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## Becoming Adults: Trajectories of Adult Identity Development Among Undergraduate Students with Implications for Mental Health

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LOYOLA UNIVERSITY CHICAGO

BECOMING ADULTS:  
TRAJECTORIES OF ADULT IDENTITY DEVELOPMENT  
AMONG UNDERGRADUATE STUDENTS  
WITH IMPLICATIONS FOR MENTAL HEALTH

A THESIS SUBMITTED  
TO THE FACULY OF THE GRADUATE SCHOOL  
IN CANDIDACY FOR THE DEGREE OF  
MASTER OF ARTS

PROGRAM IN CLINICAL PSYCHOLOGY

BY

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CHICAGO, ILLINOIS

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## **ABSTRACT**

One of the defining developmental processes that occur during the unique stage of emerging adulthood is the emergence of adult identity, or the subjective sense of adulthood. Adult identity has been hypothesized to grow gradually, linearly, and at different rates for subgroups of individuals over the course of this stage (Arnett, 2006; Côté, 2006). Differences have also been suggested to predict wellbeing and distress (Côté, 2006; Kroger, 1996; Kroger, Martinussen, & Marcia, 2010). The goals of the current study were to examine heterogeneity in adult identity development over four years in college and to examine differences in self-esteem and negative emotional symptoms, namely depression, anxiety, and stress, after four years. Findings revealed that adult identity develops linearly on average, but there is heterogeneity in this development. Specifically, the majority of students increase in adult identity over four years and a smaller portion of students decline over time. Differences between developmental subgroups on self-esteem and negative emotional symptoms are explained by adult identity ratings at the end of the fourth year. The importance of studying heterogeneity of development among emerging adults and the mental health implications of adult identity development are reviewed.

## **CHAPTER ONE**

### **INTRODUCTION**

During the developmental stage of emerging adulthood, individuals often experience dramatic shifts in their external and internal worlds (Arnett, 2004). Many emerging adults undergo such environmental changes as beginning college or entering the work environment, starting long-term romantic relationships, or taking on increasingly challenging personal and familial responsibilities (Abouserie, 1994; Fadjukoff, Kokko, & Pulkkinen, 2007). Internally, emerging adults explore their identities and report feeling that they are in-between adolescence and adulthood. Adult identity, or a subjective sense of adulthood, develops gradually and at different times for different individuals during this time (Arnett, 2006; Côté, 2006).

Originally, Erik Erikson (1968) conceptualized the development of adult identity as occurring during adolescence; however, the timing of this developmental process has since been shifted later into the emerging adult years beginning around age eighteen (Arnett, 2006). Identity growth at this time is hypothesized to occur in a linear progression (Waterman, 1982) during which goals, values, and defining self-regulatory processes are established and solidified (Berzonsky & Adams, 1999). Individuals can choose to pursue their adult identities actively by relying on tangible resources (i.e., education, group memberships, financial resources) and their own personal agency or

they can progress more passively toward adulthood over a longer period of time (Côté, 2006).

While in the past the subjective sense of adulthood was conceptualized as directly associated with external transitions, today adult identity is thought to develop slowly and is linked to growth in feelings of responsibility and independence (Arnett, 2004). Adult identity is seen as an asset that assists emerging adults in navigating the difficulties and opportunities involved in becoming adults (Schwartz, Côté, & Arnett, 2005). The college context provides an intensified setting for the development of adult identity, as emerging adults have the opportunity to reformulate their sense of self while they seek to independently navigate new challenges (Kroger, Martinussen, & Marcia, 2010; Stephen, Fraser, & Marcia, 1992; Tanner, 2006).

In general, the identity development literature emphasizes the associations between various identity stages and both wellbeing (Kroger, 1996; Ryeng, Kroger, Martinussen, 2013) and distress (Lillevoll, Kroger, & Martinussen, 2013). Trajectories of general identity development may result in differential mental health outcomes. For example, regressive movements from more committed to less committed identity levels may negatively impact mental health functioning (Kroger, 1996; Kroger, Martinussen, & Marcia, 2010) and prolonged trajectories may affect psychological wellbeing or distress (Tanner, 2006). While the literature has primarily focused on other identity domains, such as career, romantic, and worldview areas (Kroger, Martinussen, and Marcia, 2010; Meeus, 2011), adult identity also has been emphasized as a critical feature underlying success in navigating life events and enhancing wellbeing (Côté, 2006; Erikson, 1968).

Previous research has investigated the development of identity in various domains among college students (Kroger, Martinussen, and Marcia, 2010; Meeus, 2011); however, no studies have assessed heterogeneity of development among college students by identifying divergent developmental pathways of adult identity. Given that the college setting is an intensified context for identity growth (Kroger, Martinussen, & Marcia, 2010; Stephen, Fraser, & Marcia, 1992; Tanner, 2006) and the development of adult identity is a defining feature of emerging adulthood (Arnett, 2004; Côté, 2006), the present research will examine pathways of adult identity development during college, and their relations with psychological functioning. Understanding this developmental process and its heterogeneity is essential for capturing the defining experience of individuals during this critical stage of life.

Using a growth mixture modeling statistical approach, the present study will investigate various trajectories of adult identity development for emerging adults over the four years of college. The present study will analyze the general progression of adult identity growth in college, the number and characteristics of trajectory types of adult identity development, and trajectory relationships with negative emotional symptoms and positive self-esteem at the end of college.

## **CHAPTER TWO**

### **REVIEW OF RELATED LITERATURE**

#### **Emerging Adulthood and the Defining Characteristics of a Unique Stage**

Emerging adulthood is a period of life characterized by transitions in a variety of domains. Emerging adulthood typically begins at age eighteen when many adolescents graduate from high school, move out of their family's homes, and head to college or alternative environments (Arnett, 2004). The end point of the stage is more malleable, with subjective changes in a sense of adulthood developing for some emerging adults in their early twenties, others in the mid-twenties, and still others in the late twenties (Arnett, 2006). The major impetus behind the transition from emerging adulthood to young adulthood lies in transformations in a subjective sense of adulthood, as well as in alterations in other unique characteristics of this developmental phase.

According to Arnett (2004), there are several distinct features that constitute emerging adulthood. First, the stage is defined by identity exploration, particularly in one's worldview, career, and romantic relationships. In the process of exploring identity options, emerging adults learn about "who they are and what they want out of life" (Arnett, 2004, p. 8). This stage is also characterized by a feeling of being in-between adolescence and adulthood. The majority of emerging adults ages 18-25 respond "yes and no" to the question of whether they have reached adulthood (Arnett, 2006). Since these individuals distinguish themselves from adolescents but do not yet fully identify as

adults, Arnett chose the term emerging adulthood rather than late adolescence, young adulthood, or youth to describe this unique period of life (Arnett, 2004).

Additional characteristics of this phase include an intense focus on the self in order to establish goals, define values, and fulfill individual needs. Emerging adults also experience instability as changes abound in living situations, jobs, college majors, and other aspects of life. Despite a sense of instability, they are generally hopeful for their future, reporting an awareness of opportunity and possibility as they navigate different options for their lives. Importantly, emerging adults are an extremely heterogeneous group. Some attend college – others do not, some are in serious romantic relationships – others are not, some have established life goals and identities – others are still in the process of exploration or are not interested in exploring their identities at all (Arnett, 2004). Exploring the pathways through which emerging adults progress during this phase, while also recognizing heterogeneity among emerging adults, is essential for understanding this stage of life.

Of all of these unique aspects of this developmental stage, identity development has been defined as “the most central feature,” specifically along domains of work, romantic relationships, and worldview (Arnett, 2004, p. 8). While today, researchers and theorists describe emerging adulthood as the primary stage for exploring options in various identity domains, identity was not always recognized as developing during emerging adulthood (Arnett, 2006). In fact, Erik Erikson’s original identity theory focused primarily on adolescence as the main developmental stage.

## **Early Identity Development Theories**

The original identity theory emerged out of Erik Erikson's pivotal work articulating the different psychosocial stages of development. Erikson (1963) theorized that there are eight primary tensions associated with different stages throughout the lifespan: basic trust versus basic mistrust, autonomy versus shame and doubt, initiative versus guilt, industry versus inferiority, identity versus role confusion, intimacy versus isolation, generativity versus stagnation, and ego integrity versus despair. As tensions of earlier stages become resolved, new, more advanced conflicts arise. Erikson posited that the primary challenge of adolescence is the navigation of the "identity crisis," (Erikson, 1968, p. 17) or the tension between identity and role confusion.

Within this theory, Erikson defined identity as the subjective assessment of "sameness and continuity in the face of changing fate" (Erikson, 1964, p. 96) and described identity achievement as occurring when individuals commit to a set of beliefs, values, and worldviews, thereby fostering a subjective sense of self-continuity and adulthood (Erikson, 1963). Identity is a highly social construct founded upon roles that define an individual within a cultural context (Côté & Levine, 2002). Côté and Levine (2002) theorize that identity is a multidimensional concept comprised of three levels: (a) ego identity, or a "sense of temporal-spatial continuity" (p. 106), (b) personal identity, comprised of unique behaviors and traits that distinguish individuals, and (c) a social identity made up of societal roles. Their theory suggests that the resolution of the identity conflict occurs when these three components converge to create a stable adult identity with a secure sense of communal belongingness. As each individual achieves identity

within various domains, he or she attains a strong sense of adulthood, or adult identity, and strengthens their feeling of a stable sense of self. Despite the benefits of achieving a stable adult identity, the path toward resolution is fraught with the risk of confusion. If the three components of identity do not converge, the result is “a behavioral and characterological disarray, and lack of commitment to recognized roles in a community” (Côté & Levine, 2002, p. 15). This would result in an inability to function in an adult role, confusion regarding one’s place in society, goals, and future, and psychological distress (Erikson, 1963).

James Marcia (1966) further developed Erikson’s original theory, postulating in the Ego Identity Status Model that the resolution of the “identity crisis” involves four different statuses defined by various combinations of commitment and exploration. The first identity status is diffusion, characterized by confusion and neither exploration of identity alternatives nor commitment to a chosen identity. The next identity status is identity foreclosure, which occurs when there are high levels of commitment to roles defined by others but not personal exploration. A third status is moratorium, the active exploration of different identity alternatives. Finally, identity achievement, the most advanced status, involves the attainment of a subjective sense of a stable self that develops after a period of exploration (Marcia, 1966).

Identity growth is hypothesized to occur in a linear progression from diffusion to moratorium to achievement, with some individuals experiencing foreclosure when they commit to an identity but do not engage in exploration (Waterman, 1982). In the process of establishing identity, individuals decide upon goals and expectations, commit to



values, and develop self-regulatory processes that define who they are (Berzonsky & Adams, 1999). These statuses occur in various identity domains, including occupational and ideological areas, and can develop at different times for each domain (Kroger, Martinussen, & Marcia, 2010). Achievement requires that an individual engage in the adult task of “synthesiz[ing] childhood identifications in such a way that he can both establish a reciprocal relationship with his society and maintain a feeling of continuity within himself” (Marcia, 1966, p. 551). Marcia’s theory has become one of the most frequently cited extensions of Erikson’s theory and is often used to describe various processes of identity development in different identity domains (Kroger, Martinussen, & Marcia, 2010).

### **Identity Theory in Emerging Adulthood**

A common misconception of Erikson’s theory is that the identity stage is resolved at the end of adolescence and is never challenged again. Erikson actually theorized that all psychosocial stages, including the identity crisis, are encountered throughout the lifespan even as other stages become more salient. For example, Erikson (1968) theorized that once early identities are achieved in adolescence, later normative life transitions disrupt these identities, resulting in re-formulation processes later in life (also see Stephen, Fraser, & Marcia, 1992).

While Erikson paved the way for recognizing that identity issues reemerge after adolescence, more recent research suggests that identity development not only continues on after adolescence but also has become the primary feature of the subsequent phase of emerging adulthood (Arnett, 2006). This change likely reflects diminishing structure and

increasing career opportunities and worldviews in today's society compared to generations past. Both theory and empirical evidence suggest that the timing of identity growth has shifted since Erikson originally developed his theory (Côté, 1996, 1997, 2002, 2006). In the past, there were clear options for available career paths and overt guidelines delineating timelines for developmental milestones (i.e., marriage and parenthood, see Arnett, 2006); thus, individuals achieved adult identities, or became "adults," soon after eighteen as they reached these societal milestones.

However, today there are seemingly limitless options in occupational, ideological, and romantic domains and vague expectations for individuals who are navigating the emerging adulthood identity stage. Less structure and more options force individuals to rely upon personal resources in order to establish stable adult identities (Côté, 2002).

While the less formal societal structure opens up many new opportunities, it also requires much more from individuals because they must navigate the identity phase on their own.

Late adolescents can choose to approach this stage in one of two ways: The first by passively wandering between various pathways and the second by actively building an identity (Côté, 2006). According to Côté (1997), the latter active type of exploration requires initiative to seek out and obtain opportunities for growth and commitment through a reliance on tangible resources (i.e., education, group memberships, financial resources) and intangible resources (i.e., self-efficacy, cognitive flexibility, self-monitoring). These resources, termed "identity capital," give individuals the ability to understand their surroundings and respond effectively. In turn, they are able to successfully navigate the difficulties and opportunities involved in becoming an adult,

including forming strong interpersonal relationships, navigating educational challenges, gaining work experience, and planning for the future (Schwartz, Côté, & Arnett, 2005).

The Identity Capital Theory (Côté, 1996) also posits that even though emerging adults come from different backgrounds and may begin this phase of life with different tangible attributes, the intangible attribute of an agentic personality can propel an individual toward opportunities in domains historically more difficult to access for them. Thus, individuals who rely on these personal resources are able to successfully navigate obstacles associated with educational, interpersonal, romantic, and career domains, in turn fostering adult and community identities.

In a ten-year longitudinal study of Canadian university students, Côté (2002) tested the Identity Capital Model. Personal agency after high school, measured by a composite scale of measures of self-esteem, purpose in life, and locus of control among other factors, was a robust predictor of adult identity two years later. Tangible resources such as parental education and income were only weak predictors. The predictive power of agency was equally as strong for males and females. Overall, intangible resources, compared to tangible resources, were found to be more important predictors of the timing of adult identity growth in emerging adulthood (Côté, 2002).

### **Adult Identity versus Arnett's Identity Domains**

In his theory of emerging adulthood, Arnett (2000) distinguished between identity development and the achievement of a subjective sense of adulthood, postulating that they are two different goals of emerging adults. However, Côté (1996) theorized that they are related and believed that adult identity is intertwined with identity achievements in

various personal and social domains (Côté & Levine, 2002). There are multiple explanations for how adult identity development relates to identity development in other domains. Côté (1997) suggests that having a strong adult identity gives individuals the ability to navigate the difficulties involved in forming other types of identity. Therefore, adult identity achievement would precede gains in other areas (e.g., occupational identity, ideological identity, relationship identity). However, Côté and Levine (2002), suggest that the convergence of identities in various other domains (ego, personal, and social identities) is necessary for the formation of the adult identity. Thus, adult identity growth would occur after gains in other identity areas. It also may be the case that adult identity and other identity constructs develop independently from one another. Specifically, Côté's (2006) theory recognizes that identity development in career, love, worldview, and other domains develop at different times from one another and adult identity may be another separate form of identity development in emerging adulthood that is independent from these other constructs. Alternatively, it may be the case that these types of identities mutually influence one another. Growth in various identity domains may encourage growth in the subjective sense of adulthood. Likewise, the maturity of feeling like an adult may contribute to gains in other identity domains.

While it is not clear from prior theory and research how adult identity relates to other domains of identity development, adult identity achievement is an extremely important milestone that was one of the primary focuses of Erikson's original writings (Erikson, 1968). It is a particularly important type of identity for encouraging a stable sense of self-continuity (Côté, 1997, 2006) and is predictive of life satisfaction years later

(Côté, 1997). For this reason, the current study will focus on adult identity development: The establishment of the subjective sense of adulthood that is a defining feature of the shift from emerging adulthood to young adulthood in today's society (Arnett, 2006).

### **Becoming an Adult: What it Means to Establish Adult Identity**

In the past, adulthood was associated with the abrupt role transition of marriage and parenthood; however, this defining event no longer appears to be necessary for establishing an adult identity (Arnett, 2006). Similarly, other external markers of adulthood, such as moving out of the parents' home, committing to a stable relationship, having a child, graduating from an institution of higher education, or obtaining a full-time job, no longer appear to be the defining features of a subjective sense of adulthood (Fadjukoff, Kokko, & Pulkkinen, 2007). Qualitative interviews conducted with emerging adults reveal the criteria that are considered essential for establishing an adult identity today (Arnett, 2004). Arnett's (2004) interviews regularly revealed three criteria thought to be necessary for becoming an adult, including independent decision-making, being responsible for one's actions, and taking care of oneself financially. All of these criteria were consistent across a variety of ethnic groups and socio-economic classes in the United States. Consistent results appeared in Arnett's (2006) survey in which emerging adults were asked to select the necessary criteria for adulthood from a range of options. The top selections were "accept[ing] responsibility for the consequences of your actions" (93% selected), "decid[ing] on personal beliefs and values independently of parents or other influences" (81%), "becom[ing] less self-oriented, developing greater consideration for others" (81%), and becoming "financially independent from parents" (74%) (p. 210).

For most emerging adults, the process of becoming an adult is gradual. As Arnett (2004) found in his interviews, criteria for becoming an adult develop slowly and vary across individuals over the course of emerging adulthood. For example, some individuals in their early twenties may feel that they have reached adulthood while some in their late twenties may still feel in between adolescence and adulthood. Given that emerging adults take on adult responsibilities gradually, it is not surprising that the majority report that they feel like adults in some ways, but not others (Arnett, 2006). Emerging adults also report a sense of ambivalence about becoming adults. On one hand, being an adult carries respect, independence, and authority; however, adult responsibility can be challenging and emerging adults may worry that being an adult means they will stagnate or lose their sense of freedom (Arnett, 2004). This ambivalence may be partly responsible for the prolongation of the transition to full adulthood.

### **The College Environment for the Development of Identity**

While emerging adults in different environments report experiences of adult identity development (Arnett, 2006; Côté & Schwartz, 2002; Luyckx, Duriez, Klimstra, & De Witte, 2010), a number of researchers have focused on the university context as an intensified setting for identity growth. College provides a supportive context in which emerging adults learn about alternative worldviews and identity options that may be different from the types of identifications they previously held (Tanner, 2006). The act of beginning college, which often includes leaving home, searching for a community, learning about new ideas, and choosing courses that feed into majors and career paths, may disrupt prior identity gains established during adolescence and lead to an identity

reformation process (Kroger, Martinussen, & Marcia, 2010; Stephen, Fraser, & Marcia, 1992). The university context also may serve as an extended break between high school and the stressors of adult life. This prolonged amount of time in university allows for exploration as well as accumulation of the necessary resources for the establishment of an adult identity (Côté, 2002).

Overall, in the college context, students are required to rely on personal resources as they independently navigate the stressors of college life (Côté, 2006). While some students may struggle through the challenges of college, others may excel. Differences between emerging adults in the timing of adult identity gains may be due to variation in the readiness for college, maturity, and differences in agency and self-reliance (Côté, 2006; Tanner, 2006). While not all students experience a sense of positivity in navigating these challenges, the successful student can explore, grow intellectually and personally, and develop self-direction to navigate their future (Evans, Forney, & Guido-DiBrito, 1998; Tanner, 2006).

### **Pathways of Identity Development**

As described previously, individuals navigate the identity stage during emerging adulthood in different ways. According to Marcia (1966), individuals can choose to explore and commit to identity alternatives comprising four statuses of identity exploration: diffusion, moratorium, foreclosure, and achievement. The majority of research on identity development during emerging adulthood to date has focused on these statuses. In a meta-analysis of overall identity status change in adolescence and emerging adulthood, Kroger, Martinussen, and Marcia (2010) examined 72 studies from 1966 to

2000 assessing identity status movement over time. The majority of studies using longitudinal designs assessed identity status with categorical measures and focused on college-age populations. These studies typically assessed identity status at two time points over a mean of three years. Findings showed extensive identity status movement, with less than half of participants remaining in the same status over time. The majority of participants moved toward either moratorium or achievement over time and most participants made progressive, rather than regressive, movements. Only one study in the meta-analysis with a longitudinal design used continuous measures of identity status. Cross-sectional studies revealed the percentage of emerging adults in each stage at different ages and showed extensive heterogeneity between participants. For example, about one quarter of 17-year olds had reached the achievement identity status, whereas one-third of 22-year olds had reached the achievement status. Meanwhile, at each age, less than half of emerging adults remained in the moratorium status. For participants ages 18 to 21, the percentage of emerging adults in the identity diffusion stage fluctuated between 19 and 26%, and the percentage of emerging adults in the foreclosure status fluctuated between 12 and 34%.

A more recent study by Meeus (2011) reviewed the identity status literature from 2000 to 2010. These more recent studies used more advanced designs and analytical tools to assess identity development, including multiple time points to depict developmental patterns, continuous measurements of identity, and statistical analysis such as latent class growth analysis and latent growth curve modeling to investigate the pattern of identity development at multiple time points. This review found that identity develops



progressively in adolescence and adulthood and that some people do not change identity statuses at all during this time.

Meeus (2011) also found that ethnic identity development did not follow the same pattern as the commitment – exploration matrix described by Marcia's (1966) identity statuses. Findings indicated that participants typically committed to ethnic identities early on and proceeded through a process of identity maintenance over time. This distinguishing feature of ethnic identity also may elucidate a characteristic of adult identity that differs from other types of identity development. Just as ethnic identity evidences different developmental patterns from occupational, relationship, and ideological identities, so too may adult identity development progress differently. Specifically, establishing adult identity may involve commitment, but not exploration. The uniqueness of adult identity development has been noted in previous research. Côté and Schwartz (2002) found that identity capital, comprised of adult identity and community identity, is related to Marcia's (1966) overall identity statuses, but the relationship is complex. One study found that low adult identity was associated with identity confusion (Côté, 2006), but other research found that the identity statuses do not perfectly correspond with adult identity measurements (Côté & Schwartz, 2002). In addition, Schwartz (2007) found that identity status and identity capital, of which adult identity was one facet, are best conceptualized as correlated but independent constructs. This would indicate that adult identity is different from Marcia's (1966) identity status measurements. It also may suggest that adult identity develops differently from other identity domains. Unlike occupational and ideological identity domains, where options

are investigated and tested, adult identity achievement is a subjective commitment to one's status as a mature adult for which there is only one alternative: A lack of commitment to adulthood. Exploration of alternatives, the definition of the moratorium status, does not capture adult identity growth. Instead, adult identity development may progress along a spectrum of various gradients of adulthood. This would indicate that adult identity development may need to be understood through a different framework from the identity status paradigm.

Côté (2006) described a number of other criticisms of Marcia's status theory that led him to suggest an alternative to the exploration-commitment matrix for adult identity development. First, he argued that research does not support the idea that exploration is necessary for identity achievement in various domains and instead individuals can passively progress toward identity achievement without exploration. He also argued that the developmental sequence described by Waterman (1982) of identity progression from diffusion to foreclosure to moratorium to achievement is not supported by research and some findings even suggest regressive developmental patterns for certain identity domains. Finally, Côté (2006) argued that identity development in different identity domains can occur at different times for each individual, contradicting the validity of overall identity status categorizations. In response to these criticisms, Berzonsky and Adams (1999) posit that the identity status model may still fit with certain types of identity, such as occupational, ideological, and relationship identities, but that identity development should be analyzed separately for each identity domain.

### **Adult Identity Developmental Pathways**

While research has progressed in many other identity domains (i.e., Meeus, 2011), there has only been preliminary work on the development of adult identity. Côté (2006) presents some initial findings on adult identity development from a longitudinal study of 18-29 year olds. Focusing on the college-age population in this study, the average pathway of identity development increased linearly from age 18-23. At time 1 when participants were 18-20 years old, 9% were categorized as having low adult identity scores, 55% had moderate adult identity scores, and 36% had high adult identity scores. At time 2 when participants were 21-23 years old, 6% had low adult identity scores, 53% had moderate adult identity scores, and 41% had high adult identity scores. These findings are consistent with Arnett's (2006) findings that emerging adults feel in between adolescence and adulthood. It also is consistent with Kroger, Martinussen, and Marcia's (2010) findings on identity statuses suggesting that only about one third of emerging adults reach overall identity achievement at the end of college.

Another study on a similar construct to adult identity development comes from research on longitudinal gains in independence from parents in emerging adulthood. Tanner (2006) researched individual trajectories of independence from age 17 to 27. She found that on average there was linear progression, but each individual vacillated between increasing and decreasing amounts of independence over time. Building off of these findings, Tanner argued for the importance of studying the complexity and heterogeneity of gains beyond average developmental patterns. These findings support

Arnett's (2006) argument that emerging adults are diverse and researchers should focus on studying subgroups in order to recognize this heterogeneity.

Benson and Elder (2011) published one of the first studies to investigate subgroups of adult identity in adolescence (Benson and & Elder, 2011). Using cluster analysis, they identified four groups, which were associated with high and low levels of psychosocial maturity and subjective age. They termed these subgroups late adult (low subjective age, low maturity; 20%), anticipatory adult (low subjective age, high maturity; 23%), pseudo-adult (high subjective age, low maturity; 26%), and early adult (high subjective age, high maturity; 31%). With this person-centered approach to their analyses, they identified types of individuals at different developmental stages of adulthood.

In general, research on identity development has become more complex and nuanced over time. A number of studies today have begun using continuous – rather than categorical – assessments of identity, multiple longitudinal time points to uncover growth processes, and more advanced analytical tools, such as person-centered analyses and combined person- and variable- centered approaches that depict heterogeneity of identity development (e.g., Eye & Bergman, 2003; Luyckx, Schwartz, Goossens, Soenens, & Beyers, 2008). Even though researchers in this field have begun studying identity development across a number of domains in these more nuanced formats (e.g., occupational identity, Luyckx, De Witte, & Goossens, 2011), research has not yet investigated adult identity development in these more complex ways. Given the direction

the field has taken in exploring divergent trajectories of development in various identity domains, analyzing trajectories of adult identity development is an important next step.

### **Identity Development and Mental Health**

Not only is adult identity development important in its own right, but it also has been associated with mental health. According to Erikson (1964), adult identity is comprised of a set of established goals, values, and life plans that provide protection from the difficulties of daily living. In order to establish identity, emerging adults heavily rely upon their sense of agency, a skill that also may help individuals engage in a process of continuous self-improvement and wellbeing (Côté, 1997, 2002; Luyckx, De Witte, & Goossens, 2011). In particular, adult identity achievement has been associated with life satisfaction among college graduates (Côté, 1997) and reduced burnout among working emerging adults (Luyckx, De Witte, & Goossens, 2011; Luyckx, Duriez, Klimstra, & De Witte, 2010). It also has been shown to be a strong predictor of positive psychosocial functioning (Schwartz, 2007). On the other hand, for those who have not yet achieved adult identity, the instability that characterizes emerging adulthood (Arnett, 2006) may lead to confusion and aimlessness (Luyckx, De Witte, & Goossens, 2011), as well as reduced positive adjustment, poor mental health, and greater risk of maladjustment (Luyckx, Schwartz, Berzonsky, et al., 2008; Meeus, Iedema, Helsen, & Vollebergh, 1999; Schwartz, Zamboanga, Weisskirch, & Rodriguez, 2009). Tanner (2006) generated two hypotheses for how the timing of becoming an adult may relate to psychosocial functioning. On the one hand, it may be that a prolonged emerging adulthood may result in healthier and more consistent choices, leading to greater positive adjustment. On the

other hand, theory and research suggest that prolonging the transition to adulthood may be a risk factor for mental health problems, as it may lead to confusion, lack of control, aimlessness and resulting psychological distress (Tanner, 2006).

Identity research in general has linked identity statuses to both negative and positive mental health outcomes (i.e., Meeus et al., 1999; Luyckx et al., 2005; Luyckx, Schwartz, Berzonsky, et al., 2008). One meta-analysis suggests that the identity status of foreclosure is related to fewer negative emotional symptoms, specifically lower anxiety, compared to each of the other three identity statuses (Lillevoll, Kroger, & Martinussen, 2013). Another meta-analysis found a relationship between committed identity statuses (foreclosure and achievement) and positive experiences of self-esteem (Ryeng, Kroger, Martinussen, 2013). Research also suggests that a stable sense of identity is a protective factor against depression, rumination, and burnout (Craig-Bray, Adams, & Dobson, 1988; Luyckx et al., 2005; Luyckx, de Witte, & Goossens, 2011; Luyckx, Schwartz, Berzonsky, et al., 2008; Luyckx, Schwartz, Soenens, Vansteenkiste, & Goossens, 2010).

Not only can identity itself be a protective factor, but also the timing of identity gains may impact wellbeing and distress. For example, participants who experience regressive movements in identity development may have worse outcomes than participants who maintain stable low identity scores (Kroger, 1996; Kroger, Martinussen, & Marcia, 2010). While identity research in general has begun investigating the relationship between identity development and psychosocial adjustment, there is minimal research assessing the relationship between adjustment and adult identity development.

Given Côté (2006)'s emphasis on the importance of a sense of adulthood for adjustment and mental health, this relationship is important to assess empirically.

### **Mental Health and Adult Identity in the College Context**

The college context is a particularly strenuous setting for many emerging adults (Bayram & Bilgel, 2008). College students must navigate increasingly challenging responsibilities and relationship dynamics (Arnett, 2006; Schulenberg, Sameroff, & Cicchetti, 2004) and many students report experiencing stress from academic and social challenges (Abouserie, 1994; Bayram & Bilgel, 2008; Pierceall & Keim, 2007). The majority of college students report elevated depression, anxiety, and stress (e.g., Bewick, Gill, Mulhern, Barkham, & Hill, 2008) and many experience symptoms of psychological disorder during college (Eisenberg, Gollust, Golberstein, & Hefner, 2007).

Students who have established adult identities may retain the sense of agency and self-direction that protects against experiences of subjective distress. Adult identity also may enhance feelings of positive wellbeing and self-esteem. Despite adult identity's hypothesized impact on mental health outcomes (Côté, 1997, 2006), minimal research has investigated the relationship between adult identity development and negative and positive psychological functioning. The stressors of the college context (Abouserie, 1994; Bayram & Bilgel, 2008; Pierceall & Keim, 2007) and instability that characterizes the developmental stage of emerging adulthood (Arnett, 2006) indicate the importance of assessing potential protective factors, such as adult identity.

## **The Present Study**

The present study recognizes that adult identity growth occurs during the college years and that individuals vary in their developmental trajectories over time. In order to explore adult identity development in the college context, the current study investigates trajectories of adult identity development and assesses mental health differences between various adult identity developmental subgroups at the end of the fourth year of college.

There are three primary aims of the present research:

*Aim 1:* To investigate the timing and pathways of developmental trajectories of adult identity over the course of college.

*Hypothesis 1:* On average, adult identity scores will increase linearly over the course of college. This finding would support Waterman's (1982) theory that identity development progresses linearly over time.

*Hypothesis 2:* There will be more than one latent class characterizing divergent developmental trajectories of adult identity growth in college. This finding would support Arnett's (2004) emphasis on heterogeneity of development amongst emerging adults.

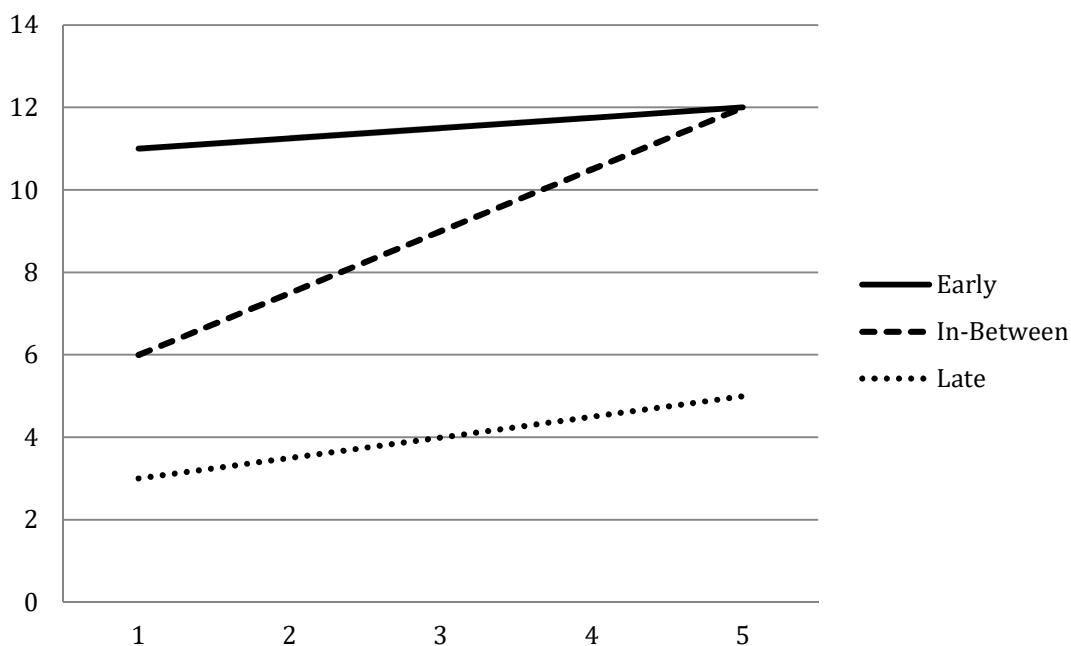
*Hypothesis 3:* There are three adult identity trajectories that reflect different developmental pathways (*Hypothesis 3a*). These identity trajectories will portray Benson and Elder's (2011) finding that there are early and late developers of subjective adulthood, as well as Arnett's (2004) emphasis on the "in-between" stage of many emerging adults. Based on these researchers' findings, the current



study hypothesizes the following three developmental trajectories (*Hypothesis 3b*; see Figure 1):

- 1) A stable high adult identity trajectory that starts high and remains high over the course of college (early-developers).
- 2) A trajectory starting at a mid-level and increasing over time, reflecting an in-between to established pathway (in-between developers).
- 3) A stable low adult identity trajectory that starts low and increases to an in-between level over the course of college (late-developers).

Figure 1. Hypothesized Adult Identity Developmental Subgroups with Early-, In-Between, and Late-Developer Trajectories



*Aim 2:* To explore the percentage of students in various trajectory subgroups.

*Hypothesis 4:* The in-between developers' trajectory will be associated with the most participants. This finding would be consistent with Kroger, Martinussen, and

Marcia's (2010) meta-analysis on identity status changes over time, which found that emerging adults were the most likely to shift from a moderate level of identity to a committed identity in college.

*Aim 3:* To test the mental health outcomes associated with developmental trajectories.

*Hypothesis 5:* There will be mental health differences among various developmental trajectories such that students in the early and in-between developmental trajectories, compared to participants in the late trajectory, will show significantly fewer negative emotional symptoms, namely lower depression, anxiety, and stress, in the fourth year of college. This finding would be consistent with Lillevoll, Kroger, and Martinussen's (2013) meta-analysis on the relationship between anxiety and the identity statuses, as well as other studies that have linked more established identity stages with lower levels of depression and distress (e.g., Luyckx et al., 2005).

*Hypothesis 6:* There will be different positive mental health outcomes associated with various developmental trajectories such that students in the early and in-between developmental trajectories, compared to participants in the late trajectory, will have significantly higher self-esteem in the fourth year of college. This finding would be consistent with Ryeng, Kroger, and Martinussen's (2013) meta-analysis on the relationship between self-esteem and the identity statuses.

## CHAPTER THREE

### METHOD

#### Participants

The present study analyzed data from 434 undergraduate students from two cohorts who completed at least four ( $N=219$ ) out of five ( $N=215$ ) time points over four years of a longitudinal study. Included participants were predominantly female (74.19%,  $N=322$ ) and had a mean age of 18.49 ( $SD=.45$ ) years at baseline. 94.5% ( $N=410$ ) of participants identified as heterosexual, 9.2% ( $N=40$ ) reported being first-generation college students, and 9.2% ( $N=40$ ) were commuter students. The majority of participants reported their religious identification as Catholic (55.3%,  $N=240$ ) with other participants reporting their religion as Protestant (7.1%,  $N=31$ ), Muslim (2.5%,  $N=11$ ), Hindu (2.4%,  $N=10$ ), Jewish (.9%,  $N=4$ ), Buddhist (.7%,  $N=3$ ), and Other (5.5%,  $N=24$ ). Sixty-six participants (15.2%) did not provide information on their religious identity and 36 participants (8.3%) reported “no religious preference.” The ethnic and racial breakdown of participants is presented in Table 1.

Table 1. Ethnic and Racial Breakdown of Participants

<u>Race/Ethnicity</u>	<u>Frequency (N)</u>	<u>%</u>
American Indian or Alaskan Native	4	0.9
Asian	64	14.7
Black or African-American	6	1.4
Hispanic or Latino	22	5.1
Other	11	2.5
Puerto Rican	4	0.9
White	322	74.2

### **Procedure**

The present study used data from an ongoing longitudinal survey of undergraduates at a mid-size, urban, Jesuit university in the Midwest. The study assessed identity development and psychosocial functioning at five time points over the course of college. All incoming students were invited by email to participate in the online survey, administered via the survey tool Opinio, the week prior to the first semester of college. Participants were invited to sign an online consent form prior to beginning the survey. Those who completed the survey at baseline (T1) were invited to complete follow-up assessments at the end of the first year (T2), end of the second year (T3), end of the third year (T4), and end of the fourth year (T5) of college.

There were 2,854 students from two cohorts who completed the baseline time point, of which 434 completed at least four time points and were thus included in the present study. Included participants represented 15.21% of the starting sample.

Participants who were eligible for inclusion in the present study did not differ significantly from those who completed less than four time points on age,  $t(2,858) = .175$ ,  $p=0.861$ , first-generation college status,  $\chi^2(1, N = 2,034) = 1.12$ ,  $p = 0.291$ , sexual orientation,  $\chi^2(1, N = 2,680) = .187$ ,  $p = 0.666$ , or commuter status,  $\chi^2(1, N = 2623) = .35$ ,  $p = 0.555$ . Those who completed at least four time points were more likely to be female (74.19%,  $N=322$ ) than were those who completed less than four time points (64.71%,  $N=1,566$ ),  $\chi^2(1, N = 2,854) = 14.78$ ,  $p < .001$ . Included participants also were more likely to identify as White (74.19%,  $N=322$ ) than non-included participants (68.9%,  $N = 1,669$ ),  $\chi^2(1, N = 2,854) = 4.77$ ,  $p < .029$ . They were less likely to identify as Hispanic (5.07%,  $N=22$ ) than non-included participants (8.01%,  $N = 194$ ),  $\chi^2(1, N = 2,854) = 4.57$ ,  $p < .033$ , and less likely to identify as African-American (1.38%,  $N = 6$ ) than non-included participants (3.14%,  $N=76$ ),  $\chi^2(1, N = 2,854) = 4.08$ ,  $p = .044$ . There were no differences between the frequencies of participants who identified as Asian, Native Hawaiian or Alaskan Native, Multi-Racial, Puerto Rican, or Other. Included participants were marginally more likely to respond to the ethnicity question in general (included non-response: 0.23%,  $N=1$  out of 434; not included non-response: 1.28%,  $N=31$  out of 2,420),  $\chi^2(1, N = 2,854) = 3.66$ ,  $p = .056$ .

## Measures

**Demographic variables.** Demographic information on age, gender, and sexual orientation were assessed at the first time point of the survey. Ethnicity/race, first-generation college status, and commuter status were obtained through institutional records with participant permission. Ethnicity/race was recoded as a dichotomous

variable (ethnic majority and ethnic minority) for inclusion as a covariate in the present analyses.

**Adult identity.** Participants responded to the Identity Stage Resolution Index (ISRI; Côté, 2006) at all five time points (see Appendix A). The ISRI measured the extent to which individuals have resolved the identity stage during emerging adulthood through two constructs: (1) community identity, or the attainment of a subjective sense of belongingness in a long-term community and (2) adult identity, the subjective sense of adulthood. The present study focused on the latter Adult Identity Resolution subscale (ISRI - AIRS), which was measured using three items on a 5-point rating scale from 0 (*not at all true*) to 4 (*entirely true*). The three items on this scale assessed how much participants “feel that [they have] matured fully,” “consider [themselves to be an adult,” and “feel respected by others as an adult.” Higher scores indicate greater adult identity. Internal consistency in the present sample was fair to good, ranging from  $\alpha=.77$  at Time 5 to  $\alpha=.81$  at Time 3 for the ISRI-AIRS.

**Negative emotional symptoms: Depression, anxiety, and stress.** Participants responded to the Depression, Anxiety, and Stress scale (DASS-21; Lovibond & Lovibond, 1995) to assess negative emotional symptoms (see Appendix B). This scale was comprised of 21 items assessing depression, anxiety, and stress over the past week, and was measured on a scale from 0 (*did not apply to me at all*) to 3 (*applied to me very much, or most of the time*). Sample items included “I couldn’t seem to experience any positive feeling at all” and “I found it difficult to relax.”

Both a total score of negative emotional symptoms and three correlated subscale scores representing (a) depression, (b) anxiety, and (c) stress have been shown to be appropriate uses of the DASS-21 (Henry & Crawford, 2005). A confirmatory factor analysis (CFA) was used to assess the appropriate measurement structure with the DASS-21 using the present data. Fit-indices of RMSEA ( $<.10$ , Browne & Cudeck, 1993), SRMR ( $<.08$ , Hu & Bentler, 1998), CFI ( $>.90$ , Bentler, 1990) and TLI ( $>.90$ , Tucker & Lewis, 1973) were used to assess model fit. The CFA revealed that a one-factor model provided acceptable fit on some fit indices, SRMR = 0.067, CFI = 0.943, and TLI = 0.937; but not others, RMSEA = 0.126. An oblique three-factor model provided acceptable fit on all four fit indices: RMSEA = 0.088, SRMR = 0.060, CFI = 0.966, and TLI = 0.961. Nested model comparison revealed that an oblique three-factor model representing depression, anxiety, and stress fit the data significantly better than a one-factor total score representing negative emotional symptoms,  $\Delta\chi^2(3) = 320.64, p <.001$ . Therefore, in the present study, three subscale scores of depression, anxiety, and stress were used to assess different aspects of negative emotional symptoms. Higher scores are reflective of higher levels of depression, anxiety, and stress. Internal consistency in the present sample was good to strong with  $\alpha=.90$  for the depression subscale,  $\alpha=.84$  for the anxiety subscale, and  $\alpha=.86$  for the stress subscale.

**Self-Esteem.** Participants responded to the Rosenberg Self-Esteem Scale (RSE; Rosenberg, 1965) to assess self-esteem (see Appendix C). The scale was comprised of ten items ranging from 0 (*strongly disagree*) to 3 (*strongly agree*). Sample items included, “I am able to do things as well as most other people” and “I take a positive

attitude toward myself.” Higher scores indicated greater self-esteem. Internal consistency in the present sample was strong with  $\alpha=.90$  for the RSE at Time 5.

### **Data Analysis Plan**

Latent growth curve modeling (LGCM) and growth mixture modeling (GMM) were used to analyze the shape of adult identity development in aggregate over the course of college, and the heterogeneity in adult identity development during, college using MPlus version 7.3 (Muthén & Muthén, 1998-2012).

To assess the first hypothesis that adult identity increases linearly over the course of college, various types of one-class latent growth curve models (LGCMs) with intercept only, linear, and quadratic factors were tested (Berlin, Parra, & Williams, 2013; see Figure 2 for the quadratic model). This approach identifies the type of change that best categorizes the average growth across all five time points – that is, whether a flat growth model, a linearly increasing model, or a curvilinear model best represents the aggregate of all data. For all one-class models, intercept values were fixed to 1. The linear model added a slope factor set at 0.00 (baseline in late August), 0.67 (8 months post-baseline in late April for Time 2), 1.67 (20 months post-baseline in late April for Time 3), 2.67 (32 months post-baseline for Time 4), and 3.67 (44 months post-baseline for Time 5). The quadratic model added an additional latent variable with factor loadings at 0.00, 0.45, 2.79, 7.13, 13.47. An additional latent basis model also was tested with intercept values fixed at 1 and slopes estimated freely at 0, \*, \*, \*, 1.

LGCMs were compared using Bayesian Information Criteria values (BIC; Schwartz, 1978), with smaller values indicating better fit. The fit of the model with the



smallest BIC was further assessed using global fit statistics of RMSEA ( $<.10$ , Browne & Cudeck, 1993), SRMR ( $<.08$ , Hu & Bentler, 1998), and relative fit statistics of CFI ( $>.90$ , Bentler, 1990) and TLI ( $>.90$ , Tucker & Lewis, 1973). As there is some evidence that race/ethnicity and gender might play a role in predicting identity development (e.g., Cheah & Nelson, 2004; Côté, 1997), all models were retested including covariates of gender, race/ethnicity, and age, entered simultaneously, in order to assess whether any of these variables significantly impacted the findings (see Figure 3).

Figure 2. Latent Growth Curve Model with Flat-Growth (Intercept Only), Linear, and Quadratic Factors across Five Time Points

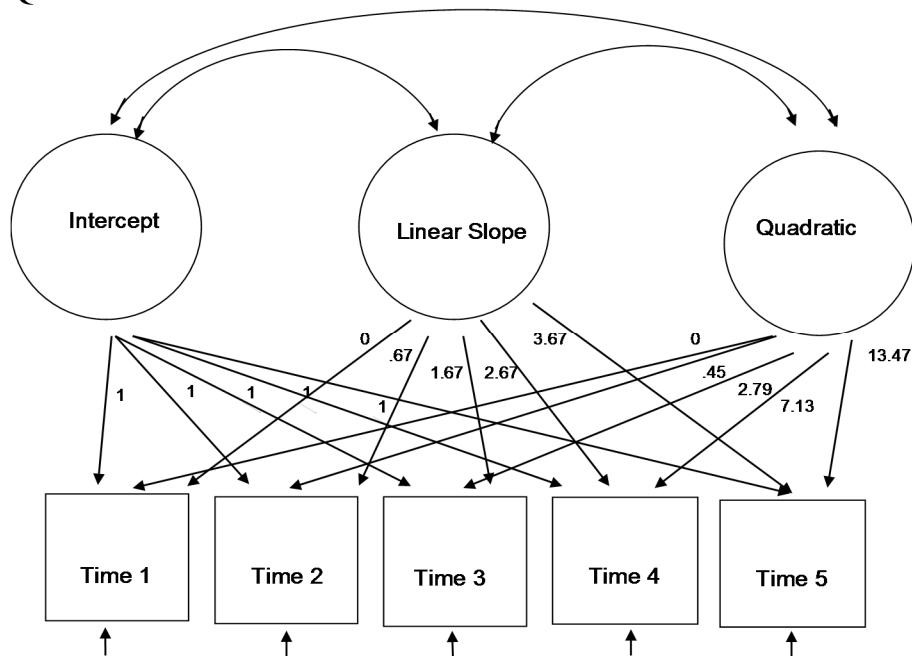
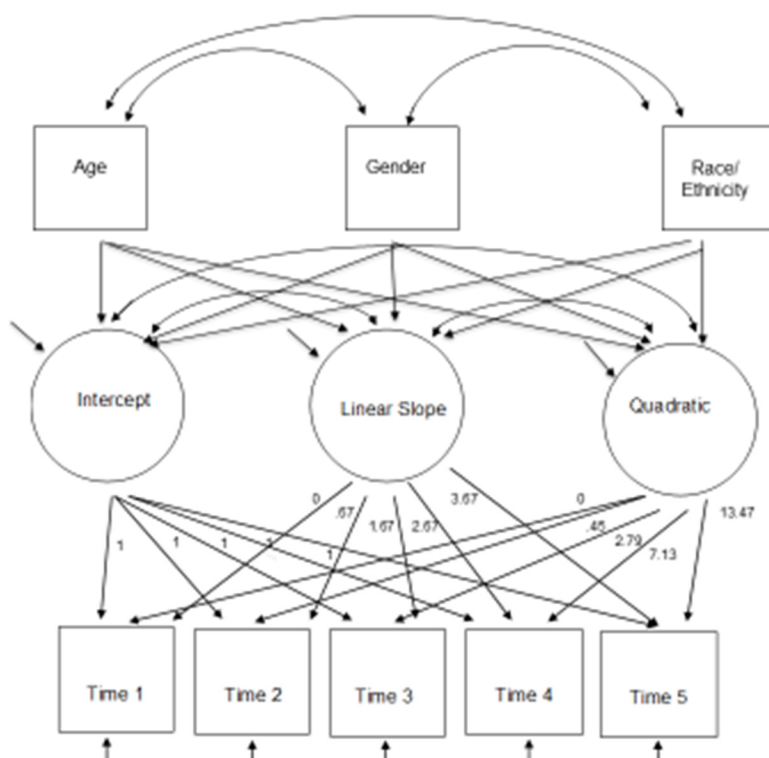


Figure 3. Quadratic Latent Growth Curve Model with Age, Gender, and Race/Ethnicity Covariates



Once the best fitting one-class model was identified, various models were tested using growth mixture modeling (GMM) to assess the number of identity developmental subgroups that best characterize the data (see Figure 4; Muthén & Asparouhov, 2009). GMM is an analytical tool in which subgroups of growth trajectories are extracted from continuous longitudinal data (Muthén, 2004). The technique analyzes inter- and intra-individual differences in change by estimating unobserved categorical latent classes of development through models with varying numbers of trajectory classes (Li, Duncan, Duncan, & Acock, 2001). For each model, random starts are used to assign mathematically estimated slope and intercept parameter values to each class. Random starts assist in models arriving at global rather than local maxima (Muthén &

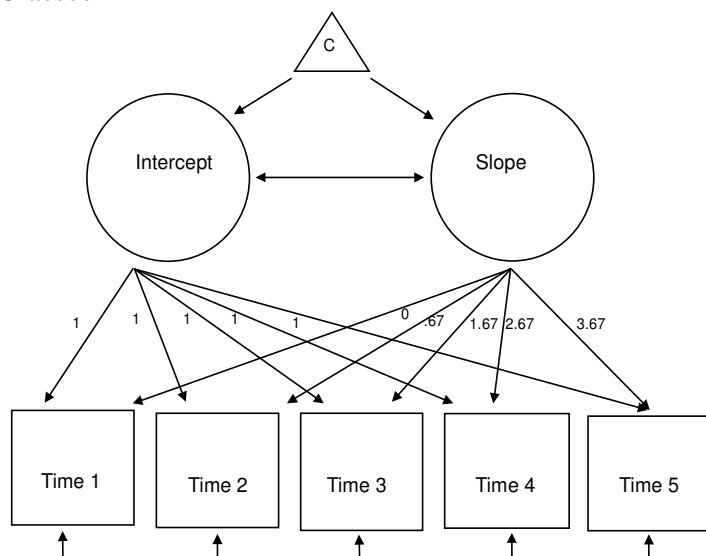
Asparouhov, 2009). Individuals are probabilistically assigned to one of the classes and fit indices depict how well each model represents the data. Comparisons also can be made between models with varying numbers of classes. In so doing, the best fitting model depicting heterogeneity of developmental trajectories over time can be identified (Muthén, 2004).

To determine the number of growth trajectories that best depict college student adult identity development, individual adult identity scores were entered as the continuous repeated outcome variable at each time point. Slope parameters were constrained to 0.00, 0.67, 1.67, 2.67, 3.67. Missing data was accounted for using full information maximum likelihood estimation (FIML), which can be used within a growth mixture modeling framework and uses available data to estimate missing values and adjust for standard errors (Little & Rubin, 1987). Participants were included in the present analysis if they were missing one time point or less on the ISRI-AIRS in order to limit the reliance on data estimation techniques, while also allowing for some flexibility with participant response rates.

GMM assessed each model with  $k$ -classes one at a time beginning with two classes, three classes, and up until the best-fitting model was identified. Model fit was assessed using entropy, such that entropy values closer to 1.0 indicate better fit. Other fit-indices also were used to assess model fit. According to Nylund and colleagues (2007), in a GMM framework, the Bootstrapped Log Ratio Test (BLRT; McLachlan & Peel, 2000) performs the best for identifying the number of latent classes. However, BLRT takes longer to compute than other indices. Therefore, Nylund and colleagues (2007)

recommends that Bayesian Information Criteria (BIC; Schwartz, 1978) and the Lo-Mendell-Rubin likelihood ratio test (LMR; Lo, Mendell, & Rubin, 2001) be used to select a few possible best-fitting models; then those models should be reanalyzed using BLRT. Significant LMR and BLRT  $p$ -values indicate that the model with  $k$ -classes is better at classifying the data than the model with  $k$ -minus-1 classes. In the present study, once a few models were identified using BIC and adjusted LMR, an LMR fit statistic that adjusts for sample size, the models were retested with BLRT to confirm the model choice. This technique not only identified whether there is heterogeneity in adult identity development in college (*Hypothesis 2*), but also indicated the number of classes that best characterized this data (*Hypothesis 3a*).

Figure 4. Growth Mixture Model Depicting a Latent Categorical Variable C, with k Classes



Notes. Each latent class's intercept and slope parameter values are estimated based on observed repeated measure data on the ISRI-AIRS over five time points. Intercept values are fixed at 1 for all time points and slope values are fixed at 0.00, 0.67, 1.67, 2.67, and 3.67, representing the amount of time in years between assessment points. Arrows below each of the time points represent measurement error.

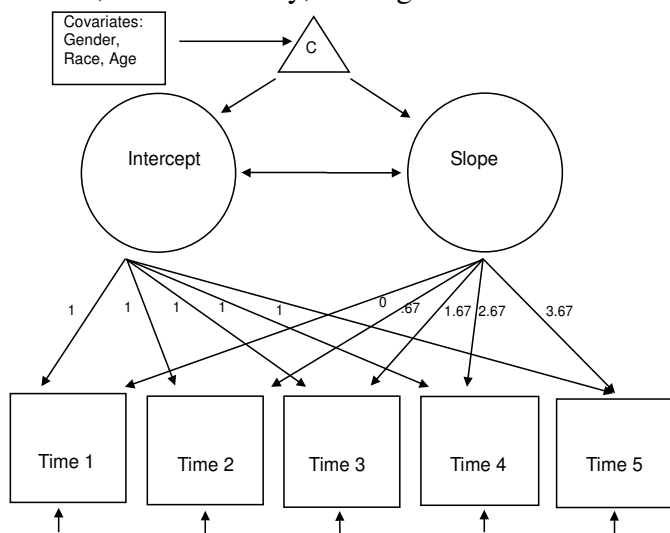
One of the assumptions of GMM is that the observed outcome variables are normally distributed (Bauer & Curran, 2003). There have been some concerns that skewed distributions lead to an overestimation of the number of latent classes, producing artifacts of non-existent classes (Bauer & Curran, 2003). In response to this concern, a new analytical tool was introduced in MPlus version 7.2 to allow for testing skewed-normal, skew- $t$ , and  $t$ -distributions for various types of non-normally distributed data, which account for skewness and kurtosis of observed outcome data (Muthén & Asparouhov, 2014). In initial tests of the data, adult identity scores revealed some skewness: Time 1 adult identity had a skewness of -0.28 ( $SE = 0.12$ ) and kurtosis of 0.01 ( $SE = 0.23$ ), Time 2 had a skewness of -0.48 ( $SE = 0.12$ ) and kurtosis of -0.02 ( $SE = 0.24$ ), Time 3 had a skewness of -0.50 ( $SE = .12$ ) and kurtosis of 0.07 ( $SE = 0.25$ ), Time 4 had a skewness of -.65 ( $SE = 0.13$ ) and kurtosis of .27 ( $SE = 0.26$ ) and Time 5 had a skewness of - 0.67 ( $SE = 0.13$ ) and kurtosis of 0.27 ( $SE = 0.26$ ).

Given some skewness in the present data, in order to control for this potential confound, normal mixtures were compared to non-normal mixture distributions to investigate which best fit the data. Specifically, once the best-fitting model of  $k$ -classes using normal distribution growth mixture models was identified, the  $k$ -class model was retested using each of the three types of skewed models (skew-normal, skew- $t$ , and  $t$ -distribution growth mixture models), as described by Muthén & Asparouhov (2014).  $BIC$  was used to assess models with these different types of distributions such that lower  $BIC$  indicated better fit.

Thus far, the mixture models described have not included covariates or mixture indicators. According to Muthén and Asparouhov (2014), the best fitting model should be assessed first and then these other variables should be introduced. By including the covariate and distal outcome factors after the best-fitting model with  $k$ -classes is identified, the number of adult identity trajectory subgroups is reflected directly from the observed data and the covariate and distal outcome variables do not change the meaning of the latent categorical variable.

Therefore, in the present analysis, once the best-fitting model (normal or skewed) with  $k$ -classes was identified, the model was retested including covariates of age, gender, and race/ethnicity, entered simultaneously, to reassess fit using indices described above (see Figure 5).

Figure 5. Growth Mixture Model of Latent Variable C with  $k$  Classes with Covariates of Gender, Race/Ethnicity, and Age

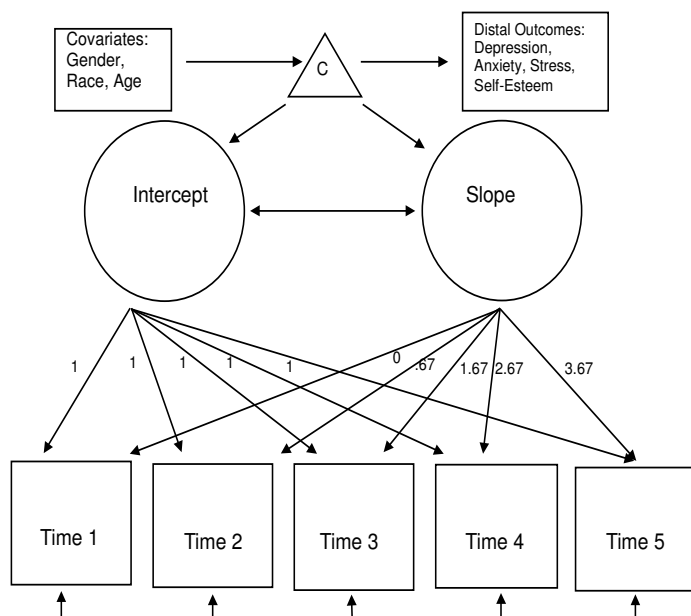


In this final model, individuals were probabilistically assigned to each latent class (trajectory subgroup) and the classes were graphically depicted to illustrate and describe

the subgroups over time (*Hypothesis 3b*). A  $1 \times k$  chi-square was used to assess whether there are significantly different percentages of students in each of the latent classes (*Hypothesis 4*).

Finally, the relationship between developmental trajectory categorization and psychological wellbeing in the fourth year of college was assessed using the automatic BCH method for assessing equality of means across classes on distal outcomes (*Hypothesis 5 and Hypothesis 6*). Outcome measures of wellbeing included self-reports of (a) negative emotional symptoms, namely depression, anxiety, and stress, and of (b) self-esteem. Asparouhov and Muthén (2014) compared the BCH method, Lanza's method, and the 3-step method, and found that the BCH method was more robust, did not shift the latent classes in the final stage as the 3-step method often did, and was particularly helpful when the variance of the distal outcome variable differed across classes. The BCH method was also more flexible, performing well under various conditions and was determined to be the preferred method for continuous distal outcomes. Therefore, in the present study, the automatic BCH method was used to create classification weights for each trajectory class so that comparisons could be made on each outcome variable (see Figure 6). While an ANOVA or ANCOVA also could have been used to assess the impact of trajectory classification on mental health outcomes, the BCH method enhanced the validity of the statistical conclusion by accounting for classification error when assigning participants to classes (Bolck, Croon, & Hagenaars, 2004).

Figure 6. GMM Model with Latent Variable C, Covariates of Gender, Race/Ethnicity, and Age, and Distal Outcomes of Depression, Anxiety, Stress, and Self-Esteem



The outcome variables of depression, anxiety, stress, and self-esteem were assessed at the same time point as the final adult identity score, which raises a potential confound. If differences were found between groups on self-esteem and/or negative emotional symptoms of depression, anxiety, and stress at the end of college, would this difference be due to differences in adult identity at T5 or due to differences in developmental trajectories over the course of college as hypothesized? In order to assess the impact of developmental trajectory above and beyond the T5 adult identity scores, four ANCOVAs with one predictor variable of adult identity trajectory classification, one covariate of T5 adult identity scores, and dependent variables of depression at T5 in ANCOVA 1, anxiety in ANCOVA 2, stress in ANCOVA 3, and self-esteem in ANCOVA 4, were run. While the disadvantage of using ANCOVA within the present framework was described above (Bolck, Croon, & Hagnaars, 2004), the advantage of



using this technique to control for T5 scores was determined to outweigh the disadvantages. Any findings were qualified by classification error involved in using ANCOVA analyses within the mixture framework.

## CHAPTER FOUR

### RESULTS

#### Average Trajectory of Adult Identity Development

Latent growth curve models (LGCMs) with intercept only, linear, quadratic, and latent-basis factors were tested (Berlin, Parra, & Williams, 2013; see Figure 2). Of the four latent growth curve models, the linear model provided the lowest BIC value, indicating the best fit (see Table 2). Fit statistics also indicated that the linear model provided acceptable fit to the data (RMSEA = .052, SRMR = .062, CFI = .978, TLI = .978; see Table 3). In order to determine whether the more parsimonious intercept-only model should be rejected in favor of the linear model, guidelines by Jones, Nagin, and Roeder (2001) for estimating the log Bayes factor were followed. The estimate of the log Bayes factor was calculated by multiplying the difference in BIC values between the two models ( $\Delta\text{BIC} = 87.83$ ) by two. Given that the estimate of the log Bayes factor ( $2 * \Delta\text{BIC} = 175.66$ ) was greater than ten, there was strong evidence that the linear model should be preferred over the intercept-only model (Jones, Nagin, & Roeder, 2001).

When covariates of gender, age, and race/ethnicity were entered into the model, the linear model still had the lowest BIC, adequate fit statistics (RMSEA = .044, SRMR = .046, CFI = .976, TLI = .969, see Table 4), and an estimate of the log Bayes factor ( $2 * \Delta\text{BIC} = 145.56$ ) greater than 10, providing strong evidence for the linear model (see Table 2). None of the covariates entered simultaneously into the model were significant

predictors of adult identity at baseline (intercept on ethnic minority status = .194,  $t = .730$ ,  $p = .466$ ; intercept on gender = .205,  $t = .812$ ,  $p = .417$ ; intercept on age at baseline = .012,  $t = .136$ ,  $p = .892$ ) or rate of change of adult identity scores (slope on ethnic minority status = -.137,  $t = -1.794$ ,  $p = .088$ ; slope on gender = -.042,  $t = -.570$ ,  $p = .569$ ; slope on age at baseline = -.021,  $t = -.627$ ,  $p = .531$ ). These findings suggested that age, gender, and race/ethnicity had a negligible effect on adult identity at baseline and rate of change in adult identity over four years. The linear LGCM without covariates is depicted in Figure 7 and the Mean and Standard Deviation at each time point are described in Table 5.

Table 2. BIC Values for Latent Growth Curve Models With and Without Covariates

<i>Model</i>	<i>BIC (no covariates)</i>	<i>BIC (with covariates)</i>
Intercept-Only	8657.45	8660.74
Linear	8569.62	8587.96
Quadratic	8577.80	8612.51
Latent-Basis	8580.58	8596.17

Table 3. Fit Statistics for Latent Growth Curve Models Without Covariates

<i>Model</i>	$\chi^2$	<i>df</i>	<i>RMSEA</i>	<i>SRMR</i>	<i>CFI</i>	<i>TLI</i>
Intercept-Only	114.059	10	.134	.108	.811	.855
Linear	21.696	10	.052	.062	.978	.978
Quadratic	545.878	10	.021	.044	.998	.996
Latent-Basis	14.897	7	.051	.058	.985	.979

*Note.* Acceptable fit indicated by RMSEA (<.10), SRMR (<.08), CFI (>.90) and TLI (>.90).

Table 4. Fit Statistics for Latent Growth Curve Models With Covariates

<i>Model</i>	$\chi^2$	<i>df</i>	<i>RMSEA</i>	<i>SRMR</i>	<i>CFI</i>	<i>TLI</i>
Intercept-Only	142.515	25	0.104	0.076	0.823	0.823
Linear	34.857	19	0.044	0.046	0.976	0.969
Quadratic	17.415	12	0.032	0.031	0.992	0.983
Latent-Basis	25.153	16	0.036	0.043	0.986	0.978

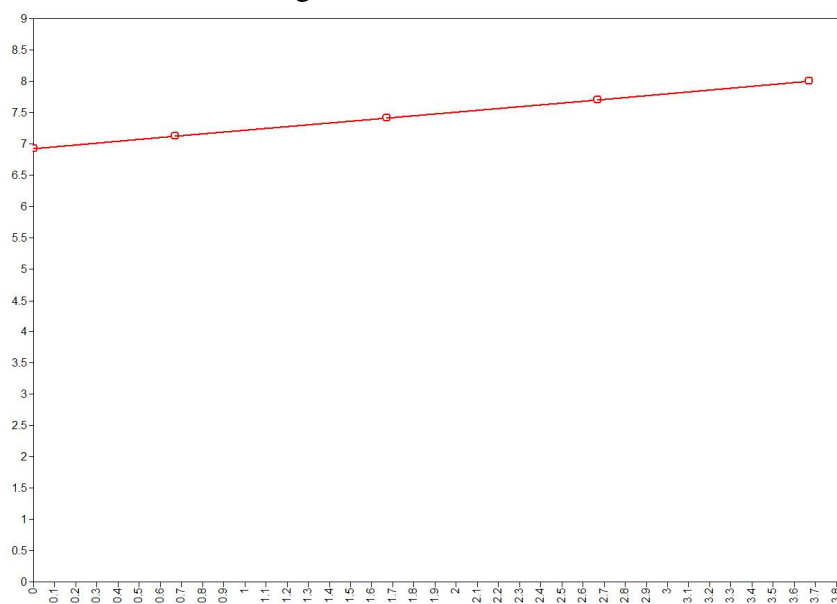
*Note.* Acceptable fit indicated by RMSEA (<.10), SRMR (<.08), CFI (>.90) and TLI (>.90).

Table 5. Adult Identity Across Respondents at Each Time Point

	Time 1	Time 2	Time 3	Time 4	Time 5
Adult Identity	6.89	7.09	7.42	7.80	7.95
Mean	(2.47)	(2.67)	(2.56)	(2.59)	(2.60)
( <i>SD</i> )					
<i>N</i>	434	418	392	344	363

*Note.* 1=beginning of first year, 2= end of first year, 3=end of second year, 4=end of third year, 5=end of fourth year

Figure 7. Linear Latent Growth Curve Model Trajectory of Adult Identity Development over Four Years of College



## Heterogeneity in Adult Identity Development

Growth mixture modeling (GMM) was used to analyze heterogeneity in adult identity development among college students (Muthén & Asparouhov, 2009). Models were assessed based on the fit-indices of entropy, BIC, adjusted LMR, and BLRT. Fit statistics indicated that the 2-class model fit the data better than did the 1-class model, including lower BIC (8554.76), entropy closer to 1.0 (.747), and significant  $p$ -values for both adjusted LMR (31.36,  $p = .002$ ) and BLRT (-4254.46,  $p < .001$ ; see Table 6).

Table 6. Fit Statistics for One- and Two-Class Growth Mixture Models

<i>K</i> -Classes	Entropy	BIC	Adjusted LMR ( $p =$ )	BLRT ( $p =$ )
1-Class	--	8569.62	--	--
2-Classes	.747	8554.76	31.36 ( $p = .002^*$ )	-4254.46 ( $p < .001^*$ )

*Note.* Models do not include correlated unique measurement error. Best fit indicated by entropy closest to 1.0, smallest BIC, and significant  $p$ -values for adjusted LMR and BLRT.

While running the growth mixture models, an error message appeared for the three-through five-class models, indicating inappropriate model fit. To enhance fit, parameters were freed to allow for correlated unique measurement error between adjacent time points for all models. Freeing this parameter corrected the error for the three-class model, but not the four- or five-class models, providing further evidence for inappropriate model fit. Fit statistics for the one- through three-class models indicated that the two-class model provided the best fit (see Table 7). Given that the two-class model could be run without correlated unique measurement error, subsequent analyses used the more parsimonious model without this freed parameter.

Table 7. Fit Statistics for One- Through Three-Class Growth Mixture Models

<i>K</i> -Classes	Entropy	BIC	Adjusted LMR ( <i>p</i> = )	BLRT ( <i>p</i> = )
1-Class	--	8594.83	--	--
2-Classes	0.746	8574.91	36.15 ( <i>p</i> = 0.041)	-4254.90 ( <i>p</i> < .001)
3-Classes	0.740	8584.55	6.78 ( <i>p</i> = 0.314)	-4235.12 ( <i>p</i> = 0.250)

*Note.* Models allow for correlated unique measurement error between adjacent time points. Best fit indicated by entropy closest to 1.0, smallest BIC, and significant *p*-values for adjusted LMR and BLRT.

The two-class GMM was then assessed using non-normal distributions to compare non-normal to normal distribution models. Various types of distributions (normal, *t*-distribution, skew-normal, skew-*t*) were assessed within the growth mixture model framework using *BIC*. The normal model provided the best fit to the data with the lowest BIC value (*BIC* = 8554.76; see Table 8).

Table 8. Two-Class Mixture Models with Normal, T-distribution, Skew-normal, and Skew-t Distributions

<i>2-Class Model Distribution Type</i>	<i>BIC</i>
Normal	8554.76
<i>T</i> -Distribution	8557.57
Skew-Normal	8588.01
Skew- <i>T</i>	8556.95

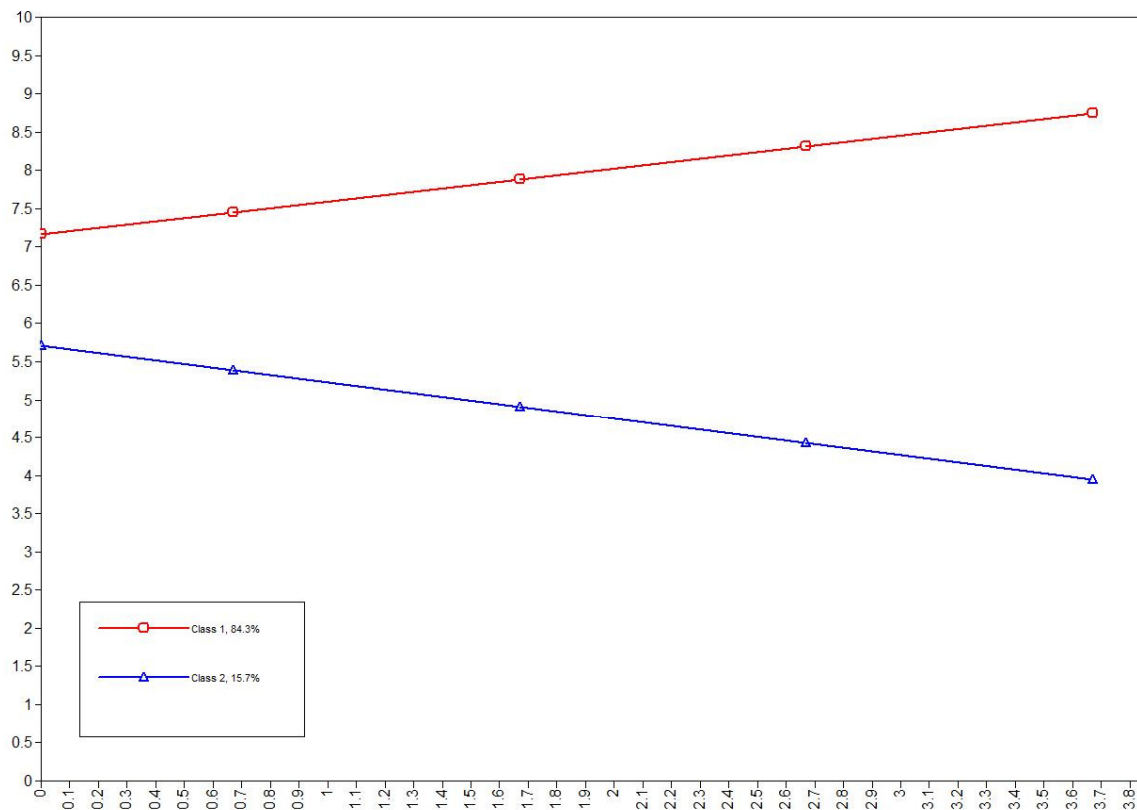
*Note.* Lower BIC indicates better model fit.

Covariates of age, gender, and race/ethnicity were entered simultaneously into the two-class normal mixture model. The logistic regression coefficients for the effects of ethnic minority on Classes 1 and 2 were .444,  $t = 1.090$ ,  $p = .276$ , and -.444,  $t = -1.090$ ,  $p = .276$ , respectively. The logistic regression coefficients for the effects of gender on

Classes 1 and 2 were  $-.124, t = -.293, p = .769$ , and  $.124, t = .293, p = .769$ , respectively. The logistic regression coefficients for the effects of age at baseline on Classes 1 and 2 were  $-.029, t = -.309, p = .757$ , and  $.029, t = .309, p = .757$ , respectively. All coefficients were non-significant indicating that none of three covariates significantly predicted class membership, and were therefore not included in subsequent analyses.

In the final two-class normal distribution mixture model without covariates, individuals were probabilistically assigned to each latent class and classes were graphically depicted to visually describe the subgroups over time (see Figure 8). The graphical depiction revealed an increasing linear trajectory (Intercept  $M = 7.16, SE = 0.13$ ; Slope  $M = 0.43, SE = 0.04$ ) and a decreasing linear trajectory (Intercept  $M = 5.71, SE = 0.49$ ; Slope  $M = -0.48, SE = 0.13$ ). Data were imported into SPSS to assess whether the adult identity scores for each class did in fact change from baseline to the end of college or if the profiles remained flat. For the trajectory that appeared to increase over time, findings confirmed that there was a statistically significant increase in adult identity scores between baseline ( $M=7.14, SD=2.39$ ) and the end of the fourth year of college ( $M=8.58, SD=1.97$ ),  $t(319) = -10.54, p < .001$ . Similarly, for the apparent decreasing trajectory, there was a statistically significant decrease in adult identity scores from baseline ( $M=5.38, SD=2.21$ ) to the end of the fourth year of college ( $M=3.12, SD=1.57$ ),  $t(41) = 7.113, p < .001$ . There was a statistically significant difference in the percentage of participants in each group,  $\chi^2(1, N = 434) = 235.95, p < .001$ , such that more participants fell in the increasing (84.3%) than the decreasing (15.7%) trajectory.

Figure 8. Estimated Growth Mixture Model of Two Trajectory Classes of Adult Identity Development over Four Years of College



### Trajectory Differences on Mental Health Outcomes

The Automatic BCH Approach for estimating equality of distal continuous outcome across classes was used to determine whether there were differences on depression, anxiety, stress, and self-esteem at the end of college. There were statistically significant differences between trajectories on depression,  $\chi^2(1, N=434) = 15.84, p < .001$ , anxiety,  $\chi^2(1, N=434) = 17.99, p < .001$ , and stress,  $\chi^2(1, N=434) = 13.97, p < .001$ , such that membership in the increasing trajectory was related to lower scores on all three subscales ( $M_{\text{dep}}=2.82, SD_{\text{dep}}=0.23; M_{\text{anx}}=2.16, SD_{\text{anx}}=0.20; M_{\text{stress}}=4.38, SD_{\text{stress}}=0.25$ ) than membership in the decreasing trajectory ( $M_{\text{dep}}=7.32, SD_{\text{dep}}=1.05; M_{\text{anx}}=6.37, SD_{\text{anx}}=0.92; M_{\text{stress}}=8.20, SD_{\text{stress}}=0.93$ ). There were also statistically significant



differences between trajectories on self-esteem at the end of college,  $\chi^2(1, N=434) = 30.38, p < .001$ , such that participants in the increasing trajectory ( $M=23.37, SD=0.31$ ) reported significantly higher self-esteem than did those in the decreasing trajectory ( $M=15.74, SD=1.28$ ).

In order to assess class membership as a predictor of depression, anxiety, stress, and self-esteem above and beyond time five adult identity scores, four ANCOVAs with T5 Adult Identity as a covariate were run. Class membership was no longer a significant predictor of depression,  $F(1, 359) = 0.63, p = .428$ , anxiety,  $F(1, 360) = 1.86, p = .174$ , or stress,  $F(1, 360) = 0.27, p = .606$ , when controlling for T5 adult identity scores. Class membership was also no longer a significant predictor of self-esteem,  $F(1, 360) = .000, p = .986$ . These findings indicated that there is a difference between trajectory classes on depression, anxiety, stress, and self-esteem at the end of college. However, this difference appears to be entirely accounted for by adult identity ratings at the end of college. Given the classification error involved in using ANCOVA for group comparison, findings should be interpreted with caution.

## **CHAPTER FIVE**

### **DISCUSSION**

Emerging adulthood is a distinct developmental stage in which individuals transition from adolescence to adulthood. This change transpires gradually over time, and has been suggested to develop at different rates for subgroups of emerging adults (Arnett, 2006). Further, the developmental pattern of adult identity growth has been hypothesized to be associated with different mental health experiences (Côté, 2006; Erikson, 1968). The present study sought to identify and describe divergent trajectories of adult identity development among college students, and to assess trajectory differences on mental health outcomes at the end of college.

The first hypothesis, that average adult identity development progresses linearly for college students over four years, was supported. These findings are consistent with prior research suggesting that adult identity increases over time during emerging adulthood (Côté, 2006; Waterman, 1982). Adult identity is associated with feelings of independence, responsibility, and empathy, which are intensified in the college context (Arnett, 2006; Stephen, Fraser, & Marcia, 1992; Tanner, 2006).

As hypothesized, the present findings also supported that there is more than one latent trajectory characterizing adult identity development over time. Arnett (2006) articulates the importance of assessing heterogeneity among emerging adults, including

the recognition that emerging adults make gains in identity domains at different times and may pursue identity-building resources in different ways (Côté, 2006).

This present study hypothesized that there would be three types of growth trajectories starting at different levels of adult identity and growing at different rates over the four years of college. Specifically, the three hypothesized categories would include early developers, late developers, and an in-between subgroup (Arnett, 2004; Benson & Elder, 2011). However, the three-trajectory hypothesis was not supported with the present results. Instead, findings indicated that a two-class model best characterized the data. Specifically, one trajectory showed a pathway in which students started with relatively high ratings and increased in their adult identity over their four years in college. The majority of students (84.9%) developed in this way. The other trajectory showed a decreasing pathway in which students began college at a moderate level of adult identity and declined in their subjective ratings over time. A minority (15.1%) of students fell in this latter category.

The former increasing trajectory is consistent with previous research on identity growth in college; however, the notion of a decreasing adult identity pathway initially appears inconsistent with prior research and theory. The literature on adult identity has suggested that emerging adults gradually increase in adult identity over the course of college with heterogeneity in the timing of this growth (Arnett, 2006; Côté, 2006; Waterman, 1982). The university context provides an environment in which students develop self-direction and independence, both of which underlie the subjective experience of becoming an adult (Arnett, 2004, 2006; Evans, Forney, & Guido-DiBrito,

1998). Even if subgroups of individuals develop at different rates, these theories suggest that emerging adults in the college context gradually mature toward a subjective sense of adulthood over time.

However, the present findings indicate that for a minority of students, adult identity declines linearly over four years of college. There are a number of potential explanations for this finding. First, prior research on subgroups of adult identity development studied adolescents rather than emerging adults and found that all subgroups grew longitudinally (Benson & Elder, 2011). Thus, all adolescents may experience increases in adult identity up to age 18, but present findings suggests that a portion find their sense of adult identity declining once they enter and progress through the college environment.

A look at the broader identity literature may explain this regressive pattern. Declining patterns in identity development over time have been reported in other identity domains as individuals transition from committed statuses to less certain identity statuses (Kroger, 1996; Kroger, Martinussen, & Marcia, 2010). The identity status of foreclosure, when individuals commit to an identity without having explored other options, often gives way to a period of less commitment and more exploration, or moratorium (Marcia, 1966). It may be that a subset of students begin college with a foreclosed adult identity, fostered by parental or societal expectations of being an adult, but then experience declines in that subjective feeling as they shed identities dictated by others and assess their subjective sense of adulthood using other criteria (e.g., independence and responsibility; Arnett, 2004).

Adult identity also may decline for those students who feel less independent, less financially secure, and less able to make decisions on their own over the course of college. During this time, students are confronted with a host of important life decisions, such as a career path, which has been linked to identity growth and can be difficult for some students to navigate (Ng & Feldman, 2009). Nationwide statistics also have indicated the challenge of funding higher education. Rising rates of tuition and fees have led to increasing student debt and reliance on grants, loans, and parental and other resources (Payea, Baum, & Kurose, 2013). Given that one of the components of feeling like an adult is financial independence, the difficulty of funding higher education may pose a challenge to adult identity (Arnett, 2004). Over time, financial reliance on parents and loans, a lengthened amount of time before entering the workforce, and indecision regarding important life choices may lead to a declining subjective sense of adulthood. With these and other stressors of the college experience (Abouserie, 1994; Bayram & Bilgel, 2008; Pierceall & Keim, 2007), it may be a challenge for some individuals to take full responsibility for the consequences of important life decisions, another component of becoming an adult (Arnett, 2006).

Active versus passive exploration may be another underlying mechanism explaining membership in the increasing versus decreasing trajectory. According to Côté (1997), the multitude of options in today's society and less rigid structure underlying developmental gains requires that individuals navigate the pathway toward adulthood on their own. Individuals can either passively wander among life options without seeking out specific opportunities or they can actively engage in building skills and strengths to

uncover life meaning and goals. It is possible that active exploration may occur for the majority of individuals, leading toward a growth pathway, and that passive exploration may lead to a decline in adult identity.

The present study assessed the timing and general pathway of identity growth, but did not analyze mechanisms underlying this process. Therefore, while the present study showed some heterogeneity, it is possible that far more complexity underlies these developmental pathways in various ways individuals explore the entry into adulthood. Côté and Levine (2002) identify five types of individuals who explore this stage in different ways: 1) *Refusers* who do not wish to become adults, 2) *Drifters* who are uninterested, 3) *Searchers* who do not yet know where they belong, 4) *Guardians* who maintain identities given to them by their parents and childhood communities, and 5) *Resolvers* who actively seek out an adult identity. It may be the case that searchers, guardians, and resolvers all experience increases in their subjective feeling of adulthood over the course of college; whereas, refusers and drifters may decline over time. The present study does not address the processes underlying the timing of this development and future research may further explore heterogeneity in the experience and implications of these categories.

### **Impact of Gender, Race/Ethnicity, and Age on Adult Identity Development**

Prior research has suggested that gender and race/ethnicity may play a role in the timing of adult identity growth (e.g., Cheah & Nelson, 2004; Côté, 1997). However, the present study found that neither of these constructs predicted the starting amount of adult identity when beginning college, the rate of development, or membership in the

increasing or decreasing trajectory. Age differences at baseline also did not predict adult identity development. While some research has indicated that adult identity development differs based on these demographic characteristics, other researchers have noted that the intangible attribute of an agentic personality is far more important than any tangible attributes, such as demographics (Côté, 1996). However, it is possible that other demographic variables such as socioeconomic status may predict the timing of this growth (Côté, 1996), which could be an important area for future research.

### **Adult Identity Development and Mental Health**

Findings from the present study indicated that there is a difference between trajectory classes on negative emotional symptoms, namely depression, anxiety, stress, and on self-esteem at the end of four years in college. This finding is consistent with research on other identity domains, which has shown an association between regressive movements in identity development over time and lower mental health functioning (Kroger, 1996; Kroger, Martinussen, & Marcia, 2010). It also is consistent with research suggesting differences between committed (foreclosure and achievement) and non-committed (moratorium and diffusion) identity statuses on both anxiety and self-esteem, such that individuals in more committed statuses report lower levels of anxiety and higher levels of self-esteem than do those in non-committed statuses (Lillevoll, Kroger, & Martinussen, 2013; Ryeng, Kroger, Martinussen, 2013). While the present study found that there were differences between trajectory classes on depression, anxiety, stress, and self-esteem at the end of four years of college, the difference appeared to be entirely accounted for by the final adult identity rating at that time point. Thus, the subjective

experience of adulthood after four years of college, rather than the process of development throughout college, is linked to experiences of depression, anxiety, stress, and self-esteem.

A strong sense of adult identity is associated with having agency and independence (Arnett, 2006; Côté, 1997). These characteristics may increase an individual's feeling of self-esteem, while buffering against anxiety and depression that can emerge from the instability of emerging adulthood (Luyckx, De Witte, & Goossens, 2011). On the other hand, for individuals with lower adult identity, the frequent challenges that arise during emerging adulthood along with a lower sense of agency and independence can lead an individual to report lower self-esteem and greater negative emotional symptoms (Luyckx, De Witte, & Goossens, 2011). This finding should be interpreted with caution given classification error when assigning individuals to trajectory subgroups in the ANCOVA analyses. In addition, mental health pathways were not examined along the same timeline as adult identity development and it may be that these constructs change concurrently over time. Alternatively, it may be the case that mental health predicts adult identity development rather than the other way around.

### **Limitations and Future Research**

The present research only included individuals who completed at least four time-points. This select group of students represents a portion of the starting sample (15.21%), of which many students completed the first time point but no others. While the final percentage does not take into consideration students who have transferred or dropped out from the university, it still represents a small portion of the student body that remained at



the university through four years. This sample may have distinct characteristics compared to students who completed less than four time-points of the longitudinal study. There were demographic differences between those participants that completed at least four time points and both those participants that completed less than four time points and the university as a whole (Loyola University Chicago, n.d.), such that included participants were more likely to be female and white. Additional characteristics, such as motivation or conscientiousness, may also differ between samples. As such, those students who completed fewer waves or did not participate in the survey at all may experience different developmental pathways of adult identity that were not captured by the present findings.

In addition, all constructs of the present study were assessed through self-report. Adult identity is an entirely subjective construct, therefore warranting assessment in this manner. Likewise, self-esteem, depression, anxiety, and stress often are captured well through self-report. However, this methodology can be subject to response bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Further, an additional measurement limitation is the use of the Adult Identity subscale of the Identity Stage Resolution Index to assess adult identity. This assessment has been used in a variety of research and has linked adult and community identities to wellbeing and distress outcomes (e.g., Côté, 1997, 2006; Luyckx, De Witte, & Goossens, 2011). However, it is a short, 3-item measure and, as such, may not fully capture the spectrum of experiences of adult identity.

The present research was conducted at a private, Jesuit university that has a majority female and Caucasian population. This environment is not necessarily characteristic of all other university contexts and students at other more diverse, secular,

or public universities may experience different developmental pathways. This study therefore warrants replication at other university environments.

Finally, the sample size of the present study is small for structural equation modeling. Results from various published Monte Carlo simulations were investigated to assess the present study's power to detect the hypothesized three-class structure and to assess confidence in the present study's findings. A Monte Carlo simulation by Tofighi and Enders (2007) investigated the power of various fit indices to accurately detect a three-class structure. Under conditions of high-class separation, a sample size ranging from 400-700 had 57-86% power to detect 3-classes using LMR (Tofighi & Enders, 2007).

Peugh and Fan (2012) also investigated power of various fit indices to adequately detect a three-class model. At a sample size of 300, the authors found that BLRT and aLMR fit-indices had an extremely high rate of overestimating the number of latent classes when the true number of population classes was three, with different intercept and slope parameter values. 96-98% of the time, when the true population model had three classes, BLRT and aLMR indicated that a four-class model best fit the data. However, the rate of underestimating the number of latent classes under the same conditions was less than 1%. On the other hand, when the true population model had one homogenous latent class, aLMR and BLRT rarely overestimated the number of classes at a sample size of 300. The Type II error rate of overestimating the number of latent classes at two when there was only one latent class was 4% for BLRT and 10% for aLMR (Peugh & Fan, 2012). In spite of the low power at a sample size of 300 to correctly identify a three-class

model, given the low rate of overestimation if the true number of latent classes is  $k=1$  and the low rate of underestimation if the true number of latent classes is  $k=3$ , Peugh and Fan's (2012) simulation study places some confidence in the present study's findings of a two-class model.

Finally, in a third Monte Carlo Simulation, Kim (2012) found that the required sample size for accurate maximum likelihood estimation of a two-class model under conditions of high class separation and 20% missing data was 200. Under conditions of low class separation with 20% missing data, the sample size requirement ranged from 600 for six indicator variables to 800 for four indicator variables (Kim, 2012). Thus, the present study appears to have an adequate sample size for detecting a two-class model under the condition of high-class separation, but may not be powered under low class separation. Overall, results of these simulation studies indicate that some confidence can be placed in the present study's findings of a two-class model, but replication is needed with larger sample sizes to further substantiate them.

### **Implications of the Present Research**

Emerging adulthood involves the coordination and integration of various behaviors, personality characteristics, and roles, as individuals navigate development in various identity domains, such as love, work, religion, politics, friendships, ethnicity, gender, and sexuality (Arnett, 2006; Côté & Levine, 2002). By merging these various components of identity, an integrated sense of self is fostered, sense of adulthood strengthened, and future life plans initiated (Côté & Levine, 2002; Schwartz, Côté, & Arnett, 2005). However, not all individuals attain a strengthened sense of adulthood

while in college. While the majority of individuals grow in their subjective sense of adulthood during college, some decline.

Adult identity has been suggested to foster a coherent sense of self that can withstand challenges in the environment (Erikson, 1964). The inability to integrate many different experiences and domains of life into a coherent sense of self during this time may lead to confusion, lack of direction, and resulting psychological dysfunction (Côté & Levine, 2002; Erikson, 1963). Given the importance of adult identity development during emerging adulthood, therapeutic techniques targeted toward identity development could assist those who are struggling with this transitional step (Berman, Kennerly, & Kennerly, 2008).

Future research should continue to investigate pathways of adult identity in college, including demographic differences, predictors, concurrent development of wellbeing and distress over the span of emerging adulthood, and other distal outcomes that may be linked to changes in adult identity over time. In addition, development should be reassessed using different samples and extending beyond the fourth year of college.

The present research provides an important contribution to understanding the experience of emerging adults. Findings indicate that it is crucial to investigate heterogeneity among students during this stage to capture development more fully, and that this heterogeneity is associated with wellbeing and distress in the fourth year, when most students are transitioning out of college. The college setting is formative, having implications for an individual's sense of self, community, and feeling of independence. Adult identity development in this context contributes substantially to the ability to

navigate challenges and seek opportunities, commit to values and goals, and develop a unique persona (Erikson, 1963; Schwartz, Côté, & Arnett, 2005).

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## VITA

Jenna Shapiro is a doctoral student at Loyola University Chicago studying clinical psychology with a specialization in children and families. She received her B.A. *summa cum laude* with a major in Psychology and minor in Dance from Barnard College of Columbia University in 2011. She participated in a number of psychology research labs while at Barnard College and conducted an independent research study funded by the Hughes Science Pipeline Project in which she examined embodied cognition and its relation to physiological arousal and emotional valence. Following graduation, Ms. Shapiro worked as a full-time research assistant at Columbia University Medical Center where she collaborated on manuscripts and poster presentations at national conferences. Ms. Shapiro has been a member of Dr. Colleen Conley's Improving Mental-health and Promoting Adjustment through College Transitions (IMPACT) Lab since beginning graduate school at Loyola University Chicago. As part of this lab, she has worked on research examining the effectiveness of technology-based mental health prevention programs for higher education students, trajectories and predictors of mental health over the course of college, relations between social media use and psychosocial functioning, and the effectiveness of an intervention to reduce self-stigma among students with mental illness. She was also awarded the American College Health Foundation's Stephen D. Weiss Student Mental Health Award to conduct research on the effectiveness of indicated mental health prevention programs for at-risk higher education students. Her master's

thesis examined divergent trajectories of adult identity development and trajectory relations with mental health over four years of college. Her participation in these projects has resulted in multiple presentations at regional and national conferences and manuscripts accepted for publication, under review, and in preparation.

