack thereof) of individuation. Thus, the findings are important and extend previous literature

because they show the following: (a) increases in parent involvement over the freshman year were related to steeper declines in the already decreasing trajectories of individuation; and (b) that the starting level and rate of change in parent involvement explained significant variance in both the intercept and linear slope of individuation, especially in the models linking parent support and contact with emotional independence.

Results from a recent study by Schiffrin et al. (2014) compliment the current study's findings, and support the idea that lower levels of student's feelings of autonomy and competence may be the mechanism that explains the negative association between parenting and individuation. Grounded in self-determination theory, Schiffrin et al. (2014) estimated an indirect effects model that found helicopter parenting (over-involvement) was negatively related to college student's feelings of autonomy and competence, which in turn predicted higher levels of depression and anxiety. Importantly, the authors concluded "Helicopter parenting behaviors may also interfere with feeling a sense of competence because such parental actions can convey the message that parents do not have faith in their child's abilities" (p. 554). This conclusion can be extended to the current study and suggests that increasing levels of parent support, contact, and academic engagement may inhibit student gains in individuation because they may prevent freshmen from developing the confidence that is integral to self-problem solving. For example, freshmen who experience increases in their parents asking them about their performance in their classes may feel that their parents do not believe in their abilities to be successful, leading to declines in autonomy and competence, and in turn declines in individuation. While this consequence of increasing parental involvement is likely unintended, evidence from the current study suggests that it does occur. Future

researchers should explore this mechanism to clarify the underlying processes that link changes in involvement to changes in individuation.

All together, findings suggest that across the first year in college freshmen may struggle with finding a balance between desiring independence and relying on their parents for support, and that increasing levels of parent involvement across the first year may intensify their struggles with making gains in independence. It is important to note, however, that not all facets of parent involvement were linked to individuation (i.e., parent contact and academic engagement were unrelated to attainment of adult criteria), indicating that types of involvement strategies may be differentially perceived and related to student's reports of individuation. It is also important to note that the association between these change processes may be bidirectional, and/or that students rather than parents may drive this association. For instance, parents may become more involved over the course of the freshman year if they perceive their emerging adult needs increasingly more help navigating the challenging transition to college. In sum, although a strength of the current study was its longitudinal design, without prior measures of both constructs conclusions cannot be drawn regarding causal effects. Furthermore, perhaps the span of an academic year was not long enough to capture how changes in parent contact and academic engagement were related to attainment of adult criteria. Future research should explore these questions to identify what parenting factors, if any, are predictive of the major markers of the attainment of adulthood. Such work would make a valuable contribution to the theory of emerging adulthood, as it makes strong claims that parents are inherently tied to the process of youth developing the abilities to make

independent decisions, obtain financial independence, and accept responsibility for one's self (Arnett 2000; 2004).

Limitations, Future Directions, and Conclusions

The current study was the first of its kind to conduct a four-wave prospective longitudinal study to systematically investigate linear and nonlinear changes in parent involvement and student outcomes, as well as links between changes in involvement and student outcomes. Notwithstanding, there were limitations to the overall study that deserve mention and have implications for future research. First, the only perspective reflected in this study was that of college freshmen. Future studies should acquire the parental perspective to investigate if the findings from the current study are similar are different when using parent's report of their own involvement. Obtaining parent reports would also facilitate the ability to assess if divergence between parent and student report on involvement, both in magnitude and direction, are related to student outcomes. Results from these dyadic analyses would provide important insight about what happens when parents and students are on the same page about involvement, versus when they are not. Similarly, because previous work documents differences between parents and emerging adults in the criteria considered integral to transition to adulthood (Nelson et al., 2007), collecting parent's perspectives on their children's individuation would inform two related avenues of future research: (a) investigating if trajectories of individuation vary by reporter, and (b) investigating if variability in changes in involvement are explained by parent's perspectives on their child's individuation. Second, given researchers have found differences in parent involvement during emerging adulthood based on the gender of the parent (e.g., Swartz et al., 2011), future work that

disaggregates mothers' and fathers' involvement will help identify how their trajectories of support, contact, and academic engagement may differ. Accounting for the role of student gender in these analyses is also recommended to determine if involvement trajectories and their associations with student outcome trajectories depend on both parent and student gender. Findings from this line of research would not only contribute to literature on family processes during emerging adulthood, but would also inform college parent programming with relevant information for moms and dads experiencing the college transition with their son and/or daughter.

Third, although the sample recruited for the study was relatively large in size, it was somewhat homogenous in its racial distribution (i.e., mostly Caucasian) and reflected the perspectives of students at a large, public Midwestern research university. Following, to determine if the results of the current study are generalizable to domestic freshmen students across US institutions of higher education, future researchers should examine associations with more ethnically diverse students and different types of universities (e.g., small, private institutions). These recommendations are valid, given researchers have found ethnic differences in the frequency of involvement behaviors (Wolf et al., 2009; Suizzo & Soon, 2006), as well as ethnic differences in associations between parent's involvement strategies and students' motivational outcomes (i.e., internal locus of control; Suizzo & Soon, 2006). Variations in the environmental context of colleges, such as campus alcohol policies and the proximity and density of alcohol outlets around campuses, have also been linked to differential engagement in risky behaviors (i.e., risky drinking; Wechsler & Nelson, 2009). Feasible next steps for this research include addressing questions such as "how are the parents of ethnic minority students involved

across the college transition," and "do structural characteristics of colleges and universities explain variability in changes in parent involvement, student outcomes, and their joint associations." Results from this work may help parent programs tailor the content of the provided information to best serve all families across multiple different institutions.

Fourth, there were some limitations in the measurement of parent involvement and student outcomes. Although the current study's goal was to assess contact with parents as a total sum score to reflect the overall frequency of communication between parents and students regardless of the mode of communication, perhaps different modes of contact portray different growth curve patterns. Provided that cell phones are commonly reported to be the most utilized form of communication technology between parents and college students (e.g., Chen & Katz, 2009), it is likely that students in the current sample reported primarily using this mode of communication for phone calls and texting versus in-person or social media avenues. Thus, a next step would be to preserve the independence of the modes of communication and model separate growth curves to determine differences in the trajectories of the modes across the freshman year. Another measurement limitation was the inability to assess parent-emerging adult relationship quality as a time-varying covariate due to a high proportion of missingness in the created deviation variables. Determining if the documented changes in relationship quality during emerging adulthood (e.g., Aquilino, 1997) explain variability in the growth curve models of parent involvement, student outcomes, and their joint association will require future researchers to garner more complete relationship quality data. While measurement strengths of the current study included the examination of academic persistence as a

continuous variable and the extension of the Likert scale for attainment of adult criteria, findings for these models should be interpreted with caution and need replication since this was the first study to abide by these operational definitions. Relatedly, although the current study's goal was to assess engagement in risky behaviors as a total sum score to reflect the overall frequency of behaviors regardless of the domain, the modest model fit for this growth curve suggests that future researchers should investigate trajectories each domain of risky behaviors separately. Since previous work has found differences in the proportion of students engaging in types of risky behaviors (e.g., ACHA, 2012) and differences in the magnitude of change in partaking in types of risky behaviors from high school to college (e.g., Fromme et al., 2008), this line of future work is warranted. Results from this work would reveal how change trajectories for risky sexual, drinking, and drug behaviors vary across the first year in college, as well as how parent involvement may be related to these different developmental patters, and as such could better inform the content and sensitivity of the timing of the delivery of prevention programs (at the student and parent level).

Lastly, despite the strength of the statistical technique employed by the current study to handle missing data (i.e., FIML) and the large sample size obtained to facilitate these analyses, differential patterns of survey participation that were influenced by the study's recruitment design may have affected growth curve model estimations, especially because only about one-fifth of the sample participated in all measurement occasions. Although the recruitment design was carried out to protect against small sample sizes at each measurement occasion and a significant amount of attrition across the study, this design may have compromised model estimations. A recommended future design would

be to recruit, consent, and retain only one group of students, or to control for differential patterns of attrition/retention groups, or to run sensitivity analyses to determine if differential patterns of participation influenced model estimations, or to only include participants who completed most (75%) of the measurement occasions. Relatedly, in light of the strength of the current study's use of LGC to model trajectories of involvement, student outcomes, and their associations, measures of prior levels of these constructs were not included. Thus, to unpack the direction of effects, future work should also include pre-college measures as covariates to be able to more closely determine causal effects. In line with this design recommendation, future researchers should also employ cross-lagged statistical analyses to be able to disentangle whether links between parent involvement and student outcomes reflect a top-down, bottom-up, and/or bidirectional process. Findings from this work would help answer important questions such as: "Are declines in student individuation predictive of increases in parent involvement over the freshman year, or are increases in parent involvement predictive of declines in student individuation over the freshman year, or are these change processes reciprocally determined?" Implications for informing the content of parent programming, especially regarding how parents' involvement may or may not be associated with changes in student outcomes, will only be appropriate when future research disentangles the direction of effects. On the other end of the time spectrum for collecting data, future work should continue to assess trajectories of involvement, student outcomes, and their associations beyond the freshman year to gain a holistic perspective of how these change processes unfold throughout the undergraduate years. The need for this future work is highlighted by the small effect sizes for the change trajectories estimated in the current

study, in that perhaps a longer span of time is needed to better capture and explain changes in parent involvement, student outcomes, and their associations. It may be the case that different involvement strategies become more or less important for shaping academic, well-being, and individuation outcomes as students progress towards college graduation. Only through longer-term longitudinal studies can these ideas be addressed.

To conclude, the findings from this study add new knowledge on the nature of parent involvement during emerging adulthood and within the context of college, and as such represent an important advancement to the theory of emerging adulthood (Arnett, 2000; 2004; Tanner, 2006) by articulating specific strategies parents may use to remain connected to their child during the salient ecological transition to college. Findings also contribute further evidence characterizing the trajectories of freshmen student's academic success, well-being, and individuation. Importantly, findings convey how changes in involvement may have implications for changes in student outcomes, especially that of freshmen's well-being and individuation, and as such provide support for Elder's (1984; 1994) dual dynamic of family relationships which articulates that changes in family dynamics has implications for individual development. Although these specific findings are novel, design limitations present in the current study preclude the ability to accurately inform parent programming with information that specifically notes if these associations actually reflect a top-down process that starts with parents and ends with students. Considering these effects may be bidirectional in nature or may instead be driven by students rather than parents, results from this study are not yet ready to inform the content of parent programming that includes information on how parent involvement may "cause" certain student outcomes. Following, implications for parent programming derived from

the current study instead should focus on providing parents with more information on the developmental course of their involvement and their emerging adult's academic success, well-being, and individuation. Provided that parent programming for college students has become almost ubiquitous across institutions of higher education and that a recent review of these programs found that few were grounded in empirical evidence or conducted studies to assess links between participation in parent programming and student outcomes (Savage & Petree, 2013), the results from this study represent a notable contribution to closing the gap between program implementation and empirical research. For example, informing parents that it is normal to experience less contact with their emerging adult across the first year in college may help parents have more realistic expectations about the changes that occur in family relationships (Aquilino, 2006; Arnett, 2004) and involvement strategies during emerging adulthood. Similarly, a few simple and practical guidelines for college parents that are derived from the findings of the current study include "Ask your child what they are learning in their classes a few times a month at the beginning of the freshman year," and "It is normal for your child to display declining levels of autonomy and maturation throughout the freshman year." To maximize the likelihood of a successful college transition, researchers and university officials should devote effort to helping students and parents better understand what characterizes developmentally appropriate levels of parent involvement across the freshman year so that parents' involvement can make a positive contribution to student's outcomes.

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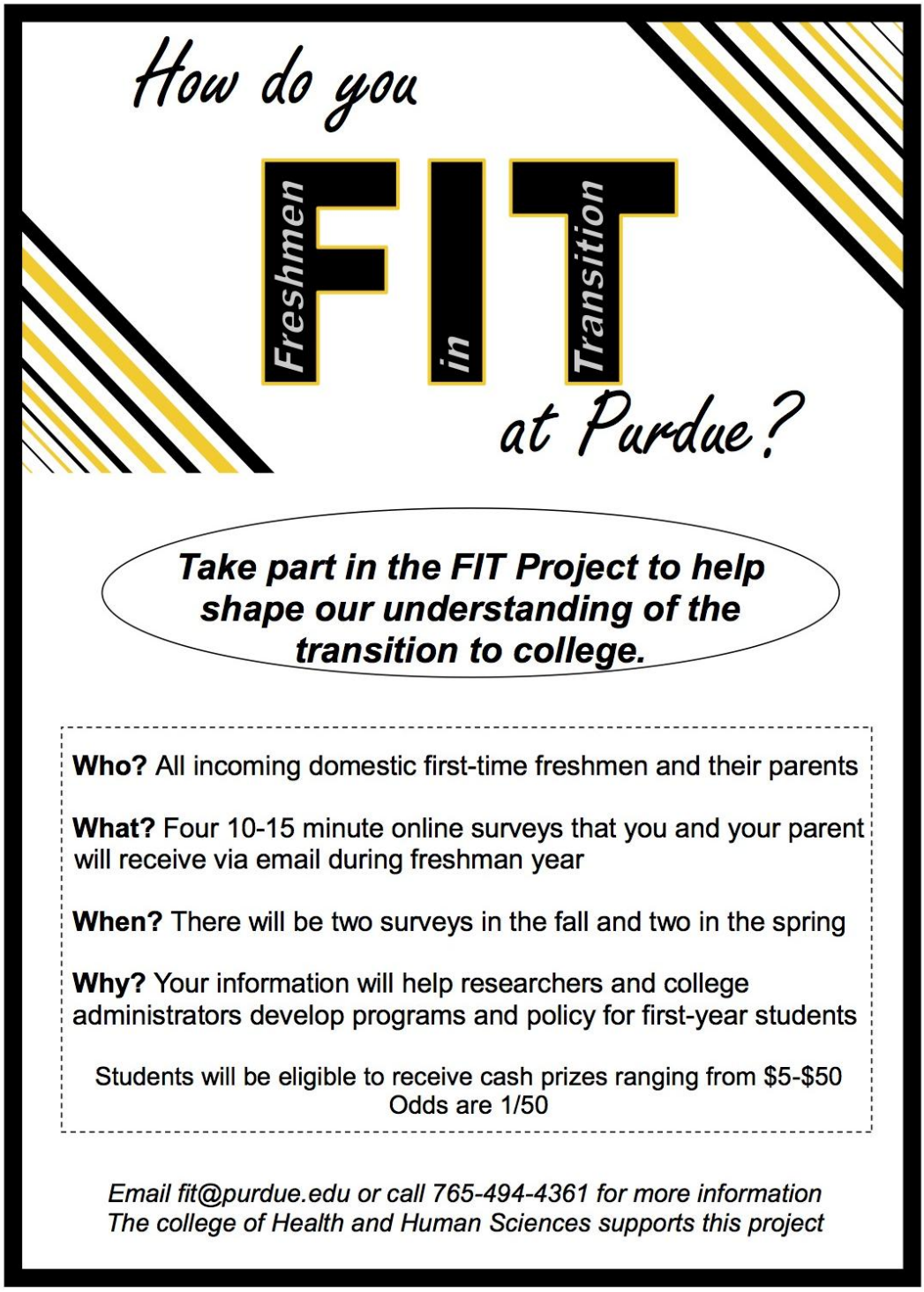
APPENDICIES

Appendix A: FIT Flyer



Appendix B: Student Survey

Items were reformatted for the Qualtrics platform, but the language remained the same.

Demographics Questionnaire

1. What is your age? _____

2. What is your gender?
    a. Male
    b. Female

3. What is your race/ethnicity?
    a. Caucasian/White
    b. Black or African American
    c. Hispanic or Latino
    d. Asian
    e. Native American or Alaskan Native
    f. Native Hawaiian or Pacific Islander

4. What is your residential status?
    a. Living on-campus
    b. Living off-campus
    c. Living off-campus with parents

5. What is your major? _____

6. What is your college?
    a. College of Agriculture
    b. College of Education
    c. College of Engineering
    d. College of Health and Human Sciences
    e. College of Liberal Arts
    f. Krannert School of Management
    g. College of Pharmacy
    h. College of Science
    i. College of Technology
    j. College of Veterinary Medicine

7. What is your **mother's** highest level of education?
    a. Less than a high school degree
    b. High school degree or GED
    c. Some college
    d. College degree
    e. Advanced degree (e.g., M.A., Ph.D., M.D.)

8. What is your **father's** highest level of education?
    a. Less than a high school degree
    b. High school degree or GED
    c. Some college
    d. College degree
    e. Advanced degree (e.g., M.A., Ph.D., M.D.)

9. How much are **your parents** paying for your college education?

None (0%)	Some (25%)	Half (50%)	Most (75%)	All (100%)
1	2	3	4	5

10. How much are **you** paying for your college education using the following financial sources?

		None (0%)	Some (25%)	Half (50%)	Most (75%)	All (100%)
1.	Scholarships	1	2	3	4	5
2.	Grants	1	2	3	4	5
3.	Loans	1	2	3	4	5
4.	Personal Funds (e.g., money earned from a job)	1	2	3	4	5

11. What was your cumulative high school GPA? _____

12. What was your ACT score? If you did not take the ACT, please leave this blank.
    _____

13. What was your total SAT score (combined Verbal & Math)? If you did not take the SAT, please leave this blank. _____

14. How did you hear about the Freshmen in Transition (FIT) Project? Please select all that apply.
    a. FIT information booth during STAR at the PMU
    b. Email advertisement from fit@purdue.edu
    c. Advertisement in the Purdue Group X newsletter
    d. Advertisement on PurdueBoard
    e. Information from academic advisor

Support from Parents

In the **past few months,** how often has your parent(s) provided you the following types of support?

		Not at All	Once Every Few Months	Once a Month	A Few Times a Month	Weekly	A Few Times a Week	Daily
1.	Emotional (e.g., expressing care and concern)	1	2	3	4	5	6	7
2.	Practical (e.g., assistance with everyday activities)	1	2	3	4	5	6	7
3.	Socializing (e.g., hanging out)	1	2	3	4	5	6	7
4.	Advice	1	2	3	4	5	6	7
5.	Financial (e.g., paying bills)	1	2	3	4	5	6	7
6.	Discussion about daily events	1	2	3	4	5	6	7

Contact with Parents

In the **past few months,** how often have you and your parent(s) communicated with each other using the following methods?

		Not at All	Once Every Few Months	Once a Month	A Few Times a Month	Weekly	A Few Times a Week	Daily
1.	In-Person	1	2	3	4	5	6	7
2.	E-Mail	1	2	3	4	5	6	7
3.	Phone (cell and/or landline)	1	2	3	4	5	6	7
4.	Texting	1	2	3	4	5	6	7
5.	Social Media (e.g., Facebook)	1	2	3	4	5	6	7

Parental Academic Involvement

Please rate how much your parent(s) takes part in your academics in the following statements.

		Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
5.	My parent(s) and I discuss what classes I should take.	1	2	3	4	5
6.	My parent(s) and I discuss what I am learning in class.	1	2	3	4	5
7.	My parent(s) is very interested in my academic progress.	1	2	3	4	5
8.	My parent(s) stress the importance of getting good grades.	1	2	3	4	5

Relationship with Parents

Please rate how much the following statements reflect your relationship with your parent(s).

		Not at All	A Little	Some	A Lot	Very Much
1.	How much do you go to your parent(s) for advice or support?	1	2	3	4	5
2.	How much do you want to be like your parent(s)?	1	2	3	4	5
3.	How much does your parent(s) accept you no matter what you do?	1	2	3	4	5
4.	How much does your parent(s) understand what you're really like?	1	2	3	4	5
5.	How much do you share your inner feelings or secrets with your parent(s)?	1	2	3	4	5
6.	How much does your parent(s) come to you for advice or support?	1	2	3	4	5
7.	How important is your parent(s) to you?	1	2	3	4	5
8.	How satisfied are you with the relationship you have with your parent(s)?	1	2	3	4	5

Grade Point Average – Measurement Occasions 2, 3, & 4

****In Qualtrics, these items were formatted so that students had the ability to list more than 8 classes.****

The following questions are about the classes you are currently taking. Please list each class you are currently taking and the number of hours that each class is. Then, estimate the letter grade that you are currently earning in each class. For example, "General Chemistry, 3.0 hours, B."

	Academic Class	Number of Hours	Letter Grade
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			

Feelings about my Academic Performance

Please rate how much the following statements reflect your thoughts and feelings about your academic performance at Purdue.

		Not at All True		Somewhat True		Very True
1.	I'm certain I can master the skills taught in my classes this year.	1	2	3	4	5
2.	I'm certain I can figure out how to do the most difficult work in my classes.	1	2	3	4	5
3.	I can do almost all of the work in my classes if I don't give up.	1	2	3	4	5
4.	Even if the work is hard, I can learn it.	1	2	3	4	5
5.	I can do even the hardest work in my classes if I try.	1	2	3	4	5

Feelings about my Academic Performance

Please rate how much the following statements reflect your thoughts and feelings about your academic performance at Purdue.

		Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
1.	It is important to me to graduate from college.	1	2	3	4	5
2.	I am confident that I made the right decision in choosing to attend Purdue.	1	2	3	4	5
3.	I will most likely register at Purdue next Fall.	1	2	3	4	5
4.	It is important to me to graduate from Purdue.	1	2	3	4	5
5.	I have an idea about what I want to major in.	1	2	3	4	5
6.	Getting good grades is important to me.	1	2	3	4	5

My Emotions

Below is a list of the ways you might have felt or behaved. Please rate how often you have felt this way **during the past week**.

		Rarely or None of the Time (less than 1 day in the past week)	**Some of the Time** (1-2 days in the past week)	**Much of the Time** (3-4 days in the past week)	**Most or All the Time** (5-7 days in the past week)
1.	I did not feel like eating; my appetite was poor.	0	1	2	3
2.	I felt depressed.	0	1	2	3
3.	I felt everything I did was an effort.	0	1	2	3
4.	My sleep was restless.	0	1	2	3
5.	I was happy.	0	1	2	3
6.	I felt lonely.	0	1	2	3
7.	People were unfriendly.	0	1	2	3
8.	I enjoyed life.	0	1	2	3
9.	I felt sad.	0	1	2	3
10.	I felt that people disliked me.	0	1	2	3
11.	I could not get "going."	0	1	2	3

My Behaviors

Below is a list of behaviors. Please rate how often you have engaged in these behaviors **in the past month.**

		None	**Once in the Past Month**	**A Few Times in the Past Month**	**Weekly**	**A Few Times a Week**	**Almost Every Day**
1.	Had sexual intercourse with more than one partner.	0	1	2	3	4	5
2.	Had unprotected sexual intercourse.	0	1	2	3	4	5
3.	Engaged in binge drinking (4-5 drinks on one occasion).	0	1	2	3	4	5
4.	Were sick to your stomach or threw up after drinking.	0	1	2	3	4	5
5.	Used marijuana.	0	1	2	3	4	5
6.	Used other drugs (e.g., heroin, cocaine, crystal meth, & mushrooms).	0	1	2	3	4	5

Feelings about my Relationship with my Parents

The following list of statements describes different aspects of your relationship with your parent(s). Please rate how much each statement applies to you.

		Not at All True of Me	A Little Bit True of Me	Moderately True of Me	Quite a Bit True of Me	Very True of Me
1.	I like to show my friends pictures of my parent(s).	1	2	3	4	5
2.	I feel longing if I am away from my parent(s) too long.	1	2	3	4	5
3.	My parent(s) is the most important person in the world to me.	1	2	3	4	5
4.	I wish that my parent(s) lived nearer so I could visit him/her more frequently.	1	2	3	4	5
5.	Being away from my parent(s) makes me feel lonely.	1	2	3	4	5
6.	I sometimes call home just to hear my parent(s)'s voice.	1	2	3	4	5
7.	When I am home on a vacation I like to spend most of my time with my parent(s).	1	2	3	4	5
8.	After being with my parent(s) for a vacation I find it difficult to leave him/her.	1	2	3	4	5
9.	I like to hug and kiss my parent(s).	1	2	3	4	5
10.	I decide what to do according to whether my parent(s) will approve of it.	1	2	3	4	5
11.	When I do poorly in school I feel I am letting my parent(s) down.	1	2	3	4	5
12.	My parent(s) is my best friend.	1	2	3	4	5
13.	I seem to be closer to my parent(s) than most people my age.	1	2	3	4	5
14.	I sometimes feel like an extension of my parent(s).	1	2	3	4	5
15.	I feel uncomfortable keeping things from my parent(s).	1	2	3	4	5
16.	I often have to make decisions for my parent(s).	1	2	3	4	5
17.	I am not sure I could make it in life without my parent(s).	1	2	3	4	5

Feelings about my Relationship with my Parents

The following list of statements describes different aspects of your relationship with your parent(s). Please rate how much each statement applies to you.

		Not at All True of Me	A Little Bit True of Me	Moderately True of Me	Quite a Bit True of Me	Very True of Me
1.	My parent(s)'s wishes have influenced my selection of friends.	1	2	3	4	5
2.	When I am in difficulty, I usually call upon my parent(s) to help me out of trouble.	1	2	3	4	5
3.	I often ask my parent(s) to assist me in solving personal problems.	1	2	3	4	5
4.	I wouldn't make a major purchase without my parent(s)'s approval.	1	2	3	4	5
5.	My parent(s)'s wishes have influenced my choice of major at school.	1	2	3	4	5
6.	My parent(s) helps me to make my budget.	1	2	3	4	5
7.	I generally consult with my parent(s) when I make plans for an out-of-town weekend.	1	2	3	4	5
8.	I consult with my parent(s) when deciding about part-time employment.	1	2	3	4	5
9.	I ask my parent(s) what to do when I get into a tough situation.	1	2	3	4	5
10.	I do what my parent(s) decides about most questions that come up.	1	2	3	4	5
11.	I ask for my parent(s)'s advice when I am planning my vacation time.	1	2	3	4	5
12.	I like to have my parent(s) help me pick out the clothing I buy for special occasions.	1	2	3	4	5
13.	I call my parent(s) whenever anything goes wrong.	1	2	3	4	5

Standards for Being an Adult

Below are some standards for being an adult. Please rate how much you think you have achieved these standards.

		Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
1.	Accepting responsibility for yourself.	1	2	3	4	5
2.	Making independent decisions.	1	2	3	4	5
3.	Being financially independent.	1	2	3	4	5

VITA

VITA

Katie Elizabeth Lowe

RESEARCH INTERSTS

My research is grounded in developmental and ecological theories and seeks to understand connections among parent factors (e.g., involvement), classroom context (e.g., student-teacher relationship quality), and adolescents' academic success. My research aims to understand how parent and classroom factors uniquely and jointly contribute to students' academic outcomes (e.g., motivation) from early adolescence to emerging adulthood. I am also interested in how parent involvement changes, in terms of level and type, across this same developmental period and factors that influence these changes. My expertise includes examining associations between parent involvement and freshmen students' academic success and adjustment across the college transition. An extension of this research includes developing evidence-based education for parents of intercollegiate student-athletes to facilitate positive parent involvement and student-athlete development.

EDUCATION

Ph. D., Human Development and Family Studies December 2015

Purdue University – West Lafayette, IN

Dissertation: *Parental involvement during the college transition: Trajectories and associations with academic success, well-being, and individuation.*

M. A., Psychology 2010

University of West Florida – Pensacola, FL

Thesis: *Critical thinking dispositions and myside bias among college students: A cross-sectional study.*

B. A., Psychology 2007

Minors: Music & Child Welfare

University of West Florida – Pensacola, FL

Honors Thesis: *Intergenerational transmission of discipline styles: A retrospective study*

RESEARCH EXPERIENCE

1) Purdue University, Department of Human Development and Family Studies

- ❖ Dissertation Research (Purdue Freshmen In Transition [FIT] Project)
  - RA August 2013 – May 2015
  - Advisor: Aryn M. Dotterer, Ph. D.
- ❖ National Collegiate Athletic Association (NCAA) Innovations Research Grant
  - RA May 2014 – January 2015
  - Advisors: Travis E. Dorsch, Ph. D. & Aryn M. Dotterer, Ph. D.
- ❖ Purdue School And Family Experiences (SAFE) Project
  - RA August 2010 – May 2013
  - Advisor: Aryn M. Dotterer, Ph. D.
- ❖ Purdue Home Literacy Project
  - RA August 2009 – May 2010
  - Advisor: Seung-Hee Son, Ph. D.

2) University of West Florida, Department of Psychology

- ❖ Master's Thesis
  - May 2008 – December 2008
  - Advisor: Samuel R. Mathews, Ph. D.
- ❖ Independent Research
  - May 2008 – December 2008
  - Title: Students' perceptions of parental involvement during the first year of college.
  - Advisor: Samuel R. Mathews, Ph. D.
- ❖ Undergraduate Honors Thesis
  - January 2007 – May 2007
  - Title: Intergenerational transmission of discipline styles: A retrospective study.
  - Advisor: Samuel R. Mathews, Ph. D.

TEACHING EXPERIENCE

1) Purdue University, Human Development and Family Studies

- ❖ Adolescent Development (HDFS 313)
  - June – August 2014
  - Position: Instructor of Record
  - Mentor: Doran French, Ph. D.

- ❖ Advanced Research Methods in Child and Family Study (HDFS 617)
    - August – December 2012; August – December 2013
    - Position: Teaching Assistant and Laboratory Instructor
    - Mentor: Shawn Whiteman, Ph. D.
- ❖ Adolescent Development (HDFS 313)
    - January – May 2012
    - Position: Teaching Assistant
    - Mentor: Jennifer Dobbs-Oates, Ph. D.

2) University of West Florida, Department of Psychology

- ❖ Laboratory in Child and Adolescent Development (DEP 4990L)
    - January – May 2008; January – May 2009
    - Positions: Teaching Assistant; Instructor of Record
    - Mentor: Samuel R. Mathews, Ph. D.
- ❖ Psychology of Adolescence (DEP 4305)
    - August 2007 – May 2009
    - Position: Teaching Assistant
    - Mentor: Samuel R. Mathews, Ph. D.
- ❖ Child Development (DEP 3130)
    - August 2007 – May 2009
    - Position: Teaching Assistant
    - Mentor: Samuel R. Mathews, Ph. D.

REFEREED PUBLICATIONS

Dorsch, T. E., **Lowe, K.**, Dotterer, A. M., & Lyons, L. (in press). Parent involvement in young adults' intercollegiate athletic careers: Developmental considerations and applied recommendations. *Journal of Intercollegiate Sport*.

Dotterer, A. M., & **Lowe, K.** (2011). Classroom context, engagement, and academic achievement in early adolescence. *Journal of Youth and Adolescence, 40*, 1649-1660. doi: 10.1007/s10964-011-9647-5

Dotterer, A. M., & **Lowe, K.** (in press). Perceived discrimination, parenting, and academic adjustment among racial/ethnic minority adolescents. *Journal of Applied Developmental Psychology.*

Dotterer, A. M., **Lowe, K.**, & McHale, S. M. (2013). Academic growth trajectories and family relationships among African American youth. *Journal for Research on Adolescence*, *24*, 734-747. doi: 10.1111/jora.12080

Lowe, K., & Dotterer, A. M. (2013). Parental monitoring, parental warmth, and minority youths' academic outcomes: Exploring the integrative model of parenting. *Journal of Youth and Adolescence*, *42*, 1413-1425. doi: 10.1007/s10964-013-9934-4

Lowe, K., Dotterer, A. M., & Francisco, J. (2015). "If I pay, I have a say!" Parental payment of college education and its association with helicopter parenting. *Emerging Adulthood*. doi: 10.1177/2167696815579831

Mathews, S. R., & **Lowe, K.** (2011). Classroom practices that foster a disposition for critical thinking. *Learning Environments Research, 14*, 59-73. doi: 10.1007/s10984-011-9082-2

Wehrspann, E. A., Dotterer, A. M., & **Lowe, K.** (in press). The nature of parental involvement in middle school: Examining nonlinear associations. *Contemporary School Psychology*.

MANUSCRIPTS IN PROCESS

Dorsch, T. E., **Lowe, K.**, Dotterer, A. M., Lyons, L, & Barker, A. (under review). Stakeholders' perceptions of parent involvement in young adults' intercollegiate athletic careers: Policy, education, and desired-student-athlete outcomes.

EXTRAMURAL GRANT PROPOSALS

Dorsch, T. E., **Lowe, K.**, & Dotterer, A. M. (2014). *Parent involvement in young adults' intercollegiate athletic careers: Developmental considerations and applied recommendations*. NCAA. Role: Co-Investigator. Amount awarded: $9,985

Kaye, M., Dorsch, T. E., & **Lowe, K.** (December, 2014). *The quality and quantity of parent involvement behavior in intercollegiate athletics: Developmental considerations and applied recommendations*. NCAA. Role: Co-Investigator.

REFEREED CONFERENCE PRESENTATIONS

Dorsch, T. E., **Lowe, K.**, Dotterer, A. M., & Lyons, L. (June, 2015). *Parent involvement in young adults' intercollegiate athletic careers: Developmental considerations and applied recommendations*. Poster at annual meeting of North American Society for the Psychology of Sport and Physical Activity (NASPSPA), Portland, OR

Dorsch, T. E., **Lowe, K.**, Dotterer, A. M., Lyons, L., & Barker, A. (June, 2015). *Stakeholders' perceptions of parent involvement in young adults' intercollegiate athletic careers: Policy, education, and desired-student-athlete outcomes*. Poster at NASPSPA, Portland, OR.

Lowe, K., Dotterer, A. M., & Christ, S. (November, 2014). *Operationalizing parent involvement in college: A confirmatory factor analysis*. Poster at annual meeting of National Council on Family Relations (NCFR), Baltimore, MD.

Lowe, K. & Dotterer, A. M. (April, 2014). *To help or not to help: When does parental assistance with homework matter?* Poster at biennial meeting of Society for Research on Adolescence (SRA), Austin, TX.

Dotterer, A. M., & **Lowe, K.** (April, 2013). *Racial discrimination and adolescent academic engagement: Exploring direct and indirect pathways*. Poster at biennial meeting of Society for Research in Child Development (SRCD), Seattle, WA.

Lowe, K., Dotterer, A. M., & Wehrspann, E. (April, 2013). *Links between parenting practices and minority youth's academic functioning.* Poster at SRCD, Seattle, WA.

Lowe, K., Dotterer, A. M., & Francisco, J. (November, 2011). *Parental involvement during the transition to college*. Poster at NCFR, Orlando, FL.

Mathews, S. R., & **Lowe, K.** (September, 2011). *Developmental and educational factors in enhancing a disposition for critical thinking*. Paper at biennial conference of European Association for Research on Learning and Instruction, Exeter, UK.

Dotterer, A. M., & **Lowe, K.** (April, 2011). *Relationships with parents and academic trajectories among African American adolescents*. Poster at SRCD, Montreal, QC.

Lowe, K. (April, 2010). *Critical thinking dispositions and myside bias among college students: A cross-sectional study.* Poster at Conference on Human Development, New York, NY.

Mathews, S. R. & **Lowe, K.** (February, 2009). *Creating classroom environments to foster dispositions for critical thinking.* Conversation Hour, Southeastern Psychological Association Conference, New Orleans, LA.

INVITED PRESENTATIONS

Dorsch, T. E., **Lowe, K.**, & Dotterer, A. M. (January, 2015). *Parent involvement in young adults' intercollegiate athletic careers: Developmental considerations and applied recommendations*. Presentation delivered at annual NCAA Convention, Washington, DC.

EXTENSION: EDUCATIONAL MATERIALS

Dorsch, T. E., **Lowe, K.**, Dotterer, A. M. (2015). *Parent guide: Evidence-based strategies for parenting the college student-athlete.* Logan, UT: Utah State University Families in Sport Lab.

Dorsch, T. E., **Lowe, K.**, Dotterer, A. M., Lyons, L, & Barker, A (2015). *Administrator manual: Best practices for improving parent involvement in intercollegiate athletics.* Logan, UT: Utah State University Families in Sport Lab.

AWARDS

- ❖ Graduate
  - Nominee for the College of Health and Human Sciences (HHS) Outstanding Graduate School Excellence in Teaching Award at Purdue University, 2015
  - Bilsland Dissertation Fellowship in HHS at Purdue University, 2014
  - HDFS Graduate Student Teaching Award, 2014
  - Ruth Hathaway Jewson Dissertation Award –NCFR, 2012
  - Van Scoyoc Fellowship – Center for Families (CFF) at Purdue University, 2012
  - Graduate Student Travel Award – Purdue Graduate Student Government (PGSG), 2012
- ❖ Undergraduate
  - Linda O. Dye Leadership Award for Outstanding Loyalty and Service to UWF, 2007
  - Dean's and President's List, 2004 – 2007
  - Graduated Summa Cum Laude, 2007

PROFESSIONAL AFFILIATIONS

1) SRCD Member – 2010 to present
2) NCFR Member – 2011 to present
3) SSEA Member – 2013 to present
4) SRA Member – 2014 to present