Profiles of Parental Mental Health and Children's Academic Coping

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ABSTRACT

Academic coping moderates the relationship between academic stress and children's social, emotional, and behavioral functioning (Grant et al., 2003). Parent psychopathology affects children's coping, but minimal research has explored the relationship between other facets of parent mental health and children's academic coping. Moreover, most research studying the interplay between parent mental health and children's coping has taken a variable-centered approach. This study conducted person-centered analyses to derive latent classes of parents based on how they respond and adapt to stressful life events, then examined how the classes differentially relate to children's academic coping. Participants were 115 adults with children between the ages of 5 and 15 in the mid-western United States. Data were collected using the parent report form of the Response to Academic Stress Questionnaire (RSQ-AS; Connor-Smith et al., 2000), the Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1994), the Life Challenges Scale (LCS; Sullivan et al., 2019), and a single-item life satisfaction scale (MIDUS, 1995). Results of Latent Profile Analysis— using indicators of life satisfaction, stressful life events, perceived helplessness, and perceived self-efficacy—indicated that a 3-class solution provides the best fit empirically and conceptually. The automatic 3-step approach (Asparouhov & Muthén, 2013) was performed to examine socioeconomic factors related to class membership, as well as to examine the association between parent group membership and children's responses to academic stress. Results indicate that income and education were weakly associated with parent membership in two of the groups. Further, parent group membership was significantly associated with children's primary control coping, disengagement coping, and involuntary disengagement. This study adds to the literature on children's coping in response to academic stress, suggesting that there are certain profiles of parents based on indicators of subjective wellbeing and perceived stress that relate to children's functioning in school, above and beyond stressful life events. The implications of the findings, limitations, and future directions are discussed.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1. Introduction

School can be a source of stress for many children. Whether they are managing the demands of homework, pressure to earn good grades, expectations to perform well on standardized testing, or interpersonal challenges with peers or teachers, excessive academic stress can impede healthy social, behavioral, and academic functioning (Carter, Garber, Ciesla, & Cole, 2006; Schmeelk-Cone & Zimmerman, 2003; McNamara, 2000). However, research demonstrates considerable variability in the degree to which academic stress negatively impacts children. One mechanism known to moderate this association between stress and child outcomes is coping (Grant et al., 2003; Lewis, Byrd, & Ollendick, 2012). Coping is a complex, multidimensional construct that describes the processes and behavior patterns through which individuals voluntarily respond and adapt to stress (Compas, Connor-Smith, Saltzman, Thomsen, & Wadsworth, 2001). Research on children's coping has explored its associations with individual factors such as gender (Cicognani, 2011), biological disposition (Caspi & Shiner 2008), and temperament (Rueda & Rothbart, 2009). However, given the impact of coping and other stress-related responses on children's social (Kochenderfer-Ladd, 2004), psychological (Cairns, Yap, Pilkington, & Jorm, 2014), and academic functioning (Brdar, Rijavec, & Loncaric, 2006), researchers have increasingly sought to identify malleable factors to inform interventions to promote more adaptive responses (Compas et al., 2010). Parents represent a primary source of influence on children's development, and therefore, a critical entry point for intervention to enhance children's coping. As a dynamic aspect of the home microsystem in which children spend most of their time, parents impact their children's self-regulatory abilities through their own emotions and behaviors, in addition to modeling adaptive or

maladaptive responses to stress (Abaied & Rudolph, 2011). Despite the importance of parenting on children's ability to adaptively cope with academic stress, little is known about the relationship between parent mental health and children's academic coping. Thus, this study examined how differences in parent mental health—as captured using a categorical latent class variable—is associated with different dimensions of children's coping to academic stress.

Conceptualizing Coping in Children and Adolescents

The manner in which children and adolescents respond to stress has been shown to affect their short- and long-term adjustment (Cicchetti & Curtis, 2007). Researchers have consistently examined coping as an adaptive mechanism to better understand how individuals respond to and manage stress-inducing situations. Numerous—and at times incongruent—definitions for coping have been proposed. Compas et al. (2001) define coping as "conscious, volitional efforts to regulate emotion, cognition, behavior, physiology, and the environment in response to stressful events or circumstances" (p. 89). This definition has commonalities with the construct of *emotion regulation* (i.e., the process of managing/influencing one's emotions and their behavioral responses to them; Gross, 1998). However, two critical factors distinguish coping from emotion regulation and other behavioral responses to stress (Compas et al., 2014). First, whereas emotion regulation is a continuous process that occurs under all circumstances (Gross, 2013), coping is situational and occurs under times of duress (Eisenberg, Spinrad, & Eggum, 2010). A second important distinction is that coping is inherently conscious and purposeful (Lazarus & Folkman, 1984), whereas emotion regulation and other stress responses can occur unconsciously, automatically, and involuntarily (Compas et al.,

2014; Gross, 2013). For example, humans unconsciously modulate their emotions all the time, such as crying upon witnessing something sad or becoming flush upon experiencing something embarrassing. Less adaptive involuntary (i.e., uncontrolled) responses to stress include internal subjective experiences like ruminating (i.e., perseverating on one's distress; Nolen-Hoeksema, 1998) or emotional numbing (Tull & Roemer, 2002).

Coping is typically organized along different dimensions, a few of which include *engagement (or approach) vs. disengagement (or avoidance)* and *primary vs. secondary control* coping (Skinner & Zimmer-Gembeck, 2007). Any voluntary effort to address either the source of stress or one's emotional response to it is said to be *engagement coping*. This is distinct from *involuntary engagement*, a stress response whereby individuals unwillingly or even unconsciously orient toward the stressors (Connor-Smith, Compas, Wadsworth, Thomsen, & Saltzman, 2000). The opposite of *involuntary engagement* is *involuntary disengagement*, or unwillingly/unconsciously suppressing thoughts or feelings related to the stressor (Connor-Smith et al., 2000). Due to their involuntary nature, the two aforementioned stress responses are not considered coping. *Disengagement coping* involves purposefully orienting oneself away from stress through distraction, withdrawal, denial, or giving up on goals (Ayers, Sandier, & Twohey, 1998; Carver, Scheier, & Weintraub, 1989). Both *primary* and *secondary control coping* fall under the category of engagement coping. Individuals address the source of stress, either by attempting to change the situation (primary control coping) or by changing their thoughts about the situation (secondary control coping; Rudolph, Dennig, & Weisz, 1995; Weisz, McCabe, & Denning, 1994).

Understanding outcomes associated with varied coping styles and stress responses is nuanced and complex, partly because individuals typically use multiple coping strategies and partly because the effectiveness of different coping strategies varies by individual, situation, and context (Aldridge & Roesch, 2008; Lynch, Robins, Morse, & Krause, 2001). For example, disengagement coping alleviates distress in the short-term, but may create negative long-term consequences, such as homework build-up due to task avoidance (Jaser & White, 2011). Primary control coping (e.g., problem-solving) may be extremely adaptive in situations where an individual has agency but can increase psychological distress when circumstances are beyond the individual's control (Compas et al., 2001). And involuntary disengagement, while protective in the context of conflict or abuse, is associated with poorer school performance when applied to academic stressors (Connor-Smith et al., 2000).

Individual and Developmental Differences in Coping

Prior research has identified significant differences in children's coping as a function of age (Amirkhan & Auyeung, 2007), gender (Seiffge-Krenke, 2011), temperament (Rueda & Rothbart, 2009), and biological sensitivity (Bjørnebekk, 2007). Coping development begins in infancy, during which period babies in distress seek support from caregivers and use comfort objects to self-sooth (Stansbury & Gunnar, 1994). Behavioral distraction, a disengagement coping strategy, is commonly employed in early childhood (Band & Weisz, 1990). As children mature, they adopt more sophisticated approaches to cope with the demands of their environments (Amirkhan & Auyeung, 2007; Holodynski & Friedlmeierm 2006; Kopp, 1989). For example, school-age children can employ more primary and secondary control strategies such as problem-

solving or cognitive restructuring (Skinner & Zimmer-Gembeck, 2007). With improving metacognitive abilities, older children demonstrate greater flexibility in their coping, selecting strategies they deem as most effective for a given situation (e.g., seeking help from a teacher versus talking to a friend; Skinner & Zimmer-Gembeck, 2007). Adolescents, who face greater academic and social demands than younger children, use more sophisticated forms of coping and vary their strategies as a function of context (Waters, Lester, & Cross, 2014). They employ advanced problem-solving strategies, such as reflection or long-term planning, in situations where they have agency (Hussong & Chassin, 2004), but choose to distract or reframe during instances where the source of stress is beyond their control (Skinner & Zimmer-Gembeck, 2007).

Researchers have also identified statistically significant differences across genders with respect to coping (Eschenbeck, Kohlmann, & Lohaus, 2007). Notably, children who identify as girls engage a wider array of coping techniques and use them more often than children who identify as boys (Cicognani, 2011; Wilson, Pritchard, & Revalee, 2005). For girls, primary control coping is more likely to come in the form of seeking support from friends or family (Altermatt, 2007; Rose, 2002; Eschenbeck et al., 2007; Seiffge-Krenke, 2011), whereas for boys, it is more likely to involve problem-solving (Kort-Butler, 2009; Seiffge-Krenke, 2011). With respect to disengagement coping, girls report using more wishful thinking (Frydenberg & Lewis, 1991) while boys report greater avoidance (Stark, Spirito, & Williams, 1989).

Children are biologically hardwired to respond in certain ways, and to various degrees, to stressors in their environment (Caspi & Shiner 2008; Elliott & Thrash 2002). Though difficult to detect, these differences influence the manner in which children cope

with stress (Flynn & Rudolph, 2014; Nicholls, Perry, Jones, Morely, & Carson, 2013). For example, children with more prominent *behavioral inhibition systems* (BIS; i.e., sensitivity to threats and avoidance motivation) use less engagement coping and exhibit more involuntary stress responses. In contrast, children with more prominent *behavioral activation systems* (BAS; i.e., sensitivity to rewards and approach motivation) use less disengagement coping and more secondary control coping strategies (Abaied & Emond, 2013). Moreover, researchers have found links between behavioral responses to stress and differences in brain regions associated with self-regulation (Rueda & Rothbart, 2009). For example, reduced posterior right hemisphere activity has been linked to less effortful attempts to cope and more involuntary stress responses in school-age children (Flynn and Rudolph, 2014).

Parental Influences on Children's Coping

Individual differences notwithstanding, parents can have a significant impact on the manner in which children respond to and cope with academic stress (Abaied & Stranger, 2017; Brdar & Rijavec, 2001; Power, 2004). Parent-child interactions and parenting style represent important mechanisms through which parents influence their children's coping development. When parents exhibit warmth and responsiveness in their interactions, their children tend to use more primary and secondary control coping (Davidov & Grusec, 2006; Weis, Trommsdorff, Heikamp, & Muñoz, 2014). In contrast, children exposed to negative parenting (e.g., negative emotions, discouraging statements) use more disengagement coping and exhibit more involuntary stress responses (Abaied & Emond, 2013; Valiente et al., 2004). Parents also influence their children's coping development through socialization, which occurs when parents model different ways of

responding to stress (Power, 2004; Spinrad et al., 2007; Zimmer-Gembeck & Locke, 2007). Additionally, parents can support and coach their children through stressful situations, offering suggestions about different coping strategies. Previous research found that maternal coping suggestions were predictive of children's future stress responses (Abaied & Rudolph, 2011). Though somewhat counter-intuitive, parents can also help their children develop adaptive coping by exposing them to small doses of stress in a supportive environment, a concept known as *graded exposure* (Power, 2004).

Underlying all of the aforementioned parenting behaviors that influence children's coping is parent mental health (Fear et al., 2009; Jaser et al., 2007). Poor parent mental health undermines parent-child interactions (Vandewater & Lansford, 2005), compromises the quality of support parents provide (Lovejoy, Graczyk, O'Hare, & Neuman, 2000), and introduces stressors into the family system (Hammen, Shih, & Brennan, 2004). Moreover, parents suffering from poor mental health are more likely to exhibit maladaptive responses to stress which are then modeled for their children (Hammen et al., 2004). Although the influence of parental mental *illness* (e.g., depression) on children's coping is well-documented, research within the last 20 years has broadened definitions to provide a more complete view of mental health (Lally, 2018).

With the emergence of positive psychology as a sub-field within psychology (Seligman & Csikszentmihalyi, 2000), researchers around the turn of the 21st century were interested in exploring how subjective indicators of wellbeing, including the experience of positive emotions, contributed to mental health (Fredrickson, 2001). Some started to challenge the notion that mental health and mental illness were opposite poles

of the same spectrum (Greenspoon & Saklofske, 2001). Indeed, the dual factor model (DFM) of mental health revealed that individuals could experience elevated symptoms of mental illness (e.g., anxiety, depression) and high subjective wellbeing, or conversely, few symptoms with low levels of wellbeing (Greenspoon & Saklofske, 2001). Accompanying these conceptual changes was the development of brief instruments to measure complex constructs like subjective wellbeing in large-scale survey research (Kessler et al., 2004). Several instruments sought to assess global life satisfaction (e.g., Pavot & Diener, 2008), which represents an important facet of subjective wellbeing (Diener, 2000).

In addition to indicators of subjective wellbeing, adults' experiences of stressful life events, and the extent to which they perceive they can cope with them (i.e., *perceived stress*), provide important clues into negative indicators of mental health. Self-report scales, assessing the number and severity of stressful life events that an individual has experienced, have been used as risk indices for decades (Byrne & Whyte, 1980; Deater-Deckard, 1998). Such scales are objective, easy to administer, and have demonstrated evidence of convergent (Grover, Ginsburg, & Ialongo, 2005; Muscatell, Slavich, Monroe, Gotlib, 2009) and predictive validity with respect to internalizing symptoms (Kendler et al., 2010). However, objective scales can obscure psychological *resilience*—that is, when individuals experience many and/or severe stressful life events but go on to positively adapt exhibit complete mental health (Masten, 2015). Measures of *perceived stress*, on the other hand, reflect individuals' subjective appraisals of challenging situations and their ability to cope with them (Lazarus & Folkman, 1984). Perceived stress has been found to be a stronger predictor of mental health outcomes than objective stress

indicators (Cacioppo, Hawkley, & Thisted, 2010), with some research suggesting it mediates the relationship between stressful life events and mental health outcomes (Ghorbani, Krauss, Watson, & LeBreton, 2008).

Gaps in the Literature

Given the myriad of ways in which parent mental health is said to influence children's coping, there is need for research exploring the relationship between children's academic coping and a more complete conceptualization of parent mental health. This would address shortcomings of current research, which largely explores children's coping from the vantage point of parental distress (e.g., Dunbar et al., 2013). Additionally, much of the extant research linking parent mental health to children's coping utilizes variable-centered approaches, which study variables as the central unit of analysis. Person-centered analyses enable researchers to better understand how individual factors (e.g., stress, wellbeing) cluster together within groups (Morin et al., 2017). A person-centered approach would permit researchers to investigate different mental health profiles and how they relate to coping. Research that seeks to address these vacancies in the literature has important implications for research and practice. Most notably, it will provide a foundation for the development of interventions seeking to promote complete parent mental health as one means of improving children's academic coping. Such interventions carry promise of mitigating the negative effects of academic stress on children's social-emotional functioning and school performance.

Purpose of this Study

The purpose of this study was to better understand the relationship between parental mental health and children's academic coping. Through a person-centered

analytic approach called Latent Profile Analysis (LPA), this study sought to identify profiles of parents based on a more complete conceptualization of mental health that considered both distress and wellbeing. Once derived, these profiles were studied in relation to children's academic coping and stress responses, to determine which profile(s) were associated with the most adaptive responses. Additionally, profiles were compared with respect to income and education level, to shed light on the relationship between socioeconomic status (SES) and complete mental health. The following research questions guided this study:

1. Drawing on measures of objective stress, perceived stress, and subjective wellbeing, how many parent groups (i.e., profiles) emerge, what are the characteristics of each group, and what proportion of parents are classified in each group?
2. How does SES relate to parents' likelihood of being classified in each of the groups?
3. Do the children of parents in different groups differ significantly in their typical responses to academic stressors?

A priori study hypotheses were grounded in previous person-centered research examining adult mental health (e.g., Bonanno et al., 2012), as well as previous research on children's academic coping (e.g., Compas et al., 2001). Four profiles of parents were expected to emerge, with varying levels of objective stress, subjective stress, and subjective wellbeing. It was hypothesized that the largest proportion of parents would be classified as having optimal mental health, and that higher SES would increase the odds of being classified in that profile. Children of parents with the optimal mental health were

anticipated to use the most adaptive academic coping (i.e., primary control coping, secondary control coping), whereas children of parents with the poorest mental health were hypothesized to exhibit more involuntary stress responses (e.g., involuntary engagement, involuntary disengagement).

CHAPTER 2. Literature Review

School is inherently stressful, and many children experience heightened levels of stress in response to the academic and social demands of school. Children who can cope adaptively in response to academic stress (e.g., engaging in problem-solving or positive thinking instead of avoiding or ruminating on the source of stress) perform better in school (Brdar et al., 2006). Various individual and environmental factors influence the ways in which children respond to stress (Compas et al., 2010). Notably, parents play a critical role in the development of children's coping abilities through coaching, modeling, and supportive parenting (Abaied & Stanger, 2017; Zimmer-Gembeck & Locke, 2007). However, poor parental mental health can undermine the mechanisms through which parents help their children develop adaptive coping (Dunbar et al., 2013). The current study performed a person-centered analysis of parental mental health—conceptualized along dimensions of stress and wellbeing—to identify potential profiles of parents that are related to children's academic coping. The purpose of this chapter is to provide an overview of the literature that forms the theoretical and conceptual base of this dissertation study. This chapter opens with a discussion of the sources and consequences of children's academic stress. Then, various conceptualizations of coping are described, with research highlighting the implications of using various coping dimensions across different contexts. Individual variables and environmental factors that are associated with different ways of coping are discussed next, including the mechanisms by which parents shape their children's coping development. Finally, research is reviewed that relates to adult stress and wellbeing—the two dimensions used to conceptualize parent mental

health in the current study. The chapter concludes by noting gaps in the literature related to parent mental health and children's academic coping.

Academic Stress

Children and adolescents across the globe report experiencing substantial stress associated with school and academic performance (Låftman, Almquist, & Östberg, 2013; Lee & Larson, 2000; Moksnes & Espnes, 2011; Putwain, 2009; Kouzma & Kennedy, 2000). In fact, across numerous studies, school and related experiences were identified as children's top stressors (de Anda et al., 2000; Compas, 1987; Lohman & Jarvis, 2000; Stark et al., 1989). Even 30 years ago, children were endorsing grades, homework, and exams as their primary sources of stress (Greene, 1988).

Societal advancements and increased expectations for economic growth have increased the degree to which children around the world experience school stress (Bynner, 2000). For example, globalization has engendered greater competition within the job market, rendering it crucial to obtain higher levels of education if one hopes for job security (Arnett, 2002). Consequently, parents apply greater pressure on their children to achieve in school (Ang & Huan, 2006). The academic demands on children are at an all-time high (Hjern, Alfven, & Östberg, 2008; Moksnes, Løhre, Lillefjell, Byrne, & Haugan, 2016), with children reporting they have "too much to do" (Kouzma & Kennedy, 2000). As the standards for college admissions continue to rise, the expectations around homework, grades, and test scores increase (Pope, 2008; Pope, Brown, & Miles, 2015). In addition to their studies, children also have to navigate complex school-based relationships with teachers and peers, and they must figure out how to balance homework with extra-curricular activities and leisure (Byrne, Davenport,

& Mazanov, 2007). All of this contributes to what researchers have dubbed the "educational stressors hypothesis" to describe the psychological toll and impact of increased pressure on educational attainment (Goodyer, 1990; Rutter & Smith, 1995).

Standardized testing and entrance exams. Ample research suggests that standardized testing and school entrance exams generate considerable stress, which adversely impacts children's wellbeing (Kyriacou & Butcher, 1993; Kouzma & Kennedy, 2000; McNamara, 2000; Putwain, 2009). Even Kindergarten students were observed to exhibit a significant increase in stress-related behaviors during testing, which subsided once testing was over (Fleege, Charlesworth, Burts, & Hart, 1992). Because standardized tests are often used as accountability metrics for schools (e.g., 'No Child Left Behind'; Morgan, 2016), teachers may intentionally or unknowingly apply pressure on their students to perform (Banks & Smyth, 2015). The pressure that students perceive from their teachers to do well on standardized tests can amplify students' stress (Denscombe, 2000; Putwain, 2009). In fact, the Obama administration acknowledged these adverse impacts and called for a reduction of standardized testing in schools (Zernike, 2015).

For many secondary students and some elementary students seeking entry into selective schools or programs, high stakes school placement tests and entrance exams bring about immense stress (Connor, 2003; Hardigan, Lai, Arneson, & Robeson, 2001). There is some evidence that exam stress differentially affects culturally diverse students (Williams, 1983), English language learners (Gandara & Lopez, 1998), and students from low socio-economic backgrounds (Deil-Amen & Tevis, 2010), who are vulnerable to biased tests and less likely than more privileged peers to receive the same degree of test preparation. Students with disabilities, many of whom never receive needed testing

accommodations, are also likely to experience heightened stress around high-stakes exams (Polovoy, 2012).

School climate. While stress generated from homework and exams is fairly universal, the climate within specific schools may augment or attenuate student stress. For example, high performing schools tend to promote a competitive culture that emphasizes academic achievement, often to the detriment of students' mental health (Låftman et al., 2013; Levine, 2006). Students at such schools have reported feeling the need to obtain perfect grades in order secure admission to a "perfect" college and get a "perfect" job (Levine, 2006; Simmons, 2018). The climate within honors classes or other selective programs may also cultivate stress. For example, one study found that students participating in the International Baccalaureate program (a selective, academic enrichment program) were significantly more stressed about academic requirements than their counterparts in the general education program (Suldo, Shaunessy, Thalji, Michalowski, & Shaffer, 2009). However, a positive school climate seems to be associated with lower levels of student stress. Resnick and colleagues (1997) found that students who reported feeling more "connected" at school were less stressed by academic demands than students who perceived a less welcoming climate.

Transactional perspectives on stress. Despite the widespread nature of academic stress, the degree of stress students report is highly variable, even among students in the same classes. These differences can be best understood using a *transactional* perspective (Lazarus & Folkman, 1984). The transactional perspective suggests that how individuals respond to stress is a function of the reciprocal interplay between that individual and their environment. Some individuals are equipped with better

resources (whether internal or external) to handle a stressful situation, so consequently, they appraise the situation as less stressful and more manageable (Felner & Felner, 1989). In fact, *perceived stress* is a term used to describe the discrepancy between the demands of a situation and the resources a person has available (Lazarus & Folkman, 1984). There is evidence to suggest that perceived stress is a stronger predictor of future psychological distress than more objective indicators (Barrera, 1986). The transactional perspective also suggests that individuals not only react to their environments, they contribute to them (Nolen-Hoeksema, Girgus, & Seligman,1992; Rudolph et al., 2000). In a cyclical process, stressful school environments breed stressed-out students and stressed-out students lead to more stressful school environments (Link, Mesagno, Lubner & Dohrenwend, 1990).

Vulnerable populations. Stress appraisal is an individual process, influenced by the dynamic interactions between an individual and their environment. Nevertheless, previous research has identified groups that tend to be most impacted by academic stress, or that experience it to the strongest degree (Connor, 2003). Broadly, school-related stress increases with age and reaches its peak in adolescence (Byrne, Davenport, and Mazanov 2007; Persike & Seiffge-Krenke, 2012). This is likely attributable to increased curricular demands, greater pressure from parents and teachers, and more complex social relationships (Moksnes, Espnes, & Haugan, 2014). West and Sweeting (2003) surveyed a nationally representative sample of Scottish 15-year-olds and found that upper-middle class females reported the highest levels of academic stress. Interestingly, they also endorsed more symptoms of anxiety and depression than their male and less-affluent peers.

Impact on children's adjustment. Prolonged stress exposure has deleterious effects across the lifespan and is particularly detrimental to child and adolescent development (Grant, Compas, Thurm, McMahon, & Gipson, 2004). The effects of *toxic* stressors (e.g., poverty, violence, abuse) on development have been copiously examined (Shonkoff et al., 2012). However, less is known about the cumulative impact of *daily hassles*, or minor stressful events associated with everyday living. *Academic stress* is a subtype of daily hassles relating specifically to school (e.g., taking a test, getting a bad grade; Banks & Smyth, 2015). Research suggests that how children and adolescents perceive academic stress is predictive of psychological wellbeing (Terzini-Hollar, 2008) and psychosocial maladjustment (Cowan, Cowan, & Schultz, 1996). At a behavioral level, heightened stress in response to academic demands can lead to externalizing (i.e., acting-out behaviors) or internalizing (i.e., internal subjective distress connected with avoidance and withdrawal) behaviors (Flynn & Rudolph, 2014). Numerous studies have linked the accumulation of academic stressors to anxiety and depression symptoms (Byrne et al., 2007; Compas, 1987; Felner & Felner, 1989; Fröjd et al., 2008; Grant et al., 2004; Undheim & Sund, 2005). Further, anxiety and depression have been associated with decreased academic performance (Fröjd et al., 2008; Owens, Stevenson, Hadwin, & Norgate, 2012; Short, Gradisar, Lack, & Wright, 2013), even among high-achieving students (Suldo et al., 2009). Fortunately, research suggests that children's coping can moderate the impact of academic stress on school performance (Brdar et al., 2006; Suldo et al., 2008). Coping is the process of trying to deal with or handle a situation. As will be discussed, some children adaptively cope with academic stressors whereas others use maladaptive ways of coping, which may lead to the aforementioned negative outcomes.

The importance of coping and specific conceptualizations of coping that have implications for research and practice will be discussed in greater detail in the sections to follow.

Conceptualizations of Coping in Children

It is only within the last 30 years that scholars have begun to operationalize coping as it pertains specifically to children (Compas, 1987). While much of this work builds upon the foundational understanding of coping in adulthood, simply applying frameworks from the adult literature overlooks the critical role development plays in coping broadly, as well as the influence of differential coping patterns on individual children's development. For example, coping is dynamic and changes as a function of developmental stage and context (Skinner, Edge, Altman, & Sherwood, 2003). Within the literature on children's coping, scholars have defined the construct in various ways. Additionally, they have delineated numerous dimensions and subtypes of coping, and explored the implications of each across different developmental periods and contexts.

Coping defined. One of the challenges within the domain of research on children's coping is that inconsistent definitions have limited the extent to which findings can be synthesized across studies (Compas et al., 2001). In contrast, detailed and consistent definitions enable researchers to gather stronger evidence about which variables influence coping most significantly. One notable distinction between definitions is whether they define coping as *any* stress response—voluntary or involuntary (e.g., Coyne & Gottlieb, 1996; Eisenberg et al., 1997; Skinner, 1995), or whether coping requires volition, effort, and control (e.g., Compas et al., 1997; Lazarus & Folkman, 1984; Rudolph et al., 1995). For example, Skinner & Wellborn (1994) defined coping as

"how people mobilize, guide, manage, energize, and direct behavior, emotion, and orientation, or how they fail to do so" (1994, p. 113) under stressful conditions. In contrast, Lazarus (1993) conceptualized coping as a goal-directed process whereby individuals channel thoughts and behaviors toward resolving the source of stress and managing emotional reactions to stress. Compas et al.'s (2001) offered a different definition of coping as "conscious, volitional efforts to regulate emotion, cognition, behavior, physiology, and the environment in response to stressful events or circumstances" (p. 89). Within the literature underscoring coping as a volitional process, involuntary stress responses are generally recognized as uncontrollable cognitive or physiological reactions to stressful situations and are *not* considered coping. Despite dissimilarities between definitions of coping, the consensus within the literature is that coping is an important self-regulatory process that ties into individuals' experiences of emotion, cognition, behavior, physiology, and the environment (Compas et al., 2001; Eisenberg et al., 1997).

Coping dimensions. Informed by the work of Lazarus and Folkman (1984) who argued that coping is a multifaceted construct with distinct yet overlapping elements, coping and stress response behaviors are generally organized along several dimensions. These dimensions facilitate understanding regarding the function and adaptiveness of certain stress response patterns, attending to both context and stage of development (Skinner & Zimmer-Gembeck, 2007). In contrast to simply distilling coping down to discrete strategies, the dimensional approach to studying coping helps to preserve some of the construct's nuance and complexity (Lynch et al., 2001). For example, research suggests that certain patterns of coping (e.g., primary control coping) are associated with

better long-term functioning. Other coping behaviors (e.g., avoidance) may minimize distress in the short term but are more likely to result in poor adjustment longer-term (Jaser & White, 2011). Another benefit of using a dimensional approach to examine coping is that people tend to utilize more than one coping strategy (Aldridge & Roesch, 2008). Moreover, a single coping strategy or behavior (e.g., problem-solving) can be classified across multiple dimensions.

Table 1 provides definitions and examples of coping dimensions that are frequently cited in the literature. These include *engagement vs. disengagement, primary vs. secondary control*, and *problem- vs. emotion-focused* coping (Skinner & Zimmer-Gembeck, 2007). The relationship between these dimensions is illustrated in a concept map (see *Figure 1*). Engagement coping involves orienting towards the source of stress or to one's emotions and thoughts related to the stressor. Problem-solving, support-seeking, and emotional ventilating are all examples of engagement coping strategies (Ebata & Moos, 1991; Tobin, Holroyd, Reynolds, & Wigal, 1989). Disengagement coping, on the other hand, is defined as orienting oneself away from the stressor or the thoughts and emotions that the stressor brings about. Disengagement coping strategies include distraction, withdrawal, denial, or relinquishing goals that are challenged by the stressor (Ayers, Sandler, & Twohey, 1998; Carver et al., 1989). Involuntary stress responses can also be conceptualized along the *engagement* vs. *disengagement* dimension. Rumination, intrusive thoughts, and physiological arousal are examples of involuntary engagement, because they involve unregulated attention directed toward the stressor (Compas et al., 2001). Involuntary disengagement could show up as emotional numbing, shutting down, or even dissociation (Compas et al., 2001). Primary control, secondary control, and

problem-focused coping are nested within engagement coping, whereas emotion-focused coping can involve engagement or disengagement strategies. Primary and secondary control coping both seek to address the stressful situation, either by gaining control over the environment (primary control) or by adapting to the environment (secondary control; Rudolph et al., 1995; Weisz et al., 1994). For example, trying to resolve the source of stress (i.e., problem-solving) would be construed as primary control coping. However, coming to terms with the situation (i.e., radical acceptance) or reframing one's interpretation of the situation (i.e., cognitive restructuring) are examples of secondary control coping. The goal of problem-focused coping is to tackle the source of stress by seeking information, trying to resolve the problem at hand, or getting support with problem-solving. On the other hand, emotion-focused coping aims to palliate difficult emotions engendered by the stressor and includes techniques such as expressing one's emotions, regulating one's emotions, or seeking emotional support (Lazarus & Folkman, 1984).

Table 1

Explanations and Examples of Frequently-Cited Coping Dimensions

Dimension	Focus/Goals	School-Related Examples
Voluntary (i.e. coping)	Employing a strategy/approach to manage a stressor in a willful and/or controlled way	Taking a brief walk to relax oneself before a stressful exam
Involuntary (i.e. stress response)	Unconscious/uncontrollable cognitive or physiological responses to stress	Having a panic attack in response to a pop quiz
Engagement	Orienting *towards* the source(s) of stress or one's thoughts/feelings about the stressor(s)	Asking a teacher or peer for assistance on a difficult class assignment
Disengagement	Orienting *away* from the source(s) of stress or one's thoughts/feelings about the stressor(s)	Giving up on a class assignment because it feels too difficult
Primary control	Changing something about the situation or the stressor	Asking teacher for extra credit assignments to raise a low grade
Secondary control	Reframing one's interpretation of the situation or stressor	Reminding oneself that one low grade is not the end of the world
Problem-focused	Taking actions to resolve the actual source of stress	Asking parents for a tutor to help with math
Emotion-focused	Seeking emotional support to address negative emotions caused by stressor	Talking to a counselor about how poor math performance is affecting one's self-esteem

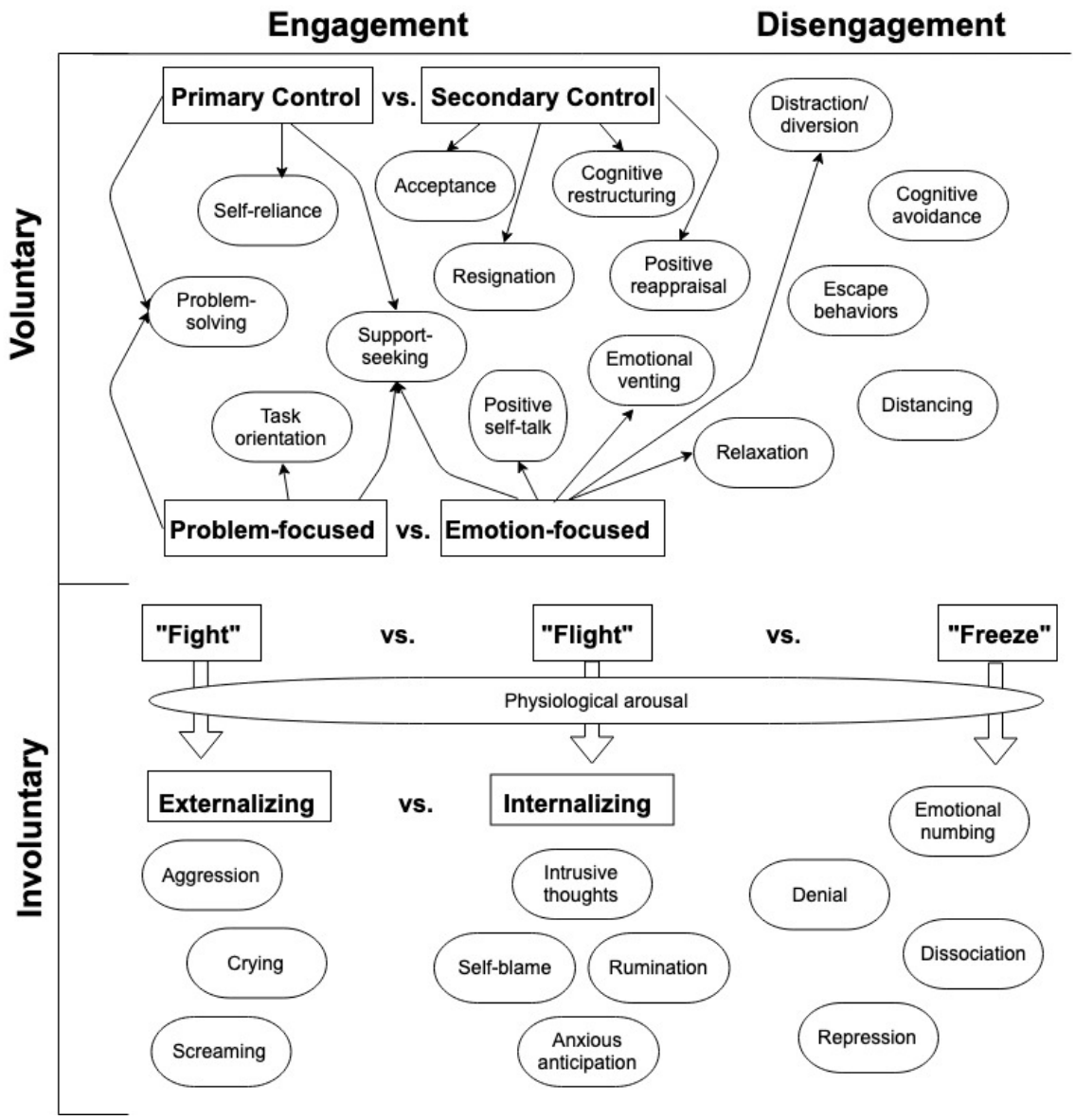

Figure 1. Concept map illustrating dimensions of coping and stress response with specific examples.

The Importance of Coping

Children's developmental trajectories appear to be significantly influenced by their patterns of coping in response to stressful events (Cicchetti & Cohen, 1995; Masten et al., 1999). Cross sectional studies have brought to light correlations between certain dimensions of coping and child outcomes, while prospective longitudinal and intervention studies have lent support to the causal link between types of coping and longer-term adaptation and functioning (Sandier, Wolchik, MacKinnon, Ayers, & Roosa, 1997; Smith & Carlson, 1997). From a developmental psychology perspective, studying the correlates of coping is pivotal to understanding the underpinnings of successful adaptation to stress, or *resilience* (Masten & Obradovic, 2006). From an applied psychological perspective, these findings can inform interventions to promote better outcomes for children while underscoring the need for such initiatives.

Psychological implications. It is well documented in the literature that the ways in which children cope with stress have implications for their mental health and psychological functioning (Compas & Reeslund, 2004; Evans et al., 2015). First, children's coping behaviors can moderate or mediate the impact of stressful experiences on psychopathology (Grant et al., 2003). In other words, coping—in conjunction with many other factors like biology and environmental support—can help explain why some children who face challenges bounce back quickly, while others exposed to the same stressors develop significant mental health problems. Second, how children cope can affect their likelihood of being re-exposed to similar stressors later in life (Lynch et al., 2001). For example, disengagement coping through avoidance or emotion-focused coping do not actually address the root cause of problems, making them likely to

resurface. Compas and colleagues (2001) conducted a review of 64 studies on children's coping. Across most included studies, using engagement coping and/or problem-focused coping was associated with lower internalizing problems, while using disengagement coping and/or emotion-focused coping was associated with higher internalizing problems. Similar findings have been uncovered from more recent studies of coping in children and adolescents (e.g., Evans et al., 2015; Hampel & Petermann, 2006; Lewis et al., 2012; Thabet, El-Buhaisi, & Vostains, 2014).

Social implications. Cross-sectional and prospective longitudinal studies have revealed associations between coping patterns and social outcomes in childhood and adolescents. Broadly speaking, the development of prosocial behavior has been linked to coping abilities (Eisenberg, Fabes, Guthrie, & Reiser, 2000). More specifically, researchers have found adaptive patterns of coping to be associated with lower instances of aggression (Jaser et al., 2007) and peer victimization (Kochenderfer-Ladd, 2004). Moreover, adolescents who employ active coping have been found to engage in more socially appropriate behavior, to exhibit a greater capacity for empathy, and to be more highly rated by peers with regard to social status (Gonzales, Tein, Sandler, & Friedman, 2001). Conversely, youth who experience higher perceived stress and utilize less adaptive coping strategies experience more adjustment and relationship problems (Hampel & Petermann, 2006). Ultimately, youth who struggle to cope with social situations are less likely to engage fully in their school experiences, which has implications for academic performance.

Academic implications. *Academic coping* refers to how children interpret and respond to academic stress, and it has clear implications for children's success and

satisfaction at school (Skinner & Wellborn, 1994). Research over nearly four decades shows considerable variability in how children handle academic stress, and how these patterns of behavior relate to academic achievement (e.g., Diener & Dweck, 1978; Suldo, Shaunessy, & Hardesty, 2008; Dweck, 2014). For example, ample research suggests that children who utilize engagement coping strategies generally fare better at school and have higher academic achievement than children who use disengagement strategies (Causey & Dubow, 1992; Dweck & Sorich, 1999; Mantzicopoulos, 1990; Onatsu-Arvilommi & Nurmi, 2000; Rijavec & Brdar, 1997). Not only that, but children who use more engagement coping rate themselves higher on academic competence (Mantzicopoulos, 1990). Similarly, problem-oriented coping (e.g., planning and preparing school work; studying for a test) is used more among high-achieving students, relative to low-achieving students who tend to use more emotion-oriented (i.e., palliative) coping (Brdar, Rijavec, & Loncaric, 2006; Cohen, Ben-Zur, & Rosenfeld, 2008; Mantzicopoulos, 1990). Students who have been deemed "good copers" perform better on IQ tests (Plante et al., 1993) and have better grades (Gonzales et al., 2001), even after controlling for cognitive variables (Eisenberg et al., 2005; Graziano, Reavis, Keane, & Calkins, 2007).

The importance of these findings notwithstanding, some scholars have suggested that the implications of using certain coping strategies within academic settings is more nuanced than initially believed (e.g., Gonzales et al., 2007; Skinner & Wellborn, 1997; Suldo et al., 2008). Variables related to the situation, availability of resources, and abilities of the student have the potential to moderate the effectiveness of certain coping strategies. For example, Skinner and Wellborn (1997) challenged the notion that

engagement coping is always optimal in academic settings by suggesting that strategies such as skipping problems students do not know or help seeking can be important for academic success. Putwain and colleagues (2012) found that while engagement coping was optimal at low levels of academic stress, avoidant coping was more adaptive at extremely high levels of stress. Moreover, Suldo and colleagues (2008) found some differential effects of certain coping styles for high achieving students in an accelerated academic program. Specifically, disengagement coping was a strong predictor of internalizing problems (e.g., anxiety, depression), whereas secondary control coping appeared to buffer the negative effects of stress on wellbeing. While actual coping behaviors are important, Watt and colleagues (1987) found that student *perceptions* about the availability of coping resources at home and at school was related to their academic success or failure.

Factors Influencing Children's Coping

The development of coping in children and adolescents is shaped by processes that occur between the individual their host environments. Host environments represent key microsystems in which children spend the vast majority of time, such as home and school. Some of the mechanisms through which individual and environmental characteristics shape children's coping development are described below.

Individual influences. In addition to age-graded changes in coping (Amirkhan & Auyeung, 2007), individual characteristics that predict coping include more stable attributes such as gender (Seiffge-Krenke, 2011), temperament (Rueda & Rothbart, 2009), and biological sensitivity (Bjørnebekk, 2007), as well as more malleable factors like beliefs (Hunter, Boyle, & Warden, 2004) and motivation (Carver & Scheier 2008).

Age. The developmental changes to coping dimensions that occur as a function of age have been well-documented in the literature (Amirkhan & Auyeung, 2007; Holodynski & Friedlmeierm 2006; Kopp, 1989). These age-graded changes are likely attributable to the fact that throughout their life course, individuals learn new strategies to cope with stressors and continue to refine old ones. Coping begins to develop in infancy, and in these early years, tends to focus on palliating negative emotions by seeking support from others and using tangible objects to self-sooth (Stansbury & Gunnar, 1994). Young children continue to employ these palliative strategies, in addition to using behavioral distraction, such as playing with something pleasurable (Band & Weisz, 1990). As children transition to middle childhood, they begin to exhibit more complex ways of coping, that include both emotion-focused and problem-solving strategies (Band & Weisz, 1990). Specifically, engagement coping that involves both primary and secondary control strategies starts to emerge at this time (Skinner & Zimmer-Gembeck, 2007). For example, children in middle childhood exhibit the ability to reframe difficult situations, use self-talk to alleviate negative emotions, or generate alternative solutions to a problem (Dumont & Moss, 1996). These changes occur parallel to cognitive and metacognitive shifts in this developmental stage.

In late childhood, as children continue to hone their metacognitive abilities, they exhibit increased flexibility in their coping (Smetana, Campione-Barr, & Metzger, 2006; Spear, 2000). In addition to having a wider range of coping strategies available, they are better at discerning which situations would be best handled with certain responses (Garcia, 2010; Griffith, Dubow, & Ippolito, 2000). For example, they are better able to recognize situations in which seeking help from an adult would be better – particularly

situations in which adults have authority (Skinner & Zimmer-Gembeck, 2007). In addition, older children exhibit an increase in peer support-seeking and cognitive distraction, while their use of escape as a primary coping strategy decreases (Skinner & Zimmer-Gembeck, 2007). Coping continues to evolve into adolescence, particularly at the transition to high school when the school context changes (Barber & Olsen, 2004; Waters et al., 2014). While psychological problems increase dramatically during this time (Davey, Yücel, & Allen, 2008), adolescents are most adept at determining the best source of support in a given situation, and using cognitively advanced forms of problem-solving such as reflection or long term planning (Hussong & Chassin, 2004). Moreover, they are better able to identify when stressors are beyond their control, and therefore use distraction in such scenarios (Skinner & Zimmer-Gembeck, 2007).

Gender. The literature also indicates that children differ in their usage of coping strategies as a function of gender (Eschenbeck et al., 2007). Research suggests that girls use a wider range of coping strategies (Cicognani, 2011), and use coping strategies more often (Wilson et al., 2005) than boys. With regard to specific strategies, boys have been found to rely more on avoidance (Stark et al., 1989) or problem-solving strategies (Kort-Butler, 2009; Seiffge-Krenke, 2011). In contrast, girls rely largely on emotion-focused strategies such as seeking social support from friends and family (Altermatt, 2007; Rose, 2002; Eschenbeck et al., 2007; Seiffge-Krenke, 2011) or engaging in wishful thinking (Frydenberg & Lewis, 1991) and positive reappraisal (Ebata and Moos, 1994). Nevertheless, several studies have found that girls still report more problem-focused coping relative to boys (Compas et al., 2001; Griffith et al., 2000). Herres (2015) hypothesized that this difference could reflect a greater willingness among girls to report

their use of coping strategies, or that girls experience stress at a higher frequency then boys and therefore must engage in more coping.

Personality, temperament, and biological sensitivity. Although less perceptible than age and gender, children's personalities and biological hardwiring are also associated with their utilization of different dimensions of coping (Carver & Connor-Smith, 2010; Flynn & Rudolph, 2014; Nicholls et al., 2013). Numerous studies have linked personality traits such as optimism, conscientiousness, extraversion, openness, and agreeableness to greater use of engagement coping (e.g., Bartley & Roesch, 2011; Nicholls et al., 2013). Temperamental differences across approach/avoidance and attentional regulation systems also influence coping responses (Compas, Connor-Smith, & Jaser, 2004; Derryberry, Reed, & Pilkenton-Taylor, 2003; Rueda & Rothbart, 2009; Skinner & Zimmer-Gembeck, 2007), as do individuals' sensitivity to reward and threat cues in their environment or their baseline emotional reactivity (Caspi & Shiner 2008, Elliott & Thrash 2002). For example, children exhibiting higher *behavioral inhibition* (BI), or the tendency to withdraw in unfamiliar situations, use less engagement coping and have more involuntary responses. Conversely, children exhibiting higher *behavioral activation* (BA), or the motivation to pursue and achieve goals, utilize less disengagement coping and more secondary control coping strategies (Abaied & Emond, 2013). Moreover, structural differences in regions of the brain involved with the regulation of thoughts, emotions, and behaviors are associated with differential responses to stress (Rueda & Rothbart, 2009). For example, in a study of 510 4th through 8th graders, Flynn and Rudolph (2014) found that reduced posterior right hemisphere activity was associated with less effortful, more involuntary stress responses.

Beliefs and motivation. Goal-based models of behavior provide another framework for understanding coping. In goal-based theory, behavior is either motivated by the desire to move towards goals which have *positive incentive value* or to avoid threats which have *negative incentive value* (Carver & Scheier, 2008; Elliott 2008). An *expectancy construct* in goal-based theory is an individual's degree of confidence or doubt that they can attain the desired outcome (Carver & Scheier, 2008). According to Carver and Connor-Smith (2010), incentive values and expectancy constructs can influence individuals' decisions about which coping strategies to engage in a given situation. Other researchers have found that children's belief systems, such as their perceived sense of control, impacts their coping responses in stressful situations (Garmezy & Rutter, 1983; Hunter, Boyle, and Warden, 2004).

Environmental influences. It is well-established that coping is shaped by social relationships and contexts (Maccoby, 1983; Murphy & Moriarity, 1976; Rutter, 1981). Environmental influences are observed across various microsystems, such as family (Abaied & Rudolph, 2011), peer groups (Skinner & Zimmer-Gembeck, 2007), and school (Altermatt & Broady, 2009). At the macrosystemic level, culture influences children's coping development (Molock & Barksdale, 2013; Valiente et al., 2004).

Cultural influences. Culture is a set of ideas, behaviors, attitudes and traditions that exist within large groups of people of shared backgrounds or experiences. Cultural differences in coping are largely the result of differing worldviews (Barbarin, 1983). The primary mechanism by which culture influences coping is *socialization*, a process through which children learn the norms, rules, and behavioral expectations governing their environment (Rotheram-Borus, 1989). For example, children from cultures that

emphasize individualism tend to be socialized to deal with challenges or stressors independently, while children from collectivist cultures tend to be socialized to turn to others for help (Markus and Kitayama, 1991). Culture has also been associated with whether, whom, and how many people children seek out to discuss a problem or get support (Munsch & Wampler, 2003), as well as the extent to which children view themselves as active agents in their own lives (Gibbs, 1990; Rotheram-Borus, 1989; Wheaton, 1982).

Much of the research exploring the influence of culture on children's coping has specifically examined differences in coping across racial and ethnic groups. Not only have children from underrepresented racial and ethnic groups experienced significantly more school stress than majority children (Phillips, 1979; Newcomb, Huba, & Bentler, 1981), they have also been found to exhibit different patterns of coping (Eschenbeck et al., 2007). For example, in several studies, Black and Latino youth reported using religious coping and social support more than white youth (Chapman & Mullis, 2000; Malooly et al., 2017; Molock & Barksdale, 2013), which are examples of secondary control and emotion-focused coping dimensions, respectively. In another study that asked children how they would handle a stressful situation at school, African American boys stated they would be direct and assertive, while Mexican-American boys said they would respond more passively (Phinney & Haas, 2003). Moreover, compared to white and Latino adolescents, African American adolescents are more likely to turn to extended family members during times of stress (Barbarin, 1983; Gibbs, 1990).

Peer influences. Peers also play a role in shaping how children cope with stress at school (Skinner & Zimmer-Gembeck, 2007). When confronted with stressors, older

children and adolescents often turn to their peers to help them cope (Band & Weisz, 1988; Causey & Dubow, 1992). These social interactions influence children's attitudes around school and their future behavioral responses when confronted with school challenges (Altermatt, 2007). For example, Altermatt & Broady (2009) found that children who engaged in negative emotion-focused conversations with peers following school failure were more likely to develop maladaptive coping and learned helplessness in response to school stress. In contrast, children whose friends assisted with problem-solving following academic failure went on to develop greater agency (Altermatt & Broady, 2009).

Parenting influences. Research suggests that no single microsystem impacts children's coping development quite as profoundly as parents (Abaied & Rudolph, 2011; Abaied & Stranger, 2017; Brdar & Rijavec, 2001; Kliewer et al., 2006; Power, 2004; Skinner & Edge, 2002; Zimmer-Gembeck & Locke, 2007). Parents play a role in determining which stressors children face, how they comfort and sooth their children when faced with stress, and what skills and strategies their children learn from stressful experiences (Holodynski & Friedlmeier, 2006). The primary mechanisms through which parents influence their children's coping development are discussed below, and include parenting styles, parent-child interactions (Wigfield, Eccles, Schiefele, Roeser, & Davis-Kean, 2006), attachment (Seiffge-Krenke, 2006), parent modeling and socialization (Spinard et al., 2007), and graded exposure (Power, 2004). In addition, all these mechanisms are tied to parent mental health (Frye & Garber, 2005; McCarty & McMahon, 2003; Vandewater & Lansford, 2005).

Parent-child interactions, parenting styles, and attachment. Children of parents who exhibit warmth and responsiveness in their interactions have been found to develop more adaptive coping (Davidov & Grusec, 2006; Weis et al., 2014). This is likely attributable to the praise, support, and scaffolding that warm parents provide in response to children's coping efforts (Adam, Gunnar, & Tanaka, 2004; Jennings et al., 2008; Karreman et al., 2006). In fact, Kamins & Dweck (1999) found that the type of praise or criticism children receive after failure predicts how they will respond to academic challenges in the future. *Autonomy supportive parenting*, a parenting style which encourages children to pursue their own goals and validates children's emotional experiences, has also been linked to more adaptive coping in children (Valiente et al., 2004). On the flipside, negative parenting qualities, such as maternal expression of negative emotions, parent psychological control, or discouraging statements, are associated with less adaptive coping responses like avoidance or learned helplessness (Abaied & Emond, 2013; Hokoda & Fincham, 1995; Valiente et al., 2004). Finally, secure attachment has been associated with greater engagement coping and less disengagement coping in adolescence and emerging adulthood, while the reverse was found for insecure attachment (Seiffge-Krenke, 2006; Seiffge-Krenke & Beyers, 2005). Children, adolescents, and young adults who have better relationships and more frequent contact with parents exhibit more adaptive coping in times of stress (Garmezy & Rutter, 1983; Abaied & Emond, 2013).

Graded exposure. It is well-established that high levels of stress have deleterious effects on health and development (Masten, 2015). However, research indicates that children who grow up with limited exposure to any kind of stress are stifled in their

ability to handle challenges when they do arise (Masten, 2015). A likely explanation is that without adequate opportunities to practice coping with scaffolding, children fail to learn adaptive coping mechanisms in response to stress (Fox et al., 2005). One way that parents positively influence their children's coping development is by grading their exposure to healthy "doses" of stress in a supportive environment (Power, 2004). This provides a context for parents to model, teach, and coach their children through stressful and challenging circumstances (Kliewer et al., 2006; Peterson, 2005).

Modeling and socialization. Parental modeling and socialization of coping has the potential to shape children's development of adaptive or maladaptive coping (Abaied & Rudolph, 2011; Spinard et al., 2007; Power, 2004). This occurs via two primary pathways: (1) Parents model coping through their own responses to stress (Zimmer-Gembeck & Locke, 2006); and (2) Parents coach and offer suggestions about how their children should respond to stressors (Abaied & Rudolph, 2011; Kliewer, Fearnow & Miller, 1996; Kliewer et al., 2006). For example, Abaied and Rudolph (2011) found that the degree to which mothers offered engagement or disengagement coping suggestions to their children predicted their children's future coping responses. Moreover, children learn coping by observing their parents' emotions and actions in response to stress (Zimmer-Gembeck & Locke, 2006).

The Significance of Parent Mental Health

Many of the aforementioned mechanisms (e.g., attachment, socialization) can be conceptualized as mediators of the relationship between parent mental health and children's coping (Fear et al., 2009; Jaser et al., 2007). Research indicates that on average, parents with poor mental health interact less positively with their children (Frye

& Garber, 2005; McCarty & McMahon, 2003; Vandewater & Lansford, 2005), provide less emotional support (Lovejoy et al., 2000), have more stressful home environments (Goodman and Gotlib, 1999), and model less adaptive responses to stress (Hammen et al., 2004). Considering this, it is unsurprising that children of parents with poor mental health exhibit less adaptive coping (Fear et al. 2009; Jaser et al. 2007) and are at higher risk for developing their own mental health problems (Goodman, 2007; Weissman et al., 2006). It is important to note that in most of these studies, "poor mental health" was defined by the presence of internalizing symptoms (e.g., depression, anxiety, withdrawal). These definitions reflect an older paradigm, in which mental health was understood as the absence of psychopathology and vice versa (Greenspoon & Saklofske, 2001). A more holistic view of mental health—*dual factor model*—has been offered that takes into account both negative and positive mental health factors, like subjective wellbeing.

Dual factor model of mental health. Around the turn of the 21st century, some scholars began to adopt a dual factor model (DFM) for understanding mental health in adults (Greenspoon & Saklofske, 2001) and later in children (Suldo & Shaffer, 2008). The emergence of *positive psychology*, a field dedicated to studying factors that enable individuals and communities to flourish, facilitated this paradigm shift (Seligman, 2002; Seligman & Csikszentmihalyi, 2000). These new perspectives challenged the notion that mental health and mental illness are mutually exclusive, diametrically opposed states of being (Greenspoon & Saklofske, 2001). Scholars suggested that including both psychopathology and wellbeing as independent dimensions of mental health provides a more nuanced and meaningful understanding of complete mental health (Proctor et al.,

2009). To illustrate this idea, a prospective longitudinal study found that reporting low life satisfaction increased the likelihood that non-depressed adults would develop depression two to three years later (Lewinsohn et al., 1994). Using a single factor model, all individuals without negative symptoms would have been deemed mentally "healthy", when in fact, a subset were at greater risk for developing depression. The added dimension of subjective wellbeing (i.e., life satisfaction) could be used to differentiate individuals in meaningful ways and improve the predictive validity of these classifications (Schlosser, 1990).

Subjective wellbeing. Much like coping and mental health, the construct of wellbeing is complex and multifaceted (Westerhof & Keyes, 2010). Literature on wellbeing is typically situated within one of two research traditions (Westerhof & Keyes, 2010). Those who study *eudaimonic wellbeing* are concerned with self-actualization and optimal functioning (e.g., Ryan & Deci, 2001). Variables related to eudaimonic wellbeing include self-acceptance, purpose, autonomy, relationships, mastery, personal growth, and fulfillment. The other camp is *hedonic wellbeing*, also referred to as *emotional wellbeing* or *subjective wellbeing* (Westerhof & Keyes, 2010). One of the most widely-accepted models of subjective wellbeing comes from Diener (2000) who articulated two components of subjective wellbeing: positive emotions and life satisfaction.

Positive emotions. Positive emotions are widely regarded as the affective dimension of positive functioning (Diener, Suh, Lucas, & Smith,1999). Emotions occur when an individual appraises an event or stimulus as personally meaningful. This appraisal, whether conscious or unconscious, then triggers a cascade of experiential, behavioral, and physiological reactions (Diener, 2000). Cognitions, physiology, and

subjective experiences are all important factors that help determine which emotions individuals experience and to what degree (Tay, Kuykendall, & Diener, 2015). Several of the vanguard studies on wellbeing examined the ratio of positive to negative emotions, finding that a higher ratio signified better outcomes and was correlated with greater life satisfaction (Andrews & McKennell, 1980; Bryant & Veroff, 1982; Diener, Sandvik, & Pavot, 1991). Fredrickson (2001) expanded upon these seminal findings, creating the *broaden-and-build theory* of positive emotions, which suggests that positive emotions propel individuals toward an optimal state of wellbeing called *flourishing.* According to Fredrickson (2001), when individuals experience positive emotions, they obtain access to improved cognitive, social, and physical resources. These resources enable them to take advantage of experiences that engender more positive emotions. For example, joy motivates people to play, explore, and take creative risks, which in-turn breeds more joy. In contrast, when people experience negative emotions (e.g., fear), they narrow-in on a single course of action (e.g., escaping a threat). This tunnel vision, though crucial and adaptive at times, can cause people to overlook opportunities to flourish (Fredrickson, 2001). For this reason, Fredrickson (2001) notes, flourishing occurs most often in non-threatening (i.e., non-stressful) circumstances.

Life satisfaction. Whereas positive emotions represent the affective component of subjective wellbeing, life satisfaction represents the cognitive component, according to Diener's (2000) model. Though interrelated and both considered important indicators of mental health, they are independent constructs (Proctor et al., 2009). Life satisfaction is best defined as a global evaluation of the "goodness" of one's life as a whole, according to individually determined standards (Pavot & Diener, 2008). Social scientists first began

to study life satisfaction through surveys administered in the 1960s and 70s, with the aim of improving social policies (Westerhof & Keyes, 2010). Research on life satisfaction expanded rapidly once Diener and colleagues introduced the Satisfaction with Life Scale (SWLS) in 1985. Since then, hundreds of studies have used the SLWS, which includes only five items and has good psychometric evidence (Pavot & Diener, 2008).

Additionally, in 1990, the MacArthur Foundation established the Research Network on Successful Midlife Development with the goal of identifying bio-psycho-social factors that promote *flourishing* among midlife adults, in addition to those that undermine wellbeing (Kessler et al., 2004). The network sponsored the first ever study of Midlife in the United States (MIDUS-1; 1995), designed and executed by an interdisciplinary team of psychologists, sociologists, epidemiologists, demographers, doctors, and policy-makers (Kessler et al., 2004). The MIDUS team developed new measures exploring various constructs related to health and wellbeing (including life satisfaction) and administered their 45-page survey to a nationally representative sample (N = 7,108) of English-speaking adults. Over 1,000 publications have emerged from this data since the study's conception in 1995, and many of the measures developed remain in use (National Institute on Aging, 2018).

Despite their wide circulation, some scholars have questioned the reliability and validity of life satisfaction scales, citing evidence that life satisfaction judgments are sensitive to recency bias (Schwarz & Strack, 1999) or fluctuations in the respondent's mood (Schwarz & Clore, 1983). However, Schimmack, Oishi, and Diener (2002) found that individuals typically base life satisfaction judgments on the same information across multiple time points, and Eid and Diener (2004) found that effect of current mood on life

satisfaction judgments is relatively small. In fact, personality and temperament (e.g., extraversion, neuroticism) account for considerably more variance in life satisfaction than recent events in a person's life, whether positive or negative (Stubbe, Posthuma, Boomsma, & De Geus, 2005). Further evidence suggests that chronic mood mediates this relationship between temperament and life satisfaction (Schimmack et al., 2002).

Stress. Much like wellbeing, stress represents an important facet of mental health that can be conceptualized using various indicators, from stressful life events (e.g., Brugha, Bebbington, Tennant, & Hurray, 1985) to salivary cortisol (e.g., Adam, 2009). Not only does heightened stress increase an individual's risk for psychopathology (Hammen et al., 2004; Kessler, 1997; Monroe, Slavic, & Gotlib, 2014), it has also been shown to negatively affect wellbeing (Suh, Diener, & Fujita, 1996). For this reason, the ability to accurately assess stress has important implications for understanding the full picture of mental health. Barring measures of physiological stress reactivity (e.g., cortisol, heart rate, skin conductance), self-report measures represent a feasible and popular approach in stress research. Self-report measures can be further distilled into measures of stressful life events and measures of perceived stress.

Stressful life events. Many early studies examining the impact of stress on mental health have investigated the cumulative effect of objectively stressful life events using self-report questionnaires (e.g., Byrne & Whyte, 1980; Holmes & Rahe, 1967; McFarlane, Norman, Streiner, Roy, & Scott, 1980). Respondents indicate which stressful events they have experienced within a specified timeframe (e.g., 12 months). Scores are then generated by tallying the total number of events that occurred within the time period, or by weighting the events based on severity and calculating a sum total (Cohen,

Kamarck, & Mermelstein, 1983). Over time, the original rudimentary scales (Holmes & Rahe, 1967) were replaced by longer and more complex inventories, such as the List of Threatening Experiences (LTE-Q). The LTE-Q is a widely-used 25-item questionnaire with adequate psychometric properties (Brugha et al., 1985; Brugha & Cragg, 1990). Items fall into 12 categories including serious illnesses or injuries to the subject or a close relative; the death of a family member or a close friend; separation from a significant other; interpersonal problems; unemployment or job termination; and financial hardship.

Questionnaires like LTE-Q have evidence of convergent validity with other measures lifetime adversity (Brugha & Cragg, 1990). For this reason, they have been used in numerous studies as indices of cumulative risk (Deater-Deckard, 1998). In addition, life events scales have been found to correlate moderately with depression (Grover et al., 2005; Kendler et al., 2010; Kessler, 1997; Muscatell et al., 2009). Benefits of stressful life events scales also include ease of use and minimization of bias, given their objective nature (Donoghue et al., 2016). Nevertheless, using *only* life events scales to approximate stress presents some significant limitations. First, not all life events are equal in the degree of stress they generate (McGrath & Buckhart, 1983). Secondly, many individuals who experience a high volume of objectively stressful events go on to have good mental health, a phenomenon known as *psychological resilience* (Masten, 2014). As previously discussed, the transactional perspective holds that individuals evaluate the stressfulness of an event in light of their available coping resources (Lazarus & Folkman, 1984). In other words, events themselves do not cause stress; rather, stress is mediated by an individual's cognitive appraisal of the situation (Lazarus & Folkman, 1984). Moreover, coping is a stronger predictor of mental health outcomes than the occurrence

of stressful events (Seiffge-Krenke, 2006). For these reasons, measures of perceived stress are often used in conjunction with more objective measures of stress.

Perceived stress. Perceived stress is defined as the perception that situational demands exceed an individual's ability to cope (Lazarus & Folkman, 1984). It is most commonly measured using the Perceived Stress Scale (PSS; Cohen, Kamarch, & Mermelstein, 1983), a self-report questionnaire that gauges how unpredictable, uncontrollable, and overwhelming people believe their lives to be. There are three versions of the PSS that contain 14, 10, and 5 items respectively. Though moderately correlated with scores derived from life events scales (Cohen et al., 1983), perceived stress is a more powerful predictor of mental health-related outcomes than objective indicators (Cacioppo et al., 2010; Martin, Kazarian, & Breiter,1995). Perceived stress has also been shown to mediate the relationship between stressful life events and mental health outcomes (Ghorbani, Krauss, Watson, & LeBreton, 2008).

Association between socioeconomic status and mental health. It is well-established that social risk factors must be considered when investigating the etiology or treatment of mental health disorders (Allen, Balfour, Bell, & Marmot, 2014; Compton & Shim, 2015). Conversely, sociodemographic characteristics can also represent important protective or promotive factors that buffer against risk or enhance wellbeing (Masten, 2015). One socio-demographic variable that has been carefully studied with respect to its influence on mental health is socio-economic status (SES). SES is a multifaceted construct that encompasses financial resources, education, and social status (i.e., occupational prestige). There is evidence of a trend that rates of mental health disorders increase as SES decreases, although the exact relationship between these two variables is

likely non-linear (Kessler et al. 2004; Lantz et al. 2005; Ross & Mirowsky, 2008). Extant research has explored the association between the various facets of SES (e.g., education, income) and the different constructs that make up mental health (i.e., stress, subjective wellbeing). These findings are briefly discussed below.

Socio-economic status and stress. Numerous large-scale epidemiological studies have found that exposure to stressful life events is inversely correlated with SES (Benjet, Borges, & Medina-Mora, 2010; McLaughlin et al., 2011; Williams et al., 2010). In addition to objective differences, perceived stress has been found to be higher in samples with lower levels of education (Nielsen, Curtis, Kristensen, & Nielsen, 2008) and lower in samples with higher levels of education and income (Cohen et al., 2012). In fact, stress appears to be a partial mediator of the relationship between SES and risk for mental health disorders (Mezuk et al., 2010).

Socio-economic status and wellbeing. Several groups of scholars have conducted systematic literature reviews examining the link between SES and subjective wellbeing and found an overall positive correlation (Cummins, 2000, Read, Grundy & Foverskov, 2016; Tay, Kuykendall, & Diener, 2015). A multitude of studies have found that education is significantly related to wellbeing, with higher educated individuals reporting greater wellbeing (Keyes, Shmotkin, & Ryff, 2002; Westerhof & Keyes, 2010). Similar results were found for income, with higher income individuals reporting greater wellbeing (Diener, Horwitz, & Emmons, 1985). However, other studies examining the link between SES and wellbeing found no evidence of a relationship (Diener et al., 1999; Headey & Wearing, 1992; King & Napa, 1998). Some have evidence of a small association between education and wellbeing, but had inconsistently significant findings

(Judge & Locke, 1993; Tran, Wright, & Chatters, 1991). To add to the confusion, Myers (2000) highlights that following World War II, the average household income increased in many countries; however, subjective wellbeing in developing nations has remained relatively stable. One possible explanation is that subjective wellbeing increases when individuals' economic situation improves in such a way that enables them to feel financially secure and optimistic about their future (Diener, Tay, & Oishi, 2013). A conceptual model proposed by Tay et al. (2015) called *homeostatic theory* also helps to make sense of these conflicting findings. The model suggests that increased income improves subjective wellbeing only to the extent that it improves perceived control and self-esteem and provides a buffer to mitigate the financial harm brought about by stressful life events.

Gaps in the Literature

Understanding associations between parent mental health and ways in which children cope with academic stress represents an important area of research, with significant implications for parent-focused interventions seeking to improve indicators of parent mental health and behavior as a way of promoting children's academic coping. The present study seeks to elucidate this connection by addressing several gaps in current research. While prior research has established a clear link between parent psychological functioning and children's coping, most studies have centered on parent deficits and psychopathology (e.g., Bettis et al., 2016; Dunbar et al., 2013; Hammen et al., 2004). Despite the significant overlap between the constructs of coping and positive psychological outcomes (e.g., wellbeing), there is limited research linking parental wellbeing to their children's coping. Moreover, the bulk of this research has espoused a

variable-centered approach. Variable-centered approaches help establish an understanding of strength of association between variables, but they do not reveal how individuals cluster together. Unlike variable-centered analyses that consider how characteristics are related to each other, person-centered analyses investigate how these variables group within individuals (Morin et al., 2017). Mental health, like coping, is a multidimensional construct. Therefore, a person-centered approach that generates different profiles of parents across positive (i.e., wellbeing) and negative (i.e., stress) of mental health lends itself to a better understanding of how parental factors influence children's coping. Additionally, most research examines children's coping globally across a variety of contexts. However, environmental specificity is critical when studying children's coping, given evidence that coping strategies may be adaptive in some situations, such as home, while maladaptive in others, such as school. Therefore, there is a need for more contemporary research to study influences on children's coping at school specifically. Finally, much of the research on coping in children uses clinical or at-risk samples. Since school stress is experienced by all children, there is a need to explore how parents shape children's coping in a non-clinical sample.

Study Purpose

Based on the aforementioned gaps in the literature, the purpose of this study was to use a person-centered approach to examine the relationship between positive and negative indicators of parental mental health and children's coping in response to academic stress. Using latent profile analysis, this study identified groups of parents based upon their life satisfaction, stressful life events, and perceived stress. Relationships between the identified profiles and different dimensions of children's academic stress

responses were subsequently examined. Once an empirically and conceptually defensible latent class model was identified, household income and level of education—characteristics that are theoretically linked to stress response and adaptation—were assessed as predictors of profile membership. Finally, to determine whether latent profiles were significantly associated with child outcomes, children's voluntary coping and involuntary stress response behaviors were compared across groups along five coping dimensions. The following three research questions guided the methods and analyses employed in the current study:

1. Using indicators that assess life satisfaction, lifetime adversity, and perceived stress (perceived helplessness and perceived self-efficacy subscales), what k-class solution best fit the data, and what is the composition of each resulting profile?
2. To what extent is household income and level of education associated with parents' likelihood of belonging to each latent profile in the final estimated model?
3. Using parent predicted profile membership as a grouping variable, are there statistically significant group differences in children's voluntary coping (i.e., primary control, secondary control, and disengagement) and involuntary stress responses (i.e., involuntary engagement, involuntary disengagement) when faced with academic stress?

Based on prior person-focused research exploring mental health (Bonanno et al., 2012; Moore, Dowdy, Nylund-Gibson, & Furlong, 2019), a four-profile solution was hypothesized. It was expected that the largest profile ("flourishing") would include individuals with high life satisfaction, fewer/mild stressful life events, and lower

perceived stress. Individuals endorsing more/severe stressful life events were hypothesized to make up the second and third largest groups: those with high life satisfaction and mild perceived stress ("resilient"), and those with low life satisfaction and high perceived stress ("surviving"). The last and smallest of the four hypothesized profiles was expected to include individuals with low life satisfaction, fewer/mild stressful life events, and high perceived stress ("languishing"). Extant literature on adult mental health suggests that socio-economic variables such as education and SES occasionally serve as a buffer against stress by increasing the availability of coping resources (Tay et al., 2015). Therefore, it was hypothesized that household income and parent education would significantly but weakly predict group membership. Finally, given the literature surrounding how parents influence children's coping, with parental psychopathology negatively impacting the mechanisms (e.g., parent-child interactions, support, positive socialization) associated with adaptive coping (Hammen et. al., 2004), it was hypothesized that parent class membership would be significantly associated with children's responses to academic stress. Specifically, it was hypothesized that parent membership in the "resilient" and "flourishing" groups would be associated with children's use of primary and secondary control coping. In contrast, parent membership in the "surviving" and "languishing" groups was expected to be associated with involuntary engagement, involuntary disengagement and disengagement coping.

CHAPTER 3. Method

Participants and Setting

Data collection for this dissertation study occurred within the context of a larger research project conducted at the Minnesota State Fair in August of 2017. The central objective of the larger study was to compare the impact of four brief relaxation exercises designed to help children cope with stress induced by a frustrating task. Specifically, researchers were interested in the feasibility and potential promise of the exercises for helping children cope with challenges and stressors at school. With approval from the University of Minnesota's Institutional Review Board, 142 parent-child dyads were enrolled in the study. Data were collected across two half-days, with each parent-child dyad participating in one 20-minute session. During the sessions, children completed a series of tasks with a graduate student experimenter (Hansen, Fiat, Thayer, Lyu, & Cook, 2018; Pauling, Thayer, Fiat, Cook, & He, 2018) while parents completed several questionnaires on iPads.

Setting. The study was conducted in the Driven to Discover (D2D) research facility at the Minnesota State Fair. The Minnesota State Fair is a twelve-day event in the summer that draws nearly two million visitors from across the state each year. In 2017, over 60,000 individuals visited the D2D building. The building accommodates eight research bays allowing for numerous investigative groups to simultaneously conduct studies that address a wide variety of research topics.

Participants. In total, 142 parent-child dyads consented to participate in this study. In this study, a *parent* was defined as a primary caregiver who has legal custody of the child seeking to participate in the research study. Parent participants were primarily

biological mothers (60.8%) or fathers (30.1%) of the participating children. The remainder were grandmothers (4.9%), adoptive mothers (2.1%), stepfathers (1.4%), and an adoptive father (0.7%). The majority of the parent participants were female (65%), white (93.7%), and held a Bachelor's or post-graduate degree (65.7%). Black (2.1%), Latino (3.5%) and Asian (0.7%) participants made up just over five percent of the sample.

Children in the study ranged from 5- to 15-years-old with a mean age of 9.77 years-old (SD = 2.48). Forty-six percent of participating children were female. Similar to parents, the majority of children were white (88.1%), followed by multiracial (4.9%), Latino (3.5%), Black (1.4%), Asian (1.4%), and American Indian/Alaskan Native (0.7%). The median grade level of participating children was 6, and the average grade point average, though only reported for 42% of children, was 3.68.

Participants lived within 86 different geographic zones around the state (as denoted by zip code), and three dyads lived out of state. The median household income of families in the study was $112,000 per year, with a range of $10,000 to over $200,000. English was the primary language spoken at home for all but two families, which reported Spanish and Hmong as their primary languages. Four families reported that in addition to English, Somali was also spoken in the home, and seven reported that Spanish was spoken at home in addition to English.

Measures

The measures in this study consisted of three parent-report questionnaires and two single-item scales that took approximately 20 minutes to complete. One questionnaire gathered demographic information, one measured parent perceived stress, and one

assessed how children respond to academic stress. The single-item scales were used to assess life satisfaction and stressful life events. Parents completed the measures using Redcap, a HIPAA compliant mobile software application, on iPads. Measures are described in detail below.

Family Information Questionnaire. The purpose of this measure was to glean basic demographic information about respondents and their children on which they were reporting. Information was sought about age, race/ethnicity, family income, level of education (grade and GPA for children), English language status, and zip code for all participants.

Life Satisfaction Scale. A single-item continuous scale assessing global life satisfaction was employed in this study. The item was worded as follows: "Using a scale from 0 to 100 where 0 means 'the worst possible life overall' and 100 means 'the best possible life overall,' how would you rate your life overall these days?". Participants used a slider on an analog visual scale in Redcap to indicate their responses. A text box to the right of the scale, containing a numerical value between 1 and 100, corresponded to the slider's position on the scale. As the slider moved right or left, participants could see the numerical value increase or decrease respectively. The scale was originally developed for the Midlife in the United States (MIDUS) survey, a nation-wide study of adult health wellbeing (Ryff et al., 2007). Although the reliability and validity of this *exact* scale have not been assessed, numerous large scale survey studies—including MIDUS—have employed similar straightforward, single-item measures of life satisfaction and demonstrated evidence of criterion-related validity (e.g., Fleche, Smith, & Sorsa, 2012; McNamara et al., 2014). Additionally, Lucas and Donnellan (2012) tested a nearly

identical scale in numerous studies and found strong evidence of test-reliability (r = .68 to .74) and criterion validity with the Satisfaction with Life Scale (SWLS; r = .78 to .80).

Life Challenges Scale. The Life Challenges Scale (LCS; Sullivan et al., 2019) was designed to approximate the number and severity of stressful events experienced over the course of an individual's lifetime. This measure was based on the Lifetime Events Questionnaire (LEQ; Masten, Neemann, & Andenas, 1994) and the List of Threatening Experiences Questionnaire (LTE-Q; Brugha & Cragg, 1990), which have been used in a large volume of studies examining stress and adaptation across the lifespan. Like the life satisfaction measure described above, the LCS is a single-item continuous scale. Respondents were prompted to reflect on their life *as a whole,* and to drag the slider on the analog visual scale to the spot that best represented the overall number and severity of challenges they had experienced in their life. The left side of the scale corresponded to "few mildly challenging experiences" (e.g., new job, returning to work, mild accident, moving to a new place) and the right side of the scale corresponded to "many extremely challenging experiences" (e.g., death of a relative, home destroyed, dangerous living conditions, severe accident of self or family member). The LCS for adults, as well as a child-specific version, have been validated in multiple studies including studies utilizing a high-risk sample (e.g., Merrick, Kalstabakken, Labella, Fiat, & Masten, 2016; Sullivan et al., 2019). It has good evidence of test-retest reliability (r = .81, p<.001; Merrick et al., 2016) and is moderately correlated with the LEQ (r=.50, p<.001; Sullivan et al, 2019). This measure was selected due to its brevity and focus on domain-general stressful life experiences. Given the nature of research at the state fair, care was taken to keep protocol short and to avoid having parents recall details of

potentially traumatic events that could trigger emotional reactions in a busy, public setting.

Perceived Stress Scale. The Perceived Stress Scale (PSS-10; Cohen & Williamson, 1988) is a 10-item questionnaire that has been widely used to measure the degree to which individuals appraise situations in their life as stressful. It was developed based on Lazarus' model of stress appraisal (Lazarus, 1993; Lazarus & Folkman, 1984), whereby primary appraisal involves determining whether the situation poses a threat, and secondary appraisal involves assessing the resources or coping strategies at one's disposal to address the stressor. Participants were asked questions about the frequency of certain thoughts and feelings *within the last month* and prompted to respond using a 5-point Likert scale ranging from 0 (*never*) to 4 (*very often*). Scores on the PSS can range from 0 to 40, with higher composite scores indicative of greater perceived stress. Items on the PSS-10 load onto two factors: A Perceived Helplessness (PH) subscale (6 items) and a Perceived Self-Efficacy (PSE) subscale (4 items). The PSS-10 has good evidence of internal consistency for the total score (α=.89), PH subscale (α=.85), and PHE subscale (α=.82; Roberti, Harrington, & Storch, 2006). The current study found similar internal consistency estimates for the full scale (α=.86), PH subscale (α=.83), and PHE subscale (α=.81). Roberti, Harrington, and Storch (2006) also reported evidence that the PSS-10 has convergent validity with the State-Trait Anxiety Inventory-Trait Version (Spielberger, 1983) and the Multidimensional Health Locus of Control (MHLC Form A; Wallston, Strudler Wallston, & DeVellis, 1978). An earlier 14-item version of the PSS (Cohen, Kamarck, & Mermelstein, 1983), normed on college students, was shown to have predictive validity. Moreover, the PSS has demonstrated relationships with

depressive symptomatology (r's ranging from .65 to .76), physical symptoms (r's ranging from .52 to .65), and social anxiety (r's ranging from .37 and .48).

Response to Stress Questionnaire–Academic Stress. The Response to Stress Questionnaire (RSQ; Compas, Connor-Smith, Saltzman, Thomsen, & Wadsworth, 1999) contains 57-items that assess a range of voluntary coping and involuntary stress responses in children and adolescents. Parents were asked to rate their child's frequency and/or extent of enacting certain behaviors using a 4-point Likert scale ranging from 1 (*not at all*) to 4 (*a lot*). Both an adolescent self-report version and a parent-report version have been developed, however only the parent-report version was used in this study. This decision was made given time constraints to the study protocol and the fact that the self-report version would not be viable for the younger children included in the study. Moreover, prior research suggests that parents are generally able to accurately predict their children's coping responses (Brdar & Rijavec, 2001). In the academic version of the questionnaire (RSQ-AS; Connor-Smith, Compas, Wadsworth, Thomsen, & Saltzman, 2000), the wording of items was adapted to be specific to stress experienced in the domain of school. For example, the first part of the RSQ-AS parent report (PR) form asked parents about recent school-related stressors their children had experienced, the amount of stress the situations/events generated, and the extent to which children perceived they had control over the events. Items on the RSQ map onto five factor scales representing three distinct dimensions of coping (i.e., primary control, secondary control, disengagement) and two types of involuntary stress responses (i.e., involuntary engagement, involuntary disengagement). Studies show that the RSQ-AS (PR) has good internal consistency (α=.85), as well as strong evidence of convergent validity with the

COPE (Carver, Scheier, & Weintraub, 1989). In the current study, the RSQ-AS also exhibited good internal consistency (α=.89). Finally, past research highlights moderate correlations between parent- and adolescent-report forms of the RSQ.

Procedures

Data collection occurred in late August 2017 at the University of Minnesota's Driven to Discover (D2D) research facility at the Minnesota State Fair. Ten trained research assistants and one faculty member were on site during each shift to carry out research activities.

Recruitment. Study information was publicized on the D2D website and Facebook page to draw potential participants. In addition, typically developing school-age children and their legal guardians were recruited on-site during the hours of data collection. Research assistants stood in front of the D2D building with an informational poster and spoke to any eligible passersby. Interested families were directed inside to the research booth where graduate assistants conducted informed consent and child assent procedures, ran the child experimental conditions, and helped administer questionnaires to parents on iPads.

Eligibility determination. Prior to beginning consent procedures, graduate research assistants verified with interested families that children met eligibility criteria for the experimental study (i.e., enrolled in K-8 school, English proficient, no significant intellectual disabilities or vision/hearing impairments), and that the accompanying adult was a parent or legal guardian. Custodial relatives (e.g., grandparents) could participate, as long they were legal guardians and the participating child had been in their care for at least a year. More than one child from the same family (i.e., siblings) could participate if

different parents completed the measures on each child independently. A total of 13 sibling pairs and their 26 respective parents that participated in the study.

Data collection. All data were collected on iPads using the Redcap online software application. The link to the parent questionnaire (containing all four measures) was installed on each iPad and tested prior to data collection. Back-up paper measures were available on-site in the event of technological challenges. Each parent-child dyad was assigned a unique numeric identifier to link parent and child data. To ensure accuracy, each participant was given a sticker to wear with their ID number printed on it, and ID numbers had to be entered twice by a research assistant before handing off the iPad to the parent. Parents completed the questionnaire while seated or standing near their children who were completing the experimental tasks—or waiting to start them— at small tables within the research bay. Ten iPads were available for parents to complete questionnaires, and all or most were in use at any given time. Four research assistants were solely responsible for conducting consent procedures and answering questions or assisting parents completing the questionnaire.

Data Analytic Plan

Among the research examining complex patterns of stress and adaptation, person-centered analytic approaches, in which the individual is the chief unit of analysis, have increasing appeal (Morin et al., 2016). Unlike variable-centered approaches, person-centered approaches enable researchers to identify patterns of characteristics that distinguish heterogeneous subgroups from one another. Such approaches have recently been used to study stress (Karsberg, Elkit, & Armour, 2014), mental health (Moore, Dowdy, Nylund-Gibson, & Furlong, 2019) wellbeing (Chen & Page, 2016), and

resilience (Bonnano et al., 2012) in children and adults. Given the complex and multifaceted nature of stress, coping, and mental health, this study utilized a person-centered framework with separate data analytic procedures conducted to address each of the three research questions. All analyses were conducted in M*plus* vesion 8.1 (Muthén and Asparouhov, 2000-2019).

Latent Profile Analysis. Latent Profile Analysis (LPA) is a person-centered mixture modeling procedure by which individuals in a sample are grouped using a set of observed (i.e., manifest) variables that serve as a proxy for an underlying categorical (i.e., latent) variable. In other words, the latent variable helps predict the observable differences between groups (Clogg, 1995). LPA assumes that there are a finite number of groups (i.e., classes), that each group is distinct from the others, that individuals only belong to one group, and that individuals within groups resemble each other with respect to the manifest variables (Nylund, Asparouhov, & Muthén, 2007). My first research question focused on selecting an LPA model that best fit the data and describing the resulting groups. Best fitting models (i.e., solutions) group participants in the most precise yet parsimonious way using the specified manifest variables, referred to hereafter as *indicators*. Life satisfaction, stressful life events, and perceived stress—broken into subscales of perceived helplessness and perceived self-efficacy—were the indicators used in this LPA. Using maximum likelihood (ML) estimation, M*plus* generates several parameters for LPA models. These include the proportion of the sample predicted to be in each class based on posterior probabilities and the class-specific means for each indicator (Masyn, 2013; Nylund et al., 2007). Unfortunately, there is no statistical test to reveal the correct number of groups, nor is there a single statistic reflecting the goodness of model

fit. Rather, LPA is more of an "art" that demands careful consideration of a variety of model characteristics and other factors, described in greater detail below.

Latent class enumeration. As recommended by Nylund, Asparouhov, and Muthén (2007), an exploratory and iterative model building technique, referred to as *latent class enumeration*, was employed for these analyses. Latent class enumeration involves estimating a series of latent class models, and comparing them in terms of fit, parsimony, substantive meaning, and theoretical importance to determine the optimal solution (Bauer & Curran, 2003; Ram & Grimm, 2009).

Model building in LPA requires first making decisions regarding the variance-covariance structures that will be specified. Such decisions affect the number and interpretability of the latent classes that emerge in the final model (Masyn, 2013). As LPA utilizes continuous indicator variables, resulting parameter estimates could include class-specific means, variances, and covariances for each indicator, in addition to variable means, variances, and covariances for the overall sample. However, by default, M*plus* allows only indicator means to vary across classes. Meanwhile, indicator variances and covariances are held equal across classes. Similarly, the within-class indicator covariance (i.e., the relationship between indicators in a given class) is fixed to zero by default. This model specification is called *class-invariant, diagonal*, and is considered the most restrictive structure (Masyn, 2013). More restrictive model structures may end up requiring more classes; however, less restrictive structures complicate profile interpretation, as classes are then distinguished by variances/covariances in addition to class-specific means. Without an empirically grounded reason to free the variances/covariances across classes and allow indicators to covary within classes, this

study employed the default M*plus* model specification.

Upon selecting the class-invariant diagonal model structure, I began with a one-class model and sequentially examined models with one additional class until reaching a poorly identified *k*-class model. There are several reasons for which a latent class model may be deemed poorly identified. The first is if the best log likelihood fails to replicate when using a set of random starting values. A warning message of this nature in M*plus* signals that multiple local maxima were identified, challenging the likelihood that an identified *local* maximum is in fact the *global* maximum. In efforts to replicate a global maximum of the likelihood function rather than a local solution, multiple sets of random starting values were specified. A second sign of a poorly identified model is if the model reaches the highest number of available iterations before a local maximum is found. When this happens, a warning message in M*plus* indicates that the model failed to *converge*. Finally, if classes begin to emerge with extremely small estimated proportions, this suggests over-extraction, and may indicate a poorly identified model.

Evaluating model fit and accuracy. After examining the output for signs of poor model identification, various statistics were used to evaluate the fit and classification accuracy of the candidate models (Foti, Bray, Thompson, & Allgood, 2012; Masyn, 2013). Information criteria are used to compare one model's accuracy in reflecting the data to that of another (known as *relative* fit). Information criteria examined in this study included the log likelihood (LL), Akaike information criterion (AIC), Bayesian information criterion (BIC; Schwartz, 1978), sample-size-adjusted BIC (SSA–BIC; Sclove, 1987), consistent Akaike information criterion (CAIC), and the approximate weight of evidence (AWE). Each of these values examines the fit of the data in terms of

log likelihood values, but does so using a slightly different penalty, based upon sample size and number of parameters. Lower information criteria values indicate better fit, and examined in conjunction with other fit indices, can help select the optimal solution. The Bayes Factor (BF), correct model probability (cmP), adjusted Lo-Mendell-Rubin likelihood ratio test (adj. LMR-LRT; Lo, Mendell, & Rubin, 2001), and bootstrap likelihood ratio test (BLRT; McLachlan & Peel, 2000) were also used to compare model fit. A *k*-class model has weak evidence of being the "true" model, relative to a model with one additional class, if the BF is less than 3. BF values between 3 and 10 offer moderate evidence for the estimated model, and values above 10 offer strong evidence (DiCiccio, Kass, Raftery, & Wasserman, 1997). Larger cmP values indicate that the estimated model is more likely to be the best fitting model, relative to the others tested (Masyn, 2013). Finally, significant *p*-values on the LMR-LRT and BLRT suggest that the estimated *k*-class model has better relative fit than a model with one fewer classes. As the BIC and BLRT are generally recommended over other fit indices, they were given the greatest consideration in determining the optimal solution (Nylund et al., 2007; Nylund-Gibson & Masyn, 2016).

A smaller selection of latent class solutions were compared with regard to classification accuracy and class separation. Classification accuracy represents the degree of confidence with which individuals are assigned to a class. Class separation reflects how distinct classes are from one another on the indicators included in the model. Several diagnostic indices were used to assess the classification accuracy and class separation of the estimated models. These indices rely upon posterior class probabilities ($\hat{\pi}_k$)—that is, the probabilities of an individual belonging in each latent class, based on maximum

likelihood parameter estimates and the individual's patterns of responses across indicator variables. Other indices take into account modal class assignment proportion (*mcaP$_k$)*. An individual is *modally assigned* to the class for which they have the highest posterior class probability. First, *relative entropy* (E$_k$) summarizes the overall classification accuracy for estimated model. Higher values (closer to 1) indicate more precise classification of individuals to specific profiles (Henson, Reise, & Kim, 2007; Lo, Mendell, & Rubin, 2001; McLachlan & Peel, 2004; Nylund et al., 2007). Highly discriminating latent class models have entropy values greater than .80 (Henson et al., 2007). The average posterior class probability (AvePP) provides an indication of the classification certainty for each class. To obtain the AvePP for a given class (*k*), the posterior class probabilities for class *k* are averaged for all individuals modally assigned to that class. As with relative entropy, AvePP values greater than .80 suggest adequate class separation and classification accuracy (Masyn, 2013; Nagin, 2005). The odds of correct classification ratio (OCC$_k$) provides an additional metric to gauge class-specific classification accuracy. To calculate the OCC$_k$, one divides the odds of correctly classifying individuals using modal class assignments by the odds of correctly classifying individuals using random assignment. Higher OCC$_k$ values suggest better precision, whereas values close to zero would indicate that modal class assignment is no more accurate than chance. In conjunction with the relative fit statistics and the theoretical implications of different solutions, the aforementioned indices facilitated the selection of a final LPA model.

Structural equation mixture modeling. In addition to generating parent profiles, this study sought to examine the magnitude of the association between socioeconomic variables (i.e., education, income) and parent class membership. Therefore, simply

selecting an LPA model and describing the resulting classes was not sufficient to address these aims. Structural equation mixture modeling (SEMM) is a statistical approach that enables researchers to test the strength of the relationships between the latent class variable and other auxiliary (i.e., predictor or outcome) variables (Asparouhov & Muthén, 2014). It involves integrating the LPA model into a second structural model to be estimated using MLE. However, there are several statistical, theoretical, and practical challenges that result from combining LPA and SEMM into a single step. Statistically speaking, the secondary model can alter the estimated latent class means and posterior probabilities (Asparouhov & Muthén, 2014). Additionally, a single-step approach introduces significant model-building issues, in that the model would need to be re-estimated each time a covariate is added or removed (Asparouhov & Muthén, 2014). These shortcomings can be circumvented by performing the analyses in multiple steps. The first step involves selecting an optimal LPA model, as described in the previous section. In the second step, class membership is transposed into a nominal variable, with class assignment based upon individuals' most-likely class memberships (i.e., modal class assignment). Finally, the third step tests the nominal class membership variable as a predictor or outcome in the structural model. M*plus* contains several packages that run these three steps automatically, while accounting for measurement error and classification uncertainty (Asparouhov & Muthén, 2014). Specifically, the measurement error rates for the LPA model are derived in step two and fixed during step three. The structural models and the M*plus* packages used to run them are described below. Additionally, the conceptual model for the SEMM tested in this study is depicted in *Figure 2*.

Multinomial logistic regression predicting class membership. Using the R3STEP command in M*plus,* socioeconomic indicators (i.e., education, income) were treated as predictors of class membership in a multinomial logistic regression. Multinomial logistic regression relies upon five assumptions. The first two assumptions were met because the dependent variable of interest (profile membership) is nominal, and because the independent variables included were categorical. The third assumption of independence of observations was met because class membership was mutually exclusive (i.e., parents were only modally assigned to one class). Scatter plots were visually inspected to check the assumption of a linear relationship between the continuous independent variables and the log transformations of the nominal dependent variables. The final assumption of multinomial logistic regression is that there are no outliers or highly influential points. This was tested using a univariate outlier labeling procedure (Banerjee & Iglewicz, 2007). Several metrics were used to evaluate the goodness-of-fit of the final model. First, I examined the logistic coefficients, or the expected changes in the logit for every unit change in the predictors. Logistic coefficients closer to zero signify less influential predictors. Next, I examined the odds ratios associated with each predictor. Predictors that increase the logit have an odds ratio greater than 1.0, those that have no influence on the logit have an odds ratio equal to 1.0, and predictors that decrease the logit have an odds ratio less than 1.0 (Garson, 2011).

Predicting stress response from class membership. Using the DE3STEP function in M*plus*, univariate regression models were estimated to assess the relationship between parents' class membership and children's academic stress response, as captured by scores on each of the five factors of the RSQ-AS. The DE3STEP function allows the means of

the distal outcome variable (i.e., coping/stress response factor scores) to vary while restricting variances to be equal across groups. This approach was selected over the alternative DU3STEP function (for which variances are unrestricted) because it functions better when class sizes are small, as was the case in this study (Asparouhov & Muthén, 2014). To ensure that analytic assumptions were met, distribution and residual plots of all outcome variables were analyzed with respect to linearity, homoscedasticity, and independence of errors. Scatter plots, histograms, quantile-quantile (Q-Q) plots, and probability-probability (P-P) plots were used to check the assumption of normality, alongside visual and statistical analysis of skew and kurtosis. Levene's test was be performed to support the assumption of homoscedasticity. To evaluate model fit, I first inspected the Pearson chi-square statistic. Higher and statistically significant ($p < .05$) chi-square values indicated that parent membership in a given class (relative to another) was associated with specific coping outcomes in children. In addition, to convey the strength of the association, Cohen's *d* effect sizes were calculated for significant findings. Cohen's *d* values equal to 0.2 suggest a small effect, values of 0.5 suggest a medium effect, and values 0.8 or greater suggest a large effect (Cohen, 1988).

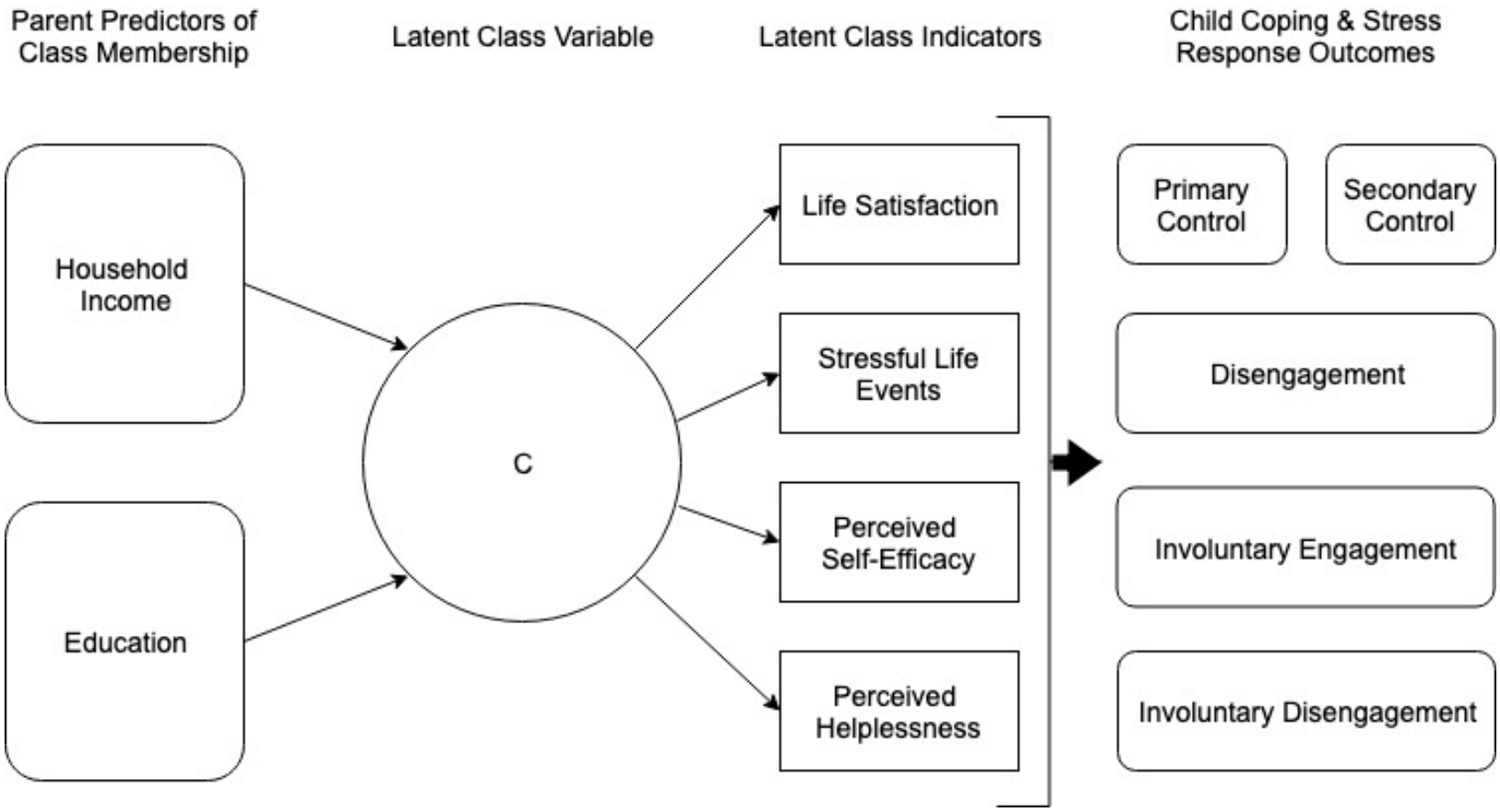

Figure 2. Path diagram for latent class structural equation mixture model.

Missing data. Two separate approaches were utilized to address missing data, which comprised 1.7% of the overall dataset. First, listwise deletion was used to handle cases with data missing from the life satisfaction scale and LCS. According to Graham (2009), when missingness is under 5% and when data is missing at random, it is permissible to use this approach. Given that the life satisfaction scale and LCS were single-item measures, using only complete cases with no imputed values was preferable. This is because imputation approaches are likely to generate imprecise and variable value predictions when there is minimal information in the observed data for a given case (Greenland and Finkle, 1995). Moreover, after listwise deletion, the sample was only reduced by 27 cases (19%), which would not significantly restrict the power to detect moderately sized effects at the $p < .05$ level. Finally, inspection of the data suggest they were missing at random (MAR; Little & Rubin, 2002). They were most likely missing as the result of a technical issue in Redcap, in which the sliding scale feature malfunctioned and responses were not recorded. When data are MAR, using listwise deletion does not typically lead to biased estimates or inflated standard errors (King, Honaker, and Scheve 1998). All other missing data were handled using full information maximum likelihood (FIML) estimation in M*plus* 8.2. This approach uses the expectation-maximization (EM) algorithm under the assumption that data are MAR (Little & Rubin, 2002) to estimate model parameters (Muthen & Shedden, 1999). FIML utilizes of all available data points, while adjusting the standard errors and chi-square statistics to account for non-

normality. It is considered the de facto approach for handling missing data in mixture modeling (Masyn, 2013).

CHAPTER 4. Results

Sample Characteristics

The final analytic sample contained 115 parents (80.9% of the total sample) who had complete data on the four measures included in the LCA. Table 2 displays demographic characteristics (i.e., gender, relationship to child, race, ethnicity, education, and household income) of parents in the analytic sample, and Table 3 depicts characteristics (i.e., gender, race, ethnicity, and grade) of the children on whom they reported. On average, participants in the sample rated themselves high on life satisfaction (M = 76.83 out of 100; min = 23, max = 100) moderately high on perceived self-efficacy (M = 10.98 out of 16; min = 0, max = 16), and moderately low on perceived helplessness (M = 9.25 out of 24; min = 1, max = 100). Participant responses on the stressful life events scale average close to the center of the scale (M = 45.70 out of 100; min = 6, max = 97), indicating moderate levels of stressful life events. In terms of children's stress responses, parents rated secondary control coping (M = .24; min = .08, max = .35) highest, followed by involuntary engagement (M = .24; min = .14, max = .36) and primary control coping (M = .21; min = .11, max = .31). Disengagement coping (M = .14; min = .08, max = .20) had the lowest mean rating, followed by involuntary disengagement (M = .17; min = .11, max = .27).

Table 2

Demographic Variables of Parent Participants in Analytic Sample (N = 115)

Characteristic	*n*	*%*
Gender		
Female	75	65.2
Male	40	34.8
Race		
White	113	98.3
Asian	1	0.9
Other	1	0.9
Ethnicity		
Not Hispanic/Latino	111	96.5
Hispanic/Latino	4	3.5
Highest Level of Education Completed		
Elementary	10	8.7
Some High School (w/ GED)	2	1.7
High School Diploma	7	6.1
Associates/Vo-Tech Degree	16	13.9
Bachelor's Degree	37	32.2
Post-graduate Degree	43	37.4
Collective Household Income		
$10,000 to $14,999	1	.9
$15,000 to $19,999	1	.9
$25,000-$49,999	2	1.7
$50,000-$74,999	13	11.3
$75,000-$99,999	19	16.5
$100,000 - $124,999	27	23.5
$125,000-$149,999	13	11.3
$150,000-$174,999	9	7.8
$175,000-$199,999	9	7.8
Over $200,000	12	10.4
Chose Not to Respond	9	7.8

Note. Totals of percentages are not 100 for every characteristic due to rounding.

Table 3

Demographic Variables of Child Participants in Analytic Sample (N = 115)

Characteristic	*n*	*%*
Gender		
Female	59	51.3
Male	56	48.7
Race		
White	110	95.7
Black	1	0.9
Native	1	0.9
Asian	6	5.2
Other	1	.9
Ethnicity		
Not Hispanic/Latino	112	97.4
Hispanic/Latino	3	2.6
Grade		
Preschool	3	2.6
Kindergarten	9	7.8
1st Grade	13	11.3
2nd Grade	12	10.4
3rd Grade	9	7.8
4th Grade	13	11.3
5th Grade	16	13.9
6th Grade	12	10.4
7th Grade	19	16.5
8th Grade	8	7.0

Note. Totals of percentages for race exceed 100 because participants were prompted to select all races that apply.

Data Quality

Cases were removed from the analytic sample if they had missing data on *life satisfaction* (10.6%, *n* = 15) or *stressful life events* (8.5%, *n* = 12). Chi-square tests of independence revealed no statistically significant differences between the full sample (*N* = 142) and the final analytic sample (*n* = 115) with respect to demographic variables: parent gender (χ^2 (1) = 1.43, *p* = .232), parent race (χ^2 (1) = .04, *p* = .849), parent ethnicity (χ^2 (1) = .19, *p* = .66), parent education (χ^2 (25) = 16.6, *p* = .859), household income (χ^2 (72) = 62.01, *p* = .79), child gender (χ^2 (1) = .005, *p* = .943), child race (χ^2 (1) = .24, *p* = .626), child ethnicity (χ^2 (1) = .11, *p* = .739), and child grade (χ^2 (81) = 63.51, *p* = .924). Of the resulting analytic sample (*N* = 115), nine individuals (7.8%) had opted not to provide information about household income by selecting the response option "prefer not to say". Additionally, one case (0.9%) had missing data for the primary control coping, secondary control coping, and involuntary engagement variables. No data were missing for the remaining indicator or auxiliary variables (i.e., perceived self-efficacy, perceived helplessness, parent education level, disengagement coping, and involuntary disengagement).

Relationships among indicator variables and auxiliary variables were examined using Pearson bivariate correlations (see Tables 4 and 5). All correlations between LPA indicators were statistically significant with one exception: Perceived helplessness was not significantly correlated with stressful life events ($r = .17$, $p > .01$). There was a moderate positive correlation between perceived self-efficacy and life satisfaction ($r = .55$, $p < 0.01$), a moderate negative correlation between perceived helplessness and life satisfaction ($r = -.57$, $p < 0.01$), and a moderate negative correlation between perceived

helplessness and perceived self-efficacy (r =-.54, $p < 0.01$). Stressful life events had a small negative correlation with life satisfaction (r = -.20, $p < 0.05$) and perceived self-efficacy (r = -.29, $p < 0.01$). Looking at the distal outcome variables (i.e., factor scores on the children's RSQ-AS), statistically significant correlations ($p < 0.01$) were found between each of the five factors and all other factors. The strongest positive correlation was observed between primary control and secondary control coping (r = .64). A moderate positive correlation was found between disengagement coping and involuntary disengagement (r = .50), and disengagement coping was positively but weakly associated with involuntary engagement (r = .34). Moderate to strong negative correlations were found between primary control coping and disengagement coping (r = -.63), involuntary engagement (r = -.71), and involuntary disengagement (r = -.76). Similarly, moderate to strong negative associations were detected between secondary control coping and disengagement coping (r = -.54), involuntary engagement (r = -.87), and involuntary disengagement (r = -.73). Involuntary disengagement and involuntary engagement were found to have a moderate negative correlation (r = -.52).

Table 4

Correlation Matrix and Descriptive Statistics for Latent Class Indicator Measures (*N* = 115)

Variable	1	2	3	Mean	SD	Skewness	Kurtosis	[Min, Max]
1. Life Satisfaction	1.000	--	--	76.852	15.044	-1.209	1.310	[23, 100]
2. Stressful Life Events	-.201*	1.000	--	45.704	22.253	0.051	-1.002	[6, 97]
3. Perceived Self Efficacy	.545**	-.286**	1.000	10.983	2.889	-0.725	1.120	[0, 16]
4. Perceived Helplessness	-.573**	.173	-.539**	9.252	3.762	0.264	0.329	[1, 22]

Note. * $p < 0.05$; ** $p < 0.01$.

Table 5

Correlation Matrix and Descriptive Statistics for Auxiliary Variables of Children's Coping (*N* = 115)

Variable	1	2	3	4	Mean	SD	Skewness	Kurtosis	[Min, Max]
1. Primary Control	1.000	--	--	--	.205	.041	0.144	-0.595	[.11, .31]
2. Secondary Control	.641**	1.000	--	--	.243	.056	-0.386	-0.287	[.08, .35]
3. Disengagement	-.632**	-.539**	1.000	--	.140	.022	0.149	0.292	[.08, .20]
4. Invol. Engage	-.713**	-.866**	.342**	1.000	.236	.053	0.447	-0.515	[.14, .36]
5. Invol. Disengage	-.760**	-.728**	.499**	-.523**	.173	.033	0.305	-0.240	[.11, .27]

Note. "Invol. Engage" = involuntary engagement; " Invol. Disengage." = involuntary disengagmenet; * $p < 0.05$; ** $p < 0.01$.

Analytic Assumptions

For all continuous study variables, normality was assessed using standard data screening procedures. Visual analysis of histograms and P-P plots indicated that across all variables, data approximated a normal distribution. Variable means, standard deviations, skew indices and kurtosis indices (presented in Table 4 and Table 5 for LCA indicator variables and regression auxiliary variables respectively), corroborated this finding. Across all variables, skew index values fell below 3 and kurtosis index values fell below 10, thresholds that signals whether variables likely violate normality assumptions. Homoscedasticity was visually assessed using scatter plots of the regression standardized predicted values against the regression standardized residuals. The four LCA indicator variables appeared to satisfy the assumption of equal variances across classes. This was further confirmed by Levene's test for equality of variances based on the median, which yielded no significant *p*-values. With respect to the auxiliary variables used in the simple regression, unusual clustering was noted in several of the residual scatter plots. Moreover, log transformations of the outcome variables did not facilitate homoscedasticity. Levene's test for equality of variances based on the median was found to be violated for *primary control coping* ($F(2, 112) = 4.146$, $p = 0.18$), *secondary control coping* ($F(2, 112) = 4.131$, $p = 0.19$), and *involuntary engagement* (($F(2, 112) = 4.132$, $p = 0.19$). To correct for heteroscedasticity, Maximum Likelihood Estimation was used to model the relationship between class membership and children's coping outcomes in the DE3STEP analyses. Additionally, a simple univariate outlier identification procedure was used to assess for the presence of outliers among indicator and auxiliary variables (Banerjee & Iglewicz, 2007). Using this procedure, five cases were identified that

contained a single outlier value among the indicator variables. Six cases were noted to be outliers on *primary control coping* and one case was noted to be an outlier on *involuntary disengagement coping.* However, a decision was made to retain these cases for use in the latent class analysis with the 3-step structural equation mixture modeling, as MLE is able to correct for extreme values (Masyn, 2013).

Latent Class Enumeration

Prior to conducting regression analyses, an exploratory latent class enumeration procedure was employed to determine the optimal number of classes needed to obtain well-defined, differentiated groups. Candidate models were evaluated with respect to goodness-of-fit indices, statistical tests of significance, classification accuracy, interpretability, and theoretical alignment. Consistent with the guidelines of Masyn (2013), one- through eight-class solutions were tested, using a class-invariant, diagonal model specification in which means were estimated while residual variances and co-variances were fixed to zero. All eight solutions were viable in the sense that the best loglikelihood value was always replicated and each model estimation terminated normally with no errors. Replication of the best loglikelihood indicates that the model parameters were estimated based on a global solution (as opposed to a local one), and normal termination indicates there were no issues with model convergence.

Table 6 presents the information criteria and goodness-of-fit statistics (i.e., log likelihood, *p*-values for the LMR-LRT and BLRT, BF, and cmP) that were used to help determine the model that best fit the data. This included the Akaike information criterion (AIC; Akaike, 1987), the consistent AIC (adjusted for sample size and number of parameters; CAIC; Bozdogan, 1987), the Bayesian information criterion (BIC; Schwarz,

1978), the sample size-adjusted BIC (SSA-BIC; Yang, 2006), and the approximate weight of evidence (AWE; Masyn, 2013), all distribution-free relative fit indices, based on the model loglikelihood. Additionally, the Lo-Mendell-Rubin likelihood ratio test (LMR-LRT; Lo, Mendell, & Rubin, 2001), the bootstrap likelihood ratio test (BLRT; McLachlan & Peel, 2004), the approximate Bayes Factor (BF), and the approximate correct model probability (cmP) were used to contrast the relative fit of one model to that of another (Masyn, 2013). As is typical of latent class analysis, fit statistics provided contradictory information, requiring further examination to determine the most interpretable and best fitting model. For example, the CAIC (3163) and CmP (0.387) suggested a 3-class model fit the data best; although, the BIC (3142) supported a 4-class model, the AWE (3263) supported a 2-class model, and the log-likelihood (-1481.767), AIC (3049), SSA-BIC (3031), and BF (623) supported an 8-class model. However, simulation studies (e.g., Nylund, Asparouhov, & Muthén, 2007) have revealed that AIC and SSA-BIC tend to overestimate the number of classes while the BIC and CAIC tend to underestimate it. Moreover, due to sample size sensitivity, some fit indices tend to suggest the addition of profiles without ever reaching a maximum (Marsh, Ludtke, Trautwein, & Morin, 2009). Therefore, an 'elbow' plot was used (Figure 3) to facilitate comparison and identify the point at which values "bend", indicating marginal improvement in model fit. The plot illustrated that the steepest decline in information criteria values occurs between the 2- and 4-class models, with values increasing or plateauing thereafter. Further, the LMR-LRT and BLRT suggested that model fit did not significantly improve beyond a five-class solution.

Table 6

Model Fit Indices for Exploratory Latent Profile Analysis Using Class-Restricted Diagonal Structure Specifications (N = 115)

Model	LL	*npar*	AIC	BIC	SSABIC	CAIC	AWE	Adj. LMR-LRT		BLRT	$\widehat{BF}_{K,\,K+1}$	$Cm\widehat{P}_K$
								χ^2 (df = 5)	p	p		
1-Class	-1595.650	8	3207	3229	3203	3237	3291	--	--	--	--	0.000
2-Class	-1550.735	13	3127	3163	3122	3176	3263	86.197	0.123	0.000	0.000	0.000
3-Class	-1529.949	18	3095	3145	3088	3163	3284	39.885	0.019	0.000	0.000	0.387
4-Class	-1516.581	23	3079	3142	3069	3165	3320	25.656	0.031	0.000	0.222	0.086
5-Class	-1505.620	28	3067	3144	3055	3172	3361	21.034	0.678	0.071	2.465	0.157
6-Class	-1492.905	33	3051	3142	3038	3175	3398	24.401	0.097	0.030	0.426	0.369
7-Class	-1487.194	38	3050	3154	3034	3192	3449	11.036	0.036	1.000	469	0.001
8-Class	-1481.767	43	3049	3167	3031	3210	3501	14.832	0.695	0.500	623	0.000

Note. LL = Model log likelihood value; npar = number of free parameters; AIC= Akaike Information Criterion; BIC = Bayesian Information Criterion; SSABIC = Sample Size-Adjusted BIC; CAIC = Consistent Akaike Information Criterion; AWE = Approximate Weight of Evidence Criterion; Adj. LMR-LRT = Adjusted Lo–Mendell–Rubin Likelihood Ratio Test; p = p-value corresponding to the adjusted LMR-LRT χ2 statistic (df = 6) comparing H_0: K classes vs. H_1: K + 1 classes; BLRT p = Bootstrapped Likelihood Ratio Test p-value; $BF_{K,\,K+1}$= Bayes factor ratio of Models K, K+1; cmP_K =correct model probability; Across all models, the best loglikelihood value was replicated and the model estimation terminated normally with no errors; Bolded values in Columns indicate the value corresponding to the "best" model within each set of enumerations according to each fit index.

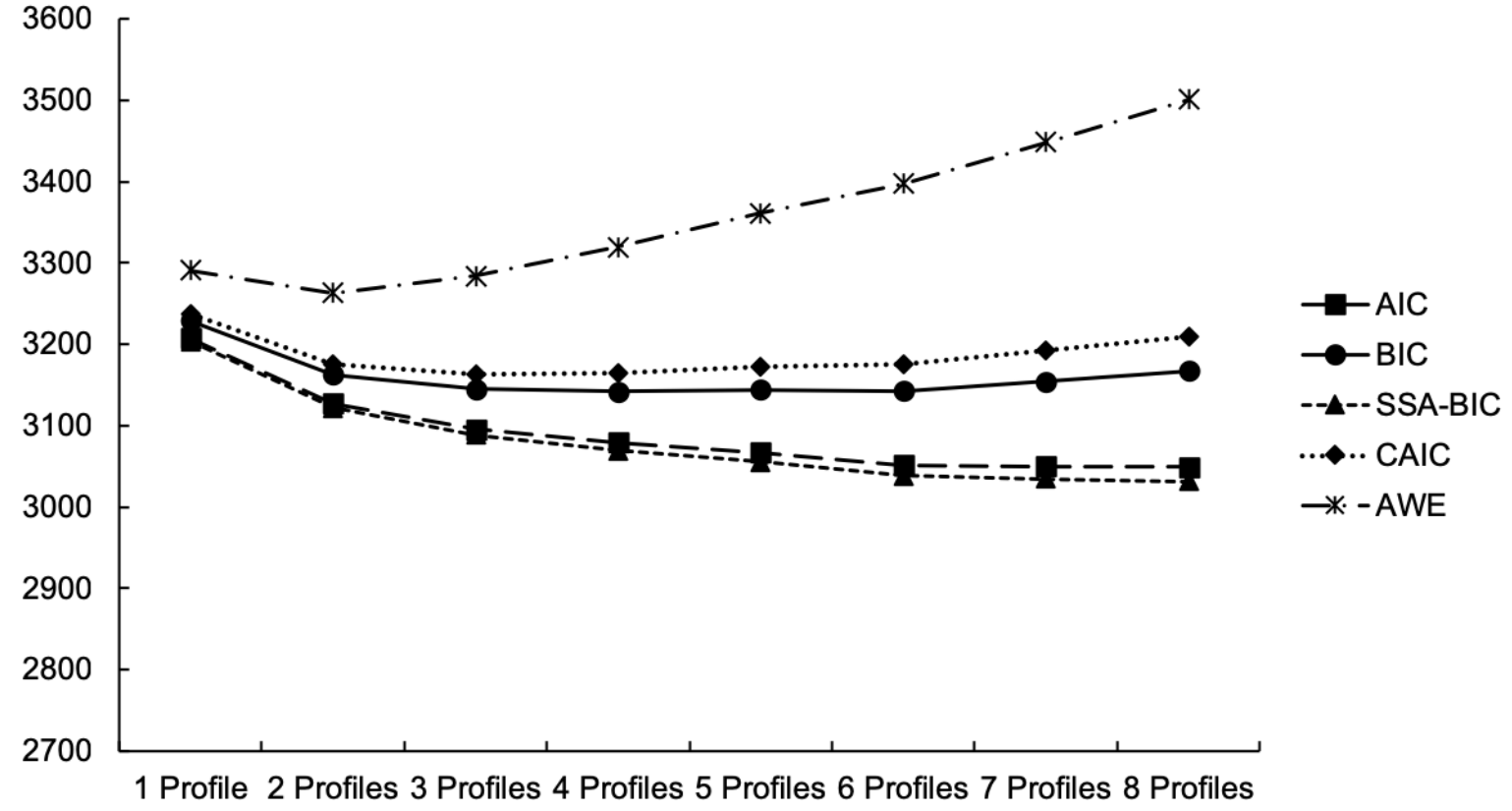

Figure 3. Elbow plot of the information criteria for 1- through 8-class latent class models.

In order to achieve diagnostic clarity surrounding the best-fitting model, a subset of 2- through 5-class solutions was examined with respect to classification precision and class separation. This information was deduced through posterior class probabilities ($\hat{\pi}_k$), modal class assignment proportions ($mcaP_k$), average posterior class probabilities ($AvePP_k$), odds of correct classifications (OCC_k), and entropy, and is displayed in Table 7. As evidenced by high $AvePP_k$ and OCC_k, values, each of the 2- through 5-class solutions exhibited strong classification accuracy. Entropy values above .80 indicate that at least 80% of the time, individuals were correctly assigned to latent classes. Further support for classification accuracy among these solutions was observed through negligible to non-existent discrepancies between posterior class probabilities ($\hat{\pi}_k$) and modal class assignment proportions ($mcaP_k$). Additionally, profile plots for the 2- through 5-class solutions using standardized means of indicators were created to visually depict class separation (see Figure 4). Visual analysis of the profile plots did not result in a clear determination of which *k*-class model had the best class separation. The 2-class solution exhibited class separation across all four indicators. The 3-class solution showed good separation with respect to *life satisfaction*, while class differences in *perceived helplessness* and *perceived self-efficacy* were most evident in the 4- and 5-class solutions. Although *stressful life events* had poor separation across all four models, the 4-class solution displayed better separation on that indicator relative to the other models. However, the 4- and 5-class solutions were ultimately rejected, as each contained a class with only one and two individuals, respectively.

Table 7

Model Classification Diagnostics for the Two- through Five-Class Solutions

K-Class Solution	Class *k*	$\hat{\pi}_k$	$mcaP_k$	$AvePP_k$	OCC_k	Entropy
2-Class	Class 1	0.287	0.278	0.926	31.09	0.813
	Class 2	0.712	0.722	0.958	9.23	
3-Class	Class 1	0.115	0.113	0.989	691.91	0.811
	Class 2	0.546	0.539	0.93	11.05	
	Class 3	0.339	0.348	0.864	12.39	
4-Class	Class 1	0.115	0.113	0.987	584.28	0.854
	Class 2	0.532	0.530	0.928	11.34	
	Class 3	0.008	0.009	0.999	1.238 e 5	
	Class 4	0.344	0.348	0.874	13.23	
5-Class	Class 1	0.114	0.113	0.988	639.89	0.853
	Class 2	0.178	0.165	0.884	35.19	
	Class 3	0.017	0.017	0.994	9579.43	
	Class 4	0.184	0.183	0.888	35.16	
	Class 5	0.507	0.522	0.901	8.85	

Note. $\hat{\pi}_k$ = posterior class probabilities; $mcaP_k$ = modal class assignment proportion; $AvePP_k$ = average posterior class probability; OCC_k = odds of correct classification ratio.

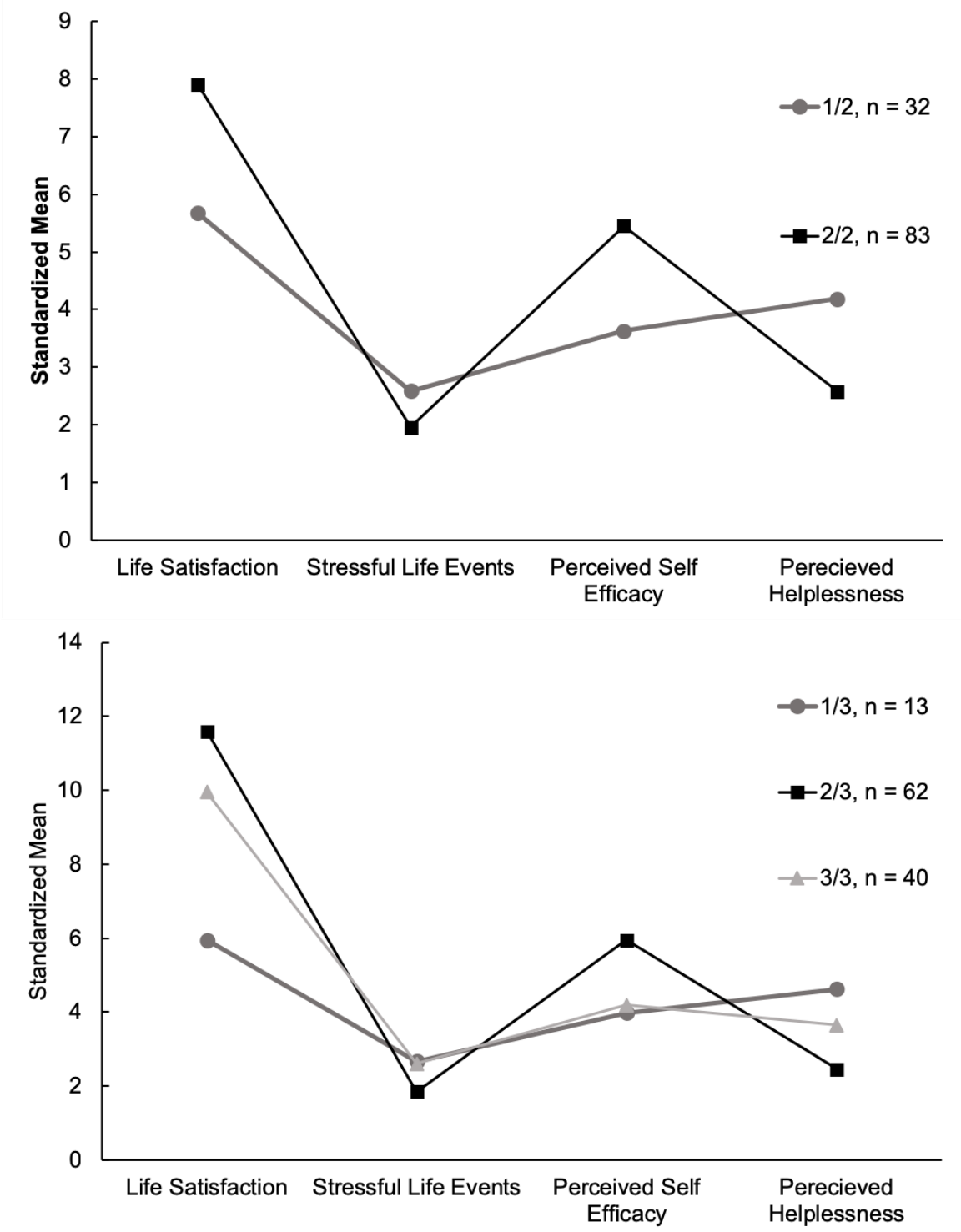

Figure 4a. Profile plots for 2- and 3-class models using standardized means of indicators. Class size information is presented in the legend.

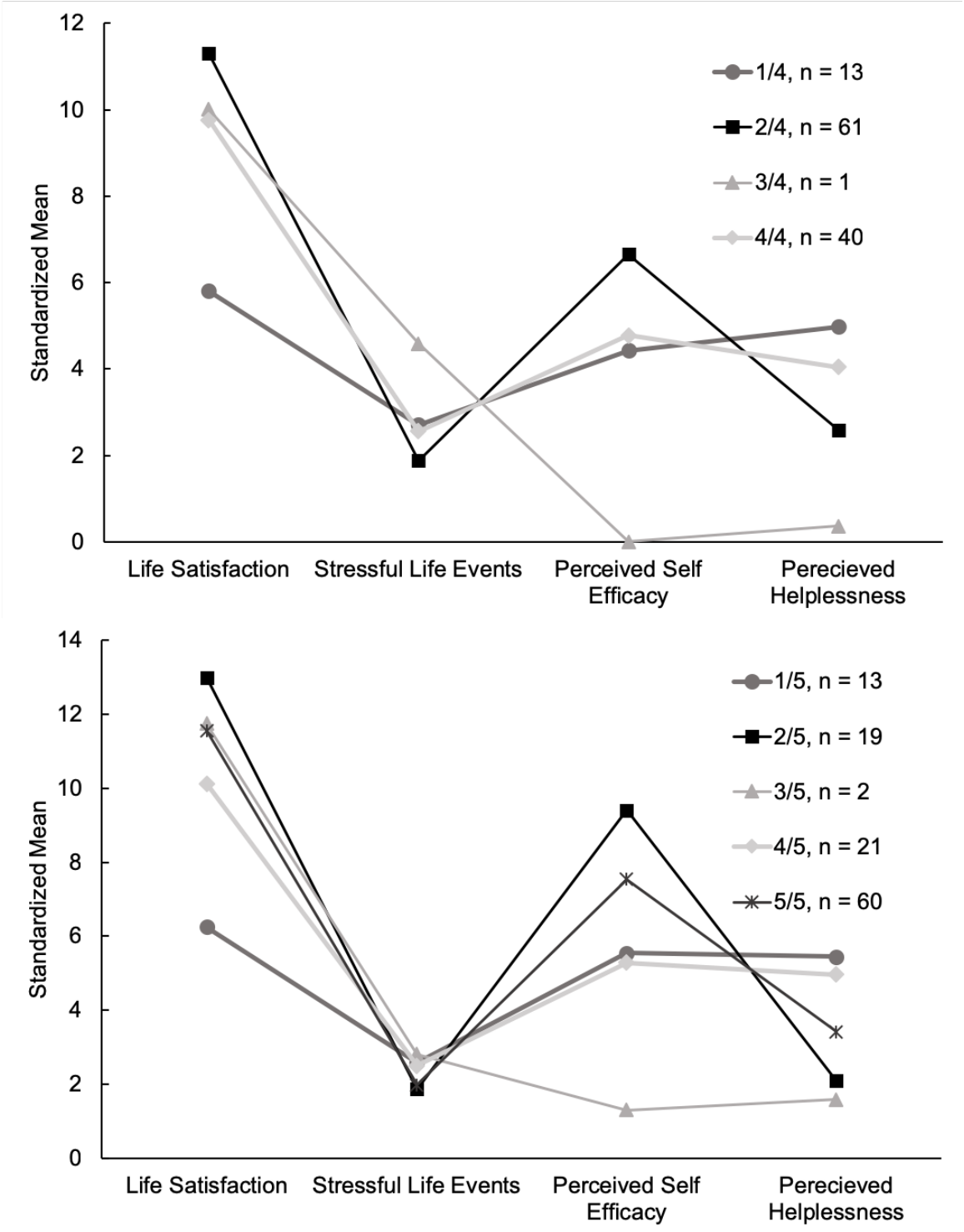

Figure 4b. Profile plots for 4- and 5-class models using standardized means of indicators. Class size information is presented in the legend.

With the 2- and 3-class solutions remaining as the most parsimonious and viable options, relative fit and theoretical alignment were the final considerations in selecting a model. As noted in Table 6 and observed in Figure 3 (elbow plot), the 3-class solution is superior with respect to all information criteria except AWE. Beyond relative fit, the 2- and 3-class solutions were compared with regard to substantive contributions and theoretical interpretability, as is recommended by Muthén and Asparouhov (2002). In both solutions, the largest group (n_{2k} = 83, n_{3k} = 62) was characterized by higher *life satisfaction* (M_{2k} = 83.653, M_{3k} = 85.803, scale = 100) and *perceived self-efficacy* (M_{2k} = 12.151, M_{3k} = 12.744, scale = 16), and lower *stressful life events* (M_{2k} = 41.819, M_{3k} = 38.413, scale = 100) and *perceived helplessness* (M_{2k} = 7.845, M_{3k} = 7.304, scale = 24) relative to the other classes. This profile was consistent prior literature suggesting that individuals who face fewer and less severe life challenges typically fare better than their counterparts who dealt with greater *stressful life events* (Kendler et al., 2010), as observed in the smaller group of the 2- and 3-class models. This smaller group (n_{2k} = 32, n_{3k} = 13) was characterized by more *stressful life events* (M_{2k} = 55.300, M_{3k} = 55.370, scale = 100), higher *perceived helplessness* (M_{2k} = 12.727, M_{3k} = 13.755, scale = 24), lower *perceived self-efficacy* (M_{2k} = 8.096, M_{3k} = 8.544, scale = 16), and lower *life satisfaction* (M_{2k} = 60.057, M_{3k} = 44.001, scale = 100). However, with 3-class solution, a third group emerged (n_{3k} = 40) that seemed to illustrate the concept of resilience. While comparable to the previous group in terms of *stressful life events* (M_{3k} = 54.162, scale = 100) and *perceived self-efficacy* (M_{3k} = 8.975, scale = 16), *life satisfaction* (M_{3k} = 73.592, scale = 100) was relatively higher and *perceived helplessness* (M_{3k} = 10.860, scale = 24) was relatively lower. With the addition of a third class capturing a more nuanced

relationship between *stressful life events* and current functioning, a 3-class solution was best justified from both an empirical and theoretical perspective.

Profile Interpretation

Class labels were assigned based on patterns of the mean indicator values across the three classes, presented in Table 8. "Surviving" (n = 13, 11%) was used to describe the group with the lowest means on *life satisfaction* and *perceived self-efficacy*, and the highest mean on *perceived helplessness*. The label "resilient" (n = 40, 35%) was assigned to the class with the highest mean on *stressful life events* that also had a higher mean *life satisfaction* and lower mean *perceived helplessness* relative to the "surviving" group. Finally "flourishing*"* (n = 62, 54%) designated the group with the lowest means on *stressful life events* and *perceived helplessness*, and the highest means on *life satisfaction* and *perceived self-efficacy*. Figure 5 provides a graphical depiction of the three parent profiles.

Table 8

Group Sizes and Estimated Mean Values for Each LPA Indicator for 3-Class Solution

Indicator	Mean (S.E.)			Variance
	Surviving (n = 13, 11%)	*Resilient* (n = 40, 35%)	*Flourishing* (n = 62, 54%)	
Life Satisfaction	44.001 (2.666)	73.592 (1.936)	85.803 (1.416)	54.807
Stressful Life Events	55.370 (3.693)	54.162 (3.838)	38.413 (3.459)	431.175
Perceived Self-Efficacy	8.544 (0.631)	8.975 (0.626)	12.744 (0.356)	4.603
Perceived Helplessness	13.755 (0.897)	10.860 (0.657)	7.304 (0.504)	8.872

Note. Range of possible values on life satisfaction was 0-100; range of possible values on stressful life events was 0-100; range of possible values on perceived self-efficacy was 0-12; range of possible values on perceived helplessness was 0-16.

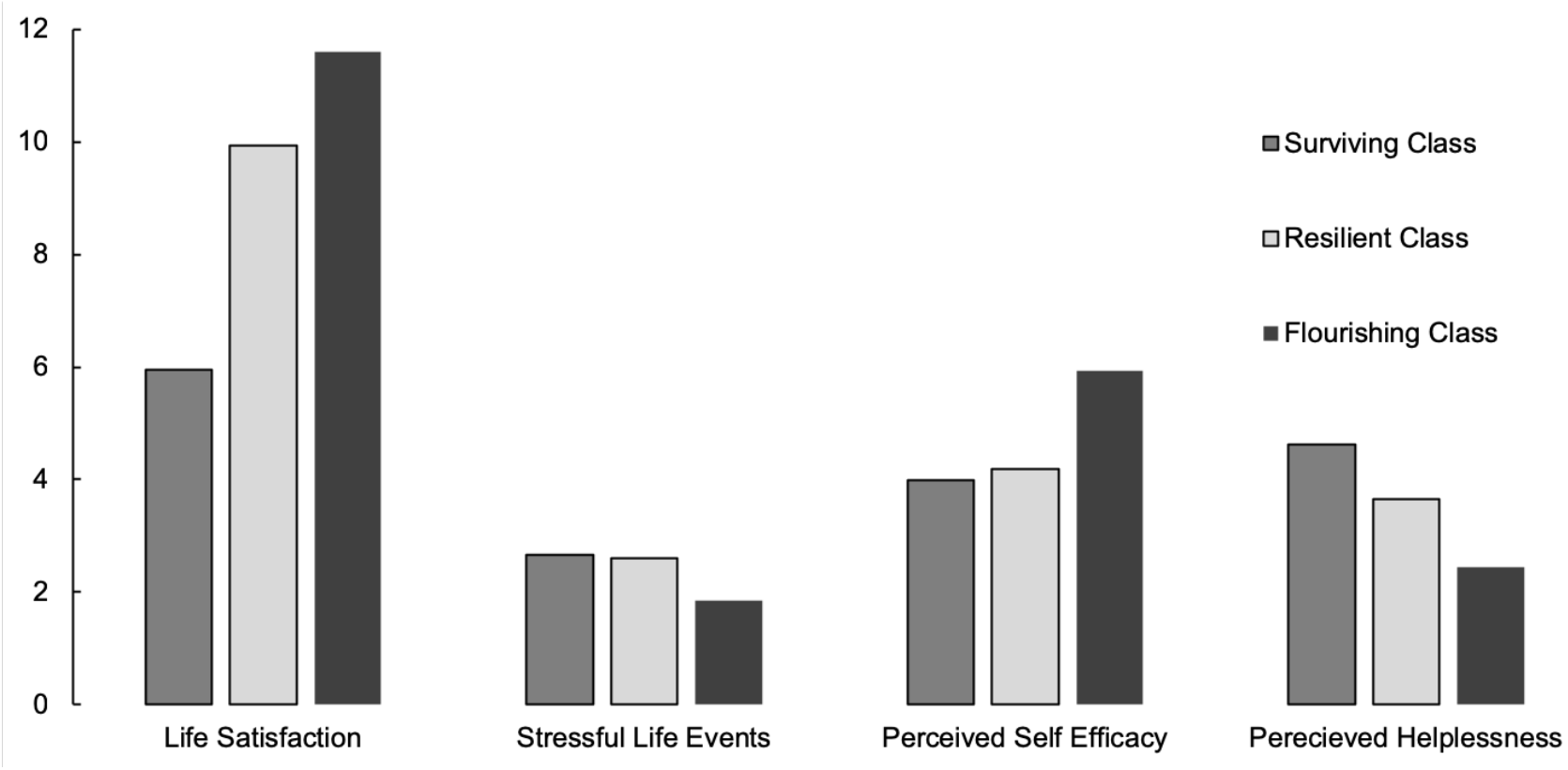

Figure 5. Standardized mean values of LCA indicators by class using a 3-class solution.

Socioeconomic Differences Across Groups

After selecting the optimal 3-class model, the R3STEP function in M*plus* (Asparouhov & Muthén, 2014) was utilized to examine the relationship between socioeconomic variables (i.e., household income and education level) and class membership. Two independent multinomial logistic regression models were run, each including one ordinal socioeconomic variable as a predictor of latent class membership. As the class with the greatest posterior probabilities, "flourishing" was chosen as the reference group. Results are summarized in Table 9. Negative coefficient values, where $p < .05$, suggest that for a given socioeconomic variable, individuals were more likely to be classified in the "flourishing" group than the comparison class.

Table 9

Three-Class Latent Class Regression Results for the Effects of Parent Education and Household Income on Latent Class Membership (n = 115)

	Class	Coefficient	S.E.	p-value	OR
Education					
	Surviving	-0.385	0.204	0.059	0.680
	Resilient	-0.240	0.182	0.189	0.787
Household Income					
	Surviving	-0.619	0.238	0.009**	0.538
	Resilient	-0.213	0.138	0.123	0.808

Note. * $p < 0.05$; ** $p < 0.01$; SE = Standard Error of the coefficient; OR = Odds Ratio; "Flourishing" is reference group.

These results indicate that income was significantly associated with the probability of profile membership, while level of education was marginally significant. Specifically, higher collective household income decreased the chances of belonging to the "surviving" group ($OR = 0.538$, $p = .009$) relative to the "flourishing" group, as did more education ($OR = 0.680$, $p = .059$), with a p-value approaching significance. In other words, every incremental increase (~ $25,000) in collective household income was associated with a 46% decrease in the likelihood of belonging to the "surviving" group. Figure 6 visually depicts this inverse relationship between income and predicted membership in the "surviving" versus "flourishing" groups. As income (x-axis) increases, the proportion of parents (y-axis) modally assigned to the "flourishing" group increases, while the proportion of parents modally assigned to the "surviving" group decreases. All the parents earning under $20,000 of combined household income annually were predicted to belong to the "surviving" group. Of the parents whose collective household income was less than $50,000, none were predicted to be in the "flourishing" group. Earning $50,000-$74,999 of combined household income appears to be the tipping point, at which most parents are predicted to belong to the "flourishing" group. No parents with $125,000-$199,999 of combined income were predicted to belong to the "surviving" group. However, one family earning more than $200,000 was modally assigned to the "surviving" group.

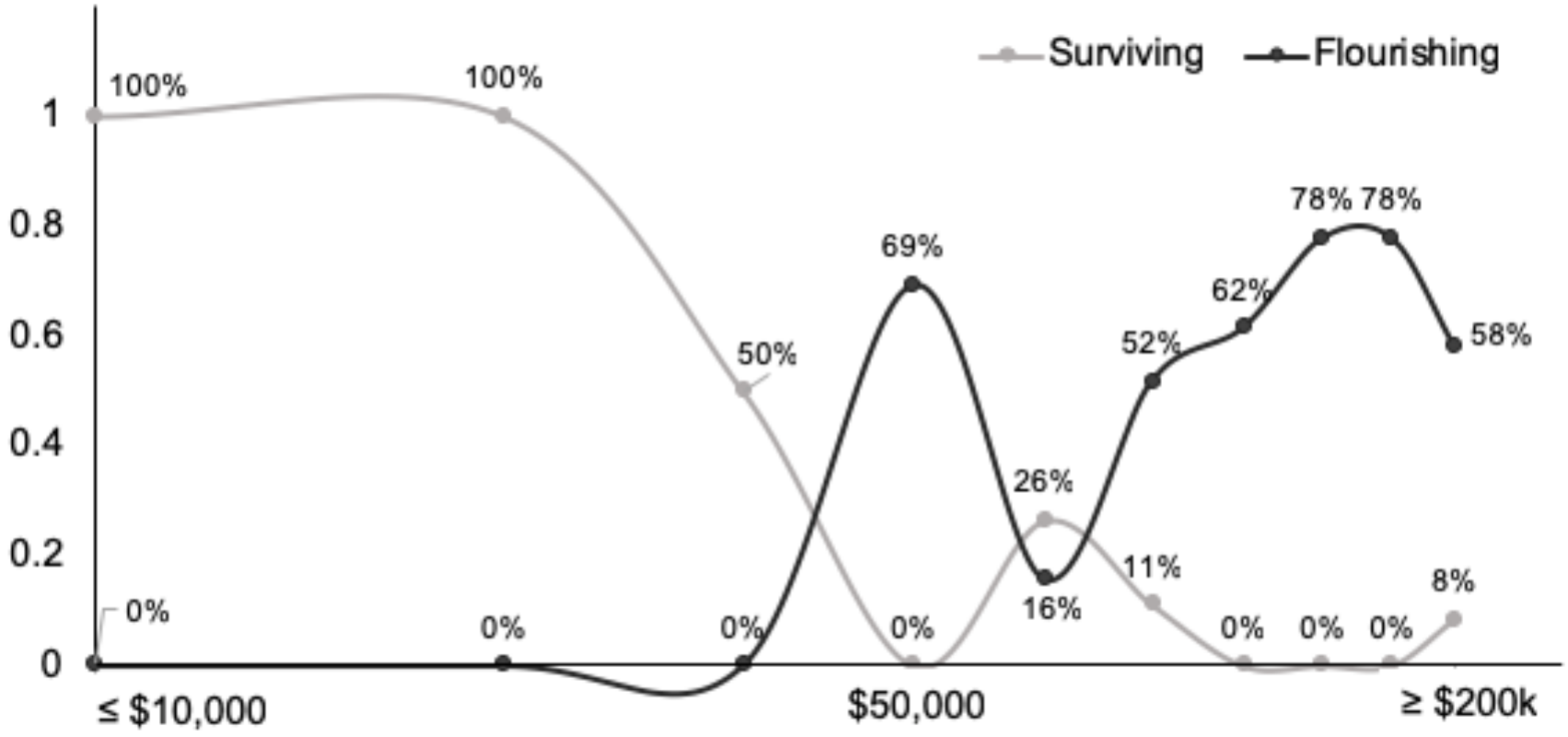

Figure 6. The proportion of participants modally assigned to the "surviving" vs. "flourishing" class across levels of income.

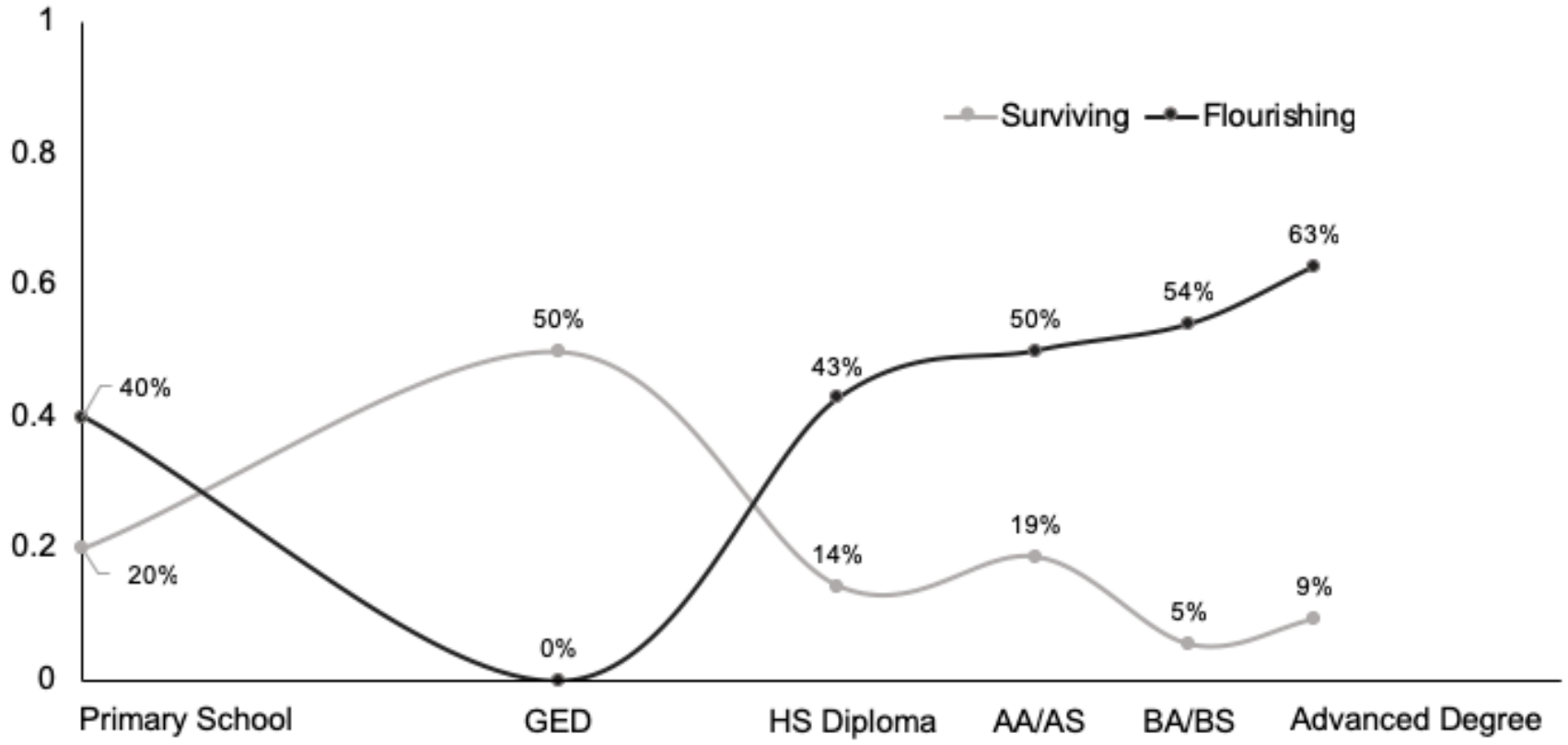

Figure 7. The proportion of participants modally assigned to the "surviving" vs. "flourishing" class across levels of education.

Additionally, every unit increase in level of education obtained corresponded to a 32% decrease in the odds of belonging to the "surviving" group. Figure 7 visually depicts this trend, with level of education represented on the *x*-axis and the proportion of parents modally assigned to a given group reflected on the *y*-axis. Interestingly, 40% of the parents who indicated they had completed elementary or middle school were predicted to belong to the "flourishing" group. However, the remaining parents predicted to belong to the "flourishing" group had completed a high school Diploma. Most parents who had received an associate's, bachelor's, or advanced degree were predicted to belong to the "flourishing" group. In contrast, half the parents whose highest level of education was a GED were predicted to belong to the "surviving" group (the remaining half were modally assigned to the "resilient" group). Less than 20% of the parents who reported obtaining a high school Diploma or associates degree were modally assigned to the "surviving" group. Less than 10% of the parents who reported earning their bachelor's degree or advanced degree were predicted to belong to the "surviving" group.

Influence of Class Membership on Children's Coping

The last research question examined the predictive validity of parent class membership on children's utilization of various stress response dimensions, as reported by their parents on the Response to Academic Stress Questionnaire (RSQ-AS). Using the DE3STEP command in M*plus* (Asparouhov & Muthén, 2014) in which auxiliary variables are treated as distal outcomes, mean scores on the five subscales of the RSQ-AS were compared across groups. Prior to estimating the model, the gender, age, and race of children were compared across groups (see Table 10). Pearson chi-square tests and a one-way analysis of variance suggested no significant differences across groups with respect

to gender (χ^2 (115) = 3.21, p = .201) race (χ^2 (115) = 2.42, p = .298), and age (F(115) = 0.62, p = .540). In other words, factors known to moderate children's coping and stress responses were not likely to account for the observed differences between groups.

Table 10

Demographic Characteristics for Children of Parents Modally Assigned to Each Latent Profile

		n (%)			
		Total Sample (*N* = 115)	*"Surviving" Group* (*N* = 13)	*"Resilient" Group* (*N* = 40)	*"Flourishing" Group* (*N* = 62)
Gender					
	Female	59 (51.3)	7 (53.8)	16 (40)	36 (58.1)
	Male	56 (48.7)	6 (46.2)	24 (60)	26 (41.9)
Race					
	White	110 (95.7)	12 (92.3)	37 (92.5)	61 (98.4)
	Non-white	9 (7.9)	1 (7.7)	3 (7.5)	5 (8.1)
		Mean (SD)			
Age		9.86 (2.495)	10.31 (3.225)	10.08 (2.325)	9.63 (2.451)

Table 11 presents each group's mean scores and standard errors for the five stress response factor variables: primary control coping, secondary control coping, disengagement, involuntary engagement, and involuntary disengagement. Table 12 summarizes the results obtained by regressing parent group membership on each stress response factor using the automatic 3-step approach. Figure 8 visually depicts the statistically significant findings, with groups' mean factor scores presented as *z*-scores. Parents in the "flourishing" group indicated that their children utilized significantly *less* disengagement coping (e.g., avoidance, wishful thinking) when confronted with school

stress than parents in both the "resilient" group ($\chi^2 = 6.95$, $p = .008$, $d = 0.51$) and the "surviving" group ($\chi^2 = 6.13$, $p = .013$, $d = 0.48$). In other words, the mean disengagement coping subscale score was roughly half a standard deviation lower among children of "flourishing" parents, relative to children of "resilient" or "surviving" parents. These are considered moderate effects. Compared to the "resilient" parents, the "flourishing" parents also reported that their children used significantly *less* involuntary disengagement (e.g., emotional numbing, cognitive interference; $\chi^2 = 8.21$, $p = .004$, $d = 0.56$), and significantly *more* primary control coping ($\chi^2 = 4.76$, $p = .030$, $d = 0.42$). This means that children of "flourishing" parents had a mean primary control coping score that was about .4 standard deviations above the mean for children of "resilient" parents. This is considered a small to moderate effect. Additionally, the mean involuntary disengagement score for children of "flourishing" parents was .55 standard deviations above the mean for children of "resilient" parents, which is considered a moderate effect. No statistically significant group differences were found with respect to secondary control coping or involuntary engagement. Moreover, no statistically significant differences were found between children of parents in the "surviving" group and those of parents in the "resilient" group across any coping dimension. The most significant differences and those of the greatest magnitude were uncovered between the "resilient" and "flourishing" groups.

Table 11

Means and Standard Errors of Five Factor Scores on the Children's Response to Academic Stress Questionnaire

Coping Dimension	*Surviving* (*n* = 13)		*Resilient* (*n* = 40)		*Flourishing* (*n* = 62)	
	Mean	S.E.	Mean	S.E.	Mean	S.E.
Primary Control	0.193	0.013	0.197	0.007	0.217	0.005
Secondary Control	0.238	0.013	0.229	0.010	0.253	0.008
Disengagement	0.149	0.006	0.147	0.004	0.133	0.003
Involuntary Engagement	0.245	0.013	0.241	0.010	0.232	0.007
Involuntary Disengagement	0.181	0.010	0.184	0.005	0.164	0.004

Table 12

Results of Chi-Square Tests Comparing Dimensions of Coping in Children Across Latent Classes (n = 115)

	Global (df = 2)		*Surviving vs. Resilient*			*Surviving vs. Flourishing*			*Resilient vs. Flourishing*		
	χ^2	*p*-value	χ^2	*p-value*	Cohen's *d*	χ^2	*p-value*	Cohen's *d*	χ^2	*p-value*	Cohen's *d*
Primary Control	6.091	.048*	0.054	.816	0.043	2.763	.096	0.314	4.763	.030*	0.416
Secondary Control	2.864	.239	0.289	.591	0.100	0.961	.327	0.184	2.737	.098	0.312
Disengagement	10.247	.006**	0.089	.765	0.058	6.131	.013*	0.475	6.951	.008**	0.508
Involuntary Engagement	0.874	0.646	0.043	.835	0.039	0.704	.401	0.157	0.448	.503	0.125
Involuntary Disengagement	8.999	.011*	0.073	.787	0.050	2.607	.106	0.305	8.213	.004**	0.555

Note. * $p < 0.05$; ** $p < 0.01$.

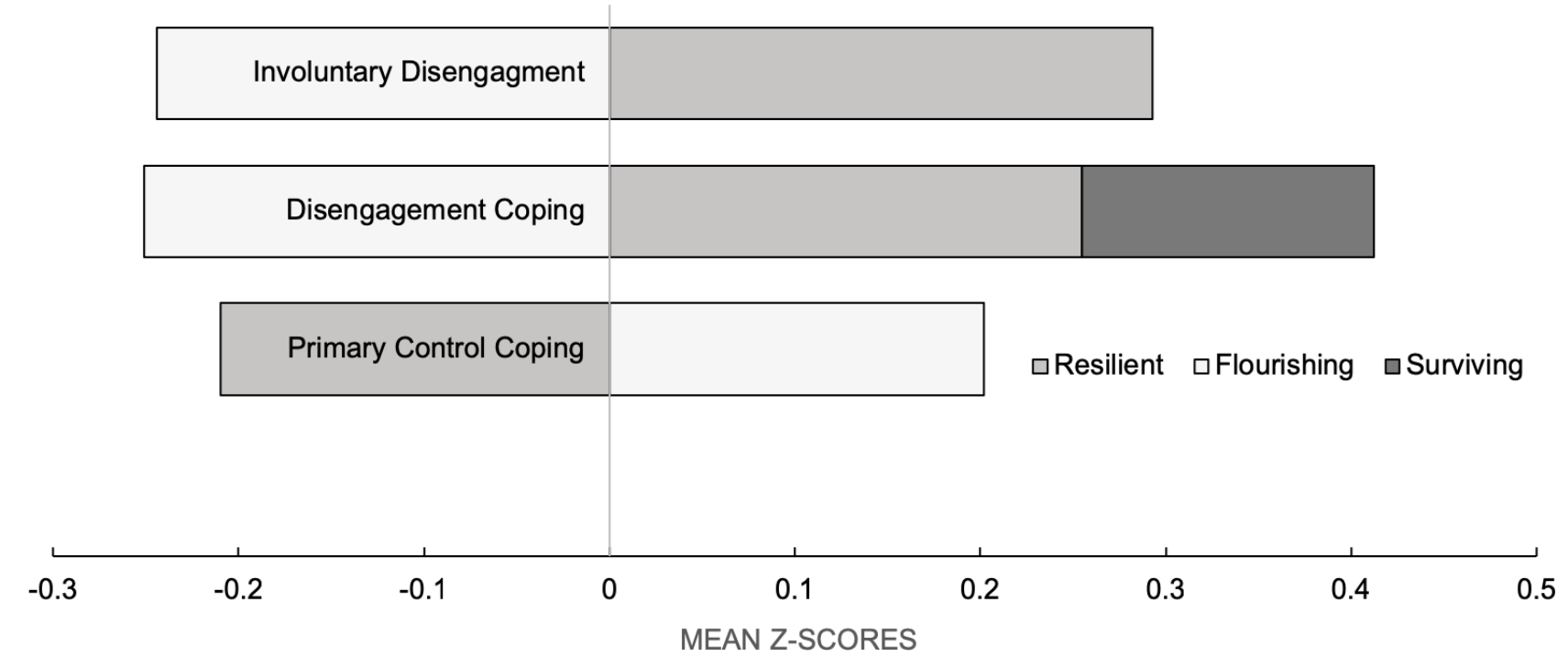

Figure 8. Statistically significant class differences in mean scores on child outcomes of primary control coping, disengagement coping, and involuntary disengagement (shown in z-scores).

CHAPTER 5. Discussion

For most children, school is the source of considerable stress. In addition to the cognitive demands of learning and retaining new information, children face pressure to earn good grades, perform well on exams, and complete copious amounts of homework. Moreover, school places significant social demands on children, whereby they must learn to get along with their teachers and peers. Children who lack the resources to adapt appropriately to academic stress are more likely to experience ensuing social, emotional, behavioral or academic problems (Brdar et al., 2006; Cairns et al., 2014; Lewis et al., 2012). Conversely, children who exercise good academic coping fare well, even in the face of objectively stressful circumstances (Grant et al., 200). Coping is a multidimensional construct that refers to how people voluntarily respond and adapt to stress (Compas et al., 2001). Its multidimensionality stems from the diverse ways in which people attempt to cope more or less adaptively within different contexts (Aldridge & Roesch, 2008). Academic coping, which focuses specifically on school-related stressors, has received little attention relative to other contexts in which children's coping has been studied (Grant et al., 2004).

Given the significance of academic coping in relation to children's functioning, understanding factors that influence academic coping carries great applied importance. Individual characteristics (e.g., age, gender, personality, and biological disposition) that relate to children's coping in the broader context are well-documented. Unfortunately, many of these individual-level characteristics are not viable, malleable targets for intervention. Fortunately, previous research has also identified several ways in which microsystemic factors—most notably parents within the home environment—influence

children's coping and stress response behaviors (Zimmer-Gembeck & Locke, 2006). The takeaway of this research is that positive parenting practices can facilitate children's development of adaptive coping (e.g., Weis et al., 2014), whereas poor parent mental health can undermine it (Fear et al., 2009). As such, parent mental health represents a practical and malleable point of intervention to enhance children's coping. However, more person-centered research is needed to understand the profiles of parents across both positive and negative indicators of mental health that relate to the development of children's academic coping.

Overview of Study Findings

This study used Latent Profile Analysis (LPA) to add to the literature investigating the relationship between parent mental health and children's coping. The purpose of this study was threefold. First, this study sought to identify a latent class model that more fully encapsulates parent mental health in order to examine links between parent mental health profiles and children's academic coping. Additionally, this study investigated whether socioeconomic variables were related to parents' predicted profile membership. Based on previous studies examining mental health using mixture modeling, it was hypothesized that a four-profile LPA model would emerge with the best evidence of fit and parsimony. Hypothesized profiles, in order of anticipated group size (largest to smallest), were "flourishing" (few/mild stressful events, low perceived stress, high life satisfaction), "resilient" (many/severe stressful events, moderate perceived stress, high life satisfaction), "surviving" (many/severe stressful events, high perceived stress, low life satisfaction), and "languishing" (few/mild stressful events, moderate perceived stress, low life satisfaction). In light of research examining stress and wellbeing

as a function of socioeconomic status (e.g., Tay et al., 2015), it also was hypothesized that greater household income and higher levels of education would increase parents' likelihood of belonging to certain profiles (e.g., "flourishing") and decrease their likelihood of belonging to others (e.g., "surviving"). Finally, it was hypothesized that children of "flourishing" and "resilient" parents would use more primary and secondary control coping when faced with school stress. Conversely, children of "surviving" and "languishing" parents were hypothesized to use more involuntary engagement, involuntary disengagement, and disengagement coping. In addition to LPA, this study utilized the automatic 3-step method (Asparouhov & Muthén, 2013) to estimate separate structural equation mixture models testing the relationship between predicted profile membership and the aforementioned auxiliary variables (i.e., socioeconomic status, children's coping). Study findings are summarized below.

Latent Profile Analysis. Latent Profile Analysis (LPA) is a *person-centered* mixture modeling approach that groups individuals based on observed indicators which collectively represent an underlying latent construct. The latent construct central to this study was parent mental health, understood in terms of both stress (objective and perceived) and subjective wellbeing. This conceptualization of mental health was loosely based on the dual factor model (DFM; Greenspoon & Sakloske, 2001), which posits that wellbeing and distress represent distinct dimensions of mental health. The four indicators used to represent parent mental health in this study were *life satisfaction*—a facet of subjective wellbeing (Diner, 2000), *stressful life events*—an objective gauge of stress (Kendler et al., 1995), *perceived helplessness*, and *perceived self-efficacy*. Life satisfaction and stressful life events were measured using single-item scales, and

perceived helplessness and perceived self-efficacy are the two subscales that comprise the Perceived Stress Scale (PSS; Cohen et al., 1998).

Inspection of relative fit statistics, classification accuracy, and theoretical alignment resulted in the selection of a 3-profile solution that was largely consistent with the study hypotheses, though it represents a departure from the 4-profile dual factor model. The profiles that emerged were labeled as "flourishing", "resilient", and "surviving". In accordance with study hypotheses, the "flourishing" group was the largest, and was characterized by high levels of life satisfaction, low levels of stressful life events, low levels of perceived helplessness, and high levels of perceived self-efficacy. The "resilient" group, as hypothesized, was second largest. It was defined by moderate to high levels of life satisfaction, high levels of stressful life events, moderate levels of perceived helplessness, and low levels of perceived self-efficacy. Finally, the smallest group, labeled "surviving", was characterized by low levels of life satisfaction, high levels of stressful life events, high levels of perceived helplessness, and low levels of perceived self-efficacy.

The posterior class probabilities (i.e., the proportion of parents estimated to be in each group) were also fairly consistent with the prevailing literature. The majority of the sample (54%) were modally assigned to the "flourishing" group, followed by the "resilient" group (35%), with only 13 individuals (11%) predicted to belong to the "surviving" group. These results support the notion that the majority of individuals have optimal mental health (i.e., "flourishing"; Greenspoon & Sakloske, 2001) and that positive adaptation in the face of stress (i.e., resilience) is more prevalent than poor outcomes (Masten, 2014).

All three groups exhibited good separation (i.e., were relatively distinct) with respect to life satisfaction and perceived helplessness. However, the "resilient" and "surviving" groups exhibited marginal differences in terms of stressful life events and perceived self-efficacy. In other words, despite experiencing a similar level of objective stress and perceiving a similar degree of control over their stressors, members of the "resilient" group, on average, were happier with their lives and felt less distressed. These results are consistent with previous research suggesting that perceived stress accounts for more variance in mental health than objective indicators of stress (Cacioppo et al., 2010). This distinction may also reflect differences in how "resilient" and "surviving" parents appraise stressful situations in terms of their capacity to cope (Lazarus and Folkman, 1984). This is noteworthy given the research behind parental socialization (i.e., modeling and coaching) of children's coping (Hammen et al., 2004). It is therefore conceivable, as hypothesized, that children of parents classified as "resilient" would respond to stress in more adaptive ways.

Socioeconomic variables and profile membership. Previous research examining the association between socioeconomic status (SES) and various dimensions of mental health (e.g., stress, wellbeing) has produced inconsistent findings. An aim of this study was to explore how socioeconomic variables were related to parents' likelihood of being classified in each mental health profile. To this end, two multinomial logistic regression models were estimated using the 3-step approach (Asparouhov & Muthén, 2013). Results indicated that lower-income and less educated parents were significantly more likely to belong to the "surviving" group, though income had a stronger effect than education level. These findings are consistent with several studies in which higher-income

individuals reported greater wellbeing (Diener, Horwitz, & Emmons, 1985) and lower stress (Cohen et al., 2012), as did individuals with higher levels of education (Nielsen et al., 2008; Westerhof & Keyes, 2010). Conversely, higher levels of stress have been consistently reported in individuals of lower SES, with stress representing a partial mediator between SES and risk for mental health disorders (Mezuk et al., 2010).

It should be noted that neither income nor level of education were statistically significant predictors of membership in the "resilient" group. One possible interpretation for this finding is that while higher SES does not shield adults from stressful life events, it may confer protective resources that serve as a buffer against stress and promote wellbeing. This interpretation is consistent with Tay et al.'s (2015) *homeostatic theory*, which suggests that increased income improves mental health to the extent that it increases perceived control and dampens the financial blow of stressful life events. However, this explanation does not capture the full picture, as higher- and lower-income individuals were equally likely to be classified in the "resilient" group. The literature on adulthood resilience can help fill in these gaps. Notably, a huge array of individual and environmental factors (e.g., behavioral flexibility, healthy relationships), the least of which is SES, can help promote positive adaptation in the face of stress (Bonanno, 2004). Ultimately, the logistic regression analyses yielded evidence that while stress, wellbeing, and SES are interconnected, dimensions of complete mental health cut across different social strata.

Parent profiles and children's coping. As discussed, a central focus of this study was to understand how different latent profiles of parents, modeled on positive and negative indicators of mental health, were associated with various dimensions of

children's academic coping. A 3-step approach was used to generate five regression models. Each model included profile membership as the predictor and a different factor score from the Response to Academic Stress Questionnaire (RSQ-AS) as the predicted outcome. The five factors included as outcomes were primary control coping, secondary control coping, disengagement coping, involuntary engagement, and involuntary disengagement. As hypothesized, children of "flourishing" parents utilized more primary control coping than children of parents in the other two groups. Primary control coping, or taking actions to control the stressor, is generally considered a highly adaptive form of coping (Rudolph et al., 1995). It includes strategies such as problem-solving and help-seeking, which can be advantageous in the context of school challenges (Grant et al., 2003). This finding was unsurprising and supports the notion that parents with more complete mental health are likely to use more adaptive coping, which they model and transmit to their children through socialization (Eisenberg et al., 2005).

However, statistically significant group differences were only found between children of "flourishing" parents and those of "resilient" parents. This calls into question the idea that better parent mental health equates to greater use of primary control coping in children. Additionally, statistically significant group differences were found between children of "flourishing" parents and children of "resilient" parents with respect to disengagement coping and involuntary disengagement, with children of "flourishing" parents scoring significantly lower on both dimensions. This was expected, as children who exhibit greater primary control coping are less likely to engage in disengagement coping and involuntary disengagement. Nevertheless, these findings are somewhat inconsistent with the initial study hypotheses. Specifically, children of "resilient"

parents—who exhibit higher life satisfaction and lower perceived helplessness than "surviving" parents—were hypothesized to more closely resemble children of "flourishing" parents across all dimensions of coping. In other words, they were expected to use more primary and secondary control (i.e., engagement) coping, and less disengagement coping, involuntary engagement, and involuntary disengagement than children of parents in the "surviving" group. Instead, no statistically significant group differences were found between children of parents in the "surviving" group and those in the other groups. Additionally, none of the groups significantly differed with regard to secondary control coping or involuntary engagement.

Though somewhat puzzling, several possible interpretations of these results are offered. The most straightforward explanation is that children's use of primary control coping increases and use of disengagement strategies decreases as a function of improved parent mental health (lower stress, higher wellbeing). Since the "flourishing" group is more consistent with the notion of complete mental health, followed by the "resilient" and "surviving" groups, use of primary control coping would be expected to follow a similar trend. This was the case, at least with the "resilient" group. The lack of statistically significant findings for the "surviving" group could be an artifact of the small sample (n = 13), which precludes valid parameter estimates. One issue with this interpretation is its grounding in the assumption that primary control coping is more adaptive for adults and children in *all* groups, regardless of circumstances. Certainly, there is ample evidence of primary control coping resulting in better academic outcomes (e.g., Brdar, Rijavec, & Loncaric, 2006; Cohen, Ben-Zur, & Rosenfeld, 2008). However, some research has found that while primary control coping works best under low

academic stress, disengagement coping is more adaptive under high levels of academic stress (Gonzales et al., 2001). To that end, a second possible interpretation is that children of "resilient" parents who experience higher levels of stress than their "flourishing" counterparts employ more disengagement coping because it is *adaptive* in the context of more stressful experiences. Of course, it may be faulty to assume that high stress levels among parents means higher stress levels in children. An additional shortcoming of both interpretations is that they do not address the question of directionality. For example, it is conceivable that greater reliance on disengagement coping predicts worse mental health over time, perhaps by causing stressors to accumulate (Lynch et al., 2001) or by diverting one's attention away from the present moment (Seligman & Csikszentmihalyi, 2000). However, it is also conceivable that poor mental health causes parents to utilize more disengagement coping, perhaps because they perceive insufficient resources to address the stressor (Watt et al., 1987). Like this study, most previous research on coping explores associations between coping typologies and mental health, and ignores the question of directionality (Compas et al., 2001). Further research is indicated to shed light on causal mechanisms.

Finally, the lack of statistically significant group differences in secondary control coping and involuntary engagement merits further comment. In addition to the fact that means did not differ significantly *across* groups, all three groups had higher means on secondary control coping and involuntary engagement with respect to other factors. Upon initial consideration, these findings are surprising and somewhat counterintuitive. For starters, secondary control coping is *voluntary* and involves reappraising a stressful situation in a more positive or helpful light (Weisz et al., 1994). Conversely, involuntary

engagement is—as its name suggests—*involuntary* and involves unhelpful or negative intrusive thoughts (Abaied & Emond, 2013). Indeed, these factors appear to be diametrically opposed, yet both represent *engagement* responses to stress centered on cognition. This is noteworthy for two reasons. First, it is possible that children engage secondary control coping strategies in an attempt to counterbalance the negative, intrusive thoughts engendered by involuntary engagement. More notably, this study employed a parent-report form of the RSQ-AS, and cognitions by their very nature are difficult to observe. Therefore, despite the RSQ-AS parent-report form having validity evidence for each factor scale, non-significant group differences may be an artifact of the indirect measure of children's coping used in this study.

Implications for Research and Practice

The present study contributes to the literature in several noteworthy ways. First, it provides a foundation for future research to investigate children's academic coping in relation to parent mental health. Despite conceptual similarities between these constructs, formal analyses exploring the relationship between parent mental health and children's academic coping are absent from the literature. Bridging these two distinct bodies of research is not only novel, it has important implications for practice. Parent mental health is a malleable microsystemic factor that, if intervened upon, may positively affect children's academic coping. The current study offers preliminary support for this idea by providing insight into the nature of the relationship between parent mental health and children's academic coping. Future research should explore multimodal interventions that attend to both parents and children in home and school settings.

A second major contribution of this study is reflected in the way that parent mental health is conceptualized and measured. Previous research exploring parent mental health in relation to child coping has typically utilized variable-centered approaches focused on parent distress. However, most past research has failed to consider subjective wellbeing, which is now understood to be an important facet of mental health. The current study conducted person-centered analyses using measures of objective stress, perceived stress, and wellbeing to provide a more complete mental health classification. Whereas studies that only examine one dimension of parent mental health may obscure population heterogeneity, the multidimensional conceptualization of mental health employed in this study enabled the detection of meaningful group differences. Moreover, the use of mixture modeling to empirically derive typologies of parent mental health represents a useful direction for future research aiming to elucidate how parents cluster on key dimensions related to children's academic coping. Most studies examining mental health from a multidimensional framework make classification decisions using theoretically derived cut-scores. Using LPA, however, provides greater methodological flexibility. Allowing levels of distress and wellbeing indicators to vary instead of adhering to rigid cut scores permitted more nuanced and parsimonious profiles. Moreover, the resulting profiles lend empirical support for a more complete framework of mental health.

Aside from this study's conceptualization of mental health, the single-item scales employed to assess subjective wellbeing and objective stress have promising applications for research and practice. The use of single-item scales to measure psychological constructs has long been contested, due to presumed concerns about poor reliability and

construct underrepresentation (Wanous, Reichers, & Hudy, 1997). Though single-item scales may be more vulnerable to some validity threats (e.g., situational influences; Drost, 2011), recent research has detected adequate to strong psychometric properties of single-item scales designed to measure facets of stress (Elo, Leppänen, & Jahkola, 2003; Littman et al., 2006; Merrick et al., 2016) and wellbeing (Lucas & Donnellan, 2012; MacDowell, 2010; Sandvik, Diener, & Seidlitz, 2009). Further, single-item scales represent a practical choice, both in research and practice, in that they can considerably reduce time, cost, and participant burden. For research participants or clients filling out surveys, these scales have better face validity then long questionnaires with redundant or highly personal items. For example, at the state fair, where the current study was conducted, the research protocol was not permitted to exceed 15 minutes. Single-item scales, therefore, increased protocol efficiency. Moreover, using a single-item scale to assess stressful life events mitigated ethical concerns about asking sensitive questions about specific adverse experiences, which could be construed as invasive in the context of the state fair. Single-item scales are valuable in practice settings as well. It is already common practice for clinical settings to employ measures with one or two items, such as the Patient Health Questionnaire for Depression and Anxiety (PHQ-2; Kroenke, Spitzer, & Williams, 2003) or the Subjective Unit of Discomfort Score instrument (SUDS; Wolpe, 1990) for screening and/or progress monitoring purposes. This study suggests that using single-item scales to assess multiple dimensions of mental health could be useful to obtain a more complete mental health classification in practice. However, further research is needed to translate the LPA classification parameters from this study into methods that can be adopted in applied settings.

This study also laid the groundwork for applied research seeking to identify optimal ways of enhancing children's academic coping. One approach that merits investigation is supporting parents in promoting healthy coping development among their children. Although improving self-regulation is an aim of numerous evidence-based parent training programs (e.g., Baumann et al., 2015), most focus on behavior management in the home context through positive reinforcement and effective discipline (e.g., Garland, Hawley, Brookman-Frazee, & Hurlburt, 2008). It is unclear from the literature to what degree these programs address parents' abilities to coach and model adaptive coping for their children. Additionally, very few programs focus on academic coping specifically, highlighting a need for parent-focused interventions that specifically address how children respond to stress in the school context. Moreover, from the standpoint of school-based service delivery, existing social-emotional learning (SEL) programs offer a promising avenue for helping children acquire coping skills and apply them in response to academic stress. Although SEL programming has been shown to improve a range of student outcomes (e.g., reductions in disruptive behavior, improvements in academic performance; Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011) it less evident whether it facilitates acquisition and use of specific coping skills.

Limitations & Future Directions

The theoretical and applied contributions of this study notwithstanding, results should be considered in light of several study limitations. The first limitation has to do with the size and diversity of the study sample. In mixture modeling, it is notoriously difficult to make a priori decisions regarding sample size. The general guideline of ten

observations per estimated parameter can lead to sample size under- or overestimation. (Wolf et al., 2013). Moreover, there are currently no means of conducting formal power analyses for mixture modeling. Although the study's sample size was adequate for the current analyses, a larger sample may have resulted in a good-fitting latent profile model with more than three well-identified classes. Recall that during the latent class enumeration process, the four- and five-class models were disregarded due to tiny class sizes. It is conceivable that a four- or five-class model is the best solution, but that those profiles could not be reliably estimated due to insufficient representation in the sample. Considering the increased cost associated with raising the sample size and the fact that small samples are often sufficient for mixture modeling (Wolf et al., 2013), future studies should consider running a Monte Carlo simulation prior to data collection to inform determinations regarding study sample size (Nylund et al., 2007). In addition to size limitations, the study sample was restricted with regard to racial/ethnic and geographic diversity. All but two parents in the analytic sample were white, and only four were Hispanic/Latino. Considering previous research suggesting higher rates of stress and mental health concerns in non-white populations as a function of racism and discrimination (Zeiders, Hoyt, & Adam, 2014), it would have be useful to consider the relationship between race/ethnicity and profile membership. The fact that all but two study participants were residents of the same state also limits generalizability of the findings. Therefore, future research should aim to replicate these analyses with a more diverse, nationally representative sample.

A second limitation of the current study relates to measurement. As previously discussed, scales constructed from multiple items are generally construed to have

stronger psychometric properties than single-item scales, such as those used in this study to measure stressful life events and life satisfaction. Given the time demands within the current study and the previous literature documenting the validity of single-item scales, longer measures were not considered. If time and data collection procedures permit, future studies could attempt to replicate findings using more sophisticated measures of objective stress and subjective wellbeing. Additionally, all LPA indicators of parent mental health relied on parent self-reporting. A limitation of self-report measures in general is that they are subject to different biases (e.g., situational, availability) and sensitive to mood states. For example, parents with poor mental health are more likely to appraise events in their life as negative or stressful (Dubois et al., 1992). Similarly, people might endorse higher levels of life satisfaction while attending the state fair then they would on a typical workday. However, evidence suggests that mental health is more strongly associated with perception than with objective indicators (Cohen et al., 1994). A third note pertaining to measurement is that complete mental health in this study was conceptualized using life satisfaction as an indicator of wellbeing, stressful lifetime events as an indicator of objective stress, and the perceived stress scale. These indicators were chosen because they are brief, unobtrusive, and widely used in other studies. However, other variants of these tools, or indicators assessing different facets of distress or wellbeing could be considered in future research. Specifically, future studies could include measures of affect, which is considered the second facet of subjective wellbeing according to Diener's (2000) model, or symptoms of current psychopathology (e.g., depression, anxiety). Moreover, instead of measuring stressful events across one's lifetime, future research could include a measure with a narrower window (e.g., 6-12

months). The final measurement limitation of the current study was that parents reported on their children's responses to school stress. Although previous research suggests that parents are generally accurate reporters of their children's coping and stress response behaviors (Brdar & Rijavec, 2001), certain responses (e.g., ruminating, cognitive restructuring) cannot be observed and rely on children communicating their thoughts to their parents. For this reason, including a child-report component in future studies could improve the accuracy of these assessments, specifically with respect to secondary control coping and involuntary engagement factors. The RSQ-AS has a child-report form that is validated for use with older children. Although it was not used in this study due to the age range of children in the sample and time constraints with study protocol, it should be considered in future studies.

A final class of limitations in this study pertain to the study analyses. First, the issue of nesting should be noted, given that multiple adults (and children) within a single family were permitted to participate. Specifically, there were 13 sibling pairs and their 13 pairs of parents who participated in the study. Excluding participants from the same family would significantly reduce the sample size in this study and restrict power. Fortunately, M*plus* has a CLUSTER function that can be employed in future iterations of this study to adjust standard errors based on the fact that some cases may violate the non-independence assumption. It is also important to note limitations in the analyses conducted to examine the link between parent mental health and children's coping. The DE3STEP method was employed for this study because it bypasses a number of model-building issues that arise when performing LPA and structural equation mixture modeling separately. However, one limitation to this approach is that it precludes the inclusion of

co-variates in the structural model. Considering that stress response patterns are known to vary as a function of age and gender (Eisenberg et al., 2005), it would be optimal to control for their influence by including age and gender as covariates in the structural model. Additionally, the automatic 3-step approach only allows models to specify one predicted outcome. For this reason, analyses included five separate regression equations, in lieu of one multivariate multiple regression predicting scores on all five factors of the RSQ-AS. In future studies, both of these issues could be addressed by utilizing the manual BHC method (Bakk, Oberski, & Vermunt, 2016). This method has been shown to be more robust than the 3-step method when distal outcomes are continuous. The manual BHC method works by first regressing the latent class indicator onto demographic covariates, then regressing the distal outcomes onto the latent class indicator, and finally, regressing the distal outcomes onto the covariates.

Conclusion

Parents play a critical role in shaping how their children cope with academic stress, which notably affects their school performance. This study focused on how profiles of parent mental health are related to the ways in which children respond to school stressors. Findings demonstrate the importance of utilizing person-centered methodologies to capture heterogeneity in parent mental health based on indicators of stress and wellbeing. However, additional research is warranted to better understand how children's coping develops as a function of parental mental health. Continued research in this domain can inform the development of multimodal interventions to improve children's academic coping and optimize their school success.

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