A Person-Centered, Mixed Methods Account of Emerging Adults' Internalizing Symptoms Before, Across, and After Graduating from University

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ABSTRACT

A person-centered, mixed methods account of emerging adults' internalizing symptoms before, across, and after graduating from university

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Many emerging adults experience elevations in internalizing symptoms (anxiety, depressive symptoms). Developmental psychopathology theories assert that the developmental transitions inherent to this life stage, such as university graduation, may alter emerging adults' psychological functioning. The current dissertation served to explore emerging adults' internalizing symptoms across graduation from university, in order to delineate for whom this is a period of risk for internalizing symptoms. Specifically, the present set of studies examined how emerging adults fare psychologically prior to graduating from university (Study 1), across the year following university graduation (Study 2), and the specific risk, contextual, and personality factors that relate to different internalizing symptom patterns across the graduation transition (Studies 3 and 4).

Emerging adults in their final year of university education (n = 159; M_{age} = 23.22) participated in a four-wave longitudinal study focused on wellbeing across the transition from university. Participants were recruited from an urban Canadian university and completed online surveys at each wave. A mixed methods design was employed to maximize insight into this under-researched yet arguably very important developmental transition. Quantitative data were collected once in the semester prior to graduating, and at three subsequent waves post-graduation. In line with developmental psychopathology perspectives, person-centered analyses were employed to account for heterogeneous patterns of internalizing symptoms, and a multitude of factors that influence such patterns were examined. Additionally, qualitative data were collected at the final wave, one year post-graduation, and a phenomenological analysis was conducted to augment and enhance the quantitative analyses.

Results from Study 1 uncovered heterogeneity in how participants felt about their upcoming graduation, with the majority feeling positive about their graduation. Positive feelings about graduation were linked to differences in dispositional attributes (optimism, neuroticism). Study 2 examined how participants' symptoms of anxiety and depression, respectively, changed

across the graduation transition. Distinct trajectories of both anxiety and depressive symptoms emerged, however anxiety levels did not change across graduation whereas depressive symptom levels did. The majority of participants showed stable, low depressive symptoms across the transition, but a small percentage decreased in depressive symptoms (11%), whereas a sizable group (32%) increased in depressive symptoms following graduation. Studies 3 and 4 served to identify factors related to the different depressive symptom trajectories across the graduation transition. Consistent across both qualitative and quantitative analyses was the finding that personality/mindset factors related to changes in depressive symptoms, and graduation contextual factors did not. This highlights the role of one's internal capacities in coping with a novel developmental transition. Optimism, grit, and less neuroticism emerged as key dispositional assets across the transition, along with qualitative accounts of willingness to learn from setbacks, self-efficacy, and gratitude for the university experience. Together, these results highlight the complex nature of adjustment, and clarify past research showing that aspects of emerging adults' personality and mindset are key determinants for how they emotionally navigate this pivotal transition period.

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CHAPTER 1

Introduction

Emerging adulthood is a developmental period ample with diverse psychosocial changes, challenges, and opportunities. Of particular concern are elevated rates of internalizing symptoms, namely depressive symptoms and anxiety, during this period. In part, elevated rates of internalizing symptoms may be explained by the multiple simultaneous developmental transitions that emerging adults have to navigate. One such transition is graduation from post-secondary education. Despite university graduation being an increasingly normative rite of passage for Canadian emerging adults, there exists very little research on how they experience it emotionally. Indeed, while research has begun to delineate rates and predictors of emerging adults' internalizing symptoms *in* university, little is known about how students fare psychologically as they transition *out of* university, or what makes this transition better or worse emotionally. Some research documents predictors of job attainment and satisfaction, but examining emerging adults' *psychological wellbeing* is an important goal for developmental science, as it is highly predictive of later life mental health and professional success. Accordingly, this dissertation explores how emerging adults experience the university graduation transition, with specific examination of their internalizing symptoms prior to, and across graduation, with follow-up one year later. In line with developmental psychopathology perspectives, the studies presented herein advance existing literature by considering heterogeneous patterns of internalizing symptoms, and by examining a multitude of factors that influence such patterns. Further, a mixed methods design is employed to maximize insight into this under-researched yet arguably very important developmental transition.

Emerging Adulthood

Prior to the late twentieth century, developmental psychologists predominantly studied children and adolescents. However, due to increased societal industrialization, the path from adolescence to the normative markers of adulthood, such as parenting and marriage, has become prolonged and less standardized. These societal changes prompted the conceptualization of a unique stage of life: *emerging adulthood* (EA; Arnett, 2000). Building from Erikson's lifespan theory (1950), Jeffrey Arnett's theory of EA is currently the most predominant theory describing

an “in-between period” ranging between ages of 18 to 29. Unlike adulthood, which is more stabilized, EA is thought to be an unstable, transitory stage, with formative implications for adulthood (Settersten, 2011). Arnett characterizes EA by five elements: seeking a sense of identity, experiencing instability, focusing on self-development, feeling in-between adolescence and adulthood, and optimistically believing in many possible life pathways (Arnett, 2004).

Arnett’s five characteristics of EA have been debated and adapted within the literature. Research suggests that some features cardinal to EA, such as identity exploration and instability, are experienced by most young people in Western nations, but that these findings are historically, and culturally specific (Arnett, 2004; Hendry & Kloep, 2007). Others have added to the defining features of EA, such as the inclusion of geographic mobility, self-direction, and choice in life paths (Shanahan, 2000). Further, no two emerging adults are the same, and Arnett has revised his theory to account for the possibility of such heterogeneity (Arnett, 2006; 2007). The extent to which this suggests EA is a developmental process, as opposed to a stage, has been heavily debated (see Arnett, Kloep, Hendry, & Tanner, 2011, for a thorough review). Nevertheless, compelling evidence, such as neuroscientific imaging studies, suggest that, at least for Western young people, there are significant maturational changes in the brain that occur uniquely at these ages (Huttenlocher & Dabholkar, 1997; Tanner & Arnett, 2011). Further, longitudinal studies suggest that emerging adulthood is a unique “juncture” in development across cultures, wherein social and psychological functioning at this time is predictive of later adulthood functioning (Schulenberg, Sameroff, & Cicchetti, 2004). Accordingly, understanding patterns and antecedents of wellbeing in emerging adulthood is an important social goal.

Internalizing Symptoms across EA

Since its recognition as an important and distinct life stage, research on emerging adulthood has grown in the last two decades. One research domain that has garnered much attention is emerging adults’ internalizing symptoms. Under the broader conceptual framework of affect, which refers to various kinds of states that involve good-bad discriminations, internalizing symptoms refer to clusters of emotional (e.g., sadness) and behavioural (e.g., withdrawal) symptoms that are developed, maintained, and expressed within an individual, and are difficult to detect through external observation (Cicchetti & Toth, 1991; Gross & Thompson, 2007; Merrell, 2008). Most commonly, internalizing symptom research centers on depression and anxiety, although internalizing symptoms may also refer to other interrelated constructs such

as low self-esteem, withdrawal, loneliness, or somatization (Quintana & Kerr, 1993). For the purposes of the current dissertation, the focus of internalizing symptoms will be on symptoms of depression and anxiety.

The defining features of depression are an abnormally low mood and/or lack of pleasure, which are often accompanied by other psychological and physiological symptoms, such as low self-esteem and fatigue (American Psychiatric Association, 2013). More severe or frequent depressive symptoms may meet criteria for Major Depressive Disorder, although depression is increasingly being recognized as a dimensional and heterogeneous construct (Fried & Nesse, 2015; Ruscio, 2019). Often comorbid with depression is anxiety, which refers to symptoms of both cognitive anxiety (e.g., worry) and physiological anxiety (e.g., heart racing; American Psychiatric Association, 2013). Anxiety and the various anxiety disorders in the Diagnostic and Statistical Manual of Mental Disorders are also becoming increasingly considered as dimensional, rather than categorical, constructs (Ruscio et al., 2005; Ruscio, 2019). Because of their high co-occurrence, some scholars suggest that depressive and anxiety symptoms are reflective of the same underlying emotional process, whereas others assert they have distinct mechanisms and courses (Oathes, Patenaude, Schatzberg, & Etkin, 2015). For example, developmental patterns show that anxiety is more stable and time invariant, whereas depression is more episodic and subject to contextual influences (Prenoveau et al., 2011).

Regarding prevalence of depression and anxiety in EA, research is mixed. Many studies show that emerging adulthood is a period of risk for internalizing symptoms, with epidemiological data showing dramatic spikes in anxiety and depression (e.g., Blanco et al., 2008; Kessler & Wang, 2008; Rohde, Lewinsohn, Klein, Seeley, & Gau, 2013). Yet, other research contradicts these findings, demonstrating that on average these symptoms improve across emerging adulthood (Galambos, Barker, & Krahn, 2006; Ross & Mirowsky, 2008). These conflicting findings have led scholars to suggest that there may be heterogeneity in internalizing symptoms among emerging adults (Schulenberg & Zarrett, 2006). Nevertheless, the presence of both anxiety and depressive symptoms in EA are uniquely, and synergistically, related to poorer mental health and social (i.e., employment, marriage, parenting, education) outcomes in the short and long term (Balázs et al., 2013; Horwitz & White, 1991; Howard, Galambos, & Krahn, 2010; 2014; Kessler et al., 2001). Thus, efforts are needed to pinpoint factors that promote vs. prevent these problems during this life course period.

Transitions and Internalizing Symptoms

Across the lifespan, people go through transitions that require entering novel contexts that have the potential to disrupt one's previous sense of equilibrium. It has been proposed that for the emerging adults who experience a rise in internalizing symptoms, this rise may be explained, in part, by their reaction to the developmental transitions inherent to this life stage (Eberhart & Hammen, 2006; Quintana & Kerr, 1993). Indeed, lifespan developmental theories emphasize the importance of transitions, be they biological or social, in shaping later psychological functioning and adaptation (Granic & Hollenstein, 2003; Schulenberg & Zarrett, 2006). For example, dynamic systems perspectives describe wellbeing as typically stable within individuals, but also extremely sensitive to "perturbations", or alterations during developmental transitions (Granic & Hollenstein, 2003). Although many developmental transitions occur across the life course, transitions during emerging adulthood are unique and especially critical for later adult development, and many often occur simultaneously (Schulenberg et al., 2004). For example, an emerging adult may need to navigate several contextual and social role changes concurrently, such as shifts in geographical location, building a career, developing their sense of identity, and forming or ending relationships. These unique features of emerging adulthood, which have become more common in contemporary society, may explain the rise in internalizing symptoms seen across generations of young adults in the past 80 years (Twenge et al., 2010). Specifically, it may be that the navigation of several concurrent transitions causes indecision, worry, low mood, and stress among present-day emerging adults. At the same time, such transitions may provide opportunities for positive change, cultivating interests or life satisfaction. Whatever the case may be, the extent to which these transitions inherent to present-day emerging adulthood impact internalizing symptoms has only recently begun to be examined.

Post-secondary Education and Internalizing Symptoms

One transition that has potential implications for emerging adults' internalizing symptoms is the experience of post-secondary education. University or college attendance is increasingly normative in Western nations. For example, 63.8% of emerging adult Canadians pursued postsecondary education in 2014, and rates have steadily increased over time for both men and women (Statistics Canada, 2017). Emerging adults themselves also view attainment of a university education as a necessary task of their generation (Thurber & Walton, 2012). Given that most emerging adults spend a significant part of their daily life in post-secondary education,

it is not surprising that there is much research on its link with internalizing symptoms. Most of this research has focused on the early stages of the transition, namely emerging adults' initial adjustment to college or university. Findings show that while emerging adults look forward to commencing post-secondary education, for many, this initial transition is stressful. For example, the majority of first-year post-secondary students report depression, homesickness, and concentration problems (Price, McLeod, Gleich, & Hand, 2006; Shaver, Furman, & Buhrmester, 1985). On average, depressive symptoms tend to increase slightly and then improve following the first few months at university or college (Azmitia, Syed, & Radmacher, 2013), but some research shows continuity of depression across the entire university experience, with a recent systematic review showing that depression prevalence is on average 30%, irrespective of year of study (Ibrahim, Kelly, Adams, & Glazebrook, 2013).

Anxiety rates on campus in Canada have also risen over the past few years (American College Health Association, 2016a). A recent epidemiological study reported past-year prevalence rates of 12% for diagnosed anxiety disorders in college students (Blanco et al., 2008), and many more students experience subsyndromal anxiety that causes significant impairment and requires treatment (American College Health Association, 2016b). Prevalence rates also suggest that internalizing symptoms are higher in university students as opposed to emerging adults not attending post-secondary education (Ibrahim et al., 2013), although these findings are mixed (Blanco et al., 2008). This growing body of research, in tandem with rises in student suicides (Cash & Bridge, 2009), has caught the attention of media outlets and applied researchers, who claim "mental health crises" across campuses, arguing for increased availability of accommodations, counselling services, and faculty and student awareness (e.g., Kadison & Digeronimo, 2004; Lunau, 2012). Further, this research has spurred several university and national initiatives to comprehensively review and implement student mental health standards (Mental Health Commission of Canada, 2019).

While emerging adults' emotional experiences *in* university have recently been well-documented, how their internalizing symptoms change as they transition *out of* university, is unclear. The majority of Canadian emerging adults who attend university or college go on to complete their degrees and move out of post-secondary education (ranges from 44-90% depending on the university; MacLean's, 2018; Statistics Canada, 2017). Interestingly, there is a relative dearth of research on how emerging adults fare across the graduation transition, and to

what extent it impacts their internalizing symptoms. Some research has examined patterns of objective markers of wellbeing, particularly job attainment and financial status (e.g., Roisman, Masten, Coastworth, & Tellegen, 2004). To a lesser extent, other research examines emerging adults' subjective experience of navigating the job market following graduation. For example, students report more stress when they cannot find a job following graduation (e.g., Perrone & Vickers, 2003). Amongst emerging adults that obtain jobs, stress can be exacerbated by work-related factors, such as a change in culture, unmet expectations, and perceived lack of experience (Haase, Heckhausen, & Silbereisen, 2012; Wendlandt & Rochlen, 2008). While emerging adults' employment experiences are important research domains, post-graduation pursuits extend widely beyond job attainment (Arnett, 2016). Further, while objective wellbeing is an important determinant of future successes, internalizing symptoms, which can be considered facets of subjective wellbeing, are also uniquely related to future indicators of successful functioning (Diener, 1998).

Of the scarce data examining facets of EA post-graduation internalizing symptoms, we see that on average, positive affect tends to increase and depressive symptoms decrease (Haase et al., 2012). Other wellbeing correlates of internalizing symptoms, such as problem drinking, decline on average across graduation as well (Littlefield, Sher, Wood, & Watson, 2009). Yet, many emerging adults remain at risk, or do not outgrow their depression after university, but this varies between people (Frohlich, Rapinda, O'Connor, & Keough, 2018). This suggests there may exist significant variability in how emerging adults' emotionally experience the graduation transition. Indeed, while university itself can be stressful, some have argued that it serves as a relatively structured environment for some students, thereby allowing a temporary moratorium from adult responsibilities (Fasick, 1988). That is, while emerging adulthood is, by definition, and unstructured period (Arnett, 2000), for those emerging adults who attend university, some structure is imposed on them by the fact that they are enrolled in an academic program and have well-defined responsibilities. Further, other transitions may be postponed until after graduation, when societal expectations become much less clear and young people are met with different challenges than those experienced in university (Mortimer, Zimmer-Gembeck, Holmes, & Shanahan, 2002). Others have noted that university graduation sets up "quarter life crises" that may compromise wellbeing because of the many simultaneous changes occurring at this time (Robinson, 2018). Accordingly, the transition from graduating post-secondary education may

reflect a unique period of instability for some, which could hinder emerging adults' emotional functioning and contribute to internalizing symptoms. However, it is possible that for others, increased maturity and self-regulation developed during the early 20s may equip emerging adults to cope in the context of any post-graduation uncertainty or challenges, or that the transition may afford positive opportunities for exploration and growth (Arnett, 2000; 2004; Caspi, Roberts, & Shiner, 2005). Examination of emerging adults' internalizing symptoms across graduation is therefore warranted in order to better understand predictors of wellbeing and success during this varied life stage.

Developmental Psychopathology Theory

The field of developmental psychopathology aims to elucidate the interplay of factors that contribute to, or maintain, mental health difficulties, such as internalizing symptoms (Cicchetti & Toth, 2009). Developmental psychopathology theory emphasizes the importance of "turning points", or transitions as potentially reorganizing one's psychological functioning for the better or worse (Rutter, 1996), making it a useful theoretical framework within which to examine emerging adults' internalizing symptoms across the graduation transition. The field is guided by several overlapping goals: distinguishing between abnormal and normal fluctuations in psychopathology, examining developmental trajectories and patterns of continuity and discontinuity to do so, and examining the interplay of person-specific and environmental factors as they interact to contribute to psychopathology or resilience (Cicchetti & Rogosch, 2002).

Person-Centered Analyses

Implicit within developmental psychopathology theory is that human functioning and psychopathology are complex and rarely can be summarized by a "one-size-fits-all" approach. Accordingly, given the inherent heterogeneity in emerging adults' functioning (Arnett, 2007; Schulenberg & Zarrett, 2006) and conflicting findings about improvements vs. risk for internalizing symptoms in EA, it is likely that the developmental psychopathology concepts of *equifinality* and *multifinality* are enacted at this time. Equifinality refers to different starting points that converge over time, whereas multifinality refers to similar starting points that diverge over time (Cicchetti & Rogosch, 1996). Applied to EA, these concepts suggest there may be considerable heterogeneity in how students initially adjust to graduating from university, how their adjustment unfolds over the following year, and what factors influence this adjustment and for whom.

In order to measure the inherent heterogeneity in human functioning in line with developmental psychopathology theory, researchers have increasingly adopted person-centered methods of analysis (Magnusson & Berman, 1988). Person-centered analyses refer to statistical approaches that identify groups or types of individuals based on their parallel endorsements of variables (Magnusson, 2003; Muthén & Muthén, 2000). Specifically, when it comes to wellbeing over time or across a transition, person-centered analyses examine whether distinct trajectories exist within the sample, and if so, what factors differentiate the different trajectories (Sameroff & Mackenzie, 2003). This is in contrast to variable-centered approaches, such as regression, hierarchical linear modelling, or structural equation modeling, which tend to emphasize average-level change and relationships between variables (Magnusson, 2003). As such, person-centered approaches are well-suited to elucidate specific nuances in functioning that may occur across pivotal transitions (Cicchetti & Rogosch, 1996; Schulenberg et al., 2004), and more precisely identify at-risk individuals who would benefit from targeted interventions (Laursen & Hoff, 2006; Masten et al., 2004).

Examining heterogeneity in developmental trajectories is a promising avenue for distinguishing between normative fluctuations, vs. maladaptive patterns of internalizing symptoms across time (Morin et al., 2011). When it comes to modeling longitudinal developmental trajectories, a frequently used method is latent growth modeling. Latent growth modeling estimates one trajectory for the whole sample but considers heterogeneity as significant variability in the growth parameters (i.e., slope, intercept) and factors can be added in to the model to see if they significantly predict the variability (Jung & Wickrama, 2008). However, this method estimates only one set of growth parameters for the sample and assumes uniform influence of potential covariates on the growth parameters, effects which may not hold across all individuals in the sample (Jung & Wickrama, 2008). Accordingly, latent class growth analysis (LCGA) is a person-centered type of analysis that captures heterogeneity differently. A member of the mixture modeling family, LCGA identifies discrete trajectories, or classes, that are homogenous subgroups of individuals, on the basis of similar patterns of growth (Wang & Bodner, 2007). This is accomplished by adding a latent categorical variable to the latent growth model, which permits any identified class to have its own growth parameters (Colder, Campbell, Ruel, Richardson, & Flay, 2002; Muthén & Shedden, 1999). While no research has applied LCGA to examine patterns of internalizing symptoms across the graduation transition, there is

reason to believe that there may be heterogeneity in such symptoms across a transition (Stoolmiller, Kim, & Capaldi, 2005). More specifically, several studies document that depressive symptoms (Stoolmiller et al., 2005; Wickrama & Wickrama, 2010; Wickrama, Wickrama, & Lott, 2009), and anxiety symptoms (Crocetti, Klimstra, Keijsers, Hale, & Meeus, 2009; Morin et al., 2011) vary within adolescence and young adulthood, over time.

Risk and Protective Factors

Another major tenet of the developmental psychopathology perspective is the assumption of multideterminism. Specifically, that psychopathology such as internalizing symptoms results from multiple causal influences (Cicchetti & Cohen, 1995). Such influences are conceptualized as risk and protective factors. Risk factors are defined as antecedent characteristics, experiences, or events that are associated with an increased probability of a negative outcome or reduced probability of a positive outcome (Kraemer et al., 1997). Conversely, protective factors refer to antecedent conditions that are associated with a decrease in, or protection from, a negative outcome, or an increase in a positive outcome (Kraemer et al., 1997). Risk and protective factors can be derived from diverse domains, and yet few studies considering internalizing symptoms in EA examine multiple risk factors in conjunction, despite evidence that many co-occur and interact (Cicchetti & Rogosch, 2002). When considering factors that may relate or contribute to emerging adults' internalizing symptoms across graduation, they can be summarized into three domains: specific internalizing symptom risk factors, graduation contextual factors, and personality traits. Gaining a better understanding of how these risk and protective factors relate to developmental trajectories of internalizing symptoms across graduation can be useful for providing programs and services aimed at assisting young adults' psychological adjustment across this period.

Internalizing Symptom Risk Factors. Traditional developmental psychopathology theories emphasize the specific impacts of early environments, stress, and resources as predictors of internalizing symptoms later in life (Rutter, 1981). In particular, the link between lower childhood socioeconomic status (SES) and mental health problems in emerging adulthood has been extensively supported (Wickrama, Noh, & Elder, 2009). For example, students coming from lower socioeconomic class families have a harder time adjusting to college (Ostrove & Long, 2007), and in another sample, those indicating they grew up in poor families were substantially more likely (odds ratios above 3) to screen positive for depression and anxiety

disorders (Eisenberg, Gollust, Golberstein, & Hefner, 2007). Because students from lower family incomes are more likely to take on student debt (Houle, 2013), it is possible that this financial strain may contribute to their internalizing symptoms come graduation as well.

Recent negative life events also play a role in altering emerging adults' wellbeing (Hammen, 2005). For example, the death or illness of a loved one are related to the onset of depression in emerging adults (Friis, Wittchen, Pfister, & Lieb, 2002). The impact of negative life events on depression is documented consistently in the literature, although the effect is less consistent when it comes to anxiety (Phillips, Carroll, & Der, 2015). Although the impact of negative life events has not been examined across the graduation transition, developmental psychopathology literature would suggest that negative life events would either add to any stress of graduation, or interact with it, to contribute to internalizing symptoms (O'Hara et al., 2015; Rosen, Handley, Cicchetti, & Rogosh, 2018). Similarly, having had a prior mental health problem predicts the recurrence of such problems (Cohen et al., 2019), a finding that may also hold in the context of a major life transition.

On the other hand, a protective factor consistently inversely related to internalizing symptoms in the literature is social support. Specifically, young people who feel they have someone they can talk to tend to be less depressed (Pettit, Roberts, Lewinsohn, Seeley, & Yaroslavsky, 2011). This effect holds across education transitions: American emerging adults who reported the most social support from friends and family showed greater improvements in their internalizing symptoms and other mental health indicators as they transitioned into college (Azmitia et al., 2013). All sources of social support tend to be helpful for emerging adults, including parental support and peer and romantic connections (van Wel, ter Bogt, & Raaijmakers, 2002), although the extent to which this may hold across the graduation transition is unclear.

Graduation Contextual Factors. Because of the likely rapid and multitude of changes occurring across graduation from university, some aspects specific to this transition likely interact with or contribute to young people's internalizing symptoms. Some factors that may be especially influential are elements of the graduate's university academics and achievement. Specifically, cascade analyses show that low academic achievement is related to later internalizing symptoms in young adults (Masten et al., 2005). The mechanism underlying this link is hypothesized to be self-competence, whereby low academic achievement undermines

one's sense of competence thereby contributing to low self-esteem and mood. During the graduation transition where competition is high for limited opportunities, good grades may facilitate a sense of competence for the competition at hand, or in reverse, contribute to internalizing symptoms. This is supported in the sociological literature, whereby higher academic achievement supports success in economic tasks, which improves wellbeing (McFarland & Wagner, 2015). A related facet is the degree which one obtains, as there are diverse bachelor degrees available at university. Indeed, scholars note the importance of "job ready" bachelor degrees, such as engineering or commerce, in facilitating the job search (Perrone & Vickers, 2003), thereby contributing to positive wellbeing. Such applied or more professionally geared degrees, in contrast with less job-directed degrees such as those in the liberal arts, may facilitate stability and certainty, protecting against internalizing symptoms.

Another factor likely contributing to internalizing symptoms is challenge finding employment. Many recent graduates struggle to find work (Robinson, 2018) and this is believed to be a major source of stress and dampened self-esteem (Brown, Cober, Kane, Levy, & Shalhoop, 2006; Nurmi & Salmela-Aro, 2002; Symonds, Dietrich, Chow, & Salmela-Aro, 2016). A recent study of German university graduates showed that depressive symptoms were highest when participants lacked work opportunities (Haase et al., 2012), and a detailed case study showed an increase in anxiety following graduation when feeling locked out of work opportunities (Robinson, 2018). Further, Canadian graduates are not guaranteed full-time employment or high post-graduation earnings: a Canadian study showed that 52% of university graduates were employed full-time one year after graduating (32% part-time; Frohlich et al., 2018), and national data show that the median employment income two years after graduating from a university degree in Canada is $43,600, which is 25% less than the national average (Statistics Canada, 2018). Because graduating emerging adults have likely become, or are on the verge of becoming financially self-sufficient (Tanner & Arnett, 2011), struggles achieving full-time employment or a substantial income may pose financial stress, which may contribute to their internalizing symptoms (Blanco et al., 2008).

In addition to objective factors such as achievement, finances, or employment, some researchers have pointed to the overall evaluation, or appraisal of one's situation, as an important determinant in young people's internalizing symptoms. This is at the heart of Oliver Robinson's (2018) "quarter life crisis" theory, whereby young people experience an emotional disruption

when they perceive a mismatch between their situation and their ideals. For example, he gives the example of an emerging adult who is struggling to find meaningful employment but is stuck in an unfulfilling part-time job, feeling "locked out" (Robinson, 2018). Or, in contrast, an emerging adult who transitioned into a high-pressure and structured job, but wishes to use their 20s to explore other interests and travel, may thereby feel "locked in" (Robinson, 2013; 2018). Such appraisals can cause distress, such as internalizing symptoms, but can also motivate change, making the distress temporary. The degree of satisfaction with one's present life path or situation may be a key factor in facilitating wellbeing, or prompting or maintaining internalizing symptoms across graduation.

The post-university transition also typically includes changes in residence and relationships. For example, for some who may have lived away from home at university, they may move back home to the family of origin. For others, as is common in large Canadian cities (Statistics Canada, 2011), they will have lived at home during university and possibly for some time afterwards. The differences between emerging adults' residential statuses, and the within-individual variability of such, are extensive (Cohen, Kasen, Chen, Hartmark, & Gordon, 2003). A study of Belgian emerging adults showed that those living with their parents had lower life satisfaction than those in more independent living arrangements, although only when the parental living environment was not autonomy supportive (Kins, Beyers, Soenens, & Vansteenkiste, 2009). However, it is unknown to what extent living situation after graduation might impact internalizing symptoms.

Personality Factors. Transactional models of developmental psychopathology emphasize the role of individual personality traits in affecting their wellbeing, often in combination or interaction with environmental influences (Masten & Garmezy, 1985). Personality traits reflect one's characteristics or modes of thinking, feeling, and behaving, which historically have been believed to be relatively stable from childhood onward (Roberts & Mroczek, 2008). However, recent research confirms that in fact personality traits change over time, with most mean-level personality trait change occurring during emerging adulthood (Caspi, Roberts, & Shiner, 2005; Roberts, Walton, & Viechtbauer, 2006; Terracciano, McCrae, & Costa, 2010). For example, typically neuroticism decreases and conscientiousness and optimism increase across the 20s, and these changes are thought to be linked to role transitions, such as entering the workforce (Leikas & Salmela-Aro, 2014; Roberts, Caspi, & Moffitt, 2003).

However, there are significant individual differences in personality trait change in young adults. For example, some may become less neurotic, whereas others may remain relatively stable, differences which may affect wellbeing differentially (Caspi et al., 2005).

Personality growth across EA has implications for wellbeing because it is during times of change that individuals rely on personality – typical ways of behaving – to guide them. For example, Caspi & Moffitt (1993) argue that because developmental transitions are often novel with ambiguous expectations, individuals cannot rely so much on their external sources of support and direction, and thus must rely on one's self and internal guides. A study of young women navigating developmental transitions (e.g., graduating from high school, starting one's first job) showed that those with more adaptive personalities (e.g., openness to experience), had higher subjective wellbeing (Weiss, Freund, & Wiese, 2012). Other studies document the predictive importance of personality traits on wellbeing across transitions (e.g., Henning, Hansson, Berg, Lindwall, & Johansson, 2017; Perren, Keller, Passardi, & Scholz, 2010). To date, however, no studies have examined specific personality traits, as they may or may not interact with other factors, to contribute to wellbeing across graduation from university.

Specific personality traits that may hinder or facilitate internalizing symptoms across graduation include optimism, grit, and neuroticism. Optimism at the dispositional level is defined as the general expectation that positive outcomes will occur in the future (Carver & Scheier, 1985). Optimism is consistently positively linked to wellbeing across development (e.g., Oberle, Schonert-Reichi, & Zumbo, 2011). Emerging adults that are more optimistic have less internalizing symptoms and navigate the first year of college more positively (Brissette, Scheier, & Carver, 2002). Across other developmental transitions that may pose uncertainty and new challenges, such as graduation from university, optimism is likely a key resource that will enable emerging adults to remain confident that no matter what happens things will turn out positively, thereby likely facilitating positive wellbeing.

Active, task-focused coping and perseverance in the context of challenging situations is related to less risk for internalizing symptoms in emerging adulthood (Masten et al., 2004). For this reason, the trait of grit, or the tendency to sustain interest in and effort toward long-term goals (Duckworth, Peterson, Matthews, & Kelly, 2007), may be protective should university graduation be coupled with challenges. Those who are grittier tend to have more objective and subjective success (Duckworth, Weir, Tsukayama, & Kwok, 2012), which may facilitate keeping

one's "eye on the prize" and boost positive mood across a challenging transition (Jin & Kim, 2017). However, the extent to which grit is helpful for internalizing symptoms across the transition from university is unclear.

In contrast to the protective aspects of optimism and grit, the trait of neuroticism, or emotional lability and tendency towards reactivity and negative moods, is a consistent predictor of internalizing symptoms in young adults (Hirschfield et al., 1989). Neuroticism increases in adolescence and early adulthood (Caspi et al., 2005), but there are individual differences such that those that subsequently "mature out" of this mood reactivity show a decline of internalizing symptoms in emerging adulthood (Aldinger et al., 2014; Leikas & Salmela-Aro, 2014). Although it has not been investigated across the graduation transition, neuroticism predicts increases in depressive symptoms across other life transitions, such as community relocation (Kling, Ryff, Love, & Essex, 2003), transition to university, highschool-to-work transitions (Perren et al., 2010), and transitioning from an academic preparatory program (Shulman, Kalnitzki, & Golan, 2009). When faced with a possibly uncertain and novel transition such as graduation, it is likely that remaining emotionally stable and not reactive will protect from internalizing symptoms.

Qualitative Research

Most emerging adulthood literature that pertains to internalizing symptoms is quantitative in nature. However, recent calls have been made for greater integration of qualitative work in EA research (Arnett, 2006). Qualitative research describes a set of approaches that analyze data in the form of natural language and expression of experiences (Levitt et al., 2018). In contrast to the typically deductive nature of quantitative research, qualitative research is inductive, in that it begins with observations that eventually materialize to generalizations or theories (Wertz, 2010). Qualitative methods such as open-ended questions may illuminate how this transition is appraised and experienced subjectively, and the perceived risk and protective factors that influence this experience, beyond the answers that are derived from close-ended survey questions. Thus, qualitative approaches may be especially helpful for capturing heterogeneity that exists among emerging adults' functioning (Arnett, 2006), which makes them complimentary to quantitative person-centered analyses and the principles of multifinality and equifinality. Moreover, in combination with person-centered analyses, qualitative research is especially well-suited to explore phenomena that are little researched, such as emerging adults' internalizing symptoms across the transition from university (Briggs, 1989; Moghaddam,

Walker, & Harre, 2003). Mixed methods research, whereby both qualitative and quantitative methods are combined and contrasted, is recommended, so to enhance methodological pluralism and answer a research question as openly and creatively as possible (Richters, 1997). In this vein, scholars have noted the importance of exploratory research, to move beyond research questions that are explanatory and driven by justifying "top-down" hypotheses (Granic & Hollenstein, 2003; Richters, 1997).

The Current Studies

The present set of four studies was designed to bridge and fill gaps in the emerging adulthood and developmental psychopathology literature. Given the profound implications that graduating from university likely has for the launching of emerging adults' futures, understanding for whom this is a period of risk for, or resilience from, internalizing symptoms, and why, are the present foci. Using a longitudinal data set with four time points and qualitative data collected at one of these time points, the studies presented herein explored how emerging adults initially emotionally react to their upcoming graduation, how their internalizing symptoms persist or change across the year following graduation, what covariates relate to their diverging patterns of internalizing symptoms, and their subjective, retrospective accounts of this transition one year later. An embedded correlational mixed methods model was used (Creswell, Plano Clark, Gutmann, & Hanson, 2003), wherein both quantitative and qualitative data were collected, with the qualitative data used to supplement and explore findings derived from the quantitative data.

In Study 1, the overarching goal was to understand how emerging adults felt with respect to their upcoming graduation during their final semester of their degree, using a person-centered analysis to explore diverging patterns of feelings. It was hypothesized that there would be heterogeneity in feelings about upcoming graduation, and that different patterns of feelings would relate differentially to personality traits and internalizing symptoms. Study 2 examined broadly how emerging adults' internalizing symptoms changed across the graduation transition: from the final semester prior to graduating to one year later. Trajectories of both depressive symptoms and anxiety were examined across four waves using separate longitudinal person-centered analyses. In line with previous research on wellbeing trajectories of young adults (e.g., Stoolmiller et al., 2005), it was hypothesized that there would be significant heterogeneity in patterns of internalizing symptoms. Study 3 expanded this question further by exploring for

whom this transition is emotionally challenging, positive, or unchanged, and why. Specifically, it comprises a quantitative analysis of the internalizing symptom risk factors, graduation contextual factors, and personality factors that differentiated the different patterns of internalizing symptoms found in Study 2. Study 4 integrates the qualitative findings, to elaborate on those found in Studies 2 and 3. Specifically, participants reflected on their graduation experience by writing about it one year later, and themes were explored and differentiated across the different patterns of internalizing symptoms. By integrating person-centered and mixed methods data and examining multiple levels of risk factors before and across the graduation transition, together, this set of studies intended to identify for whom the graduation transition is challenging, and what aspects make it better or worse, in order to effectively pinpoint intervention efforts.

CHAPTER 2

Method

Participants and Procedures

Participants in this study were 159 emerging adult university students (46 identified as having a male gender identity and 113 identified as having a female gender identity) attending Concordia University in the last year of their first undergraduate degree. Participants ranged in age from 20 to 29 years of age (M_{age} = 23.22). Just over half of participants identified themselves as belonging to a White population group (52.2%; 10.7% Biracial; 8.8% South Asian; 7.5% Chinese; 5.7% Latin American; 5.7% Arab; 3.8% Black; 2.5% South East Asian; .6% Korean; .6% Aboriginal; .6% Filipino; 1.3% another population group). Most participants identified as having a heterosexual sexual orientation (87.1%; 5.8% bisexual; 5.2% gay or lesbian, 1.9% another sexual orientation). About two thirds of participants were born in Canada (62.8%) and spoke English or French as their mother tongue (64.7%). The median total combined income for the participants' parents was between $74,999 and $99,999 in the 12 months preceding data collection (range = *less than $5,000 - $200,000 or greater*).

Regarding academic status, all students were completing full-time studies, and were either in their third (21.4%), fourth (58.5%), fifth, (13.2%), sixth or further (6.9%) year in their degree program (completing an undergraduate degree in three years is typical of students in Quebec, Canada). A small number of participants were international students (13%). All participants were completing a formal bachelor's degree (35% bachelor of arts; 21.2% bachelor of commerce; 19.1% bachelor of science; 7% bachelor of engineering; 5% bachelor of fine art; 2.5% bachelor of administration).

Participants were a part of a four-wave longitudinal study at Concordia University in Montreal, Canada that focused on wellbeing across the transition from university. Recruitment was conducted during the Winter 2017 academic semester, the semester prior to graduation. Recruitment efforts for the study included flyers, advertisements in a student newspaper, cards placed around campus in common areas, targeted Facebook advertisements, solicitation at career fairs, emails broadcast by departmental administrators, presentations made in final year undergraduate courses across disciplines, and through the Department of Psychology online participant pool. The majority of advertisements contained a link to a web page that provided information about the study and sign-up instructions. The majority of participants (75%)

attended an in-person orientation session, at which they learned about the purpose of the study, gave their informed consent, and completed the demographics section of the first online survey. Following the orientation session, these students were emailed an ID number and a unique link to the remainder of the Wave 1 online survey, which they were asked to complete within two weeks. In order to enhance recruitment and accommodate students unable to attend the in-person orientation sessions, a small number of participants (25%) were offered the option to complete the entire Wave 1 survey online, without needing to attend an in-person orientation session. In order to maximize sample size, orientation sessions and Wave 1 survey completion took place from late January to April of the Winter 2017 semester.

Students who completed Wave 1 were subsequently invited to complete online surveys at Wave 2 (October 2017), Wave 3 (January, 2018), and Wave 4 (July, 2018). These measurement points were chosen to reflect developmentally meaningful moments in the transition from university, with Wave 1 designed to capture responses from students' final undergraduate semester, Wave 2 from the first post-graduation fall, Wave 3 from the first post-graduation new year, and Wave 4 from the second post-graduation summer, entirely one year after graduating. Lags between measurement points thus varied from six to nine months (Wave 1 to 2), three months (Wave 2 to 3), and 6 months (Wave 3 to 4). Students gave their informed consent and compensation was provided at each wave. At Waves 1, 2, and 3, participants were e-transferred or mailed $20 compensation, although a small portion of students (5%), at their request, were given a psychology pool credit instead, for their participation at Wave 1. Participants who attended the Wave 1 in-person orientation session also received a $5 Starbucks gift card. At Wave 4, participants were mailed $25 in order to maximize retention. All participants who completed Wave 1 were invited to attend subsequent waves, irrespective of whether they had completed the prior wave.

Measures

Graduation Reflections

Feelings About Graduation. How participants were feeling about their upcoming graduation was assessed at Wave 1 by adapting the *Scale of Positive and Negative Experiences* (SPANE; Diener et al., 2010). The SPANE is a 12-item self-report measure used to assess both positive (e.g., "joyful") and negative ("unpleasant") emotional experiences. The question prompt was modified to ask to what extent the participants had felt the following feelings when thinking

about their upcoming graduation. They were asked to indicate the frequency to which they felt the feelings on a 5-point Likert scale (0 = *Very Rarely or Never*; 5 = *Very Often or Always*). Mean scores were calculated for both the positive feelings and negative feelings subscales respectively, with higher scores indicative of greater experience of positive or negative feelings about upcoming graduation. Internal consistency for the two subscales at Wave 1 was good; (positive feelings a = .89; negative feelings a = .82).

Post-Graduation Text Response. At Wave 4, one year after graduating, participants were asked to reflect on their transition out of university, which was assessed qualitatively. Specifically, they were asked: "*Last winter and early spring we asked you to reflect on your then upcoming graduation. Now that it has been one year since you graduated, we would like you to reflect on your transition out of university. When doing this, different experiences, including different thoughts, feelings, and actions, etc. may come to mind for different people. Please think about the past year, as you transitioned from university. Then, please write for us in a few sentences what comes to mind as you reflect on this transition*." Participants typed their responses in a text entry block in the survey. Responses ranged from 5 to 401 words.

Internalizing Symptoms

Depressive Symptoms. Depressive symptoms across the four waves were assessed using the *Centre for Epidemiologic Studies Depression Scale* (CESD; Radloff, 1977). The CESD is a 20-item self-report measure used to assess depressive symptoms within the last week (e.g., "I thought my life had been a failure"). Participants were asked to indicate the frequency to which they felt the symptoms based on a 4-point Likert scale [0 = *Rarely (less than 1 day)*; 3 = *Most of the time (5-7 days)*]. Mean scores were calculated such that higher values indicated greater depressive symptomatology. Mean scores exceeding an arithmetic cut off of .80 are suggestive of being at risk for clinical depression (Radloff, 1977). Internal consistency reliability for the current sample was good across Wave 1 (a = .88), Wave 2 (a = .93), Wave 3 (a = .88), and Wave 4 (a = .92). Across the four waves, test-retest correlations for depressive symptoms ranged from .36 to .52.

Anxiety. Symptoms of anxiety were assessed across the four waves using the anxiety subscale of the *Hospital Anxiety and Depression Scale* (HADS; Zigmond & Snaith, 1983). The anxiety subscale of the HADS is a 7-item self-report measure that assesses symptoms of anxiety (e.g., "I feel tense and wound up"). Participants were asked to rate the frequency of which they

felt the symptoms on a four-point Likert scale (0 = *Not at all*; 3 = *Very often*). Mean scores were calculated such that higher values indicated greater anxiety symptomatology. Internal consistency reliability for the current sample was good across Wave 1 (a = .82), Wave 2 (a = .79), Wave 3 (a = .85), and Wave 4 (a = .81). Across the four waves, test-retest correlations for anxiety ranged from .55 to .75.

Internalizing Symptom Risk Factors

Childhood Subjective Socioeconomic Status. At Wave 1, childhood subjective socioeconomic status (SES) was assessed with a single question adapted from the *MacArthur Scale of Subjective Social Status* (Goodman et al., 2011). This version of the question asks participants to indicate their perceived family status while growing up, relative to other families, on a metaphorical status ladder. Scores ranged from 1 "worst off" to 11 "best off".

Family Income. At Wave 1, participants were asked to indicate what financial category best described their parents' total combined income for the past 12 months. Scores ranged from 1 "less than $5,000" to 12 "$200,000 or greater".

Negative Life Events. At Wave 1, negative life events that occurred in the past 12 months were assessed using an adapted version of the *PERI Life Events Scale* (Dohrenwend, Askenasy, Krasnoff, & Dohrenwend, 1978). This scale consists of fifteen items, which measure the occurrence of negative events within the last year (e.g., loss of employment, major physical illness/injury, living arrangement problem, death of a family member, etc.). Participants were asked to indicate if they had experienced these events in the past year (1 = *endorsed*, 0 = *not endorsed*). Total scores were calculated such that higher scores indicated having experienced more negative life events in the past year.

Mental Health History. At Wave 1, participants were asked if they had ever been diagnosed with or treated for a mental health problem in the past (1 = *endorsed*, 0 = *not endorsed*).

Social Support. Social support across the four waves was assessed using the *Multidimensional Scale of Perceived Social Support* (MSPSS; Zimet, Dahlem, Zimet, & Farley, 1988). The MSPSS is a self-report measure used to assess perceived support from friends, family, and a special person (e.g., "I get the emotional help and support I need from family"). Participants were asked to indicate their level of agreement with each statement based on a 7-point Likert scale (1 = *Very strongly disagree*, 7 = *Very strongly agree*). Mean scores were

calculated such that higher scores indicated greater perceived social support. The internal consistency reliability for the current sample was good across Wave 1 (a = .91), Wave 2 (a = .92), Wave 3 (a = .93), and Wave 4 (a = .91). Across the four waves, test-retest correlations for social support ranged from .63 to .72.

***Graduation Contextual Factors*.**

Grades. Participants' academic grades were assessed at Wave 1. They were asked in what range their grades typically fall. Scores ranged from 1 "Ds and failures" to 8 "As".

Degree Obtained. To classify participants' bachelor's degree, they were asked to indicate their academic major. From there, academic majors were classified into the different degree types offered: Bachelor of Arts, Science, Engineering, Fine Art, Commerce, or Administration. The most frequently endorsed degrees were Bachelor of Arts and Bachelor of Science, which are within the same Faculty at the present university. Thus, degree types were categorized into 1 "Bachelor of Arts or Science" and 2 "Another bachelor degree".

Participant Income. Participants' post-graduation income was assessed at Waves 2, 3, and 4. Participants were asked to indicate what category best described their current total annual income. Scores ranged from 1 "less than $5,000" to 12 "$200,000 or greater". Across the three waves it was assessed, test-retest correlations for participant ranged from .44 to .49.

Financial Stress. Current financial stress was operationalized as the participants' inability to afford certain life essentials and was assessed at all waves. Questions were adapted from Pearlin and Schooler (1978) and included a list of essentials (clothing, food, leisure activities, bills, school/work supplies, transportation, medical/health supplies) that participants were unable to afford. Response options indicated the frequency of stress, ranging from 0 = "never" (never unable to afford), 1 = "from time to time", and 2 = "every month". Mean scores were calculated such that higher scores indicated greater financial stress. The internal consistency reliability for the current sample was good across Wave 1 (a = .87), Wave 2 (a = .87), Wave 3 (a = .88), and Wave 4 (a = .86). Across the four waves, test-retest correlations for financial stress ranged from .31 to .59.

Employment Status. At Waves 2, 3, and 4, participants were asked about their "current status", to reflect what paths and pursuits they were spending most of their time doing at that time point. Options included being employed full-time, being employed part-time, volunteering, in graduate school, etc., and participants were able to select all that apply. Those who selected

either part-time and/or full-time employment were scored a 1 on this item, such that scores of 1 = "employed", and 0 "not employed".

Hours Worked. To measure participants' workload, they were asked to enter in a text box the average number of hours worked, which was asked at all waves.

Status Satisfaction. At Waves 2, 3, and 4, participants were asked about their satisfaction with their "current status". Specifically, when they were asked about what paths and pursuits they were spending most of their time doing at that time point (e.g., employed full-time, being employed part-time, volunteering, in graduate school, etc.), they were asked "How satisfied are you with your current situation, as indicated by the answer you provided in the last question?". Participants were asked to indicate their level of satisfaction with their status based on a 7-point Likert scale (1 = *Very unsatisfied*, 7 = *Very satisfied*).

Living Situation. At all waves, participants were asked to indicate where they currently lived. Options included living alone, with parents, with others, etc., and participants were able to select all that apply. Participants' answers were coded to measure residential dependence (i.e., living with parents) versus independence, such that 1 = "living with parents", and 0 = "not living with parents".

Personality Factors

Optimism. Dispositional optimism was assessed at all waves using the *Life Orientation Test-Revised* (LOT-R; Scheier, Carver, & Bridges, 1994). The LOT-R is a 10-item self-report measure used to assess participants' global outlook on life, with higher values indicative of more optimistic outlooks (e.g., "In uncertain times, I usually expect the best"). Of the 10 items, 4 are filler items and are omitted from scoring. Participants were asked to indicate their level of agreement with each statement based on a 5-point Likert scale (0 = *Strongly disagree*, 5 = *Strongly agree*). Mean scores were calculated such that higher values indicated greater optimism. Internal consistency reliability for the current sample was good across Wave 1 (a = .82), Wave 2 (a = .81), Wave 3 (a = .84), and Wave 4 (a = .83). Across the four waves, test-retest correlations for optimism ranged from .61 to .73.

Grit. Grit was assessed at all waves using the *Grit Scale* (Duckworth, Peterson, Matthews, & Kelly, 2007). The Grit Scale is a 12-item self-report measure used to assess participants' tendencies to persevere and have passion for long-term goals (e.g., "I finish whatever I begin"), with higher values indicative of a more "gritty" personality. Participants

were asked to indicate how much each statement applied to them based on a 5-point Likert scale (0 = *Not like me at all*, 5 = *Very much like me*). Mean scores were calculated such that higher scores indicated that the person possessed more grit. Internal consistency reliability for the current sample was good across Wave 1 (a = .81), Wave 2 (a = .81), Wave 3 (a = .81), and Wave 4 (a = .80). Across the four waves, test-retest correlations for grit ranged from .71 to .76.

Neuroticism. The personality trait neuroticism was assessed at all waves using the neuroticism subscale from the *Mini-International Personality Item Pool* (Donnellan, Oswald, Baird, & Lucas, 2006). This scale is comprised of 4 items (e.g., "I get upset easily") and participants indicate their level of agreement with each statement based on a 5-point Likert scale (1 = *Very inaccurate*, 5 = *Very accurate*). Mean scores were calculated such that higher scores indicated greater neuroticism. Internal consistency reliability for the current sample was acceptable across Wave 1 (a = .62), Wave 2 (a = .64), Wave 3 (a = .59), and Wave 4 (a = .64). Across the four waves, test-retest correlations for neuroticism ranged from .50 to .63.

CHAPTER 3:
Data Integrity and Missing Data

Data Integrity

All variables included in the subsequent chapters were screened according to best practice guidelines described by Tabachnick and Fidell (2013) using IBM Statistics Version 22. Thorough inspection of the data revealed no errors, abnormally elevated skewness, or kurtosis. There were a small proportion (< 2%) of univariate outliers (cases with more than three standard deviations beyond the mean) across some of the internalizing symptom, internalizing symptom risk, graduation contextual, and dispositional factors used in the analyses. However, given that outliers may be meaningful to risk and person-centered research, the cases were not changed or deleted. Specifically, assumptions of normality and homogeneity need not be met when conducting person-centered analyses, as the presence of unique or varied cases is inherently acknowledged by the analyses (Pastor, Barron, Miller, & Davis, 2006; Bauer & Curran, 2003). Table 1 details the descriptive statistics and correlations between continuous study variables as they pertain to the analysis for Chapter 4. Tables 2 and 3 contain this information for the analyses conducted in Chapters 5 and 6.

Missing Data

Missing data in the form of attrition, wave nonresponse, and variable nonresponse were present across the four waves of the study. The total sample size of participants with complete data on the outcome variable of depressive symptoms at each wave declined from baseline (n = 159) to Wave 2 (n = 141) to Wave 3 (n = 127) to Wave 4 (n = 119). Missing data was present at the item level (0-10.6% across Wave 1 variables; 11.4-23.9% across Wave 2 variables; 20.2-24.6% across Wave 3 variables; 25.2-32.1% across Wave 4 variables).

Rubin (1976) describes a three-pronged classification system for missing data. Data are missing completely at random (MCAR) when the probability of the missing data on a variable is unrelated to the observed data or unobserved data (Enders, 2010). Data are missing at random (MAR) when the probability of missing data is related to other study variables but not to the missing data values themselves. Third, data are missing not at random (MNAR) if the missing values are related to the missing data itself, even after controlling for other variables. Univariate t-tests were used to compare participants with and without missing data on a range of variables (all variables included in the analyses, demographic factors). Results indicated that missingness

was unrelated to wellbeing variables, subjective socioeconomic status, personality, year of study, or age. However, wave nonresponse was related to being an international student and having a higher work income at the previous wave. Within-survey attrition and item nonresponse was related to being male, being unemployed at the time, having been recruited at an in-person event, and to not living with parents at the time. Further, at each wave, the rate of item-level missing data grew across the length of the survey, meaning that people who participated began to omit more items as they progressed through the survey. Because missingness was related to observed study variables (e.g., employment), the MCAR mechanism was ruled out. Between MAR and MNAR, it was deemed that data were likely MAR because it seemed unlikely that data were related to the value of missing data themselves, and rather, that participant fatigue was the most likely cause of missing data across waves.

All quantitative models were estimated in M*plus* version 7 (Muthén & Muthén, 2010), under missing data theory using all available data and robust Full Information Maximum Likelihood Estimation (FIML). This strategy for handling missing data is a modern strategy that makes use of all available data points and accounts for non-normally distributed data, making it especially suitable for person-centered analyses (Enders, 2001; Berlin, Williams, & Parra, 2013; Little, Jorgensen, Lang, & Moore, 2013). Other modern approaches to handling missing data were considered but not chosen because they are not available within a person-centered analysis framework (e.g., using auxiliary variables to predict missingness with FIML) or would prevent the availability of indices to determine the optimal number of classes/profiles (e.g., mixture model comparison indices are not available within multiple imputation techniques)

CHAPTER 4

Study 1: Profiles and Predictors of *Pre-Graduation* Feelings

The analyses presented in this chapter explored participants' feelings about their upcoming graduation just prior to graduating, and examined associations between such feelings and personality factors and internalizing symptoms. At Wave 1, participants were asked how they were feeling about their upcoming graduation using the feelings about graduating questionnaire, as well as about their personality factors (neuroticism, grit, optimism) and internalizing symptoms (depressive symptoms and anxiety). The first research question was to examine if there were different patterns of feelings in response to their upcoming graduation, and the second explored the personality and depressive symptom correlates of these patterns. We hypothesized that there likely would be heterogeneity in participants' feelings about graduation, and that more adaptive personality traits (e.g., more optimism, less neuroticism) and less internalizing symptoms would be associated with more positive feelings about upcoming graduation.

Statistical Analysis Plan

Participants' feelings about graduation prior to graduating at Wave 1 were analyzed using a cross-sectional latent profile analysis (LPA) in in M*plus* version 7 (Muthén & Muthén, 2010). LPA is a person-centered statistical technique that determines if subgroups exist (also known as profiles) within observed data (Magnusson, 2003). In this case, a LPA was applied to determine whether there was heterogeneity in participants' feelings about their upcoming graduation. One-, two-, three-, four-, and five-profile models were estimated and compared across parameter estimates, fit indices, and model information criteria. One participant did not complete the feelings about graduation questionnaire and thus was omitted from this analysis.

Profiles were then compared across personality and internalizing symptom covariates, to determine correlates of different feelings about their upcoming graduation. When comparing latent profiles on covariates, a researcher is met with several options. The simplest method is to export participants' most likely class membership, and conduct mean group comparisons tests (i.e., chi square analyses, ANOVAs), typically in SPSS (Clark & Muthén, 2008). This method is problematic as it treats participants' most likely profile membership as an exact, observed variable, when in fact there is often uncertainty in class membership (Clark & Muthén, 2008; Morin et al., 2011). Another option is to compare latent profiles on the covariates with the

AUXILIARY (e) command of M*plus*. This method relates the participants' posterior probabilities, or the probability of being in each profile, to the covariates. Specifically, multiple pseudo-class draws approach (Morin et al., 2011; Muthén & Asparouhov, 2007) is used, wherein the probability of being in each profile is related to the covariates multiple (typically 20) times. Results are then combined across the multiple draws using an approach similar to multiple imputation of missing data (Rubin, 1987). The AUXILIARY (e) function garners a Wald chi-square test based on random pseudoclass draws and tests the equality of the covariate means across the latent classes (Wang, Brown, & Bandeen-Roche, 2005). If significant, the Wald chi square statistic rejects the null hypothesis that the classes are equal on the covariate. The pseudoclass draws approach was used herein.

Profile Enumeration

Because LPAs are prone to converge on local solutions that do not reflect the data as a whole, the current model was run 100 times using different random start values exceeding 2000, as recommended by Jung and Wickrama (2008). The best log likelihood value was replicated each time, suggesting that the solution presented herein likely characterizes the data as a whole. Further, as recommended by Geiser (2013), a sufficient number of initial start iterations (>50) was used.

Profile enumeration was compared across six different fit indices: (1) Bayesian information criteria (BIC; Schwartz, 1978), which compares models with different numbers of profiles, with lower values indicative of better fit; (2) entropy coefficient, a measure of profile distinctiveness ranging in values from 0 to 1, with values closer to 1 indicative of better fitting solutions; (3) Average latent posterior probabilities, which assess the probability that the cases were consistently placed in each profile, thereby providing an indication of the classification reliability, with values closer to 1.0 indicating more certain classification; (4) Lo-Mendell Rubin Likelihood Ratio Test (LMR-LRT; Lo et al., 2001), which compares a given model to one with one less profile: a significant value indicates that the more complex solution fits the data better; (5) substantive usefulness of the profiles (Muthén, 2004; Nagin, 2005), wherein if a solution were to emerge with a particular class that is merely a slight variation of a larger profile, and thus does not seem to have differential substantive meaning, the more parsimonious solution was chosen; and (6) all profiles had to represent more than 1% of the sample (Hill, White, Chung, Hawkins, & Catalano, 2000).

Fit indices for the current solution can be found in Table 4, with bolded values indicating better fit. The BIC had the lowest value when four profiles were selected. The entropy statistics were good (Wang & Wang, 2012) and incrementally improved across the three-, four-, and five-profile solutions. The LMR-LRT favoured selecting the five-profile solution. Although a very small class size (2%) consistently emerged in the three-profile solutions and beyond, the improvement in entropy when this occurred, in combination with an inspection of its parameters suggested it likely reflects a clear and distinct profile that should be acknowledged, ruling out the two-profile solution. Although the LMR-LRT favoured the five-profile solution, the BIC and AvePP preferred a four-profile solution. Similarly, it is recommended that when debating between two different solutions, the more parsimonious and simple solution be chosen (Masyn, 2013). Thus, the four-profile solution was retained.

Profile Descriptions

Table 5 display mean levels of the feelings about graduation variables across the four profiles. Profile 1 reflected a medium-sized group (35% of the sample, $n = 55$) and will be referred to as the *Very Happy About Graduating* profile. Prior to graduating, these individuals endorsed positive feelings about graduation very often or always, and rarely or never experienced negative feelings about their graduation. Over one third of participants were happy, excited, and pleased with the thought of their upcoming graduation.

The second profile was a smaller group reflecting those with *Mixed Feelings About Graduating* (18% of the sample, $n = 28$). In particular, looking ahead to their graduation, these individuals experienced both positive and negative feelings at moderate frequency, although negative feelings at a slightly higher frequency. Thus, less than one fifth of students are somewhat pleased, but also moderately displeased with their upcoming graduation.

The third profile was the largest group of students and reflects those who are *Mostly Happy About Graduating* (45% of the sample, $n = 72$). These individuals were often mostly content about their upcoming graduation, but also had some degree of negative feelings about their graduation. They were reasonably content, but less overjoyed than those in the first profile.

Finally, the fourth profile was reflective of a very small profile that emerged consistently across the solutions: the *Indifferent About Graduating* profile (2% of the sample, $n = 3$). A small fraction of students were indifferent, or ambivalent about graduating. They rarely experienced elevated feelings, either negative or positive, when thinking about their graduation. This may

suggest that they simply did not think much about their upcoming graduation, or were emotionally detached from the experience altogether. Because of the small size of this profile, it may be sample-specific.

Comparison of the Profiles across Covariates

The pseudo-class draw technique was implemented to perform Wald tests of mean differences on personality and internalizing symptom covariates across the four feelings about graduation profiles. Because the Wald test is a stepwise procedure, Type I error rates are inflated, but there are, as of yet, no available adjustments, such as the Bonferroni test for an ANOVA (Tabachnick & Fidell, 2013). However, it is not advisable to perform the mean comparisons with an ANOVA, due to the imprecision in profile assignment, and the very small *Indifferent About Graduating* profile. Thus, as recommended by Tabachnick and Fidell, a more conservative probability value ($p < .01$) was used to interpret the Wald test results. Table 6 displays the means for the covariates across the profiles. Wald chi-square analyses revealed that the different feelings about graduation profiles differed significantly in their levels of optimism, *Wald* $\chi^2(3) = 32.52$, $p < .001$. More specifically, the *Very Happy About Graduating* profile ($M = 2.89$, $SE = .10$) had significantly higher levels of optimism relative to the *Mixed Feelings About Graduating* profile ($M = 1.93$, $SE = .14$). Further, the *Mostly Happy About Graduating* profile ($M = 2.55$, $SE = .08$) was more optimistic than the *Mixed Feelings About Graduating* group, which was the least optimistic of the groups.

Regarding grit, the different feelings about graduation profiles did not differ significantly in their levels of grit prior to graduation, *Wald* $\chi^2(3) = 5.80$, $p = .12$. However, the profiles did differ significantly on their levels of neuroticism prior to graduation, *Wald* $\chi^2(3) = 22.26$, $p < .001$. Specifically, those in the *Mixed Feelings about Graduating* profile ($M = 3.44$, $SE = .15$) were significantly more neurotic than those in the *Very Happy About Graduating* ($M = 2.84$, $SE = .12$), the *Mostly Happy About Graduating* ($M = 2.74$, $SE = .10$), and the *Indifferent About Graduating* ($M = 2.17$, $SE = .34$) profiles. Further, the *Very Happy About Graduating* profile demonstrated more neuroticism relative to the *Indifferent About Graduating* profile, a difference which approached traditional statistical significance without correction ($p = .06$).

Regarding internalizing symptoms, the feelings about graduation profiles differed significantly when it came to depressive symptoms, *Wald* $\chi^2(3) = 31.05$, $p < .001$. Specifically, those within the *Mixed Feelings about Graduating* profile ($M = 1.16$, $SE = .10$) had significantly

higher depressive symptoms than those in the *Very Happy About Graduating* (M = .58, SE = .05), the *Mostly Happy About Graduating* (M = .74, SE = .05) profiles. For anxiety, the profiles also significantly differed, *Wald* $\chi^2(3) = 42.84$, $p < .001$, with again the individuals within the *Mixed Feelings about Graduating* profile (M = 1.65, SE = .12) having more elevated symptoms than those in the *Very Happy About Graduating* (M = 1.05, SE = .09), *Mostly Happy About Graduating* (M = 1.16, SE = .07), and *Indifferent About Graduating* (M = .57, SE = .11) profiles. Further, those in the *Indifferent about Graduating* profile had significantly less anxiety than those in the *Very Happy About Graduating* and *Mostly Happy About Graduating* profiles.

Brief Summary

This analysis serves as an examination of how final year undergraduate students reflect on and feel about their upcoming graduation. Consistent with previous investigations of wellbeing in emerging adulthood (e.g., Samela-Aro et al., 2006), there appears to be significant variability in emerging adults' feelings about their upcoming graduation. On the whole, over two thirds of students in their final semester of their undergraduate degree are mostly happy, if not, very happy at the thought of their upcoming graduation. Those that are mostly happy if not very happy also tended to, unsurprisingly, be more optimistic and less likely to experience neuroticism, depressive symptoms, or anxiety. In contrast, approximately one fifth of students have mixed feelings and seem apprehensive in looking ahead to their graduation. These students also have heightened internalizing symptoms and less adaptive personality traits, thus identifying a potentially vulnerable group with low dispositional and emotional resources to manage the post-graduation transition. Chapter 5 will build on these results to examine how the participants fare emotionally across the entirety of the graduation transition, to better clarify for whom this transition is a period of emotional risk, and why.

CHAPTER 5

Study 2: Trajectories of Internalizing Symptoms across Graduation

The analyses presented in this chapter examine patterns of internalizing symptoms across the graduation transition period and comprise the first part of an embedded correlational mixed methods model. Specifically, the research aim was first to examine how emerging adults' internalizing symptoms change, or not, across graduation, and more specifically to determine if significant variability exists in the trajectories of internalizing symptoms. Participants' internalizing symptoms were operationalized as their depressive symptoms (measured with the CESD) and anxiety (measured with the HAD-A), and they completed the two questionnaires at all four time points. In line with developmental psychopathology theory, we hypothesized there would be significant variability in both depressive symptoms and anxiety trajectories across this life course transition. Because no prior studies have questioned whether distinct trajectories exist across the graduation transition, we made no hypotheses about the number of trajectories that may emerge. However, in line with previous research on wellbeing trajectories of young adults (e.g., Morin et al., 2011; Stoolmiller et al., 2005), we expected that there would be a relatively well-adjusted group of individuals with low internalizing symptoms across the transition, and a smaller group characterized by more compromised internalizing symptoms across the transition. Both depressive symptoms and anxiety trajectories were analyzed separately as they have been shown in other studies to have different patterns over time (Prenoveau et al., 2011). Chapters 6 and 7 follow from this analysis to determine for whom, and why, different internalizing symptom trajectories exists.

Statistical Analysis Plan

Participants' anxiety and depressive symptoms across the four time points were analyzed using two separate latent class growth analyses (LCGA; Nagin, 2005) in M*plus* version 7 (Muthén & Muthén, 2010). LCGA is a statistical technique that searches the data to determine if there exist distinct developmental trajectories (referred to as latent classes) within the sample as a whole. In doing so, LCGA assumes that all individuals belonging to the same class have equivalent developmental trajectories, thereby assuming no within-group variability. Other methods exist that do not constrain within-group variability, namely, growth mixture modeling (GMM; Nagin, 1999; 2005). A GMM could not be conducted herein due to a small sample size (Nagin, 2005; Solinger, van Olffen, Roe, & Hofmans, 2013). The current sample size however

does meet the suggested minimum of 100 respondents needed to conduct an LCGA (Nagin, 2005). One-, two-, three-, four-, and five- class solutions were tested and compared across parameter estimates, fit indices, and model information criteria.

Like LPAs, LCGAs are also prone to converge on local solutions that do not reflect the data as a whole. Thus, the current models were each run 100 times using different random start values exceeding 2000, as recommended by Jung and Wickrama (2008). The best log likelihood value was replicated each time, suggesting that the solutions presented herein likely characterize the data as a whole. Further, as recommended by Geiser (2013), a sufficient number of initial start iterations (>50) was used.

Class enumeration for the two models was compared across six different fit indices: (1) Bayesian information criteria (BIC; Schwartz, 1978), which compares models with different numbers of classes, with lower values indicative of better fit; (2) entropy coefficient, a measure of profile distinctiveness ranging in values from 0 to 1, with values closer to 1 indicative of better fitting solutions; (3) Average latent posterior probabilities, which assess the probability that the cases were consistently placed in each class, thereby providing an indication of the classification reliability, with values closer to 1.0 indicating more certain classification; (4) Lo-Mendell Rubin Likelihood Ratio Test (LMR-LRT; Lo et al., 2001), which compares a given model to one with one less class: a significant value indicates that the more complex solution fits the data better; (5) substantive usefulness of the classes (Muthén, 2004; Nagin, 2005), wherein if a solution were to emerge with a particular class that is merely slight variation of a larger class, and thus does not seem to have differential substantive meaning, the more parsimonious solution was chosen; and (6) all classes had to represent more than 1% of the sample (Hill, White, Chung, Hawkins, & Catalano, 2000).

LCGA for Anxiety

Class Enumeration

Participants' anxiety symptoms across the four waves were analyzed using a LCGA in M*plus* version 7 (Muthén & Muthén, 2010). One-, two-, three-, four-, and five- class solutions were tested and compared across parameter estimates, fit indices, and model information criteria. One participant did not complete the HAD-A questionnaire at any of the waves and thus was omitted from this analysis. Quadratic and linear solutions were compared: the linear solution was chosen due to its better fit, as indicated by lower BIC values in the solution chosen, and larger

class sizes. Inspection of the plotted trajectories in both the linear and quadratic solutions showed a predominantly linear solution, with only minimal curving in the quadratic solution.

Fit indices for the current solution can be found in Table 7, with bolded values indicating better fit. The BIC showed improvement (decreased) when the four-class solution was selected, in comparison to all of the other solutions, although it markedly dropped from a two-class solution to a three-class one. The LMR-LRT favoured selecting the four-class solution, or the two-class solution. The entropy value did not discriminate between a two or three class solution, with a slight preference for a four-class solution, with all values approaching 0.80, thereby indicating adequate latent class membership classification for these solutions (Wang & Wang, 2012). The average posterior probabilities favoured a two or three class solution. Inspection of the three and four-class solution plots showed that the three-class solution is comprised of three distinct groups, whereas the addition of a fourth class was just a slight variation of one of the original three classes. The addition of a fourth class also rendered a significantly smaller class (3%), which may be suggestive of an unreliable class (Masyn, 2013). Although the BIC and LMR-LRT preferred the four-class solution, in line with recommendations for parsimony and substantive usefulness (Masyn, 2013; Nagin, 2005), the three-class solution was chosen. Furthermore, although the BIC dipped with a four class solution, its last most substantive decrease was at the three-class solution, which can indicate the best-fitting solution if inspected on an "elbow plot" (Petras & Masyn, 2010). Thus, the three-class solution was retained.

Class Descriptions

In the retained solution, the sample was divided into two medium-sized classes, and one slightly smaller class. Table 8 reports mean levels of anxiety in the three classes in the retained solution, across time. Figure 1 provides a visual depiction of the three classes, or trajectories of anxiety, over time. Class 1 reflected the majority of participants (46% of the sample, $n = 74$) and will be referred to as the *Stable Occasionally Anxious* class. These individuals tended to have stable anxiety across the graduation transition, with a nonsignificant slope. The semester prior to their graduation, they had occasional symptoms of anxiety ($M = 1.26$, $SE = .02$), a pattern which was maintained across the year. It appears that the majority of participants experienced consistent mild anxiety across the graduation transition.

The second class is the *Stable Often Anxious* class (17% of the sample; $n = 27$). Individuals in this class were the most anxious of the sample, endorsing anxiety items often prior

to graduation (M = 1.95, SE = .10) and remaining consistently anxious across the year following. Approximately one quarter of graduates were anxious prior to, and across, graduation, with minimal change in their symptoms over the year.

Finally, the third group is the *Stable Rarely Anxious* class (36% of the sample, n = 57). Reflecting just over one third of the sample, individuals in this class showed stable minimal to no anxiety across the graduation transition. Specifically, they endorsed anxiety items within the "not at all" to "occasionally" range during their final semester of their degrees (M = .69, SE = .06), and they remained consistently infrequently anxious across the year following.

LCGA for Depressive Symptoms

Class Enumeration

Participants' depressive symptoms across the four waves were also analyzed using a LCGA in M*plus* version 7 (Muthén & Muthén, 2010). One-, two-, three-, four-, and five- class solutions were tested and compared across parameter estimates, fit indices, and model information criteria. Both linear and quadratic solutions were run, and compared across the various fit indices to determine the best fitting most parsimonious solution. A comparison of the fit indices suggested the linear solution fit the data better than the quadratic one, specifically with improvement (lower values) of the BIC and larger class sizes within the linear solution. Thus, the linear solution is presented herein.

Fit indices for the current (linear) solution can be found in Table 9, with bolded values indicating better fit. The BIC showed improvement when three classes were selected, in comparison to a two or four-class solution. The LMR-LRT also favoured selecting the three-class solution. The entropy value did not discriminate between a three or four class solution, and preferred a five-class solution. Although only the five-class solution had an entropy value exceeding .80 (marker for "high entropy"; Clark, 2010) when three and four classes were enumerated, the statistic had a value approaching 0.80 (0.77), thereby indicating that the latent class membership classification is adequate for these solutions (Wang & Wang, 2012). Inspection of the three and four-class solution plots showed that the three-class solution is comprised of three distinct groups, whereas the addition of a fourth class is just a slight variation of one of the original three classes. The average posterior probabilities favoured a two- or three-class solution. Only the five-class solution had a problematically small class size (< 5 individuals). Thus, given that the majority of the fit indices preferred the three-class solution, and

in line with recommendations for parsimony (Masyn, 2013), the three-class solution was retained.

Class Descriptions

In the retained solution, the sample was divided into one large class, one medium class, and one smaller class. Table 10 reports mean levels of depressive symptoms in the three classes in the retained solution, across time. Figure 2 provides a visual depiction of the three classes, or trajectories of depressive symptoms, over time. Class 1 reflected the majority of participants (57% of the sample, $n = 93$) and will be referred to as the *Stable Low Depression* class. As implied by the name, these individuals had low levels of depressive symptoms prior to graduating ($M = .51$, $SE = .04$), and maintained low depressive symptomatology across the entire transition. Thus, it appears the majority of participants' emotional experiences are relatively well-adjusted and not impacted by the graduation transition.

The second class is the *Depression Declining Post-Graduation* class (11% of the sample; $n = 15$). Prior to graduation, individuals in this profile experienced elevated levels of depressive symptoms ($M = 1.61$, $SE = .50$), which are significantly above the cut-off for clinical depression risk (> .80; Radloff, 1977). However, following graduation, the negative slope suggests that these individuals' depressive symptoms decline, showing the largest change over time across the three profiles. Thus, although apparently depressed during the final months of their undergraduate degree, these individuals' mood improves over time. However, at the end of one year post-graduation, people in this class remain within the clinical risk for depression category, albeit at a much less severe risk. Because of the small sample size and thus larger standard error, this profile is likely representative of a more varied and less homogenous profile.

The third and final group is *Depression Increasing Post-Graduation* class (32% of the sample, $n = 51$). Reflecting approximately one third of the sample, individuals in this class showed an increase in their depressive symptoms across the graduation transition. Specifically, while were only slightly at risk for clinical depression during their final semester of undergrad ($M = .92$, $SE = .22$), they became more depressed across the following year, leaving them at more severe risk for clinical depression at the end of data collection. In other words, the year following graduation from university is likely a period of risk for compromised mental health for one third of emerging adults.

Brief Summary

The analyses presented in this chapter examined trajectories of anxiety and depressive symptoms across the university graduation transition. Both facets of internalizing symptoms demonstrated heterogeneous trajectories. For anxiety, three distinct trajectories emerged, which differed in their severity of anxiety but remained stable across the graduation transition. In contrast, three depressive symptom trajectories emerged, one of which was stable, and two of which changed across the graduation transition. The difference in stability vs. change contrasted in anxiety and depressive symptoms is consistent with previous research suggesting the anxiety is more 'trait-like' (or time invariant), whereas depression is more episodic (or time varying; Prenoveau et al., 2011). Thus, it appears anxiety levels are likely unaffected, or are sustained, across the graduation transition, whereas a significant portion of students are vulnerable to increased depressive symptoms, and some grow out of depressive symptoms across graduation. Given that the goal of the current research was to examine how the graduation transition impacted young adults' emotional wellbeing, Chapters 6 and 7 will follow up on the analysis of the depressive symptom trajectories only. Specifically, subsequent chapters will explore what factors differ across the three depressive symptom profiles, in order to highlight for whom and why this is either a period of compromised, sustained, or improved emotional wellbeing.

CHAPTER 6

Study 3: Quantitative Analysis of the Factors Underlying the Different Depressive Symptom Trajectories across Graduation

The analyses presented in this chapter examine the correlates (covariates) of the three different depressive symptom trajectories found in Chapter 5, constituting the second part of the embedded correlational mixed methods model. The research aim is to further validate the existence of the classes, and explore the mechanisms underlying the different patterns of emotional experience. More specifically, the classes were compared on demographic factors, internalizing symptom risk factors (childhood subjective SES, family income, negative life events, mental health history, social support), graduation contextual factors (undergraduate grades, income, financial stress, employment status, hours worked, living situation), and personality factors (optimism, grit, neuroticism). The time invariant factors (demographics, childhood subjective SES, family income, negative life events, mental health history, undergraduate grades) were assessed at Wave 1, whereas the other varying factors were either assessed across all waves, or Waves 2-4 if they were only relevant to the post-graduation context. We hypothesized that the *Stable Low Depression* class would have less internalizing symptom risk factors, more favourable graduation contextual outcomes, and more adaptive personality traits relative to the other two profiles. In contrast, we hypothesized that the *Depressing Increasing Post-Graduation* and *Depression Declining Post-Graduation* would differentially relate to the covariates. Given the importance of personality, above and beyond other factors during uncertain transitions (Caspi & Moffitt, 1991), we hypothesized that the two classes would demonstrate specific differences in the personality variables over time.

Statistical Analysis Plan

The depressive symptom classes were compared on the various covariates. Like with a LPA, latent classes can be compared on covariates in several different ways. The simplest method is to export participants' most likely class membership, and conduct mean group comparisons tests (i.e., chi square analyses, ANOVAs), typically in SPSS (Clark & Muthén, 2008). This method is problematic as it treats participants' most likely profile membership as an exact, observed variable, when in fact there is often uncertainty in class membership (Clark & Muthén, 2008; Morin et al., 2011). Another option is to compare latent profiles on the covariates with the AUXILIARY (e) command of M*plus*. This method relates the participants' posterior

probabilities, or the probability of being in each profile, to the covariates. Specifically, a multiple pseudo-class draws approach (Morin et al., 2011; Muthén & Asparouhov, 2007) is used, wherein the probability of being in each profile is related to the covariates multiple (typically 20) times. Results are then combined across the multiple draws using an approach similar to multiple imputation of missing data (Rubin, 1987). The AUXILIARY (e) function garners a Wald chi-square test based on random pseudoclass draws and tests the equality of the covariate means across the latent classes (Wang, Brown, & Bandeen-Roche, 2005). If significant, the Wald chi square statistic rejects the null hypothesis that the classes are equal on the covariate.

For the current analyses, all continuous covariates were compared using the pseudoclass draws approach. Because the Wald test is a stepwise procedure, Type I error rates are inflated, but there are, as of yet, no available adjustments, such as the Bonferroni test for an ANOVA (Tabachnick & Fidell, 2013). However, it is recommended to use the Wald test over an ANOVA, when available, in order to account for uncertainty in profile assignment (Morin et al., 2011). Thus, as recommended by Tabachnick and Fidell, a more conservative probability value ($p <$ .01) was used to interpret the Wald test results.

Unfortunately, the pseudoclass draws function in M*plus* is only available for continuous covariates, and thus class comparisons on covariates that were binary or categorical in nature, (e.g., gender identity, mental health history) were conducted in SPSS. Because of the small size of *the Depression Declining Post-Graduation* class ($n = 15$), Fisher's Exact Test (Fisher, 1922) was used to examine categorical demographic differences in SPSS, as opposed to a Pearson Chi Square test. Demographic comparisons can be found in Table 11, and Table 12 shows the other class covariate comparisons.

Covariate Comparisons

Demographic Factors

The classes were compared on various demographic factors in SPSS. Specifically, the most likely class membership was retained and class membership was compared on the demographic factors. Several of the demographic variables were collapsed into binary variables, because several of the options included in the questionnaires were underrepresented across classes. The classes did not differ significantly on their gender identity makeup, ($p = .97$, *Fisher's exact test*). In the *Stable Low Depression* class, 70% identified as female ($n = 66$), 73%

identified as female in the *Depression Declining Post-Graduation* class (n = 11), and 70% identified as female in the *Depression Increasing Post-Graduation* class (n = 35).

Regarding population group, the profiles did not significantly differ in their frequencies of being either white or another population group (p = .07, *Fisher's exact test*). Most individuals in the *Stable Low Depression* were white (58%, n = 54), with the three other most frequent population groups being biracial (8%, n = 8), Chinese (7%, n = 7), and South Asian (5%, n = 5). Those in the *Depression Declining Post-Graduation* class were mostly white, although at a lesser rate than the other two classes (27%, n = 4), and next most frequent population groups were biracial (27%, n = 4), South Asian (20%, n = 3), and Arab (13%, n = 2). The most population groups most frequently represented in the *Depression Increasing Post-Graduation* class were white (49%, n = 25), South Asian (12%, n = 6), biracial (10%, n = 5), and Chinese (10%, n = 5).

Regarding sexual orientation, the classes did significantly differ with regards to sexual orientation makeups (p = .02, *Fisher's exact test*). Specifically, individuals within the *Depression Declining Post-Graduation* class tended to have a smaller proportion of individuals that identified as heterosexual (60%, n = 9) than the *Stable Low Depression* (88%, n = 80) and *Depression Increasing Post-Graduation* (94%, n = 46) classes. Thus, those within the *Depression Declining Post-Graduation* profile had a larger proportion of individuals that identified as having bisexual or other sexual orientations that were not listed.

The classes did not differ on the number of years they completed their undergraduate education in, (p = .37, *Fisher's exact test*). Most individuals in the *Stable Low Depression* were in their fourth year of university before graduation (61%, n = 56), with similar patterns observed in the *Depression Declining Post-Graduation* (43%, n = 6), and *Depression Increasing Post-Graduation* classes (62%, n = 31).

Finally, Wald chi square analyses in M*plus* showed that the classes did not differ with respect to the ages of participants, *Wald* $\chi^2(2) = 3.50$, p = .17. Specifically, at Wave 1, the average age across the classes was between 22 and 23 years old.

Internalizing Symptom Risk Factors

Childhood Subjective SES. Regarding their perceived social status growing up which was assessed at Wave 1, the classes did not differ, *Wald* $\chi^2(2) = 1.15$, p = .56. Specifically, all three classes endorsed that their family of origin was fairly well off/average (range = 7.34 to 7.88 on an 11-point scale) in comparison to other families while growing up.

Family Income. For an objective marker of financial status at Wave 1, classes did not significantly differ in their reported family income, *Wald* $\chi^2(2) = 1.21$, $p = .55$. Specifically, the classes had average family incomes in the 12 months preceding Wave 1 that were in the $50,000 to $99,999 range.

Negative Life Events. The amount of negative life events experienced in the 12 months preceding Wave 1 did not differ significantly between the three classes, *Wald* $\chi^2(2) = 4.42$, $p = .10$. However, the *Depression Declining Post-Graduation* class had experienced more negative life events ($M = 3.18$, $SE = .68$) relative to the *Stable Low Depression* class ($M = 1.85$, $SE = .18$) at a rate trending towards statistical significance, $p = .06$.

Mental Health History. Posterior probabilities were retained and participants were classified into their most likely class in SPSS. The proportion of those who indicated they had had either been diagnosed or treated for a mental health problem in the past differed significantly ($p = .001$, *Fisher's exact test*). Specifically, those in the *Depression Declining Post-Graduation* class had significantly higher rates of having had a mental health diagnosis or treatment (47%) relative to those in the *Stable Low Depression* (9%) and *Depression Increasing Post-Graduation* (18%) classes.

Social Support. For amount of social support, the classes overall did not significantly differ at Wave 1, *Wald* $\chi^2(2) = 7.14$, $p = .03$. However, those in the *Stable Low Depression* class ($M = 5.78$, $SE = .11$) had significantly more social support than those in the *Depression Increasing Post-Graduation* ($M = 5.05$, $SE = .18$) class, $p < .001$. This significant difference between the *Stable Low Depression* and *Depression Increasing Post-Graduation* classes persisted a Wave 2, *Wald* $\chi^2(1) = 10.83$, $p < .01$, and Wave 3, *Wald* $\chi^2(1) = 8.69$, $p < .01$ as well. At Wave 4, the overall difference test was significant, *Wald* $\chi^2(2) = 14.03$, $p < .001$, with those in the *Stable Low Depression* class ($M = 5.71$, $SE = .11$) having significantly more social support than those in the *Depression Increasing Post-Graduation* ($M = 4.92$, $SE = .16$) and *Depression Declining Post-Graduation* ($M = 4.60$, $SE = .41$) classes.

Graduation Contextual Factors

Grades. Participants' university grade ranges, assessed at Wave 1, did not differ across the classes, *Wald* $\chi^2(2) = 4.02$, $p = .13$.

Degree Obtained. The classes also did not differ with respect to the degree that they obtained, ($p = .94$, *Fisher's exact test*) with an equal distribution of the different bachelor degree

types in each class. Specifically, for those in the *Stable Low Depression* class, 54% had a Bachelor of Arts or Science (8% Engineering, 3% Fine Art, 32% Commerce, 2% Administration), 60% of those in the *Depression Declining Post-Graduation* class had a Bachelor of Arts or Science degree (7% Engineering, 7% Fine art, 27% Commerce, 0% Administration), and for those in the *Depression Increasing Post-Graduation*, 51% had a Bachelor of Arts or Science degree (6% Engineering, 8% Fine Art, 31% Commerce, 4% Administration).

Income. Participants' post-graduation incomes were compared across the classes, and they did not differ significantly at Wave 2, *Wald* $\chi^2(2) = 4.02$, $p = .13$, at Wave 3, *Wald* $\chi^2(2) = 3.42$, $p = .18$, or at Wave 4, *Wald* $\chi^2(2) = 1.73$, $p = .42$.

Financial Stress. Participants' financial stress levels did not differ at significantly at Wave 1, *Wald* $\chi^2(2) = 1.35$, $p = .51$, at Wave 2, *Wald* $\chi^2(2) = 2.62$, $p = .27$, at Wave 3, *Wald* $\chi^2(2) = 3.17$, $p = .20$, or at Wave 4, *Wald* $\chi^2(2) = .23$, $p = .88$. Descriptively, those in the *Stable Low Depression* class had stable low financial stress, those in the *Depression Declining Post-Graduation* showed a steady decline in their financial stress, and those in the *Depression Increasing Post-Graduation* class had higher financial stress for Waves 1-3, but it declined at Wave 4.

Employment. Whether participants were employed at the post-graduation waves was compared across the classes. Employment status did not differ across the classes at Wave 2, ($p = .75$, *Fisher's exact test*), at Wave 3 ($p = .79$, *Fisher's exact test*), or at Wave 4, ($p = .37$, *Fisher's exact test*).

Hours Worked. Regarding hours worked, the classes did not differ significantly in the number of hours participants were employed at Wave 1, *Wald* $\chi^2(2) = 1.98$, $p = .37$, at Wave 2, *Wald* $\chi^2(2) = 1.46$, $p = .48$, at Wave 3, *Wald* $\chi^2(2) = .56$, $p = .75$, or at Wave 4, *Wald* $\chi^2(2) = 2.72$, $p = .25$. Specifically, prior to graduation, the classes were similarly employed part-time, and on average worked over 20 hours per week at subsequent wave points.

Status Satisfaction. Regarding how satisfied they were with their statuses at the post-graduation waves, the classes significantly differed at Wave 2, *Wald* $\chi^2(2) = 11.15$, $p < .01$. Specifically, those in the *Stable Low Depression* class ($M = 5.25$, $SE = .20$) were more satisfied with their current statuses than those in the *Depression Declining Post-Graduation* ($M = 3.53$, $SE = .51$) and *Depression Increasing Post-Graduation* ($M = 4.32$, $SE = .31$) classes. The classes

did not differ at Wave 3, *Wald* $\chi^2(2) = 6.30$, $p = .04$, but did differ at Wave 4, *Wald* $\chi^2(2) = 10.10$, $p < .01$. Specifically, at Wave 4, those in *Stable Low Depression* class ($M = 5.34$, $SE = .17$) were more satisfied with their current statuses than those in the *Depression Increasing Post-Graduation* class ($M = 4.04$, $SE = .31$).

Living Situation. Posterior probabilities were retained and participants were classified into their most likely class in SPSS. The proportion of those still living with their parents did not differ at Wave 1 ($p = .24$, *Fisher's exact test*), Wave 2 ($p = .82$, *Fisher's exact test*), Wave 3 ($p = .77$, *Fisher's exact test*), or at Wave 4 ($p = .44$, *Fisher's exact test*). However, although not significantly different, those in the *Depression Declining Post-Graduation* class were less likely to live with their parents (40%) at the outset of the transition in comparison to the other classes (60-64%).

Personality Factors

Optimism. When it comes to optimism, the three depressive symptom classes differed significantly across all Wave points. At Wave 1, those in the *Stable Low Depression* class ($M = 2.78$, $SE = .07$) had significantly more optimism than those in the *Depression Declining Post-Graduation* ($M = 1.79$, $SE = .20$) and *Depression Increasing Post-Graduation* ($M = 2.38$, $SE = .11$) classes, *Wald* $\chi^2(2) = 25.61$, $p < .001$. Those in the *Depression Increasing Post-Graduation* profile were also more optimistic than those in the *Depression Declining Post-Graduation* class, which approached statistical significance ($p = .01$). At Wave 2, those in the *Stable Low Depression* class ($M = 2.66$, $SE = .08$) had significantly more optimism than those in the *Depression Declining Post-Graduation* ($M = 1.91$, $SE = .21$) and *Depression Increasing Post-Graduation* ($M = 2.14$, $SE = .13$) classes, *Wald* $\chi^2(2) = 25.61$, $p < .001$. The same pattern persisted for Wave 3, *Wald* $\chi^2(2) = 16.10$, $p < .001$, and Wave 4, *Wald* $\chi^2(2) = 23.32$, $p < .001$, with those in the *Stable Low Depression* class being significantly more optimistic than the other two classes.

Grit. For grit, the classes overall did not significantly differ at Wave 1, *Wald* $\chi^2(2) = 4.98$, $p = .08$, although those in the *Stable Low Depression* class ($M = 3.65$, $SE = .07$) had significantly more grit than those in the *Depression Increasing Post-Graduation* ($M = 3.35$, $SE = .09$) class, *Wald* $\chi^2(1) = 6.61$, $p < .01$. This pattern of those in the *Stable Low Depression* class having significantly more grit than those in the *Depression Increasing Post-Graduation* class

persisted across Wave 2 [*Wald* $\chi^2(1) = 13.10$, $p < .001$], Wave 3 [*Wald* $\chi^2(1) = 5.52$, $p < .01$], and Wave 4 [*Wald* $\chi^2(1) = 12.10$, $p < .01$].

Neuroticism. Regarding neuroticism, the classes significantly differed at Wave 1, with participants in the *Stable Low Depression* class ($M = 2.65$, $SE = .09$) being less neurotic than those in the *Depression Increasing Post-Graduation* ($M = 3.11$, $SE = .11$) and *Depression Declining Post-Graduation* ($M = 3.45$, $SE = .21$) classes, *Wald* $\chi^2(2) = 13.64$, $p = .001$. The same significant differences occurred also at Wave 2, *Wald* $\chi^2(2) = 22.27$, $p < .001$, and Wave 3, *Wald* $\chi^2(2) = 18.88$, $p < .001$. At Wave 4, the *Stable Low Depression* class ($M = 2.44$, $SE = .09$) was only significantly less neurotic than the *Depression Increasing Post-Graduation* class (M = 3.23, SE = .13), *Wald* $\chi^2(1) = 16.32$, $p < .001$. Specifically, over Wave, those in the *Depression Declining Post-Graduation* class showed decreases in their neuroticism, whereas neuroticism remained high and stable in the *Depression Increasing Post-Graduation* class.

Brief Summary

This Chapter examined the correlates of the distinct depressive symptom trajectories described in Chapter 5, in order to elucidate the mechanisms underlying the distinct patterns of experience across graduation. Overall, the three classes did not differ on many of the demographic variables, traditional internalizing symptom risk factors, or graduation contextual factors. The *Stable Low Depression* class showed more social support across the entire transition, and demonstrated a more optimistic, gritty, and less neurotic personality style relative to the other two classes. This suggests that social support and dispositional aspects may be key protective assets across the graduation transition. Those in the *Depression Declining Post-Graduation* class were more likely to have a sexual orientation minority status, to have had a mental health problem or diagnosis, and experienced more negative life events prior to graduation. Although not statistically significant, they also were less likely to live with their parents while in university. Interestingly, those in this class also showed a decline in their neuroticism across the transition, which correlated with their similar decline in depressive symptoms across the year, although they remained relatively low on optimism. These results suggest that having had a stressful, and perhaps less "typical" undergraduate experience, might confer either emotional relief or resilience, along with an adaptive dispositional change, as one moves out into the post-graduation world. Differently said, as they have experienced a stressful undergraduate period, those in this class may have "matured out" of their tendency to be

emotional and reactive to challenges, thus proffering a decline in depressive symptoms. In contrast, those in the *Depression Increasing Post-Graduation* class tended to have low social support, and stable less optimism, grit, and more neuroticism across the waves. Because their dispositional pattern differed significantly from the other two classes, this suggests that their maladaptive dispositional tendencies may have contributed to their increase in depressive symptoms across the year. Overall, these findings underscore the importance of specific context by personality interactions that contribute to differences in emotional experience across this major life transition. Chapter 7 will build on these results by using a qualitative analysis to access themes among the three depressive symptom profiles' experience of graduation.

CHAPTER 7

Study 4: Qualitative Analysis of the Factors Underlying the Different Depressive Symptom Trajectories across Graduation

This chapter details the third part the embedded correlational mixed methods model, whereby qualitative data were gathered and interpreted to supplement the quantitative analyses detailed in Chapters 5 and 6. Specifically, qualitative data was used to provide a deeper analysis of the lived experiences of the different participants' graduation from university, which they reflected on one year post-graduation. At the fourth and final wave of data collection (one year after graduating), participants were asked to reflect on their past graduation using the "*Post-graduation text response"* question. Of the 159 participants at Wave 1, 113 participants returned for Wave 4 and completed this question. Using their text responses, we sought to understand the specific experiences of graduates within the different depressive symptom trajectory classes, in order to understand mechanisms that may explain the diverging patterns in depressive symptoms across the transition.

Qualitative Analysis Plan

Phenomenological analysis (PA; Creswell, Hanson, Plano Clark, & Morales-Escoto, 2007; Giorgi, 1997) was used as the main qualitative analysis. PA is used to understand the shared lived experiences of a group of people around a given phenomenon (Creswell & Plano Clark, 2007). Unlike other theory-driven qualitative methods, PA is an inductive procedure, meaning that it attempts to make sense of the data in order to generate theory. Further, it is ideographic, whereby individual differences, rather than overarching trends, within the data are considered, in order to make sense of potential differences in experience (Giorgi, 1997; Starks & Brown Trinidad, 2007).

Coding and analysis of the written data were carried out using an *interpretive community* (Taylor, Gilligan, & Sullivan, 1996), which consisted of two graduate students in psychology and one principal investigator. The interpretative community analyzed the data in an iterative fashion, alternating between group meetings and individual reflection, across five total steps. The first step involved meeting as group and socializing to the data and procedure. The second step consisted of individually reading through the 113 entries and considering "What is the nature of graduating from university for this individual?" While reading, the researchers annotated any codes they noticed across the entries. Codes are concise labels that represent general ideas or

experiences reflected across the entries (Larkin, Watts, & Clifton, 2006). With their respective codes in hand, the researchers then also independently compiled a list of themes they noticed across the data. Themes are recurring patterns of meaning (ideas, thoughts, feelings) throughout the text, and are assumed to reflect subjects that matter to the participants as they are raised frequently (Larkin et al., 2006). The third step consisted of a group meeting, wherein the researchers discussed and disputed the themes they noticed across the data.

A consensus was arrived at on three predominant themes that were represented across the majority of the entries. The first theme was labelled *pursuits*, as it reflected a commentary on the pursuit(s) the participants were working towards. Participants tended to comment on some form of goal or pursuit, either with respect to their achievement of the goal, or the journey towards such achievement. For illustrative purposes, we use the analogy of a car journey to describe this theme. Specifically, whether the participants are "on the road" to their preferred destination, and how the journey is going are used to illustrate their answers. The second theme was labelled *attitudes towards the graduation transition*, reflecting comments on the graduation process specifically. Many of the participants mentioned their perspectives on the transition, whether in relation to the ending of school, or the process of graduating more generally. An analogy that will be used to characterize this theme is the passage of a rain storm, wherein university is the downpour of rain which calms to a blue sky in the post-graduation period. Finally, the third theme was labelled *reflections on the self*, and reflected participants' introspection about one's self. Participants tended to comment on themselves in some way, either in relation to a sense of self growth, change, or consolidation, with variation in the affective tone (e.g., positive vs. negative) and depth of reflection (e.g., introspective vs. shallow). An analogy used to describe this theme will be the making of lemonade, as the classes differed to the extent they felt all of their internal capacities, or ingredients, were laid out in front of them, and whether they could make something positive from them.

Once the themes were agreed upon, for the fourth step, the entries were divided into the three depressive symptom classes. Two of the three researchers were already familiar with the LCGA results, however the remaining researcher remained blind to which group consisted of which depressive symptom pattern in order to limit bias. Individually, the researchers then re-read the entries, with each of the three themes in mind, and generated a phenomenological description of the themes that characterized each class. The fifth and final step consisted of the

team meeting once again and arriving at a consensus regarding the phenomenological experiences of each class, within each theme. Reliability was achieved through extensive group discussion to reach agreed-upon conceptualizations of the unit of analysis and themes (Azmitia et al., 2013; Giorgi, 1997).

Several quantitative comparisons among the classes were made to confirm the validity of the classes with respect to the qualitative responses. A word count variable was calculated for each entry, and all 113 entries were considered valid and subjected to interpretation as they showed reflective answers. On average, entries were 103.60 words (*range* = 5 - 401). A one-way ANOVA in SPSS was run in order to discern if the classes differed in the length of their reflections. There was not a significant difference in word count between the entries in the *Depression increasing post-graduation* (M = 116.59, SD = 94.02), *Depression declining post-graduation* (M = 153.14, SD = 116.90), or *Stable low depression* (M = 103.60, SD = 85.52) classes, [$F(2, 110) = 2.33$, $p = .10$]. The classes also did not differ significantly on their rate of missing data for the post-graduation text response item, $\chi^2(2) = 4.84$, $p = .09$, although the *Depression declining post-graduation class* had a lower completion rate (47%) as opposed to those in the *Depression increasing post-graduation* (71%) and *Stable low depression* (74%) classes. Finally, the classes were compared on the participants' posterior probabilities, or the probability of being in that class, as there is some uncertainty in class membership. A one-way ANOVA found there to be a significant difference in posterior probabilities within the classes, [$F(2, 156) = 6.712$, $p < .05$], with a Tukey post hoc test revealing that the *Depression increasing post-graduation* class having slightly less precise class classification (M = .84, SD = .14) than the *Stable low depression* class (M = .89, SD = .12), $p < .05$. The average posterior probability in the *Depression declining post-graduation* class (M = .87, SD = .15) did not significantly differ from those of the other two classes. However, all classes had high average posterior probabilities (i.e., >.80), suggesting that the qualitative entries are likely reflective of relatively distinct groups.

Qualitative Description of Depressive Symptom Trajectory Classes

In describing the experiences of each class, we selected one participant to serve as the illustrative of the core experiences of that class. The characterization of the classes is summarized in Table 13.

Class 1: Depression Increasing Post-Graduation

The *Depression Increasing Post-Graduation* class reflects those who showed an increase in depressive symptoms across the post-graduation year. Those within this class tended to be actively pursuing an array of pursuits after graduation (e.g., finding a job in their field, pursuing graduate studies, finding a "passion"). However, those in this class, relative to the rest of the sample, were those that felt most unprepared and underqualified for the goals of their interests. Although none of the classes had a clear, singular pursuit outcome (e.g., not all individuals had achieved their pursuits), this class was unique in its relative trouble achieving what they had hoped for post-graduation. Similarly, they tended to be psychologically de-stabilized or halted by the challenges of pursuing their specific goals, with little comment on how they plan to move forward. To use the car ride analogy, whereby participants are on the road to achieving their goals, these individuals are akin to a car that has stalled on the road; they are paused, without a clear sense of the resources needed to start and move their car forward.

Regarding the theme of attitudes towards the transition, the tone of the individuals in this class's comments was more negative relative to the other classes. In particular, this group tended to comment on the lack of preparation they had received from their undergraduate degrees. They were more defensive, their expectations were unmet, and they were generally disillusioned by their undergraduate degree in retrospect. Using the rain storm analogy as representative of the graduation transition, these individuals are still looking back on the stormy clouds that was their university experience, and are feeling bothered by their soaking wet clothes. They have not moved on or adapted, and rather are more likely to feel still burdened by and resentful of the downpour.

Finally, individuals within this class tended to be less self-reflective than the other classes. When they did tend to comment on themselves, the tone was negative. Specifically, at one year post-graduation, they tended to note that their sense of self-worth and confidence were shaken, no doubt in relation to their difficulty achieving their goals and feeling as if their degrees did not serve them well. Overall, these individuals are stuck with sour lemons, without the ability or sense of how to grow, or make lemonade, from their challenges. For example, take the case of Alexander (all names have been changed) below:

> Now that it has been a year since I graduated, I feel disappointed, discouraged and lost. I do not know if I can call this a transition since I am not doing anything psychology

> related. I feel that my bachelor's degree is not really worth it compared to other fields and I also feel stuck. Every time someone asks me what I am up to since I graduated I get a little bit annoyed. I wish I could tell them that I am working in the field, that I am training at least or that I started my master's degree. Talking and reflecting on my bachelor's degree and hopefully my future career is a great source of frustration. Not enough outstanding grades, not enough EXPERIENCE, not enough references in order to keep going (both in the labor market and schooling) I am just scared of staying in my current job at the hospital forever. I wish I knew more about the program 5 years ago when I applied. I wish our program had some kind of stage. This way, we would be ON the field, get some real insight about what we are studying, the profession and relevant experience. I wish we had more help/resources for future jobs in the field or related jobs. I wish we had more opportunities to volunteer with real people (not only in labs, entering data). I also wish that all relevant information concerning the university system and the psychology system was more accessible to everyone. For example, I do not have Facebook and I know most of [student organization] interactions took place through there. I did not know what honors or specialization was... It's not common knowledge to everyone.

Like many in this class, Alexander has some goals but feels unprepared for what to do next and is disillusioned by his undergraduate experience. There is a sense of dissatisfaction implicit in his narrative, and his progression is contingent on external factors. There is not a sense of optimism or faith that things will work out, or that he has back-up plans.

Class 2: Depression Declining Post-Graduation

The emerging adults in this class varied somewhat, which may be attributed to the fact that there were only 7 entries to analyze. All entries commented on some form of pursuit, but they tended to vary as to where they were in terms of achieving their pursuits. Nevertheless, they were mostly in progress of achieving their pursuits, but weren't quite there in terms of achievement, especially in comparison to the third class. Metaphorically, they are in the car on the road to their pursuits, but are not entirely sure which exit to take to get them there. It is likely that they are on the cusp of getting on the road to what they want, but need a bit more action or support.

With regards to their attitude towards graduation, this class had a slight negative valence. However, they tended to comment on their experiences within university itself, or just prior to graduation, rather than the entire trajectory. How they ended university appeared to be central to how they thought about graduation, and for many it was a relief to be finished. This correlates with the quantitative descriptions of this class in Chapters 5 and 6. Specifically, if the university experience was a rain storm, the storm has stopped for these individuals but they are left under the clouds still, unsure of what is to come.

Finally, with respect to reflections on the self, individuals in this class were slightly more reflective than the previous class, and seem to be in the midst of learning something but have yet to figure out what it is yet. This is reflected in Maya's entry below:

> It's been a mix of feeling hectic, challenged, fun, grateful and anxious. I wanted to take a gap year after graduation because I needed that break from school but to also figure out if grad school is something I really want to do. If I was going to go to grad school, I needed the time to figure out what schools and programs I would want to apply to. This was the main thing that was and still is on my mind. Just thinking about everything I have to do for grad school applications is a huge stress for me. I was also in need of a job as soon as I graduated. I kept applying to a lot of jobs related to my field but I wasn't successful. Either I don't hear back from the jobs I applied to or I wasn't qualified for reasons that seemed unfair to me. This was a hard time for me, especially coming from school. I was lucky to get hired as a summer camp coordinator for 8 weeks. As much as this job was a good experience, it was challenging and tiring. I also felt that my degree means nothing if I am only getting hired for this type of job. Once I was done working at the camp, I continued to search for jobs but again I had no luck. In August 2017, I met up with my thesis project mentor from [local university] who offered me a part-time position as a research assistant. I was very lucky and felt really grateful. I took the job and currently, I am still working on her project. My main task is to conduct a scoping review and it is a long process but I am getting an abstract published with my name on it so that is a huge achievement for me and something that can benefit me for grad school or future research jobs. My contract for this job should end beginning of July so I have to figure out what I want to do with my life after the end of this job. I am wondering whether I should continue working or go back to pursue grad school. Thus, I have to start all the work I

need in order to prepare for grad school applications and at the same time, I should get a job even if it's not in my field.

Maya has spent the year doing all sorts of things, and exploring her interests and the prospect of attending graduate school. She has had a hard time finding a meaningful job, but eventually found one that will help her sort her ideas out and figure out what she "want[s] to do with [her] life". In comparison to the previous class, she is further along in figuring things out, but in comparison to the next class, she is not quite there yet and has not quite consolidated her experiences in order to grow or learn from them. It is as if she has lemons, sugar, water, and the recipe card in front of her but needs more time to learn to make lemonade.

Class 3: Stable Low Depression

Individuals within this class were not without their challenges in achieving or pursuing their various goals and ambitions. However, where they differed in comparison to the other two classes was in their flexibility and satisfaction with the status of their pursuits. Not all in this class had necessarily achieved what they were searching for, but they were satisfied and pleased with the progress they had made and the effort and dedication they had put into things. Similarly, they were committed and engaged proactively in the steps needed to achieve their goals. For example, to use the car ride analogy, these individuals are moving "full steam ahead" on the right path, with their exit in mind and a clear view of it approaching on the horizon.

Similarly, in reflecting on their transition from university, these individuals' entries had a more positive tone. They tended to be more thankful for their education, or view their degree more useful, although the transition itself was not without challenges. Irrespective of whether the graduation transition jolted some of their plans, they tended to be more tolerant of such diversions, and more hopeful and adaptable. They saw the challenges posed as opportunities. The stormy clouds of university had parted, and they were able to look back on the clouds and see silver linings.

This openness for growth was similarly reflected in this class's reflections on the self. In particular, these participants displayed remarkable optimism, and resilience. They tended to bounce back from challenges, and to grow in self-awareness and self-confidence. Relative to the other classes, they also more willingly disclosed self-related aspects, suggesting their maturity and willingness to pause, reflect, and grow from the question at hand. These individuals have

taken lemons, acquired the necessary ingredients, made lemonade, and are hopeful and proud of it. This persistence, and capacity for growth is reflected in the following entry by Rachel:

> After graduation, I found a full-time job that at first seemed fine, but became less and less enjoyable as time went on. I was grateful to get any job, so I degraded what I deserve from the job (pay, vacation time, lunch time, so on). Now, as I am planning to leave not only Montreal but also Canada, I am staying in the job only for the money. Once again, I am preparing my resume, my cover letter so it seems like nothing changed. At the same time, everything changed. I am a better, more well-rounded, educated, hardworking, capable person. I would not change anything and I am very hopeful for the future.

Following graduation, Rachel achieved what she wanted initially, although realized it was not her ideal situation. Thus, she quickly decided to change her path, and plans to move on to new things. Rather than being discouraged by the path she has taken so far, she has chosen to grow from it. She is reflective, demonstrates gratitude for the challenges she has faced, and is optimistic that her experiences will only propel her forward.

Brief Summary

This chapter comprises the qualitative, and final, component of the embedded correlational mixed methods model that examines patterns of emerging adults' internalizing symptoms across the transition from university. More specifically, the analyses presented herein first showcase the themes relevant to emerging adults' reflections on their graduation transition, and then explore the nuances of these themes within the three depressive symptom trajectory classes. How and what participants discuss as they reflect on their graduation transition consisted of commentary of their pursuits, their perspectives on university graduation, and self-reflection. Those in the *Depression Increasing Post-Graduation* class tended to be stalled in their pursuit efforts, lack direction, doubt themselves, and be disillusioned by the utility of their degrees. Those in the *Depression Declining Post-Graduation* class were less established in their goals although pursuing them with some exploration, are relieved to be finished university, and are in the midst of learning and growing. Finally, those in the *Stable Low Depression* class were actively on track in pursuing their goals, are satisfied and pleased with their graduation transition, and feel they have grown in a positive way across the year. These qualitative differences across the classes, in concert with the quantitative differences found in Chapter 6, suggest that personality, or one's tendency towards action, optimism, and growth, are protective

for wellbeing across this transition. Those who saw declines in their depressive symptoms over the year appeared to have a less pleasant university experience, which might have facilitated improvements in their maturity, self-direction and growth, in turn improving their mental health. In contrast, those who felt underprepared by their undergraduate degree, and lacked internal direction and confidence showed a decline in their mental health over the year.

CHAPTER 8

Discussion

Informed by developmental psychopathology and emerging adulthood theoretical perspectives, this mixed methods dissertation served to describe and explain emerging adults' emotional experiences as they navigate their university graduation. Specifically, a series of analyses investigated 1) patterns of emerging adults' internalizing symptoms prior to, across, and one year after graduating from university, and 2) factors that related to the different patterns of emotional experience across this transition. Quantitative data were collected from emerging adults once in the semester prior to graduating, and at three subsequent time points post-graduation. Separate person-centered analyses were used to elucidate 1) pre-graduation feelings related to the upcoming graduation, 2) patterns of depressive, and 3) patterns of anxiety symptoms across the entire transition. Additionally, the specific risk, contextual, and personality correlates of these patterns were examined. Finally, a qualitative analysis of the participants' reflections on university graduation one year after graduating was conducted to substantiate and illuminate mechanisms underlying the diverging patterns of depressive experience in particular. Taken together, the combination of quantitative and qualitative methods employed in the current dissertation captured emerging adults' emotional experiences as they looked ahead, experienced, and reflected back on their university graduation. In doing so, the results provide a novel and comprehensive portrait of this pivotal developmental transition.

Summary of Findings

Profiles and Predictors of Pre-Graduation Feelings

Study 1 explored university students' feelings about their *upcoming* graduation while in the final semester of their university degree. Specifically, participants were asked about their feelings as they reflected on their upcoming graduation, and person-centered analyses were used to elucidate different patterns of such feelings. Understanding how young people feel, both negatively and positively, in reaction to their upcoming graduation is important, as these reactions and associated emotion regulation abilities have implications for successful goal regulation strategies across such a transition (Aldao, Sheppes, & Gross, 2015; Diamond & Aspinwall, 2003). Considering both positive and negative feelings, and in line with hypotheses and previous research, there was significant variability in how participants felt when thinking about their upcoming graduation. Overall, most students sampled were very happy, if not mostly

happy when reflecting on their upcoming graduation, with minimal negative affect (80%). These individuals also reported more optimistic and less neurotic personalities. A smaller group of students (18%) showed mixed feelings about their upcoming graduation, were less optimistic, and more neurotic, depressed, and anxious. This suggests approximately one fifth of university students appear to be launching into post-graduation with somewhat dubious anticipations, and possibly fewer positive emotional resources to cope with any challenges coming their way.

Interestingly, the personality trait grit was not differentially related to the unique patterns of feelings, suggesting that all groups demonstrated similar levels of goal-related perseverance irrespective of their feelings about graduation. Thus, it is unlikely that positive anticipations about graduation are simply an artifact of being committed to and pursuant of one's future goals. This conflicts with prior research implicating grit/perseverance in wellbeing across various developmental challenges and transitions (Disabato, Goodman, & Kashdan, 2018; Eskreis-Winkler, Shulman, Beal, & Duckworth, 2014; Sharkey et al., 2017). Rather, it seems that the personality traits of optimism and neuroticism, and internalizing symptoms tend to coalesce with pre-graduation feelings. This suggests that no matter how committed to goals a graduate may be, if they have general tendencies to expect good things in the future (i.e., optimism) and tend to have stable mood states (i.e., low neuroticism), they likely feel better about their upcoming graduation. Perhaps all graduates know they will have to persevere, but those who can rely on emotional stability and see the opportunities ahead are those who feel more positive looking ahead. This is consistent with previous research implicating increased optimism, and decreased neuroticism in emerging adults' wellbeing, and successful navigation of other transitions across the life course (Aldinger et al., 2014; Brissette et al., 2002; Kling et al., 2003; Oberle et al., 2011).

After examining how emerging adults felt about their anticipated and upcoming graduation from university and identifying dispositional differences related to different graduation feeling patterns, Studies 2 through 4 were conducted to describe and explain recent graduates' emotional experiences *across* graduation. Study 2 examined how participants' symptoms of anxiety and depression, respectively, changed across the graduation transition. Studies 3 and 4 served to understand the factors related to the different depressive symptom trajectories across the graduation transition.

Trajectories of Internalizing Symptoms Across Graduation

In this study, longitudinal person-centered analyses were used to determine if significant variability exists in internalizing symptoms across four waves of measurement, from the final spring semester of university prior to graduation, to three subsequent time points across the following year. Consistent with hypotheses and previous research (e.g., Morin et al., 20011; Stoolmiller et al., 2005), latent class growth analyses showed there was significant linear variability in trajectories of anxiety and depressive symptoms.

Anxiety. Three distinct anxiety subgroups emerged, all of which showed stable rates of anxiety across the entire transition. Approximately half (46%) of the sample showed occasional anxiety at all four waves, approximately one third (37%) of the sample was rarely anxious across the transition, and 17% of the sample was often anxious across the transition. These rates are consistent with other samples of university students, wherein the majority of university students have some anxiety, and approximately 15% have anxiety warranting clinical attention (Beiter et al., 2015; Eisenberg et al., 2007). Interestingly, none of the trajectories showed significant slope changes across the study, suggesting that anxiety symptoms are relatively untouched during the year following graduation. Other studies using linear LCGAs to examine anxiety at other developmental periods (e.g., across adolescence) have noted similar patterns of stability (Morin et al., 2011), although studies that employ growth mixture modeling in adolescence have showed more variability (Crocetti et al., 2009; Morin et al., 2011).

The lack of variability in anxiety across this major life transition demonstrated herein may be reflective of anxiety at this specific period of the life course. Specifically, although sparse, developmental research tracking anxiety across young adulthood shows that it tends to become more stable and thus, personality or trait-like, during this period (Prenoveau et al., 2011). Studies examining anxiety in adolescence (i.e., up to the age of 20) show that while anxiety tends to peak in middle school years/early adolescence, and varies across adolescence, it becomes more stable by late adolescence (i.e., by age 20; Dumenci & Windle, 1996; Holsen et al., 2000; Zavos, Rijsdijk, & Eley, 2013). For example, research documenting distinct anxiety trajectories in late adolescence show that most older adolescents are stable in their anxiety, with only a small fraction showing variability (Allan, Felton, Leiuez, MacPherson, & Schmidt, 2016; Crocetti et al., 2009; Morin et al., 2011; Weems, Hayward, Killen, & Taylor, 2002). Although very few studies have examined anxiety across emerging adulthood uniquely (most studies have measured across weeks or a few months; Prenoveau et al., 2011), the stability demonstrated

herein may be suggestive that anxiety simply tends to stabilize by the post-university age. Moreover, this may be explained, in part, by the maintenance mechanisms of cognitive anxiety (e.g., worry) and physiological anxiety (e.g., increased heart rate) that may cumulate over time: beliefs about the probability of negative outcomes and anxiety, with related avoidance, tend to be self-sustaining (Barlow, 2002). For example, anxious young adults who worry about future misfortunes may avoid situations that may produce such misfortunes. They then do not learn that the probability of such events is rare, or not as devastating as anticipated, thereby remaining consistent in their levels of anxiety.

Depressive Symptoms. As hypothesized, distinct depressive symptom trajectories emerged as well, though unlike anxiety, these trajectories showed some change across the transition. First, consistent with previous samples quantifying depressive symptoms in university students (e.g., Samela-Aro, Aunola, & Nurmi, 2008), the majority of participants (57%) demonstrated stable, mild depressive symptoms across the year. However, two profiles demonstrated change: one profile (11%) demonstrated symptoms above the clinical cut-off for depression prior to graduation, but showed a decline in depressive symptoms across graduation, whereas another sizable profile (32%) showed an increase in depressive symptoms across the transition, meeting the clinical cut-off at the end of the transition, on average. This demonstrates that some emerging adults improve in wellbeing across graduation, whereas approximately one third of emerging adults become at risk for clinical depression following university graduation.

The results showcasing that depression, not anxiety, varies more across graduation are consistent with, an albeit limited amount, of research comparing the two symptoms across emerging adulthood (Prenoveau et al., 2011). Studies of depression in EA clearly show that depression tends to fluctuate and is more responsive to context and stress. For example, depressive symptoms significantly fluctuate across the academic year in university students (Barker, Howard, Villemaire-Krajden, & Galambos, 2018). While anxiety tends to fluctuate more in adolescence, it may stabilize at this point in the life course (Prenoveau et al., 2011). Further, while much research attests to the comorbidity of anxiety and depressive symptoms, differences in their temporal expression also demonstrate distinctive aspects of these constructs. Specifically, anxiety tends to lessen by EA, with few emerging adults being clinically anxious by age 21, much like our sample, whereas depressive symptoms remain more frequent and subjective to variability in the 20s (Conway, Zinbarg, Mineka, & Craske, 2017). This may be

reflective of the finding that anxiety tends to peak earlier and predate depressive symptoms (Avenevoli, Stolar, Li, Dierker, & Ries Merikangas, 2001; Parker et al., 1999). This suggests that the graduation period may be more detrimental for depressive symptoms, rather than anxiety, at this point in development. For this reason, the following studies examined the correlates of the depressive symptom trajectories only, to illuminate what makes emerging adults vulnerable to compromised wellbeing across graduation.

Covariates of Differing Depressive Symptom Trajectories Across Graduation

Studies 3 and 4 served to understand the factors related to the different depressive symptom trajectories across the graduation transition. In line with recommendations for greater integration of quantitative and qualitative work (Arnett, 2006; Richters, 1997), the analyses took a mixed methods approach and were iterative in nature, to more comprehensively understand what and whom the trajectories represented.

Quantitative Comparisons. Similar to Study 1, quantitative comparisons were made across the depressive symptom groups on several demographic, internalizing symptom-specific risk factors, graduation contextual factors, and dispositional traits. Interestingly, the different patterns of depressive symptoms were not differentially related to several demographic, internalizing symptom risk factors, or graduation contextual factors. Specifically, certain trajectories were not more likely to be female, of a specific racial/ethnic population group, or to be younger or older. Similarly, perceived childhood SES, family income, self-reported undergraduate grades, type and length of bachelor's degree, and post-graduation employment hours, income, financial stress, employment status, and living situation were not significantly different across the different trajectories. This conflicts with previous, albeit limited, research suggesting that searching for work and financial stress thwart wellbeing across graduation (Haase et al., 2012; Robinson, 2018). Rather, results showed that all groups had similar levels of employment and financial success, and instead differed with respect to other life circumstances and personalities.

Similar to Study 1, the depressive symptom trajectory groups differed in their personality traits. More specifically, those with stable low depressive symptoms across graduation tended to be more optimistic and less neurotic. They also tended to be higher in grit, which although was not related to pre-graduation feelings, likely became an important asset across the year. They similarly reported more social support across the transition. Further, these individuals were

statistically less likely to have a mental health history or have experienced negative life events in the last year, which may relate to their optimistic and growth-oriented mindsets. These results are consistent with prior research showing that optimism is related to a greater perceived social support (but not network size), which procures better adjustment to the transition to college (Brissette et al., 2002).

Those who showed a decline in depressive symptoms across graduation, and thus seemingly improved in wellbeing across the year, were more likely to have experienced prior mental health problems, and negative life events while in university. Although not statistically significant, they were also more likely to live outside the family of origin across the transition. Further, they were more likely to endorse a sexual orientation other than heterosexual (gay, lesbian, bisexual, or another sexual orientation). Some research documents that university students who identify with sexual orientations other than heterosexual are more likely to be depressed and struggle emotionally in university (Lindsey, Fabiano, & Stark, 2009). This suggests that this small group of participants may have experienced significant mental health and psychosocial stressors in university in comparison to the other two profiles. Regarding personality, this group was slightly less optimistic and more neurotic than those in the stable low depression group, although their within-group levels of neuroticism tended to decrease across the transition, which could reflect a "maturing out" of their moodiness (Caspi et al., 2005). This growing emotional maturity, in tandem with previous stressor exposure, may reflect a "steeling effect" (see Liu, 2015) within this profile, wherein stress across university may have equipped these individuals with budding emotion regulation strategies and resilience to handle their post-graduation challenges (Aldinger et al., 2014; Leikas & Salmela-Aro, 2014).

The final profile reflected a third of the sample who increased in risk for clinical depression following graduation. What differentiated these individuals from the other profiles was that they had less social support across the entire transition, and showed more dispositional risks. Specifically, they had significantly less optimism than those in the low depression profile, and their within-profile mean levels of optimism declined across the year. They similarly were significantly less gritty and showed stable, high neuroticism across the year, in comparison to those in the low depression profile.

Qualitative Comparisons.

Qualitative data were used to compare and supplement the quantitative analysis, to provide a deeper understanding of the lived experiences of the different participants' graduation from university. Analyses showed that the three depressive symptom profiles differed with respect to their perspectives on themselves, their education, and their life paths. All profiles described challenges related to the post-graduation year, but their perceptions of such challenges were remarkably different, which, consistent with quantitative results, showed differences in dispositions and participants' general outlooks on life and themselves.

For example, those with stable low depression across the year were open about potential challenges they faced across graduation, but nevertheless described these challenges positively, demonstrating optimism in their ability to manage and thrive despite setbacks. Similarly, they simply had more self-assured perspectives on their ability to handle these challenges and thereby felt more satisfied with their "life status" across graduation. Finally, they tended to be open to and curious about personal growth, and felt their university experience was not perfect, but overall, positive, and they claimed to be grateful and appreciative of it. This further corroborates the role of optimism, sense of self-efficacy, openness to experience, gratitude, and emotional maturity in facilitating positive wellbeing across graduation.

Similar to their quantitative results, qualitative accounts of those in the depression improving profile further suggested that they experienced more stressors in university in comparison to the other two profiles. They tended to reflect on university more negatively, and appeared to be relieved it was over. Yet, despite their lived challenges, they were growing in optimism, grittiness and self-esteem. Although less advanced than those in the stable low depression profile, those in this group were actively making progress on their post-graduation goals. They tended to be exploring avenues to take their lives, and open and curious to what they may gain from such avenues, further growing in openness to experience, self-efficacy, and emotional maturity.

Finally, those who became at increasing risk for depression across graduation reported to be struggling with their goals and sense of self-growth. Although they experienced similar challenges to those in the other profiles, they felt lost, unsatisfied, de-stabilized, and unprepared with the challenges at hand. They doubted their self-worth, struggled to find a sense of self, and generally felt "off track", which is consistent with theories linking a sense of derailment to

depression (Ratner, Mendle, Burrow, & Thoemmes, 2019) and personality/mindset factors in leading to a quarter life crisis following university (Robinson, 2018). These individuals were distinguished on the basis of their pessimistic, confused, and unprepared mindset, which likely procured their decline in wellbeing.

Contributions to Theory and Knowledge

Several aspects of this project contribute to existing knowledge of emerging adults' emotional lives and functioning, and broader developmental psychopathology theories. First, the findings herein are the first to comprehensively document how university graduation is experienced by young people, and why certain young people experience it differently. The broadest question of this dissertation was whether graduating from one's first undergraduate degree affects wellbeing or not. The answer is that wellbeing is altered for some during this period. Specifically, our finding that anxiety is unaffected, and that some emerging adults remain unchanged, others improve, and others decline in depressive symptoms is relevant to emerging adulthood theory, and corroborates Arnett's (2006; 2007) assertions that this is a heterogeneous time in development. This unveiling of three different patterns of functioning, but also different narratives of how this functioning came to be, likewise substantiates developmental psychopathology theory that transition experiences are heterogeneous and diverse (Cicchetti & Rogosch, 1996). These findings contribute to the idea that psychological functioning is likely to differ between people, and thus, this distinctiveness needs to be considered when attempting to answer developmental questions.

However, the consideration and allowance of heterogeneity inherent to this set of studies is balanced with the distillation of certain key findings. First, we see that anxiety did not change whereas depressive symptoms did change for some, across graduation. This contributes to broader knowledge of symptom change and stability over time. It appears anxiety is less likely to be impacted by situational changes, and is more time invariant at this period of the life course (Conway et al., 2017). This can be linked to the self-perpetuating mechanism of anxiety described above, or may highlight a broader debate as to whether the construct of anxiety is a symptom or personality trait (Prenoveau et al., 2011). In line with previous research, depressive symptoms, in contrast, do change across graduation, for some. This is consistent with the ideas that depressive symptoms are more time-variant and influenced by context in emerging adulthood (Barker et al., 2018; Conway et al., 2017; Prenoveau et al., 2011).

Regarding correlates of pre-graduation feelings about one's upcoming graduation and symptom change across graduation, several factors emerged. The most consistent finding was that personality factors related differently to both the pre-graduation and post-graduation patterns, both in quantitative and qualitative accounts (for depressive symptom trajectories), and that various graduation contextual factors did not. This is consistent with previous assertions that novel developmental transitions harness one's internal capacities to navigate and cope with the transition (Caspi & Moffitt, 1993; Weiss et al., 2013). While previous research has demonstrated the importance of personality traits in coping with transitions, few have shown that these traits are some of the *sole* factors involved, over and above relevant contextual factors. It is not only about what is going on in a young graduate's life, it is their perception of it, both before and while it happens, that relates to their wellbeing.

Regarding the specific personality traits involved, from the quantitative results it was shown that the interrelated concepts of optimism, grit, and less neuroticism were important, and additionally from the qualitative results, openness to experience, willingness to learn from setbacks, gratitude, and self-efficacy were related to adaptive wellbeing across graduation. Those who improved in depressive symptoms across the year may not have possessed these traits at the outset of graduation, but showed growth in emotional steadiness (showed declines in neuroticism), and their qualitative accounts showed they became more optimistic and growth-oriented by the end, which likely facilitated their improvement in wellbeing. These findings corroborate other theories implicating personality, specifically possessing optimism and a growth-oriented mindset, as crucial for navigating this transition (Brissette et al., 2002; Dweck, 1986; Scheier, Carver, & Bridges, 2001). Further, evidence of some, albeit mild, mean-level decrease in neuroticism in the depression deceasing profile lends to the perspective that personality is not crystallized for everyone at this time point in the life course (Donellan, Conger, & Burzette, 2007; Helson, Kwan, John, & Jones, 2002; Robins, Fraley, Roberts, & Trzeniewski, 2001). Neuroticism tends to decrease in university (Robins et al., 2001), and those within this profile likely were still "growing out" of their neurotic tendencies in the year following graduation, which corresponded with an increase in wellbeing (Aldinger et al., 2014; Donnellan et al., 2007). It appears that both continuous levels, and growth in levels of adaptive personality traits correspond with wellbeing across graduation.

Another aspect that related to improvement in depressive symptoms after graduation, was prior experiences of stress. Specifically, those who became less depressed across graduation tended to have experienced more negative life events, were more likely to have had a prior mental health history at Wave 1, and described their university years less positively. The fact that these individuals counterintuitively became less depressed after graduation potentially highlights a resilience process. Specifically, these events did not thwart young participants' wellbeing across graduation, and in fact, these individuals developed increased emotional maturity and stability (decreased neuroticism). Although it was not tested, it is possible that this previous experience of stress, challenged these students in ways that helped them to mature, which led to the personality and wellbeing change witnessed herein. This is consistent with theory linking prior stress to personality "hardiness", which can facilitate wellbeing (Aldinger et al., 2014; Rutter, 2012). This further reiterates the importance of individual differences in personality, or general mindsets, in facilitating wellbeing across transitions, irrespective of previous or current contextual influences (Caspi & Moffitt, 1993). It also suggests that a negative university experience does not necessarily spill over into the year following university.

The broader question of whether emotional functioning changes across graduation and if so, why, is juxtaposed within two theoretical assertions. On the one hand, transition theories suggest that developmental challenges, such as graduation, have the potential to negatively disrupt emotional wellbeing, especially in vulnerable people (e.g., those lacking sufficient coping resources; Helson et al., 2002). In contrast, the maturity principle (Caspi, Roberts, & Shiner, 2005; Robins, Caspi, & Moffitt, 2002) asserts that young people become more emotionally stable (i.e., show less negative affect) in emerging adulthood, making them less likely to be perturbed by developmental transitions. As a result of our person-centered analyses, we can surmise that both of these theories have merit, depending on the person and variable assessed, but alone, these theories are overly simplistic and restrictive. Specifically, in line with transitions theory, we saw that some participants were emotionally affected, either negatively or positively, by the transition, when it came to their depression. When it came to *why* these individuals were affected, those who improved in depressive symptoms also became more emotionally stable, which could reflect a maturation of their emotion regulation capacities and steeling from their previous hardships. However, a third of participants showed maladaptive emotional and stable negative dispositional traits, which, may suggest that they have yet to "mature out" of their

negative wellbeing. They also may never mature out of this negative wellbeing. When it comes to anxiety, it seems that emerging adults' anxiety levels are unaffected by the transition, but still a sizable number of students remain highly anxious. Evidently, emerging adults' development across a micro-transition such as graduation, is complex: some have matured and are unaffected, others are affected negatively, others when more emotionally mature (i.e., less neurotic) are not negatively impacted, and all of this depends on the construct of wellbeing assessed (i.e., depressive vs. anxiety symptoms). Our theories of wellbeing across emerging adulthood need to, like Arnett (2000; 2004), consider the room for such complexity and acknowledge no single trend can summarize the entire experience.

The complexity of our findings would not have been illuminated without the iterative, mixed methods approach taken in this project. Many developmental examinations of patterns and associated factors consider only quantitative analyses, and often variable-centered approaches, to examining predictors of patterns of change (Arnett, 2006; Richters, 1997). Had this been done, our understanding of the underlying correlates of the emotional trajectories would have been limited. Our qualitative findings aligned well with our quantitative findings, which substantiates what was unveiled. Specifically, the qualitative accounts corroborated our understanding of the role of participants' personality/mindset, and self-perceptions in contributing to their differing wellbeing across graduation. This highlights the imperative of greater use of mixed methods analyses, methodological pluralism, and iterative research in emerging adulthood research, and in developmental psychopathology research more generally.

Limitations and Future Directions

Several limitations to the studies presented herein should be noted. First, the results would benefit from replication in larger, more heterogeneous samples. The sample was predominantly female, and although this is a commonly documented problem in research with university students and online surveys (Gosling et al., 2004), more gender diversity and parity is indicated, along with more diversity in other domains. For example, because our questions centered on the graduation experience, greater representation of different academic programs would lend more insight into our findings. Further, self-report research carries an array of problems, such as reporter awareness, accuracy and willingness to report. Although a strength of our study was the use of a mixed methods design to enhance data triangulation, future studies would benefit from multi-informant data, and more intensive mixed methods designs involving

more qualitative components. For example, the use of interviews may facilitate more thorough insight into pre-graduation feelings and internalizing symptoms across graduation.

An inherent assumption of this study is that wellbeing across the major life transition of graduation, and within emerging adulthood more generally, has implications for later life wellbeing and success outcomes (e.g., Howard et al., 2010; 2014). Thus, testing this assumption across a longer timeframe would be a compelling area for future study. Testing the research questions across a greater length of time would clarify whether the patterns documented herein (especially the depression increasing and decreasing trajectories) persist, change, or rather, represent perhaps a transient and normative "blip" in symptoms that disappear on their own after successfully negotiating the graduation transition. This is especially important in emerging adult samples, when distinguishing between normative mood variations, vs. clinically at-risk individuals can be challenging. For example, because a fraction of our sample appeared to gain emotional "hardiness" due to the challenges they experienced in university, others may, in time, also gain emotional maturity as they navigate graduation-related challenges. A longer timeframe of data collection may clarify this. Further, while the four waves were chosen to reflect developmentally meaningful moments in the transition from university (prior to graduation, the post-graduation fall, the following new year, and one year after graduating), the choice of a year following graduation is somewhat arbitrary. Examining similar research questions across different, and more repeated time points, would validate the patterns described herein.

Another limitation is the consideration of both depressive and anxiety symptoms as unidimensional continua. Internalizing symptoms such as depression and anxiety are increasingly viewed as varied continua, with different types, or "manifestations" of the symptomatology, e.g., a more somatic anxiety, vs. a more fearful type (Mineka, Watson, & Clark, 1998). Further, the analyses presented herein distinguish between anxiety and depression, rather than considering their overlapping features (e.g., general distress; Mineka et al., 1998; Naragon-Gainey, Prenoveau, Brown, & Zinbarg, 2016), or comorbidity. While this study showed that anxiety and depressive symptoms showed distinct patterns over time from one another, future studies would benefit from further explanation of these distinctions, and more integrative modelling of the two constructs, to understand how their trajectories may interrelate or influence one another. For example, a burst design, which incorporates repeated assessment within a relatively short period of time (e.g., daily diary), over widely spaced intervals (Stawski,

MacDonald, & Sliwinski, 2015), may provide a more thorough investigation of these factors, and their interplay, over time.

A compelling area for future study would be to examine the reasons underlying the observed link between personality and wellbeing across graduation. Other studies have focused largely on optimism, and have documented that optimists flourish across developmental transitions because they use more adaptive coping when faced with hardships (e.g., planning, remaining engaged, accepting the situation rather than denying it, etc.; Brissette et al., 2002). Clarifying the concrete underpinnings of why some with optimistic and less neurotic tendencies are able to cope with transitions would hint at effective intervention targets to facilitate positive wellbeing across this developmental period.

Regarding the analytic strategy used herein, it is important to note that the validity and interpretability of person-centered statistical approaches such as LCGA have occasionally been questioned (Sterba & Bauer, 2010). For example, Sher and colleagues (2011) note the recurrence of four types of longitudinal trajectories (consistent low, increase, decrease, consistent high) across various person-centered analyses, which together resemble the strings in a "cat's cradle". The authors consider the consistency of patterns found as a methodological artifact and question the extent to which such patterns can be considered as authentic. Interestingly, our trajectories did not show the typical "cat's cradle" shape, but it is true that the membership of the classes and trajectories found herein is probabilistic, thereby limiting the certainty at which such patterns would be replicated in other samples. For example, the *Indifferent About Graduating* profile uncovered in Study 1 which was comprised of only 2% of the sample may be sample-specific. However, in Studies 3 and 4, our qualitative data substantiated our quantitative person-centered findings. Thus, in addition to replication studies, qualitative data analysis may serve as an important tool to validate patterns found in other person-centered studies.

Another methodological limitation is that LCGA, in comparison to more robust mixture modeling approaches which require larger samples, constrains the parameters (slope, intercept) within each class, thereby potentially concealing variability present within the classes (Jung & Wickrama, 2008; Morin et al., 2011). As such, the analyses presented herein serve as a preliminary investigation of the patterns of internalizing symptoms prior to and across graduation from university, and thus replication in other, larger samples, with less restrictive statistical approaches, is an important future direction. Further, it is important to note that the links between

the internalizing symptom patterns and contextual and personality factors are correlational, and thus causation cannot be inferred. Although we ascribe by the research that personality, or mindset, tends to predict internalizing symptoms (e.g., Beck, 1970), and the use of mixed methods approaches enhances the speculation of mechanisms at play, the quantitative influences described herein could be bidirectional (Fredrickson & Joiner, 2002). For example, those who were more depressed could then, in turn, become less optimistic. Future research would benefit from methodology that would reveal the directionality between mindset/personality factors and internalizing symptoms.

Clinical Implications

The findings from this set of four studies have several clinical and applied implications. First, the prevalence rates described herein – of those who were depressed, or at risk for depression across graduation, are useful for clinicians, and university staff, to prepare for those who may be emotionally vulnerable across this period of the life course. Approximately 30% of students were at risk for clinical depression following graduation. Given the financial burden of clinical depression on the broader public health infrastructure and society (Kessler, 2012), this signals the importance of university resources to prepare and equip graduates for this transition, ideally to prevent, or treat such rates of clinical depression. Many of the students sampled in our study reported that the university did very little to prepare them for graduation.

Regarding intervention, this group of studies joins the growing body of research arguing for greater availability of counseling and therapeutic resources for students, and recently graduated students (e.g., Eisenberg et al., 2007). Many of the participants herein reported clinical levels of symptomatology at each of the wave points, and even symptoms falling below established clinical cut-offs can inflict severe impairment in functioning (Ruscio, 2019). While in university, many students have access to such resources, although they tend to underutilize them (Pottick, Bilder, Vander Stroep, Warner, & Alvarez, 2008), which is problematic. Furthermore, once graduated and no longer a part of a resource-rich institution, emerging adults may additionally struggle with simply finding such therapeutic resources. Universities could offer return to counseling services in the year post-graduation, which may help mitigate the challenges associated with this year. Greater availability of evidence-based help, such as cognitive therapy (Beck, 1967; Beck, Rush, Shaw, & Emery, 1987; Henin & Berman, 2016), that helps individuals adopt more constructive expectations for their futures, thereby facilitating more confidence in

confronting challenges and goals, would facilitate emotional resilience across graduation. Furthermore, institutions would benefit by enhancing mental health literacy of students so that they can better identify problematic symptomatology and solicit appropriate help (Meredith et al., 2009).

However, the key findings of these studies also highlight the importance for preventative efforts in preparing emerging adults for graduation in order to mitigate the emotional impact of graduation. Previous research suggests that universities focus on enhancing job attainment and readiness (e.g., Perrone & Vickers, 2003; Wendlandt & Rochlen, 2008), yet we have shown that job attainment, degree type (e.g., more "job ready" degrees vs. those less known to be so), salary, or other financial indicators did not differentiate across the profiles. Rather, the results described herein highlight other resources may be more potent in protecting against depression across graduation. Namely, the most consistent finding in or mixed methods results was that the difference between those who flourished across graduation and those who did not, centered mainly on the participants' mindset. Namely, those who were more optimistic, gritty, self-efficacious, and emotionally steady and mature, either maintained low depressive symptoms, or showed declines in depressive symptoms across this transition, and had a better outlook before graduating. This is consistent with cognitive theories of psychopathology (e.g., Beck, 1967), and more learning-developmental theories such as Carol Dweck's mindset theory (Dweck, 1986).

How can this optimistic and gritty mindset be cultivated? Cultivating personality traits such as optimism in students is not an easy task, as we know its seeds are sown in early life experiences (e.g., Renaud, Barker, Hendricks, Putnick, & Bornstein, 2019) and genetic influences (Forgeard & Seligman, 2012). Because cognitive therapy is the main intervention that shows promise in changing maladaptive personalities, perhaps its principles can be applied at a prevention level. Specifically, all students would benefit from being taught that setbacks are important learning experiences, and necessary for growth. Normalizing failure, challenges, and "ups and downs" of graduation life could significantly help those who become at risk for a decline in mood of graduation. Very few preventative efforts have been made to cultivate personality traits, such as optimism, although some developed for children, such as the Penn Resiliency Project, show promise (Cardemil, Reivich, Bleevers, Seligman, & James, 2007). Further, teaching problem solving and active coping, for when graduates are feeling "stalled" by progress in their goals, or lacking focused direction, may facilitate more fluid movement through

the year after graduation. This might involve teaching to accept a challenge when it presents itself (rather than deny it), remaining behaviourally engaged, and planning the steps to take accordingly (Brissette et al, 2002).

Conclusion

Because university graduation is likely one of the most pivotal transitions emerging adults will navigate, how they emotionally anticipate and cope across this transition have important implications for goals, success, and later wellbeing. This yearlong, longitudinal mixed methods set of studies demonstrated the associations between different patterns of internalizing symptoms, and corresponding contextual, and personality/mindset attributes in emerging adults as they graduated and transitioned from university. Our person-centered analyses documented different feelings about graduation patterns before graduation, and internalizing symptom trajectories across the year post graduation, highlighting the complex nature of adjustment. Many emerging adults navigate this transition smoothly, but approximately one fifth had mixed feelings about it before graduating, and one third become at heightened risk for depressive symptoms across the year. For some emerging adults who experienced challenges in university, these hardships are not life sentences, and they can improve in wellbeing across graduation. Having faith in the future and themselves, perseverance, and willingness to grow, along with social support, irrespective of job or financial indicators of success, may be especially helpful to young people graduating. Taken together, the findings contribute to past research showing that aspects of emerging adults' personality and mindsets are key determinants for how they emotionally navigate this pivotal transition period.

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Table 1

Means, Standard Deviations, and Correlations between Study Variables Included in the Profiles and Predictors of Pre-Graduation Feelings Analysis

	1.	2.	3.	4.	5.	6.	7.
1. Positive feelings about graduation W1	-						
2. Negative feelings about graduation W1	-.55**	-					
3. Depressive symptoms W1	-.41**	.47**	-				
4. Anxiety W1	-.20*	.38**	.58**	-			
5. Optimism W1	.42**	-.42**	-.50**	-.52**	-		
6. Grit W1	.25*	-.11	-.14	-.06	.26*	-	
7. Neuroticism W1	-.14	.20*	.37**	.62**	-.44**	-.08	-
M	3.88	2.31	.76	1.20	2.54	3.53	2.89
SD	.72	.68	.44	.61	.75	.57	.83

*$p < .05$; **$p < .001$

Table 2

Means, Standard Deviations and Correlations between four Measurements of Depressive Symptoms and Anxiety

			r							
	M	SD	1.	2.	3.	4.	5.	6.	7.	8.
1. Depressive symptoms W1	.77	.45	-							
2. Depressive symptoms W2	.76	.54	.38**	-						
3. Depressive symptoms W3	.75	.45	.42**	.52**	-					
4. Depressive symptoms W4	.76	.52	.36**	.48**	.52**	-				
5. Anxiety W1	1.20	.61	.58**	.39**	.38**	.27*	-			
6. Anxiety W2	1.11	.59	.43**	.63**	.49**	.38**	.57**	-		
7. Anxiety W3	1.10	.66	.45**	.45**	.61**	.40**	.58**	.75**	-	
8. Anxiety W4	1.10	.59	.34**	.49**	.51**	.62**	.55**	.64**	.74**	-

* $p < .01$; ** $p < .001$

Table 3

Means, Standard Deviation, and Correlations with the Continuous Outcome Variables of the Covariates included in the Analysis of Trajectories of Internalizing Symptoms across Graduation

			r with Depressive symptoms				*r* with Anxiety			
	M	*SD*	W1	W2	W3	W4	W1	W2	W3	W4
Internalizing symptom risk factors										
Childhood subjective SES W1	7.74	1.65	-.10	-.03	.01	.07	-.13	.01	-.10	.01
Family income W1	7.46	2.68	.12	.07	.19	.07	.05	.17	.04	.10
Negative life events W1	2.12	1.98	.25*	.25*	-.24*	.01	.40**	.31**	.25*	.19†
MH history W1	.16	.36	.31*	.23*	.21*	.23*	.38**	.30**	.27*	.26*
Social Support W1	5.48	1.13	-.33**	-.22*	-.31**	-.29**	-.21*	-.16	-.23*	-.15
Social Support W2	5.43	1.14	-.28**	-.47**	-.31**	-.31**	-.11	-.29**	-.21†	-.18†
Social Support W3	5.36	1.17	-.26*	-.25*	-.39**	-.18†	-.10	-.19†	-.30**	-.16
Social Support W4	5.37	1.02	-.44**	-.32**	-.39**	-.40**	-.18	-.29*	-.36**	-.26*
Graduation contextual factors										
Grades W1	6.42	1.15	.02	.02	.02	-.02	.16†	.11	.08	.12
Participant Income W2	4.07	1.91	-.00	-.21†	-.15	-.24†	-.13	-.25**	-.18	-.23†
Participant Income W3	5.06	3.11	-.17	-.06	.08	.07	-.08	-.13	-.03	.10
Participant Income W4	5.24	2.95	.04	.01	.07	-.08	.07	-.01	.04	.04
Financial stress W1	.36	.40	.11	.22†	.10	.11	.21*	.10	.04	.05
Financial stress W2	.30	.40	.11	.40**	.12	.33**	.07	.24*	.18	.18
Financial stress W3	.32	.44	.10	.29**	.31**	.33**	.16	.25*	.34**	.28*
Financial stress W4	.211	.36	.04	.22*	.11	.18	.04	.08	.07	.06
Employment status W2	.77	.42	.07	-.04	-.04	-.09	.01	-.11	-.13	-.21†
Employment status W3	.80	.40	.01	-.08	-.12	-.12	-.07	-.11	-.19†	-.17
Employment status W4	.82	.38	-.15	.09	-.13	-.20†	-.15	-.08	-.17	-20†
Hours worked W1	10.72	10.48	-.13	-.09	-.11	-.11	-.04	-.10	.01	-.01
Hours worked W2	24.95	16.95	-.01	-.20†	-.11	-.18	-.10	-.26*	-.18	-.23*
Hours worked W3	28.00	16.08	-.07	-.17	-.10	-.18	-.18	-.21*	-.17	-.15
Hours worked W4	31.55	13.21	-.21†	-.14	-.14	-.17	-.20†	-.11	-.17	-.07
Status satisfaction W2	4.78	1.87	-.28**	-.49**	-.30**	-.21†	-.21†	-.32**	-.29*	-.15
Status satisfaction W3	4.92	1.68	-.23*	-.31**	-.42**	-.22†	-.11	-.29**	-.31**	-.15
Status satisfaction W4	4.80	1.72	-.30*	-.29*	-.38**	-.51**	-.14	-.33**	-.36**	-.34**
Personality factors										
Optimism W1	2.54	.75	-.50**	-.38**	-.33**	-.28*	-.52**	-.28**	-.26*	-.26*
Optimism W2	2.42	.76	-.32**	-.50**	-.31**	-.28*	-.27*	-.38**	-.38**	-.31**
Optimism W3	2.40	.79	-.36**	-.44**	-.46**	-.32**	-.25*	-.27**	-.41**	-.30**
Optimism W4	2.41	.75	-.40**	-.41**	-.49**	-.56**	-.24†	-.34**	-.49**	-.42**
Grit W1	3.53	.57	-.14	-.10	-.30**	-.31**	-.06	-.03	-.08	-.20†
Grit W2	3.55	.55	-.10	-.21†	-.37**	-.32**	-.04	-.12	-.14	-.21†
Grit W3	3.40	.56	-.13	-.19†	-.30**	-.25*	.08	-.08	-.11	-.14
Grit W4	3.54	.55	-.14	-.14	-.37**	-.39**	-.02	-.10	-.17	-.19†
Neuroticism W1	2.89	.83	.37**	.38**	.29**	-.13**	.62**	.31**	.47**	.43**
Neuroticism W2	2.81	.86	.28**	.65**	.42**	.32**	.38**	.62**	.47**	.43**
Neuroticism W3	2.73	.82	.29**	.44**	.56**	.25*	.46**	.58**	.70**	.52**
Neuroticism W4	2.73	.83	.18†	.35**	.43**	.46**	.33**	.37**	.56**	.65**

†$p < .05$; *$p < .01$; **$p < .001$

Table 4

Fit Statistics for Feelings about Upcoming Graduation LPA Models with 1-5 Profiles

Number of profiles	BIC	Entropy	AvePP	LMR-LRT	Smallest class size
1	688.89	-	1.0	-	100%
2	648.41	.64	.88	$p = .02$	**40%**
3	639.07	.82	**.94**	$p = .01$	2%
4	**609.91**	**.85**	**.94**	$p = .01$	2%
5	614.62	**.86**	.92	$\mathbf{p = .21}$	2%

Note. BIC = Bayesian Information Criteria; AvePP = Average of the Posterior Probabilities; LMR-LRT = Lo-Mendell Rubin Likelihood Ratio Test. Bolded values indicative of the better fitting model.

Table 5

Parameters of the Four Latent Feelings about Upcoming Graduation Profiles

	Latent profiles (N = 158)			
	Profile 1: Very happy about graduating (n = 55)	Profile 2: Mixed feelings about graduating (n = 28)	Profile 3: Mostly happy about graduating (n = 72)	Profile 4: Indifferent about graduating (n = 3)
Mean SPANE_P	4.61 (.08)	2.95 (.07)	3.80 (.09)	2.00 (.13)
Mean SPANE_N	1.72 (.05)	3.23 (.14)	2.40 (.08)	1.38 (.09)

Note. SPANE_P = Positive Feelings about Graduation; SPANE_N = Negative Feelings about Graduation. Standard errors are in brackets.

Table 6

Differences in Personality and Internalizing Symptom Covariates as a Function of the Different Feelings about Upcoming Graduation Profiles

	Feelings about upcoming graduation profiles			
	Very happy about graduating *M (SE)*	Mixed feelings about graduating *M (SE)*	Mostly happy about graduating *M (SE)*	Indifferent about graduating *M (SE)*
Mean Optimism	2.89 (.10)[a]	1.93 (.14)[a,b]	2.55 (.08)[b]	2.44 (.27)
Mean Grit	3.63 (.08)	3.36 (.12)	3.55 (.08)	2.97 (.36)
Mean Neuroticism	2.84 (.12)[a]	3.44 (.15)[a,b,c]	2.74 (.10)[b]	2.17 (.34)[c]
Mean Depressive symptoms	.58 (.05)[a]	1.16 (.10)[a,b]	.74 (.05)[b]	.87 (.15)
Mean Anxiety	1.05 (.09)[a,c]	1.65 (.12)[a,b,c]	1.16 (.07)[b,e]	.57 (.11)[c,d,e]

Note. Personality and internalizing symptom covariates were measured at Time 1. Means with matching letters are significantly different from one another based on Wald chi-square tests based on pseudoclass draws, $p < .01$.

Table 7

Fit Statistics for Four Wave Anxiety LCGA Models with 1-5 Classes

Number of Classes	BIC	Entropy	AvePP	LMR-LRT	smallest class size
1	1020.75	-	1.0	-	100%
2	867.96	**.75**	**.92**	***p* = .06**	37%
3	**816.27**	**.75**	**.88**	$p < .05$	**16%**
4	**806.45**	**.76**	.87	***p* = .20**	3%
5	**813.22**	.74	.84	$p = .31$	3%

Note. BIC = Bayesian Information Criteria; AvePP = Average of the Posterior Probabilities; LMR-LRT = Lo-Mendell Rubin Likelihood Ratio Test. Bolded values indicative of the better fitting model.

Table 8

Parameters of the Three Latent Anxiety Classes

	Latent classes (N = 158)		
	Class 1: Stable occasionally anxious (n = 74)	Class 2: Stable often anxious (n = 27)	Class 3: Stable rarely anxious (n = 57)
Intercept	1.26 (.08)	1.95 (.10)	.69 (.06)
Slope	-.02 (.03)	-.01 (.06)	-.04 (.02)
Mean HADS W1	1.26	1.95	.69
Mean HADS W2	1.24	1.94	.65
Mean HADS W3	1.22	1.93	.60
Mean HADS W4	1.20	1.92	.56

Note. HADS = Hospital Anxiety and Depression Scale – anxiety subscale. Standard errors are in brackets.

Table 9

Fit Statistics for Four Wave Depressive Symptom LCGA Models with 1-5 Classes

Number of classes	BIC	Entropy	AvePP	LMR-LRT	Smallest class size
1	782.84	-	1.0	-	100%
2	670.15	.75	**.93**	$p < .001$	39%
3	**664.81**	**.77**	**.89**	***p* = .509**	10%
4	672.07	**.77**	.82	$p = .167$	7%
5	681.76	**.80**	.83	$p = .479$	1%

Note. BIC = Bayesian Information Criteria; AvePP = Average of the Posterior Probabilities; LMR-LRT = Lo-Mendell Rubin Likelihood Ratio Test. Bolded values indicative of the better fitting model.

Table 10

Parameters of the Three Depressive Symptom Latent Classes

	Latent classes (N = 159)		
	Class 1: Stable low depression (n = 93)	Class 2: Depression declining post-graduation (n = 15)	Class 3: Depression increasing post-graduation (n = 51)
Intercept	.51 (.04)	1.61 (.50)	.92 (.22)
Slope	-.01 (.02)	-.23 (.23)	.10 (.11)
Mean CESD W1	.51	1.61	.92
Mean CESD W2	.50	1.38	1.02
Mean CESD W3	.48	1.15	1.12
Mean CESD W4	.47	.92	1.22

Note. CESD = Center for Epidemiologic Studies Depressions Scale. Standard errors are in brackets.

Table 11

Differences in Demographic Covariates as a Function of Depressive Symptom Class Membership

Demographic variables	Latent classes			*p* value
	Stable low depression (*n* = 93)	Depression declining post-graduation (*n* = 15)	Depression increasing post-graduation (*n* = 51)	
Gender Identity†				.98ns
Female	70%	73%	70%	
Male	30%	27%	30%	
Population group†				.07ns
White	58%	27%	49%	
Another population group	42%	73%	51%	
Biracial	9%	27%	10%	
Aboriginal	1%	0%	0%	
South Asian	5%	20%	12%	
Chinese	8%	0%	10%	
Black	4%	7%	2%	
Filipino	1%	0%	0%	
Latin American	4%	7%	7%	
Arab	4%	13%	5%	
South East Asian	2%	0%	4%	
Korean	1%	0%	0%	
Another option	2%	0%	0%	
Sexual orientation†				.02*
Heterosexual	88%	60%	94%	
Another sexual orientation	12%	40%	6%	
Gay/lesbian	5%	7%	4%	
Bisexual	5%	20%	2%	
Another option	1%	13%	0%	
Length of degree†				.37ns
3 years	18%	36%	24%	
4 years	61%	43%	62%	
5 years or higher	21%	21%	14%	
Age at Wave 1‡				.17ns
M	23.32	22.61	23.21	
SE	.19	.39	.25	

Note. †denotes comparison made with Fisher's Exact Test in SPSS; ‡denotes comparison made with Wald chi square test in Mplus; ns = not statistically significant; * denotes significance at $p < .05$.

Table 12

Differences in Covariates as a Function of Depressive Symptom Class Membership

	Latent classes		
	Stable low depression *M (SE)*	Depression declining post-graduation *M (SE)*	Depression increasing post-graduation *M (SE)*
Internalizing symptom risk factors			
Childhood Subjective SES	7.74 (.17)	7.34 (.49)	7.88 (.25)
Family Income W1	7.21 (.31)	8.10 (.82)	7.65 (.45)
Negative Life Events W1	1.85 (.19)[z]	3.18 (.68)[z]	2.26 (.32)
Mental Health History W1*	9%[a]	47%[a,b]	18%[b]
Mean Social Support W1	5.78 (.11)[a]	5.17 (.29)	5.05 (.18)[a]
Mean Social Support W2	5.76 (.10)[a]	5.03 (.37)	4.94 (.21)[a]
Mean Social Support W3	5.66 (.12)[a]	5.10 (.38)	4.88 (.22)[a]
Mean Social Support W4	5.71 (.11)[a,b]	4.60 (.41)[a]	4.92 (.16)[b]
Graduation contextual factors			
Grades W1	6.44 (.12)	6.72 (.29)	6.31 (.17)
Bachelor of Arts or Science vs. Another bachelor degree obtained*	56%	60%	51%
Participant Income W2	4.30 (.22)	4.66 (.62)	3.46 (.34)
Participant Income W3	5.23 (.35)	3.88 (.77)	5.12 (.58)
Participant Income W4	5.37 (.32)	6.62 (1.79)	4.69 (.50)
Financial Stress W1	.31 (.03)	.45 (.13)	.40 (.06)
Financial Stress W2	.22 (.04)	.39 (.16)	.41 (.07)
Financial Stress W3	.23 (.04)	.36 (.11)	.46 (.09)
Financial Stress W4	.20 (.05)	.24 (.10)	.23 (.06)
Achieved employment W2*	77%	84%	73%
Achieved employment W3*	82%	75%	79%
Achieved employment W4*	86%	75%	77%
Hours worked W1	12.12 (1.16)	9.46 (2.87)	8.65 (1.52)
Hours worked W2	26.12 (1.89)	28.59 (6.83)	21.71 (2.80)
Hours worked W3	29.24 (1.94)	26.55 (5.04)	26.08 (3.01)
Hours worked W4	33.17 (1.59)	24.23 (6.38)	30.34 (2.35)
Status satisfaction W2	5.25 (.20)[a,b]	3.53 (.51)[a]	4.32 (.31)[b]
Status satisfaction W3	5.32 (.19)	4.00 (.61)	4.47 (.28)
Status satisfaction W4	5.34 (.19)[a]	3.75 (.88)	4.04 (.31)[a]
Live with parents W1*	60%	40%	64%
Live with parents W2*	55%	46%	56%
Live with parents W3*	50%	41%	54%
Live with parents W4*	47%	38%	58%
Personality factors			
Optimism W1	2.78 (.07)[a,b]	1.79 (.20)[a]	2.38 (.11)[b]
Optimism W2	2.66 (.08)[a,b]	1.91 (.21)[a]	2.14 (.13)[b]
Optimism W3	2.67 (.09)[a,b]	1.80 (.25)[a]	2.08 (.11)[b]
Optimism W4	2.71 (.08)[a,b]	1.86 (.26)[a]	2.01 (.12)[b]
Grit W1	3.65 (.06)[a]	3.42 (.19)	3.35 (.09)[a]
Grit W2	3.68 (.06)[a]	3.65 (.21)	3.26 (.09)[a]
Grit W3	3.50 (.06)[a]	3.43 (.21)	3.22 (.09)[a]
Grit W4	3.69 (.06)[a]	3.51 (.28)	3.29 (.10)[a]
Neuroticism W1	2.65 (.09)[a,b]	3.45 (.21)[a]	3.11 (.11)[b]
Neuroticism W2	2.47 (.09)[a,b]	3.45 (.22)[a]	3.20 (.09)[b]
Neuroticism W3	2.41 (.09)[a,b]	3.09 (.22)[a]	3.21 (.12)[b]

Neuroticism W4	2.44 (.09)[a]	2.83 (.26)	3.23 (.13)[a]

Note. Means with matching letters are significantly different from one another based on Wald chi-square tests, $p < .01$. *Denotes that the class comparisons were conducted with Fisher's exact tests in SPSS rather than using the Wald chi-square tests in M*plus,* as the covariates were categorical in nature. [z]Denotes $p = .06$.

Table 13

Summary of Findings from the Qualitative Analysis

Class	Themes		
	Pursuits	Attitudes towards the graduation transition	Reflections on the self
Depression increasing post-graduation	• Felt unprepared for pursuits • De-stabilized by challenges of pursuing goals • *Car stalled on the road*	• University left unprepared • Negative tone • Disillusioned/unmet expectations • *Looking back at the storm and still wet from the rain*	• Less self-reflective • Self-worth has been shaken or doubted • *Sour lemons, unable to make lemonade*
Depression declining post-graduation	• Mixed progress on their pursuits • *Car moving on the road, not entirely sure of the exit*	• How university ended more central to how reflected on university • Tone somewhat negative • *Rain storm has stopped, clouds yet to part*	• Reflective • In the midst of starting to learn, improve or grow from their experiences • *Lemonade ingredients and recipe card ready*
Stable low depression	• Challenges in pursuing goals • Content/ comfortable/ flexible with the status of their pursuits • *Car moving "full steam ahead" to the correct exit*	• Tone more positive • Not without challenges but viewed as a growing process • Forgiving, tolerant • *Clouds have parted and they see the silver lining*	• Very self-reflective • Recognized their flexibility, optimism, resilience, growth • *Have successfully made lemonade*

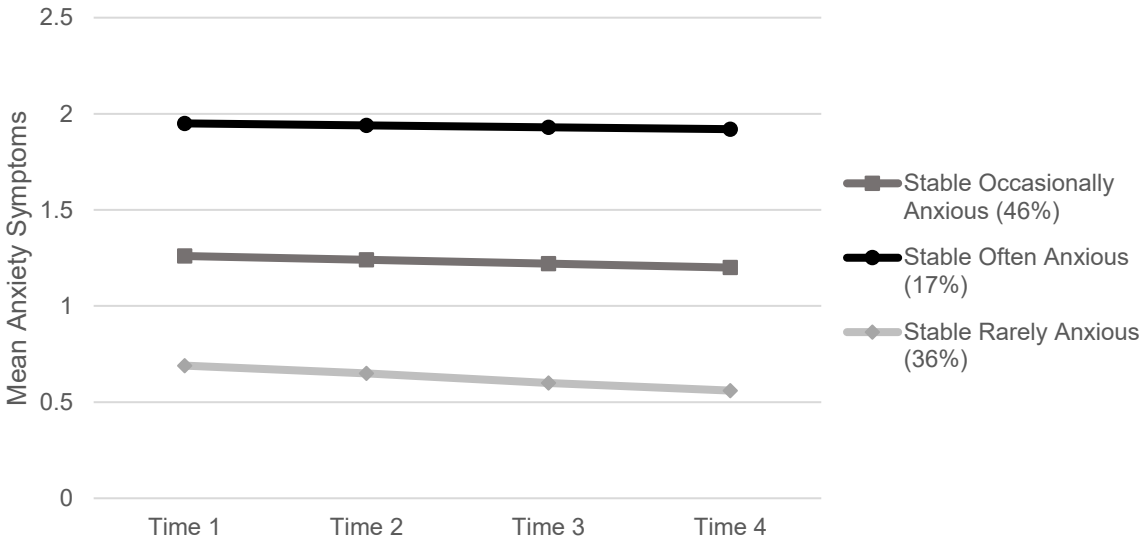

Figure 1. Trajectories of anxiety symptoms across the graduation transition.

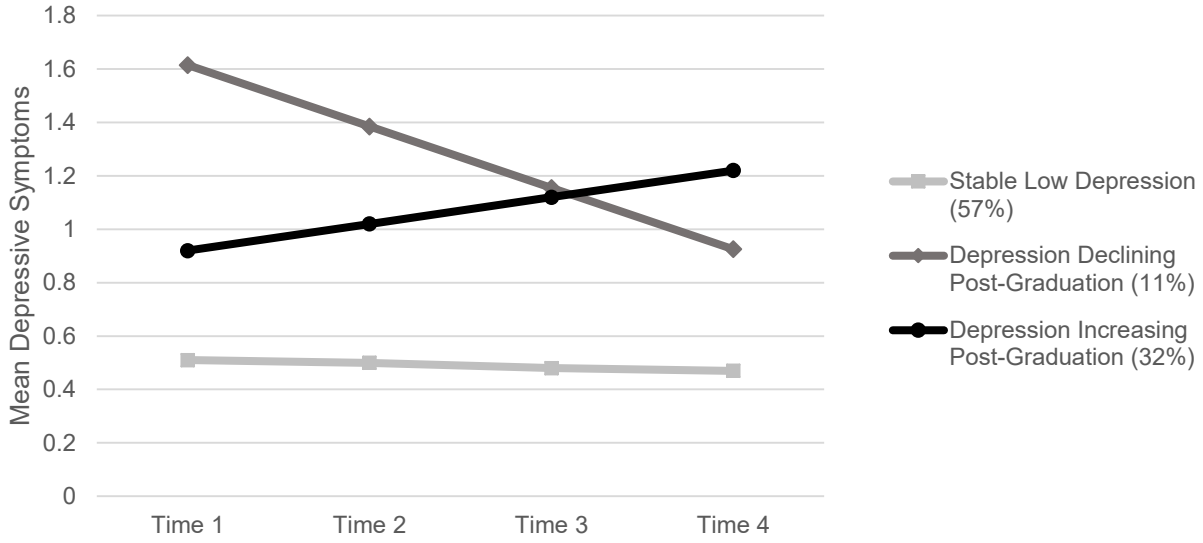

Figure 2. Trajectories of depressive symptoms across the graduation transition.