Profiles of Caregiver-Level Factors Associated with Emotion Regulation in Adolescents with and without ADHD

Stephanie Ngoc Tran Pham

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Rosanna P. Breaux
Samantha M. Kempker-Margherio
Cynthia L. Smith

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ABSTRACT

Environmental factors, most significantly caregivers, substantially contribute to youth emotional development. Emotion regulation (ER) deficits and emotion dysregulation (ED) are a significant, pervasive concern for individuals with attention-deficit/hyperactivity disorder (ADHD), especially during adolescence. Although there has been empirical support for how caregiver factors independently contribute to youth ER abilities, there is little known about whether there are any underlying patterns or permutations of caregiver-related variables that relate to ER and ED in adolescents. This master's thesis was a secondary analysis of a multi-site longitudinal study of 266 adolescents (54.1% male; 81.6% White; 51.1% comprehensively diagnosed with ADHD). The primary aims were to explore potential latent profiles of caregiver-level factors in this sample and investigate whether caregiver profiles that emerge vary based on whether their adolescents are diagnosed with ADHD, and whether caregiver profiles relate to adolescent ER and ED outcomes. Three distinct caregiver profiles emerged: Low Internalizing/ED and High Authoritative Parenting, Moderate Internalizing/ED and Permissive Parenting, and High Internalizing/ED and Moderate Authoritative Parenting. Results indicated that caregivers of adolescents with ADHD are more likely to fall into the High Internalizing/ED and Moderate Authoritative Parenting profile. Profiles characterized by authoritative parenting practices were generally associated with better adolescent ER outcomes, though no significant differences in self-reported adolescent ED were observed across profiles. These findings highlight the potential for caregiver psychopathology, ED, and parenting practices to serve as targets for interventions aimed at improving adolescent ER and reducing ED, particularly in neurodiverse populations.

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GENERAL AUDIENCE ABSTRACT

Caregivers play a crucial role in shaping children's emotional development. For adolescents with ADHD, managing emotions can be especially challenging, often leading to difficulties with emotion regulation (ER) and emotion dysregulation (ED). While we know that individual caregiver factors, like parenting style or emotional health, influence adolescents' emotional abilities, it's less clear how combinations of these factors might work together. This study analyzed data from a large research project involving 266 adolescents, about half of whom had ADHD, and their caregivers. The goal was to identify patterns of caregiver traits and explore how these patterns relate to adolescents' ER and ED. Three distinct caregiver profiles were found: low emotional difficulties and highly supportive parenting, moderate emotional difficulties and permissive parenting., high emotional difficulties and moderately supportive parenting. Caregivers of adolescents with ADHD were more likely to fall into the third profile, which included higher emotional challenges but also moderate levels of supportive parenting. Interestingly, adolescents with caregivers in profiles that emphasized supportive parenting generally had better emotional regulation, though their self-reported struggles with ED were similar across all groups. These findings suggest that a caregiver's emotional health and parenting style can be important targets for interventions, especially for families of adolescents with ADHD. By addressing caregiver well-being and parenting practices, we may help improve emotional outcomes for adolescents in both neurodiverse and neurotypical populations.

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Introduction

Emotion Regulation Abilities and Emotion Dysregulation

ER encompasses the abilities and strategies used to regulate the intensity, duration, and trajectory of both positive and negative emotions (Gross, 2002). There is extensive empirical support for the importance of ER skills in child and adolescent psychosocial functioning, with ED being viewed as a transdiagnostic risk factor for a range of mental health difficulties (see Beauchaine, 2015; McLaughlin et al., 2011). Adolescence has been characterized by the emergence of new and increased intensity of emotions as well as increased fluctuations in emotions (Maciejewski et al., 2015; Morris et al., 2007). These rapid changes in emotion development during adolescence occur concurrently with the transition from primarily relying on support in ER from others (e.g., caregivers, teachers) to an increased reliance on internal regulatory processes (Gross & Thompson, 2007; Steinberg & Drabick, 2015). Research in typically developing adolescents suggests that despite this increased expectation of independent regulation abilities with age, adolescents' repertoire of internal ER strategies is limited in both quantity and efficacy during early to middle adolescence (Zimmerman & Iwanski, 2014).

ER abilities are dependent on the maturation and connectivity of certain neural structures, particularly the frontal lobe (Gross, 2002; Perlman & Pelphrey, 2011); however, there is a large body of literature supporting the substantial impact of environmental factors, most significantly parents and caregivers, that contribute to emotional development and ER abilities (e.g., Bariola et al., 2011; Bridges et al., 2004; Morris et al., 2007). Parental socialization practices supports the development of ER abilities in children and adolescents, among other social-emotional abilities, with such socialization practices occurring in multiple ways: by observing parents' emotion regulation (e.g., modeling, social referencing), experiencing emotion-related parenting practices (e.g., emotion coaching, parental reactions), and being familiarized within the family's emotional climate (e.g., attachment, parenting style, expressivity; Eisenberg, 2020; Morris et al., 2017). Since then, many studies have sought out to examine the relations between various caregiver- and family-level factors (e.g., parenting behaviors, parent ER, and parent mental health) and child and adolescent ER and ED.

Caregiver-Level Factors and Adolescent Emotional Development

Parenting Behaviors

There is longstanding and extensive research on the impacts of different facets of parenting behaviors on child ER and ED (e.g., Brumariu, 2015; Eisenberg, 2020; Hastings et al., 2008; Kiel & Kalomiris, 2015). These elements of parenting practices have also been studied in connection with adolescent ER abilities and ED (e.g., Luebbe et al., 2013; Van Lissa et al., 2019). Some parenting practices that are identified as positive parenting factors or authoritative parenting practices (e.g., parental warmth and acceptance, consistent discipline, parent-adolescent openness, positive relationship quality, emotion coaching) have been established as being largely negatively correlated with adolescent ED and conducive of more adaptive ER skills (e.g., Coplan et al., 2009; Dunsmore et al., 2013; Herzog et al., 2015; Liu et al., 2020; Moilanen et al., 2017; Morris et al., 2017; Ratliff et al., 2013; Shortt et al., 2010). However, recent reviews

of the literature have also highlighted mixed findings for other positive parenting dimensions (e.g., parental autonomy support for their adolescents, parent overall supportiveness) having any significant impact on adolescent ER or ED (see Goagoses et al., 2023 for a review). In contrast, more authoritarian or unsupportive parenting styles (e.g., strict rules, high expectations, harsh or punitive discipline, parental rejection) have been associated with more ED and poorer ER (Dickson et al., 2019; Goger et al., 2020; Goagoses et al., 2023; Gulseven et al., 2018; Wang et al., 2018), particularly when there is a negative family climate (Herzog et al., 2015). Based off these studies examining the impact of parenting practices on youth ER independently, it may be useful to examine parenting practices in combination with other caregiver-related factors to clarify whether these mixed impacts of parenting practices may be due to combined interactions with other coexisting parent factors (e.g., psychopathology, ER/ED).

Parent Emotion Regulation

Across children's age groups, parent difficulties with ER have been associated with poorer child ER skills (see Zimmer-Gembeck et al., 2022 for a recent meta-analysis). Specifically, studies have documented that parent ER and ED have significant impacts on their children's ER/ED as early as infancy (e.g., Ostlund et al., 2016; Price & Kiel, 2022). Previous research has found evidence for parent ER deficits being directly related to children's ED (e.g., Rutherford et al., 2015; Kim et al., 2009), such that parents' abilities to effectively manage their own emotional responses and model adaptive regulation strategies impact their children's ER abilities based on informant report (Bariola et al., 2012; Binion & Zalewski, 2017; Bridgett et al., 2015; Crespo et al., 2017; Dennis et al., 2009; Dix, 1991; Morris et al., 2007), observations during lab-based tasks (Daughters et al., 2014), and physiological measures of regulation (Osborne et al., 2021). Caregivers' deficits in performing as appropriate models for ER have been related to subsequent ER deficits in their children, as children tend to imitate their parents' ER strategies through social referencing and modeling (Denham, 1998; Morris et al., 2007; Morris et al. 2017). This model of intergenerational transmission of ED has been extended to parent dyads, where mother and father modeling of poor ER strategies were demonstrated to jointly contribute to adolescents' ER deficits (Li et al., 2019).

The extant literature appears to support that despite adolescence being a developmental period of increasing autonomy, parent modeling of ER still maintains an impact on adolescents' ER and ED (Ahci et al., 2022; Silva et al., 2018). In addition to parent ED's direct associations to child ER deficits, parents who experience ER difficulties are also more likely to display negative reactions (e.g., ignore, dismiss, or punish) to their children's emotional experiences or other unsupportive parenting practices (e.g., less warmth, emotional invalidation, harsh parenting) that further exacerbating the risk of child ED (Donahue et al., 2014; Li et al., 2018; Morelen et al., 2016; Oddo et al., 2021; Saritas et al., 2013). Other studies have also suggested the need to consider the interacting influences of other parenting behaviors to fully conceptualize the model of intergenerational transmission of ER from parents to their children (e.g., Are & Shaffer, 2016; Tan & Smith, 2019). Collectively, the findings related to parent and child ER suggest frequent interactions between parenting dimensions and parent ER that may collectively contribute to adolescent ER and ED, rather than each acting as lone agents. Therefore, it may be beneficial to evaluate combined influences of these caregiver factors.

Although there appears to be a substantial amount of literature to support a relation between

parent and adolescent ER, the presence of studies that have found mixed or no relations between parent and child ER is worth noting; provided here are some examples. One study found no relation between maternal or paternal ER and child ER (Oattes et al., 2018), however parent ER was found to associate with child ED/emotion lability. Another study examined parents' ER strategy usage in reaction to their child's emotions and found no relation between parents' use of regulation strategies and their children's ER strategies; furthermore, there was no difference in children's ER based on whether parents used any regulation strategies (Spinrad et al., 2004). Both studies mentioned were focused on young children, when ER strategies are not yet autonomously employed, and thus ER and use of ER skills as it is assessed by current measures is not observable yet in these age groups (Kopp, 1989). These findings suggest a need to examine both ER strategies and ED, as there may be differential associations between parent ER and these outcomes in children and adolescents.

Parent Psychopathology

There has been increasing recognition that parent psychopathology symptoms are related to children's ER and ED. Studies have documented links between maternal depressive and anxiety symptoms and their offspring's ER abilities across developmental stages. During infancy and early childhood, maternal anxiety and depression is associated with impaired functioning of neurocognitive structures and processes that facilitate ER or the use of effective ER strategies (e.g., Crugnola et al., 2016; Granat et al, 2016; Gratz et al., 2016; Manian & Bornstein, 2009; Ostlund et al., 2016; Priel et al., 2019; Weinberg & Tronick, 1998). In preschoolers and early school age children, maternal depression is related to poorer child ER abilities broadly, with certain studies finding specific relations to poorer regulation of negative emotions and greater displays of anger (e.g., Crespo et al., 2017; Harden et al., 2016; Maughan et al., 2007). In a study comparing ER skills in children of mothers with and without depression, the authors found that young children of mothers with depression tend to use less effective self-regulation strategies and more ineffective, or passive, self-regulation strategies compared to children of mothers that have never had depression (Silk et al., 2006). A similar pattern linking maternal depression to greater use of ineffective ER strategies has been shown in pre-adolescent and adolescent samples (Felton et al., 2020; Garber et al., 1991). Further, parents' psychopathology symptoms more broadly have a negative impact on their children and adolescents' ER (De Witte et al., 2016; Suveg et al., 2011).

Another domain of parent psychopathology, parent stress, has also been shown to relate to child and adolescent ER and ED. Studies have found that parental stress and ways of coping with stress influence caregiving behaviors, and subsequently, their children's emotional functioning, including ER abilities (e.g., Havighurst & Kehoe, 2017; Zahn-Waxler et al., 2002). This pathway of parent emotional health relating to child ER outcomes is extended into parents' own history of trauma and maltreatment and how this has been established to cause ER difficulties for parents themselves that go on to cascade into their adolescents' self-regulation abilities (Osborne et al., 2021).

Similar to parent ER, there is some evidence for indirect pathways by which parent psychopathology may impact child ER abilities through the means of negative parenting practices. Review articles have outlined that parents with both clinical and subclinical presentations of psychopathology tend to exhibit higher levels of negative parenting practices

(Katz et al. 2012; Zitzmann et al., 2024). For the relation between parent anxiety and child ER, using an observational paradigm, parent anxiety symptoms interacting with parental overcontrol predicted less flexible parent-adolescent physiological ER during a shared frustrating task (Borelli et al., 2018). In studies of parents with ADHD, parent ADHD symptoms were associated with less positive and more harsh parenting behaviors (Mazursky-Horowitz et al., 2014; Park et al., 2017). Given high rates of comorbidity between ADHD and other diagnoses, one study found that the co-occurrence of maternal ADHD and depressive symptoms led to greater use of harsh parenting practices regardless of their adolescents' severity of ADHD symptoms or behavioral problems (Mazursky-Horowitz et al., 2014). Consequently, these negative or unsupportive parenting behaviors then create an indirect connection between parent ADHD and adolescent ER (Oddo et al., 2020). Given the interconnectedness of caregiver-related factors (e.g., parent psychopathology and ER relating to parenting behaviors) in predicting adolescent ER and ED, it may be informative to elucidate impacts of these factors as they co-exist to influence adolescent ER and ED.

Emotion Dysregulation and Family Context of ADHD

Although ADHD has been viewed as a disorder that is genetically predisposed or congenitally acquired (Banarjee et al., 2007), it is well documented that the presence of ADHD in a child can interfere with the overall functioning and wellbeing of the family unit (Banarjee et al., 2007; Johnston & Mash, 2001), and that the family context can influence the symptomatology of children with ADHD (Breaux & Harvey, 2019). It is well-established that children and adolescents with ADHD exhibit more ED, negative affect, and temper outbursts compared to their neurotypical peers; additionally, there are increased ER deficits in this population (see Bunford et al., 2015; Graziano & Garcia, 2016; Shaw et al., 2015; van Stralen, 2016; for reviews). For example, a recent co-twin control study found that ADHD was associated with ED above and beyond age, sex, and other mental health concerns, and was the diagnosis most strongly associated with ED (Astenvald et al., 2022). The increased prevalence of ER deficits and ED in those with ADHD have been hypothesized to arise from multiple aspects, with the role of the family context and caregiver factors being main drivers beyond the impact of genetic risk (Thapar et al., 2007). Therefore, for adolescents with ADHD, the family environment continues to pose as an important consideration in the development and management of their symptoms.

Specifically, parents of adolescents with ADHD may require more frequent acts of self-regulation as a caregiver (Johnston & Chronis-Tuscano, 2015; Podolski & Nigg, 2001; Shenaar-Golan et al., 2017). In addition to parents of adolescents with ADHD experiencing greater levels of psychopathology, these symptoms appear to occur more frequently in parents of children with ADHD relative to comparison groups and the general population (see Cheung & Theule, 2016). This meta-analysis by Cheung and Theule (2016) also highlighted that parents of adolescents with ADHD are more likely to have a diagnosis of a mental disorder as well as experience ADHD symptoms themselves; this further substantiates the need to understand caregiver wellbeing in addition to their parenting behaviors as it relates to supporting their children and adolescents with ADHD.

Adolescents with elevated symptoms of ADHD and disruptive behaviors often require more parental support and scaffolding to help manage their negative emotions, elicit more over-

reactive and inconsistent responses from their caregivers (Burke et al., 2008, Johnston & Mash, 2001). Thus, parenting a child with ADHD symptoms is considerably stressful and may elicit more negative parental reactions (Anastapoulos et al., 2009; Sobanski et al., 2010). There has been support for differential responses to adolescents with ADHD's emotions from their parents, causing further ED. For example, Oddo et al. (2020) found the pathway between maternal negative responses to adolescents' emotions and adolescent ED to be stronger in adolescents with higher severity of ADHD symptoms. Another study (Breaux et al., 2018) measured adolescent ER and ED using multimodal methods was able to find that adolescent ADHD symptoms significantly moderated the relations between non-supportive and supportive parenting practices and adolescent ER and ED/lability, in that, those who had higher elevations in ADHD symptoms were more susceptible, than those with fewer ADHD symptoms, to the impact of parenting practices on their ER and ED/lability. These findings suggest that youth ADHD symptoms may create impacts beyond intrapersonal difficulties and may exacerbate the pathway of caregivers' own emotion-related vulnerability that may spur non-supportive parenting, resulting in worsening youth emotion lability and ED in adolescence.

Despite the influential role of caregivers on adolescents' ER, clinical interventions for adolescents, including interventions designed for adolescents with ADHD, have largely targeted adolescent ER abilities as the mechanism for treatment of ED and ER deficits (see Eadeh et al., 2021 for a meta-analysis). Clinical interventions for adolescents with ADHD that have included parents in treatment have chiefly targeted parenting behaviors as a means to improve ER, despite there being evidence for other caregiver factors, such as parent psychopathology and ED, that are also impactful toward adolescent ER/ED (Eadeh et al, 2021). Given the influence of parent psychopathology and ED on adolescent outcomes, it may be beneficial to develop interventions for adolescent ER deficits/ED to also target parent and caregiver psychopathology symptoms and emotional health as well.

Person-Centered Approaches to Examining Adolescent Emotional Development

As there are many caregiver variables that can be related to adolescent ER, there have been many studies examining the effects of individual environmental and structural factors on adolescent emotion development. These studies have largely sought out to evaluate how different individual caregiver variables and characteristics relate to adolescent social-emotional outcomes broadly (see Morris et al., 2017 for a review). Despite the utility of understanding the effects of individual predictive caregiver characteristics, the use of traditional variable-centered analyses neglects the reality that these characteristics do not exist in isolation and individual variables can reflect and impact outcomes differently when existing in combination with other factors.

As there is an inherent interest in clinical and translational science to frame our findings in the context of its impact on individuals, emerging studies have utilized person-centered analyses, such as latent profile analyses (LPA), to account for how multiple variables are organized within individuals. Although burgeoning research has begun to link LPA of caregiver-level factors to child outcomes, this research is still limited. Of the research examining caregiver-level latent profiles, studies have almost exclusively focused on parenting behaviors (e.g., Borden et al., 2014; Choi et al., 2021; Withers, 2020) or parent psychopathology traits (Norris et al., 2020) and the relation between these profiles and child social-emotional adjustment and adolescent psychopathology symptoms broadly. One study has examined the latent profiles of observed

parenting behaviors in families of children with externalizing behavior disorders but was primarily focused on an early childhood population (Borden et al., 2014). This study found four latent classes of parenting behaviors that vary in levels of positive and negative parenting behaviors, however, no direct associations of these profiles to child outcomes were explicitly discussed in this article. Another study used a person-centered approach to examine profiles of adolescent ER as they relate to parenting behaviors, but not the opposite. Using LPA analyses, this study found profiles of low and high reactive adolescent ER, and that profiles of adolescents with higher reactivity were associated with more negative parenting behaviors (Turpyn et al., 2015).

Relatedly, while there has been empirical support for how each of these caregiver factors (i.e., parent psychopathology symptoms, parent ED, parenting) independently contribute to the development of youth's ER abilities, there is little known about whether there are any underlying patterns or permutations of caregiver-related variables that impact ER abilities/ED in offspring. To our knowledge only two studies have used person-centered analyses to determine profiles of parenting behaviors as they relate to child ER outcomes (Howe & Zimmer-Gembeck, 2022; Wang et al., 2019). Howe and Zimmer-Gembeck's (2022) study was able to identify four distinct profiles of parenting behaviors and child temperament, lending support to how there are variations and blends of parenting behaviors and individual characteristics that co-exist in distinct clusters. Children of parents who belonged to the profile that predominantly gravitated toward negative parenting behaviors (i.e., punitive reactions, distress, and minimization responses) displayed significantly poorer ER abilities relative to children of parents who belonged to the three other profiles (i.e., coaching/accepting parenting responses, blended supportive and non-supportive parenting responses, and low involved parenting responses). Wang et al. (2019) found four profiles of fathers' emotion-related parenting practices, and adolescents with supportive (high supportiveness, low levels of punitive responses and minimizing emotions) or balanced (moderate warmth and nonsupportive reactions, low expressive encouragement) fathers demonstrated better ER abilities compared to those with disengaged (low across all parenting indicators) or harsh (low on supportiveness, high nonsupportive) fathers. However, both of these prior LPA studies have focused solely on parenting practices, without considering other critical caregiver factors, such as psychopathology and emotion dysregulation, which are additional potential intervention targets.

With limited studies evaluating profiles of caregiver characteristics in relation to child ER/ED, it remains unclear what the underlying typologies of multiple dimensions of caregiver-related factors influencing ER abilities and ED in adolescents are. A clarified understanding of patterns across multiple caregiver-related factors can provide further information on the potential variety of environmental factors that may coexist to impact adolescent ED and ER abilities and inform prevention and intervention efforts with families. Such work has been done with families of preschool age children with ADHD (Dale et al., 2023) but has not yet been extended to an adolescent population as far as we are aware.

Given this backdrop, this master's thesis study sought to examine potential patterns of caregiver factors (parenting behaviors, parent psychopathology, and parent ED) that impact parent- and adolescent-reported emotional outcomes, specifically ER abilities and ED, in adolescents with and without a comprehensive diagnosis of ADHD. Adolescence is an exceptionally important period in development when rapid neurophysiological, psychological, and social contexts are

entering major transition, and this poses as a crucial period for intervention as there is the potential to minimize the long-term negative impacts related to psychosocial outcomes in this at-risk population of youth with ADHD (Rapee et al., 2019). An investigation of the latent profiles of caregiver level factors was conducted to elucidate the presence of important caregiver or parent-related intervention targets. This was carried out through the following aims: ***Aim 1***. Using LPA, identify patterns of parent ED, parenting behaviors, and psychopathology profiles in a sample of parents of adolescents with and without ADHD. ***Aim 2.*** Examine whether profiles of parent-related factors differ in families of adolescents with and without ADHD. ***Aim 3***. Explore whether latent profiles of parent-related factors relate to adolescent ER abilities and ED.

We expected to identify three distinct caregiver profiles, consistent with findings from previous research on caregiver characteristics. Although prior research on caregiver characteristics has identified four distinct profiles (e.g., Howe & Zimmer-Gembeck, 2022; Wang et al., 2019), the current study's smaller sample size and the inclusion of a greater number of indicator variables may reduce the likelihood of identifying the same number of nuanced profiles. Instead, it is anticipated that the analysis may yield three broader profiles (e.g., high, moderate, and low), reflecting a more simplified gradation across these indicators. These profiles were expected to differ in levels of self-reported ADHD symptoms, internalizing psychopathology, and ED. Based on prior findings linking parenting behaviors to adolescent ED, we anticipated profile-specific variations in positive parenting and discipline practices. Additionally, teaching rules and using material rewards were included as exploratory indicators, as no previous studies have examined their relationship to adolescent emotion regulation or dysregulation. We further hypothesized that caregivers of adolescents with ADHD would be more likely to belong to the profile characterized by the highest levels of ADHD symptoms, internalizing psychopathology, and ED. Finally, we expected that higher levels of ADHD, internalizing symptoms, and ED in caregivers would be associated with lower levels of positive parenting behaviors.

Methods

Participants and Procedures

The present study was a secondary analysis of a larger multi-site longitudinal study examining the role of sleep in the social-emotional and academic functioning of adolescents that was collected at Virginia Commonwealth University and Cincinnati Children's Hospital Medical Center (see Becker et al., 2019 for a more detailed description of the larger study). The full sample consisted of 302 adolescents (ages 12-14 years; M = 13.17; 44.7% female; 81.8% White) and a primary caregiver (84.11% mothers, 13.25% fathers, 1.32% grandparent, 1.32% another guardian) recruited from middle schools in the Richmond, VA and Cincinnati, OH regional areas. Two cohorts of eighth grade students with (n = 162) and without (n = 140) a comprehensive diagnosis of ADHD were recruited and followed for 2 years, spanning 5 timepoints (3 in-person and 2 online only timepoints). Data from the fifth timepoint (n = 266; 88.1% retention), was collected when the adolescents were in 10th grade (for full sample demographics for current study, see Table 1). This timepoint was chosen for the current study, as it contains the most complete collection of caregiver-level variables (e.g., parent ED was only collected at this timepoint). At this timepoint, parents and adolescents were asked to complete online measures related to social-emotional functioning and psychopathology symptoms prior to the in-person assessment visit; if measures were incomplete at the time of the visit, they were

finished on site. All study procedures were approved by both the Virginia Commonwealth University and Cincinnati Children's Hospital Medical Center Institutional Review Boards. All parents provided written consent, and all adolescents provided written assent at the first timepoint and were reconsented at the fifth timepoint regarding whether they were willing to be contacted for future research.

Measures

Parent ADHD Symptoms

The Barkley Adult ADHD Rating Scale-IV (BAARS-IV; Barkley, 2011) is a validated adult self-report questionnaire. This measure includes the 18 DSM-5 symptoms of ADHD and assesses current ADHD symptoms, areas of impairment, and retrospective reports of childhood symptoms of ADHD. The BAARS-IV consists of 21 items total, and participants are asked to respond to each item using a four-point scale (1 = *not at all*, 4 = *very often*). For the 18 symptom items, items rated a 3 or 4 are counted as present in the parent. The total ADHD symptom count (range = 0–18) was used in the current study. According to the previously stated standards for reliability, there was sufficient reliability in this current sample (α = .866).

Parent Depression, Anxiety, and Stress

The Depression, Anxiety, and Stress Scales-21 (DASS-21; Lovibond & Lovibond, 1995) was used to measure parent internalizing symptoms and stress. Respondents are asked to rate all 21 items in reference to the past week using a four-point scale (1 = *did not apply to me at all*, 4 = *applied to me very much or most of the time*). The DASS-21 total score (range = 21–84) was used in the current study, based on the fact that in the current sample and in prior research, the three components are highly correlated (Lovibond, 1998; Ross et al., 2017). Additionally, both pharmacological and behavioral interventions for depression, anxiety, and stress often look very similar (e.g., antidepressant medications, cognitive behavioral therapy). Reliability in the current sample was sufficient (α = .879).

Parenting Behaviors

The Parental Behavior Scale (PBS; Van Leeuwen & Vermulst, 2004) is a parent-report scale of their own parenting behaviors. The PBS consists of 27 items that are rated on a 5-point scale from *Never* to *Always.* The PBS produces four subscales: Positive Parenting, Discipline, Material Reward, and Teaching Rules. Reliability in the current sample for each subscale was sufficient (α = .678 –.913), with the teaching rules subscale being the only one below .740. To our knowledge, the PBS subscales have not yet been examined in relation to adolescent ER/ED. However, prior research has utilized the PBS positive parenting and discipline subscales to explore associations between parenting behaviors and adolescent mental health outcomes (see Fong et al., 2021 for a review). Additionally, some studies have combined PBS items across subscales to create customized measures of parenting behaviors (Harel & Finzi-Dottan, 2017; Franssens et al., 2021). To capture a comprehensive understanding of parenting behaviors and their potential relationships with adolescent ER/ED, all PBS subscales were included in the current study.

Parent and Adolescent ED

Both parents and adolescents rated their own ED using the Difficulties in Emotion Regulation Scale – Short Form (DERS-SF; Kaufman et al., 2015). The DERS-SF is a commonly used, well-validated 18-item measure used to assess ED (e.g., poor emotion awareness, poor emotion clarity, non-acceptance of emotions, poor access to emotion regulation strategies) in adolescents and adults. Parents and adolescents are asked to respond to each question item on a 5-point Likert scale as to how often they feel statements relevant to ED occur in their daily lives. Response options for each item include *almost never, sometimes, about half the time, most of the time, almost always,* with corresponding scores ranging from 1–5, respectively. The total score was used in the current study; this score is calculated by creating a sum of all items and reverse-scored items, with higher scores representing higher levels of ED. Reliability for the total score in the current sample was determined to be sufficient (α = .898).

Adolescent ER

Parents rated their adolescent's ER abilities and ED using the Emotion Regulation Checklist (ERC; Shields & Cicchetti, 1998). The ERC is a 24-item measure rated on a 4-point scale ranging from 1 to 4 and produces two subscales. The Negativity/Lability subscale represents mood lability and ED (e.g., "Exhibits wide mood swings," "Is prone to angry outbursts"), whereas the Emotion Regulation subscale represents whether the adolescent is able to appropriately display emotions, empathy, and self-awareness (e.g., "Can say when s/he is feeling sad, angry, mad, fearful, or afraid"). Both the Negativity/Lability subscale (α = .796) and the ER subscale (α = .850) had sufficient reliability in this sample.

Analytic Plan

First, descriptive statistics and bivariate correlations were conducted for all study variables. Next, relevant demographic factors, health information, and individual characteristics (e.g., medication status, biological sex of participant) that may significantly correlate with adolescent or parent variables at the bivariate level were examined. The significant variables identified from these preliminary bivariate analyses were then included in the LPA as covariates to account for their potential influence.

The LPA was conducted using the Bolck–Croon–Hagenaars (BCH) 3-Step method in *MPlus* to identify latent profiles of caregiver-level variables and assess whether ADHD status predicted membership in the identified classes. This automated 3-step approach is recommended for analyzing both potential predictors (in our case, adolescent ADHD status) and related distal outcomes (adolescent ER/ED; Bakk & Kuha, 2021; Collier & Leite, 2017). Full information maximum likelihood estimation was used to account for missing data due to caregiver nonresponse on questionnaires (Schafer & Graham, 2002). This method has been supported in addressing missing data within samples that contain potential covariates or grouping variables (Lanza & Cooper, 2016; Schafer & Graham, 2002).

Model Selection and Class Enumeration

Based on the empirically supported recommendations (see Nylund et al., 2007; Spurk et al., 2020), the optimal number of profiles was determined by comparing models with an increasing number of profiles, or "classes," on the following fit statistics: Bayesian Information Criterion (BIC; Schwarz, 1978), likelihood ratio test, otherwise known as the Vuong-Lo-Mendel-Rubin (VLMR; Lo et al., 2001; Vuong, 1989), Bootstrap parametric likelihood ratio test (BLRT; McLachlin & Peel, 2000), and calculations of Entropy (Kline, 2005). The BIC is a method to determine the relative fit of each model based on different numbers of classes, with smaller values of BIC indicating better fit. The BIC is considered a trustworthy method and reliable indicator of true model fit (Nylund et al., 2007). The Akaike Information Criterion (AIC) is a similar model fit statistic often reported alongside the BIC (Nylund et al., 2007). The VLMR is a likelihood ratio test that is used as another statistical indicator of model fit and helps determine when additional profiles do not contribute to improving fit or discrimination of a model (Lo et al., 2001). Specifically, the VLMR assesses the goodness of fit of two competing nested models; the two models differ by one class, and significant *p* values indicate that the model with one additional class provides a better fit compared to the competing model containing one fewer class. For additional confirmation of the selection of our profile model, the BLRT is used to determine whether the selected model was statistically better relative to a profile model with one fewer profile, as indicated by a significant *p* value (Nylund et al., 2007). Calculations of values for Entropy have been suggested to be well-suited to determine the precision of latent profile membership assignment (Kline, 2005). Entropy values range from 0 to 1, and higher levels of Entropy indicate greater class distinctiveness and can suggest greater precision of latent profile classification (Kline, 2005). Based on these fit statistics and adhering to Nylund and colleagues' (2007) widely referenced recommendations, we prioritized models in selection that have a combination of the lowest BIC, highest VLMR, and highest Entropy calculations. The BLRT was used to confirm the selection of our chosen model based on these fit statistics.

Related to Aim 2, ADHD status was included as a predictor to examine whether having an adolescent with ADHD significantly predicts membership in the identified caregiver-level profiles. Finally, a method of validating that profiles are statistically meaningful subsamples is to examine mean differences across profile groups identified by the LPA in relation to relevant distal outcomes (Spurk et al., 2020). For Aim 3, the BCH method for LPA was used to examine the relations between emergent latent profiles of caregiver variables to distal outcomes (adolescent-reported ED, parent-reported negativity/lability, parent-reported ER).

Results

Preliminary Analyses

Intercorrelations and descriptive statistics for study variables are presented in Table 2. Preliminary analyses of bivariate correlations between demographic, parent, and adolescent variables found that family annual income was significantly related to caregiver self-reported internalizing symptoms, and caregiver-reported adolescent ER and negativity/lability. Adolescent ADHD status was significantly positively correlated with family annual income, and caregiver self-reported ADHD and internalizing symptoms. With regard to parenting behaviors, adolescent ADHD status was significantly negatively associated with caregivers' use of positive

parenting and positively associated with caregivers' use of material rewards. Adolescent ADHD status was significantly positively associated with adolescent emotion regulation and negativity/mood lability. All significant correlations were weak in magnitude except for the association between adolescent ADHD status and their parent-reported negativity/lability, which was moderate in strength. Due to its significant correlation to the study's intended model indicator variables, family annual income was included as a covariate in the final model.

Latent Profile Analysis

LPA was conducted to determine the optimal number of profiles for the parent-related variables. LPA fit indices for two-through four-profile solutions are summarized in Table 3. Given the sample size and the additional profile in the four-profile solution lacked distinction and theoretical relevance, we decided to discontinue investigating models beyond four profiles. The three-profile solution was selected as the optimal fit for the data. Specifically, the three-class model had the lowest BIC, sufficiently low AIC, and demonstrated a higher log-likelihood value than the two-class solution. A confirmatory BRLT analysis determined that the three-profile solution was significantly better than the two-profile solution. Although the VLMR analysis suggested that a more parsimonious model with two-profiles may have a higher probability of good fit for this data, literature has suggested that the VLMR test may be more suited to models containing larger sample sizes (i.e., at least 300 participants; Vrieze, 2012). It is suggested that reported AIC, BIC, and log-likelihood values are sufficient for determining profile enumeration (Vrieze, 2012), therefore, based on these considerations, it was determined that the three-profile solution was suitable for representing this sample.

Three distinct profiles emerged with differences being based on levels of internalizing psychopathology, ED, and parenting styles; see Figure 1. Using Baumrind's theory of parenting styles (Baumrind, 1991), the three profiles represented permissive (i.e., low on discipline and teaching rules but moderate in positive parenting), and moderate to high levels of authoritative parenting (i.e., moderate to high on positive parenting and teaching rules, but also on discipline and use of material rewards. Profile 1, which we characterize as the Moderate Internalizing/ED and Permissive Parenting profile, contains 10.87% of the sample ($N = 32$). Caregivers that were subsumed under this profile endorsed internalizing and ED scores that were neither the highest nor lowest of the three profiles and lower total positive parenting, discipline, and teaching rules scores relative to the other profiles. Profile 2, containing 62.50% ($N = 188$) of the sample, is characterized by Low Internalizing/ED and high levels of Authoritative Parenting profile. Caregivers belonging to this profile are distinctly characterized by relatively low endorsement of internalizing symptoms, and parent ED, in addition to the highest use of positive parenting, discipline, and teaching rules relative to the other profiles. Lastly, Profile 3 is the High Internalizing/ED and moderate Authoritative Parenting profile and contains 26.60% of the sample ($N = 80$). These caregivers are distinctly characterized by relatively high internalizing symptoms and ED, and report using positive parenting, discipline, and teaching rules at levels that were neither the highest or lowest relative to Profiles 1 and 2. Of note, profiles significantly differed in levels of internalizing symptoms, positive parenting, discipline, and teaching rules but did not significantly differ in levels of material rewards or parent ADHD symptoms. Means and standard deviations of all indicators and adolescent variables for each profile are reported in Table 2.

Differences in Profiles Based on Adolescent ADHD Status and ER/ED

Significant differences were observed among the classes in terms of whether caregivers' adolescents had a diagnosis of ADHD. Caregivers of adolescents with ADHD were significantly less likely to be in the Moderate Internalizing/ED and Permissive Parenting (*OR* = 0.09; 95% *CI* = 0.02-0.36) or Low Internalizing/ED and High Authoritative Parenting (*OR* = 0.17; 95% *CI* = 0.07-0.41) class, relative to the High Internalizing/ED and Moderate Authoritative Parenting profile. Differences were also observed among the profiles in terms of parent-reported adolescent ER abilities. Adolescents whose parents fell in the High Internalizing/ED and Moderate Authoritative Parenting profile had significantly worse caregiver-reported ER ($\chi^2 = 31.58$; $p < .001$), while adolescents whose parents fell in the Low Internalizing/ED and High Authoritative Parenting profile had significantly lower levels of negativity/lability relative to the other two profiles ($\chi^2 = 36.65$; $p < .001$). No significant differences were observed across the profiles regarding adolescents' self-reported ED on the DERS-18 *(*$p_{1\ vs.2} > .870$; $p_{1\ vs.3} > .234$; $p_{2\ vs.\ 3} > .083$*).* However, adolescents with caregivers in the High Internalizing/ED and Moderate Authoritative Parenting profile had marginally higher self-reported ED than adolescents whose caregivers were in the Low Internalizing/ED and High Authoritative Parenting profile ($\chi^2 = 3.00$, $p = .083$).

Discussion

The purpose of this study was to examine profiles of caregiver variables (parent psychopathology, parenting behaviors, parent ED), draw comparisons on profiles between families of adolescents with and without a diagnosis of ADHD, and determine associations between caregiver profiles and adolescent ER and ED. Although existing studies have established the unitary relations between caregiver variables and adolescent ER and ED, few studies have explored potential combined effects of caregiver variables and impact adolescent outcomes in ER/ED. An LPA of caregiver self-reported ADHD and internalizing (depression, anxiety, and stress) symptoms, ED, and parenting behaviors (positive parenting, material rewards, discipline, teaching rules) revealed a three-factor solution for caregiver profiles. Adolescent ADHD status significantly predicted profile membership such that caregivers of adolescents with ADHD were more likely to fall into the High internalizing/ED and Moderate Authoritative Parenting group than in either the Moderate Internalizing/ED and Permissive Parenting group or Low Internalizing/ED and High Authoritative Parenting group. Relations between distinct profiles determined from the LPA and parent-reported adolescent ER and self-reported adolescent ED revealed that adolescents with caregivers in the High Internalizing/ED and Moderate Authoritative Parenting profile showed significantly poorer parent-reported ER and more ED compared to those in other profiles. These adolescents also reported marginally higher ED on the DERS-18 than those with caregivers in the Low Internalizing/ED and High Authoritative Parenting profile. Notably, the Low Internalizing/ED and High Authoritative Parenting profile was associated with the lowest levels of parent-reported negativity/lability in adolescents. These findings and their clinical implications are discussed next.

Profiles of Parent Functioning and Associations with Adolescent ADHD and ER/ED

As hypothesized, three distinct caregiver profiles emerged. The Moderate Internalizing/ED and Permissive Parenting profile was the least common (10.87% of sample) and endorsed

internalizing symptoms and parent ED that were neither the highest nor lowest of the three profiles and displayed parenting behavior most consistent with a permissive parenting style. The Low Internalizing/ED and Authoritative Parenting profile represented most of the sample (62.5%), followed by the High Internalizing/ED and Authoritative Parenting profile (26.6% of sample). Interestingly, despite these two profiles having very different levels of parent internalizing symptoms and ED, they displayed similar parenting styles, with the low internalizing/ED group just reporting that they engage in more parenting practices than those in the high internalizing/ED group.

Caregivers of adolescents with ADHD were more likely to be in the High Internalizing/ED and Moderate Authoritative Parenting profile relative to the two other profiles. There are several possible explanations for this finding. First, it could be that more active parenting practices are needed for neurodiverse adolescents, with these parents being more likely to have previously attended behavioral parent training or other family interventions that specifically focus on increasing positive parenting, use of consequences, and provision of rewards for desired behaviors (Lundahl et al., 2006). A recent review by Zitzmann et al. (2024) found that studies relating parent psychopathology and parenting behaviors differ in findings depending on the parent mental health problem or symptom severity. More specifically, parents who presented with anxiety symptoms were more likely to be overly accommodating, controlling and warm toward their children, while parents who presented with depression symptoms were likely to have diminished parental warmth (Zitzmann et al., 2024). Due to multicollinearity between the three DASS-21 subscales of depression, anxiety, and stress in the current sample, we were unable to explore this possibility. This finding was particularly surprising in light of extensive research linking depression symptoms to more permissive or harsh parenting styles (e.g., Middleton et al., 2009; Turney, 2011). It may be that adolescents who have ADHD or higher levels of ED may require more parental support. As adolescents of caregivers in the High Internalizing/ED and Moderate Authoritative Parenting profile were more likely to be those with ADHD and higher ED, their increased needs may evoke more authoritative and involved parenting, hence why caregivers of the High Internalizing/ED and Authoritative Parenting profile display such practices. This finding aligns with previous studies in emerging adults, where emerging adults with higher psychological symptoms tend to evoke more active parenting practices from their caregivers (McKinney et al., 2018; McKinney & Milone, 2012). It remains unclear in our findings and in previous studies the directionality of influence between whether adolescent symptoms elicit caregiver practices or vice versa, therefore it will be critical for future research to utilize longitudinal methodologies to elucidate which of these possible explanations may underlie our current findings.

Additionally, results generally suggested that caregivers displaying authoritative parenting styles and lower in parent internalizing symptoms/ED were linked to better ER outcomes and less negativity/lability in adolescents. No significant differences in self-reported adolescent ED were observed across profiles. This pattern of findings may reflect shared method variance and reporting biases among parents with high ED and psychopathology (e.g., a tendency to perceive more difficulties in their children; Kroes et al., 2003). Additionally, parent reports of adolescent behaviors are known to vary based on contextual factors (Barker et al., 2007). The homogeneity in self-reported ED may also stem from the DERS-18 primarily capturing ED when the adolescent is upset and external ED (e.g., becoming out of control, difficulty concentrating or controlling behaviors), rather than ER/ED for a range of emotions (e.g., worried, embarrassed)

and cognitive (e.g., cognitive reappraisal) and behavioral (e.g., avoidance, suppression) ER strategies, which are more common in adolescence (e.g., Silvers, 2022). Consistent with prior research, adolescents in this study reported lower rates of ED compared to parent reports, aligning with evidence that parent-adolescent agreement on psychological symptoms tends to be moderate at best (e.g., de Los Reyes et al., 2015; Egan et al., 2019; Hartung et al., 2004). Similar to Egan et al. (2019), who found parents reported greater adolescent self-regulation impairments than adolescents themselves, we found that parents may be more attuned to external ER/ED, which are more observable and may have been more prominent earlier in childhood. It will be important for future research to assess a range of ER/ED outcomes per adolescent-report.

The Importance of Person-Centered Approaches

The three profiles that emerged were characterized based on their relative levels of parent internalizing symptoms and ED along with patterns of parenting behaviors. To further specify parenting behavior patterns across our profiles, we relied on the well-known parenting styles developed by Baumrind (1991), who characterized parenting styles based on levels of parent demandingness (e.g., clear rules, guidelines, consequences) and responsiveness (e.g., warmth, supportiveness). As the PBS subscales used in this study do not contain items that are representative of high demanding and harsh punitive parenting practices, Baumrind's authoritarian parenting style is not well-represented by any of the profiles found in this LPA. These parenting styles have been shown to associate to patterns of child and adolescent ER and ED in prior literature (Moilanen, 2014; Morris et al., 2007) and thus warrant further attention in the future.

Our findings yielded results that are inconsistent with literature examining relations between parent psychopathology and parenting practices and between parent psychopathology and adolescent ER and ED using variable-centered analyses. Specifically, as noted above, moderate levels of authoritative parenting practices were characteristic of the caregivers that fell into the high internalizing symptoms and ED profile. This finding suggests that having higher levels of internalizing psychopathology and ED as a parent is not necessarily indicative of problematic parenting practices, despite prior research linking parent psychopathology, including symptoms of anxiety and depression, to lower levels of positive parenting (Zitzmann et al., 2024). This discrepancy may be attributed to the use of person-centered analyses, that consider parent psychopathology and ED in conjunction with parenting behaviors rather than as an outcome as is done in variable-centered analyses. Notably, when considering these constellations of parent-related variables, results suggest that increasing competency in positive parenting strategies and decreasing discipline or teaching of rules may not be the most conducive approach to improve ER/ED in their adolescents. Instead, targeting parent mental health, specifically their internalizing symptoms and ability to cope with negative emotions and stress, may be more impactful. This is consistent with theory and research regarding parent emotion socialization and its influences on youth ER/ED (see Eisenberg, 2020), and interventions targeting parental depression among families of children with ADHD (e.g., Chronis-Tuscano et al., 2013) and suggests that this work is needed within the adolescent developmental period as well.

Identification of Priority Populations

Findings of this study suggest that families of adolescents with ADHD are more likely to have parents that fall into the High Internalizing/ED and Moderate Authoritative Parenting profile. As ER deficits continue to pose as a predictor of adolescent social-emotional and academic challenges and psychopathology within this age group, these findings indicate that interventions targeting parent psychopathology are likely highly pertinent for families of adolescents with ADHD, who have been identified as a high-risk population for ER deficits and ED. Findings of this study suggest that families of adolescents with ADHD may be a priority population to receive interventions that target parent psychopathology and ED.

Given the findings that parent psychopathology and ED have an impact on adolescent ER/ED, there is strong support for treating the entire family system, caregivers and adolescents alike; future intervention studies should examine if temporality of intervening on parent and adolescent psychopathology symptoms produces different outcomes in treating adolescent ER deficits/ED. A study by Chronis-Tuscano et al. (2016) has examined whether starting treatment by targeting parent psychopathology and ED, starting with parent training, or simultaneously administering treatment for parent psychopathology/ED and parent training would be most likely conducive of improved ADHD symptoms and disruptive behaviors. Some studies have examined the outcomes of intervention delivery for both parent and adolescent ED simultaneously (Breaux & Langberg, 2020; Breaux et al., 2023); however, this research is preliminary as these have only been pilot studies without a control condition or a comparator condition only working with adolescents. It will be critical for further research to evaluate the utility of targeting parent ED and/or psychopathology prior to or simultaneously with adolescent ED among families of adolescents with ADHD.

Limitations

These findings should be interpreted within the context of several limitations. Firstly, it should be noted that the current study sample consisted of a majority of White, middle-income, and college-educated caregivers and their adolescents. With limited sociodemographic diversity within this sample and given that there is extensive literature outlining the variability in caregiver practices across racial and ethnic subpopulations (see Morelen et al., 2013 for a review), the generalizability of these findings should be interpreted with the caution as it pertains to those from underrepresented and racial/ethnic minority populations that have been underrepresented in this sample.

Of note in the current study, all indicator variables were measured via either self or parent report questionnaires. Although widely used and validated measures, it is worth noting that self and parent report questionnaires can be subject to response biases and do not capture naturalistic manifestations of these variables. Future replications should consider using observational or real-time (e.g., ecological momentary assessment) measures of parenting behaviors and ER/ED abilities to more accurately capture these behaviorally salient parent and adolescent constructs. Second, parent ADHD symptoms was included as an indicator in the LPA, given that adolescents with ADHD often have parents who have ADHD themselves. However, there was very little variability in caregiver ADHD symptoms reported within this sample.

It is notable that we informally observed that caregivers without ADHD were more likely to participate in the original study than the caregiver with ADHD in a given family. This suggests that caregiver ADHD symptoms may be underrepresented in this sample for families of adolescents with ADHD and supports the need for future research to include multiple caregivers in their studies. Finally, it is important to note that our measure of parenting behaviors, the PBS, has not been used in previous studies examining relations between parenting behaviors and adolescent ER or ED. However, previous studies that have examined relations between parenting behaviors and adolescent ER/ED (e.g., Jabeen et al., 2013; Jaffe et al., 2010; Morris et al., 2017) have found support for such relations having measured dimensions of parenting behaviors, such as positive parenting and parent discipline, like those measured by the PBS.

Conclusion

Caregivers' psychological well-being and parenting behaviors are critical factors influencing adolescents' ER abilities and ED, as demonstrated through LPA. The relationships between caregiver characteristics and adolescent emotional well-being are not simple variable-to-variable associations but rather reflect intricate patterns of interplay within individual caregiver profiles. These dynamics are especially evident in families of adolescents with ADHD, underscoring the multifaceted ways caregiver factors shape developmental outcomes. Continued person-centered analyses are recommended to explore the complex patterns among caregiver factors and other contextual variables affecting adolescent ER and ED. These efforts will provide deeper insights into the nuanced dynamics of parent-child relationships and support the development of more effective, tailored intervention strategies. Specifically, contrary to previous findings suggesting that caregivers with elevated internalizing psychopathology symptoms engage in fewer positive parenting behaviors, this study did not replicate such patterns within the elevated internalizing psychopathology profile (i.e., this profile displayed moderate levels of authoritative parenting practices). This discrepancy suggests a need for further exploration of caregiver internalizing psychopathology and its interaction with parenting behaviors, particularly within clinical child and adolescent samples. Future research should also investigate the potential benefits of targeting caregiver internalizing psychopathology and ED as part of interventions aimed at improving adolescent ER and ED. Given the frequent comorbidity of internalizing psychopathology, such as anxiety and depression, within caregivers and with conditions like ADHD, future studies should investigate whether intervention outcomes differ based on specific comorbid diagnostic profiles. In doing so, studies should examine whether the timing of addressing caregiver versus adolescent ER/ED influences intervention outcomes in general, and particularly within families of youth with ADHD.

References

Anastopoulos, A. D., Sommer, J. L., & Schatz, N. K. (2009). ADHD and family functioning. *Current Attention Disorders Reports*, *1*(4), 167–170. https://doi.org/10.1007/s12618-009-0023-2

Are, F., & Shaffer, A. (2016). Family emotion expressiveness mediates the relations between maternal emotion regulation and child emotion regulation. *Child Psychiatry and Human Development*, *47*(5), 708–715. https://doi.org/10.1007/s10578-015-0605-4

Astenvald, R., Frick, M. A., Neufeld, J., Bölte, S., & Isaksson, J. (2022). Emotion dysregulation in ADHD and other neurodevelopmental conditions: a co-twin control study. *Child and Adolescent Psychiatry and Mental Health*, *16*(1). https://doi.org/10.1186/s13034-022-00528-0

Bakk, Z., & Kuha, J. (2021). Relating latent class membership to external variables: An overview. *The British journal of mathematical and statistical psychology*, *74*(2), 340–362. https://doi.org/10.1111/bmsp.12227

Banerjee, T. Das, Middleton, F., & Faraone, S. V. (2007). Environmental risk factors for attention-deficit hyperactivity disorder. In *Acta Paediatrica, International Journal of Paediatrics 96*(9), 1269–1274. https://doi.org/10.1111/j.1651-2227.2007.00430.x

Bariola, E., Gullone, E., & Hughes, E. K. (2011). Child and adolescent emotion regulation: the role of parental emotion regulation and expression. In *Clinical Child and Family Psychology Review 14*(2), 198–212. https://doi.org/10.1007/s10567-011-0092-5

Barkley, R. A. (2011). Barkley Adult ADHD Rating Scale-IV (BAARS-IV). In *Barkley Adult ADHD Rating Scale-IV (BAARS-IV).* The Guilford Press.

Baumrind, D. (1991). Parenting styles and adolescent development. In J. Brooks-Gunn, R. M. Lerner, & A. C. Petersen (Eds.), *The Encyclopedia on Adolescence* (pp. 746-758). New York: Garland Publishing.

Beauchaine, T. P. (2015). Respiratory sinus arrhythmia: A transdiagnostic biomarker of emotion dysregulation and psychopathology. In *Current Opinion in Psychology*, *3*, 43–47. Elsevier. https://doi.org/10.1016/j.copsyc.2015.01.017

Binion, G., & Zalewski, M. (2018). Maternal emotion dysregulation and the functional organization of preschoolers' emotional expressions and regulatory behaviors. *Emotion*, *18*(3), 386–399. https://doi.org/10.1037/emo0000319

Borden, L. A., Herman, K. C., Stormont, M., Goel, N., Darney, D., Reinke, W. M., & Webster-Stratton, C. (2014). Latent profile analysis of observed parenting behaviors in a clinic sample. *Journal of Abnormal Child Psychology*, *42*(5), 731–742. https://doi.org/10.1007/s10802-013-9815-z

Borelli, J. L., Burkhart, M. L., Rasmussen, H. F., Smiley, P. A., & Hellemann, G. (2018). Children's and Mothers' cardiovascular reactivity to a standardized laboratory stressor: Unique relations with maternal anxiety and overcontrol. *Emotion*, *18*(3), 369–385. https://doi.org/10.1037/emo0000320

Breaux, R. P., & Harvey, E. A. (2019). A longitudinal study of the relation between family functioning and preschool adhd symptoms. *Journal of Clinical Child and Adolescent Psychology*, *48*(5), 749–764. https://doi.org/10.1080/15374416.2018.1437737

Breaux, R. P., McQuade, J. D., Harvey, E. A., & Zakarian, R. J. (2018). Longitudinal associations of parental emotion socialization and children's emotion regulation: the

moderating role of ADHD symptomatology. *Journal of Abnormal Child Psychology*, *46*(4), 671–683. https://doi.org/10.1007/s10802-017-0327-0

Bridges, L. J., Denham, S. A., & Ganiban, J. M. (2004). Definitional issues in emotion regulation research. In *Child Development* 75(2), 340–345. https://doi.org/10.1111/j.1467-8624.2004.00675.x

Bridgett, D. J., Burt, N. M., Edwards, E. S., & Deater-Deckard, K. (2015). Intergenerational transmission of self-regulation: a multidisciplinary review and integrative conceptual framework. *Psychological Bulletin*, *141*(3), 602–654. https://doi.org/10.1037/a0038662.supp

Brumariu, L. E. (2015). Parent-child attachment and emotion regulation. *New Directions for Child and Adolescent Development*, *2015*(148), 31–45. https://doi.org/10.1002/cad.20098

Bunford, N., Evans, S. W., & Wymbs, F. (2015). ADHD and emotion dysregulation among children and adolescents. *Clinical Child and Family Psychology Review 18*(3), 185–217. Springer New York LLC. https://doi.org/10.1007/s10567-015-0187-5

Burke, J. D., Pardini, D. A., & Loeber, R. (2008). Reciprocal relationships between parenting behavior and disruptive psychopathology from childhood through adolescence. *Journal of Abnormal Child Psychology*, *36*(5), 679–692. https://doi.org/10.1007/s10802-008-9219-7

Butts, M. M., & Michels, L. C. (2006). The sources of four commonly reported cutoff criteria: What did they really say? *Organizational Research Methods*, *9*(2), 202–220. https://doi.org/10.1177/1094428105284919

Casey, B. J., Jones, R. M., Levita, L., Libby, V., Pattwell, S. S., Ruberry, E. J., Soliman, F., & Somerville, L. H. (2010). The storm and stress of adolescence: Insights from human imaging and mouse genetics. *Developmental Psychobiology*, *52*(3), 225–235. https://doi.org/10.1002/dev.20447

Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural Equation Modeling*, *9*(2), 233–255. https://doi.org/10.1207/S15328007SEM0902_5

Cheung, K., & Theule, J. (2016). Parental Psychopathology in Families of Children with ADHD: A Meta-analysis. *Journal of Child and Family Studies*, *25*(12), 3451–3461. https://doi.org/10.1007/s10826-016-0499-1

Choi, J. Y., Park, S. H., & Lee, J. (2023). Adolescents' behavior problems based on combination of motivational system and perceived maternal parenting: A person-centered approach by gender. *Current Psychology*, *42*(1), 273–283. https://doi.org/10.1007/s12144-021-01405-3/Published

Chronis, A. M., Pelham, W. E., Baumann, B. L., Kipp, H., Lahey, B. B., Williams, S. H., Jones, H. A., & Rathouz, P. J. (2007). Maternal depression and early positive parenting predict future conduct problems in young children with attention-deficit/hyperactivity disorder. *Developmental Psychology*, *43*(1), 70–82. https://doi.org/10.1037/0012-1649.43.1.70

Coplan, R. J., Reichel, M., & Rowan, K. (2009a). Exploring the associations between maternal personality, child temperament, and parenting: A focus on emotions. *Personality and Individual Differences*, *46*(2), 241–246. https://doi.org/10.1016/j.paid.2008.10.011

Coplan, R. J., Reichel, M., & Rowan, K. (2009b). Exploring the associations between maternal personality, child temperament, and parenting: A focus on emotions. *Personality and Individual Differences*, *46*(2), 241–246. https://doi.org/10.1016/j.paid.2008.10.011

Crespo, L. M., Trentacosta, C. J., Aikins, D., & Wargo-Aikins, J. (2017). Maternal emotion regulation and children's behavior problems: the mediating role of child emotion regulation. *Journal of Child and Family Studies*, *26*(10), 2797–2809. https://doi.org/10.1007/s10826-017-0791-8

Dale, C., Parent, J., Forehand, R., DiMarzio, K., Sonuga-Barke, E., Long, N., & Abikoff, H. B. (2021). Behavioral parent training for preschool adhd: family-centered profiles predict changes in parenting and child outcomes. *Journal of Clinical Child and Adolescent Psychology*. https://doi.org/10.1080/15374416.2020.1867987

Daughters, S. B., Gorka, S. M., Rutherford, H. J. V., & Mayes, L. C. (2014). Maternal and adolescent distress tolerance: The moderating role of gender. *Emotion*, *14*(2), 416–424. https://doi.org/10.1037/a0034991

De Los Reyes, A., Augenstein, T. M., Wang, M., Thomas, S. A., Drabick, D. A. G., Burgers, D. E., & Rabinowitz, J. (2015). The validity of the multi-informant approach to assessing child and adolescent mental health. Psychological bulletin, 141(4), 858–900. https://doi.org/10.1037/a0038498

De Witte, N. A. J., Sutterlin, S., Braet, C., & Mueller, S. C. (2016). Getting to the heart of emotion regulation in youth: The role of interoceptive sensitivity, heart rate variability, and parental psychopathology. *PLoS ONE*, *11*(10). https://doi.org/10.1371/journal.pone.0164615

Denham, S. A. (1998). Emotional development in young children. *Emotional development in young children.* Guilford Press.

Dennis, T. A., Malone, M. M., & Chen, C. C. (2009). Emotional face processing and emotion regulation in children: An ERP study. *Developmental Neuropsychology*, *34*(1), 85–102. https://doi.org/10.1080/87565640802564887

Dickson, D. J., Laursen, B., Valdes, O., & Stattin, H. (2019). Derisive parenting fosters dysregulated anger in adolescent children and subsequent difficulties with peers. *Journal of Youth and Adolescence*, *48*(8), 1567–1579. https://doi.org/10.1007/s10964-019-01040-z

Dix, T. (1991). The affective organization of parenting: Adaptive and maladaptative processes. In *Psychological Bulletin*, *110*(1), 3–25. https://doi.org/10.1037/0033-2909.110.1.3

Donahue, J. J., Goranson, A. C., McClure, K. S., & Van Male, L. M. (2014). Emotion dysregulation, negative affect, and aggression: A moderated, multiple mediator analysis. *Personality and Individual Differences*, *70*, 23–28. https://doi.org/10.1016/j.paid.2014.06.009

Dunsmore, J. C., Booker, J. A., & Ollendick, T. H. (2013). Parental emotion coaching and child emotion regulation as protective factors for children with oppositional defiant disorder. *Social Development*, *22*(3), 444–466. https://doi.org/10.1111/j.1467-9507.2011.00652.x

Eisenberg, N. (2020). Findings, issues, and new directions for research on emotion socialization. In *Developmental psychology, 56*(3), 664–670. NLM (Medline). https://doi.org/10.1037/dev0000906

Eisenberg, N., Spinrad, T. L., Taylor, Z. E., & Liew, J. (2019). Relations of inhibition and emotion-related parenting to young children's prosocial and vicariously induced distress behavior. *Child Development*, *90*(3), 846–858. https://doi.org/10.1111/cdev.12934

Egan, K. N., Cohen, L. A., & Limbers, C. (2019). Parent–child agreement on the Behavior Rating Inventory of Executive Functioning (BRIEF) in a community sample of

adolescents. *Applied Neuropsychology: Child*, *8*(3), 264–271. https://doi.org/10.1080/21622965.2018.1438896

Felton, J. W., Schwartz, K. T. G., Oddo, L. E., Lejuez, C. W., & Chronis-Tuscano, A. (2021). Transactional patterns of depressive symptoms between mothers and adolescents: The role of emotion regulation. *Depression and Anxiety*, *38*(12), 1225–1233. https://doi.org/10.1002/da.23225

Fong, Z. H., Loh, W. N. C., Fong, Y. J., Neo, H. L. M., & Chee, T. T. (2022). Parenting behaviors, parenting styles, and non-suicidal self-injury in young people: a systematic review. *Clinical child psychology and psychiatry*, *27*(1), 61–81. https://doi.org/10.1177/13591045211055071

Franssens, R., Abrahams, L., Brenning, K., Van Leeuwen, K., & De Clercq, B. (2021). Unraveling Prospective Reciprocal Effects between Parental Invalidation and Pre-Adolescents' Borderline Traits: Between- and Within-Family Associations and Differences with Common Psychopathology-Parenting Transactions. *Research on child and adolescent psychopathology, 49*(10), 1387–1401. https://doi.org/10.1007/s10802-021-00825-w

Garber, J., & Dodge, K. A. (1991). The development of emotion regulation and dysregulation. Cambridge University Press.

Goagoses, N., Bolz, T., Eilts, J., Schipper, N., Schütz, J., Rademacher, A., Vesterling, C., & Koglin, U. (2023). Parenting dimensions/styles and emotion dysregulation in childhood and adolescence: a systematic review and Meta-analysis. *Current Psychology*, *42*(22), 18798–18822. https://doi.org/10.1007/s12144-022-03037-7

Goger, P., Rozenman, M., & Gonzalez, A. (2020). The association between current maternal psychological control, anxiety symptoms, and emotional regulatory processes in emerging adults. *Journal of Behavior Therapy and Experimental Psychiatry*, *68*. https://doi.org/10.1016/j.jbtep.2020.101563

Granat, A., Gadassi, R., Gilboa-Schechtman, E., & Feldman, R. (2017). Maternal depression and anxiety, social synchrony, and infant regulation of negative and positive emotions. *Emotion*, *17*(1), 11–27. https://doi.org/10.1037/emo0000204

Gratz, K. L., Moore, K. E., & Tull, M. T. (2016). The role of emotion dysregulation in the presence, associated difficulties, and treatment of borderline personality disorder. *Personality Disorders: Theory, Research, and Treatment*, *7*(4), 344–353. https://doi.org/10.1037/per0000198

Graziano, P. A., & Garcia, A. (2016). Attention-deficit hyperactivity disorder and children's emotion dysregulation: A meta-analysis. In *Clinical Psychology Review*, *46*, 106–123. Elsevier Inc. https://doi.org/10.1016/j.cpr.2016.04.011

Gross, J. J. (2002). Emotion regulation: affective, cognitive, and social consequences. *Psychophysiology, 39*(3), 281-291. https://doi.org/10.1017/s0048577201393198

Gross, J. J., & Thompson, R. A. (2007). Emotion regulation: Conceptual foundations. In *Handbook of emotion regulation,* 3–24. The Guilford Press.

Gülseven, Z., Kumru, A., Carlo, G., Palermo, F., Selçuk, B., & Sayıl, M. (2018). The mediational roles of harsh and responsive parenting in the longitudinal relations between socioeconomic status and Turkish children's emotional development. *International Journal of Behavioral Development*, *42*(6), 563–573. https://doi.org/10.1177/0165025418783279

Gültekin Ahçı, Z., Akdeniz, S., & Harmancı, H. (2022). A study of the effects of parental Attention Deficit and Hyperactivity Disorder (ADHD) and parental emotion regulation processes on adolescent self-regulation skills. *International Journal of Progressive Education*, *18*(1), 435–447. https://doi.org/10.29329/ijpe.2022.426.24

Hallquist, M. N., & Wiley, J. F. (2018). MplusAutomation: An R package for facilitating large-scale latent variable analyses in Mplus. *Structural Equation Modeling*, *25*(4), 621–638. https://doi.org/10.1080/10705511.2017.1402334

Harden, B. J., Buhler, A., & Parra, L. J. (2016). Maltreatment in infancy: A developmental perspective on prevention and intervention. *Trauma, Violence, and Abuse*, *17*(4), 366–386. https://doi.org/10.1177/1524838016658878

Hastings, P. D., Nuselovici, J. N., Utendale, W. T., Coutya, J., McShane, K. E., & Sullivan, C. (2008). Applying the polyvagal theory to children's emotion regulation: Social context, socialization, and adjustment. *Biological Psychology*, *79*(3), 299–306. https://doi.org/10.1016/j.biopsycho.2008.07.005

Havighurst, S., & Kehoe, C. (2017). The role of parental emotion regulation in parent emotion socialization: Implications for intervention. In *Parental Stress and Early Child Development: Adaptive and Maladaptive Outcomes*, 285–307. Springer International Publishing. https://doi.org/10.1007/978-3-319-55376-4_12

Herzog, T. K., Hill-Chapman, C., Hardy, T. K., Wrighten, S. A., & El-Khabbaz, R. (2015). Trait emotion, emotional regulation, and parenting styles. *Journal of Educational and Developmental Psychology, 5*(2), 119-135. http://dx.doi.org/10.5539/jedp.v5n2p119

Harel, G., & Finzi-Dottan, R. (2018). Childhood maltreatment and its effect on parenting among high-risk parents. *Journal of Child and Family Studies, 27*(5), 1513–1524. https://doi.org/10.1007/s10826-017-0994-z

Howe, S. L., & Zimmer-Gembeck, M. J. (2022). Person-centered maternal emotion socialization and child temperament: Relations to children's emotion regulation and anxiety and depressive symptoms. *Journal of Child and Family Studies*, *31*(9), 2644–2659. https://doi.org/10.1007/s10826-022-02289-y

Jabeen, F., Anis-ul-Haque, M., & Riaz, M. N. (2013). Parenting styles as predictors of emotion regulation among adolescents. *Pakistan Journal of Psychological Research, 28*(1), 85–105.

Jaffe, M., Gullone, E., & Hughes, E. K. (2010). The roles of temperamental dispositions and perceived parenting behaviours in the use of two emotion regulation strategies in late childhood. *Journal of Applied Developmental Psychology, 31*(1), 47–59. https://doi.org/10.1016/j.appdev.2009.07.008

Johnston, C., & Mash, E. J. (2001). Families of children with Attention-Deficit/Hyperactivity Disorder: Review and recommendations for future research. *Clinical Child and Family Psychology Review*, *4*(3). 183–207. https://doi.org/10.1023/a:1017592030434

Katz, L. F., Maliken, A. C., & Stettler, N. M. (2012). Parental meta-emotion philosophy: A review of research and theoretical framework. *Child Development Perspectives*, *6*(4), 417–422. https://doi.org/10.1111/j.1750-8606.2012.00244.x

Kaufman, E. A., Xia, M., Fosco, G., Yaptangco, M., Skidmore, C. R., & Crowell, S. E. (2016). The Difficulties in Emotion Regulation Scale Short Form (DERS-SF): Validation and Replication in Adolescent and Adult Samples. *Journal of Psychopathology and Behavioral Assessment*, *38*(3), 443–455. https://doi.org/10.1007/s10862-015-9529-3

Kiel, E. J., & Kalomiris, A. E. (2015). Current themes in understanding children's emotion regulation as developing from within the parent-child relationship. In *Current Opinion in Psychology, 3*, 11–16. Elsevier. https://doi.org/10.1016/j.copsyc.2015.01.006

Kim, H. K., Pears, K. C., Capaldi, D. M., & Owen, L. D. (2009). Emotion dysregulation in the intergenerational transmission of romantic relationship conflict. *Journal of Family Psychology*, *23*(4), 585–595. https://doi.org/10.1037/a0015935

Kline, R. B. (2005). *Principles and Practice of Structural Equation Modeling* (2nd Ed.). New York: Guilford.

Kopp, C. B. (1989). Regulation of distress and negative emotions: A developmental view. *Developmental Psychology*, *25*(3), 343–354. https://doi.org/10.1037/0012-1649.25.3.343

Kroes, G., Veerman, J. W., & De Bruyn, E. E. (2003). Bias in parental reports? Maternal psychopathology and the reporting of problem behavior in clinic-referred children. *European Journal of Psychological Assessment*, *19*(3), 195-203.

Lanza, S. T., & Cooper, B. R. (2016). Latent class analysis for developmental research. *Child Development Perspectives*, *10*(1), 59–64. https://doi.org/10.1111/cdep.12163

Li, D., Li, D., Wu, N., & Wang, Z. (2019). Intergenerational transmission of emotion regulation through parents' reactions to children's negative emotions: Tests of unique, actor, partner, and mediating effects. *Children and Youth Services Review*, *101*, 113–122. https://doi.org/10.1016/j.childyouth.2019.03.038

Li, L., Bai, L., Zhang, X., & Chen, Y. (2018). Family functioning during adolescence: The roles of paternal and maternal emotion dysregulation and parent–adolescent relationships. *Journal of Child and Family Studies*, *27*(4), 1311–1323. https://doi.org/10.1007/s10826-017-0968-1

Linzer, D. A., & Lewis, J. B. (2011). poLCA: An R Package for Polytomous Variable Latent Class Analysis. *Journal of Statistical Software.* http://www.jstatsoft.org/

Lo, Y., Mendell, N. R., & Rubin, D. B. (2001). Testing the number of components in a normal mixture. In *Biometrika Trust Printed in Great Britain, 88*(3).

Lovibond, P. F. (1998). Long-term stability of depression, anxiety, and stress syndromes. *Journal of Abnormal Psychology, 107*(3). 20–526. https://doi.org/10.1037/0021-843X.107.3.520

Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour Research and Therapy*, *33*(3), 335–343. https://doi.org/https://doi.org/10.1016/0005-7967(94)00075-U

Luebbe, A. M., Bump, K. A., Fussner, L. M., & Rulon, K. J. (2014). Perceived maternal and paternal psychological control: Relations to adolescent anxiety through deficits in emotion regulation. *Child Psychiatry and Human Development*, *45*(5), 565–576. https://doi.org/10.1007/s10578-013-0425-3

Lundahl, B., Risser, H. J., & Lovejoy, M. C. (2006). A meta-analysis of parent training: Moderators and follow-up effects. *Clinical Psychology Review*, *26*(1), 86-104. https://doi.org/10.1016/j.cpr.2005.07.004

Maciejewski, D. F., van Lier, P. A. C., Branje, S. J. T., Meeus, W. H. J., & Koot, H. M. (2015). A 5-year longitudinal study on mood variability across adolescence using daily diaries. *Child Development*, *86*(6), 1908–1921. https://doi.org/10.1111/cdev.12420

Magidson, J., & Vermunt, J. K. (2002). Latent class models for clustering: A comparison with K-means. In *Canadian Journal of Marketing Research*, *20*.

Manian, N., & Bornstein, M. H. (2009). Dynamics of emotion regulation in infants of clinically depressed and nondepressed mothers. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, *50*(11), 1410–1418. https://doi.org/10.1111/j.1469-7610.2009.02166.x

Maughan, A., Cicchetti, D., Toth, S. L., & Rogosch, F. A. (2007). Early-occurring maternal depression and maternal negativity in predicting young children's emotion regulation and socioemotional difficulties. In *Journal of Abnormal Child Psychology*, *35*(5), 685–703. https://doi.org/10.1007/s10802-007-9129-0

Mazursky-Horowitz, H., Felton, J. W., MacPherson, L., Ehrlich, K. B., Cassidy, J., Lejuez, C. W., & Chronis-Tuscano, A. (2015). Maternal emotion regulation mediates the association between adult attention-deficit/hyperactivity disorder symptoms and parenting. *Journal of Abnormal Child Psychology*, *43*(1), 121–131. https://doi.org/10.1007/s10802-014-9894-5

McKinney, C., & Kwan, J. W. (2018). Emerging Adult Perceptions of and Preferences for Parenting Styles and Associated Psychological Outcomes. Journal of Family Issues, 39(9), 2491-2504. https://doi.org/10.1177/0192513X18756928

McKinney, C., & Milone, M. C. (2012). Parental and late adolescent psychopathology: mothers may provide support when needed most. *Child psychiatry and human development*, *43*(5), 747–760. https://doi.org/10.1007/s10578-012-0293-2

McLachlan, G., & Peel, D. (2000). Assessing the number of components in mixture models. *Finite Mixture Models*, 175–220. https://doi.org/https://doi.org/10.1002/0471721182.ch6

McLaughlin, K. A., Hatzenbuehler, M. L., Mennin, D. S., & Nolen-Hoeksema, S. (2011). Emotion dysregulation and adolescent psychopathology: A prospective study. *Behaviour Research and Therapy*, *49*(9), 544–554. https://doi.org/10.1016/j.brat.2011.06.003

McQuade, J. D., Breaux, R., Mordy, A. E., & Taubin, D. (2021). Childhood ADHD symptoms, parent emotion socialization, and adolescent peer problems: Indirect effects through emotion dysregulation. *Journal of Youth and Adolescence*, *50*(12), 2519–2532. https://doi.org/10.1007/s10964-021-01510-3

McQuade, J. D., & Breaux, R. P. (2017). Parent emotion socialization and pre-adolescent's social and emotional adjustment: Moderating effects of autonomic nervous system reactivity. *Biological Psychology*, *130*, 67–76. https://doi.org/10.1016/j.biopsycho.2017.10.007

Middleton, M., Scott, S. L., & Renk, K. (2009). Parental depression, parenting behaviours, and behaviour problems in young children. *Infant and Child Development, 18*(4), 323–336. https://doi.org/10.1002/icd.598

Moilanen, K. L., Padilla-Walker, L. M., & Blaacker, D. R. (2018). Dimensions of short-term and long-term self-regulation in adolescence: Associations with maternal and paternal parenting and parent-child relationship quality. *Journal of Youth and Adolescence*, *47*(7), 1409–1426. https://doi.org/10.1007/s10964-018-0825-6

Moilanen, K. L., Rasmussen, K. E., & Padilla-Walker, L. M. (2015). Bidirectional associations between self-regulation and parenting styles in early adolescence. *Journal of Research on Adolescence, 25*(2), 246–262. https://doi.org/10.1111/jora.12125

Morelen, D., Shaffer, A., & Suveg, C. (2016). Maternal emotion regulation: Links to emotion parenting and child emotion regulation. *Journal of Family Issues*, *37*(13), 1891–1916. https://doi.org/10.1177/0192513X14546720

Morelen, D., & Thomassin, K. (2013). Emotion socialization and ethnicity: an examination of practices and outcomes in African American, Asian American, and Latin American families. *The Yale journal of biology and medicine*, *86*(2), 168–178.

Morris, A. S., Criss, M. M., Silk, J. S., & Houltberg, B. J. (2017). The impact of parenting on emotion regulation during childhood and adolescence. *Child Development Perspectives*, *11*(4), 233–238. https://doi.org/10.1111/cdep.12238

Morris, A. S., Silk, J. S., Steinberg, L., Myers, S. S., & Robinson, L. R. (2007). The role of the family context in the development of emotion regulation. *Social Development*, *16*(2), 361–388. https://doi.org/10.1111/j.1467-9507.2007.00389.x

Muthén, L. K., & Muthén, B. O. (1998). Statistical analysis with latent variables user's guide. www.StatModel.com

Norris, L. A., Olino, T. M., Gosch, E. A., Compton, S. N., Piacentini, J., Ginsburg, G. S., Albano, A. M., Walkup, J. T., Birmaher, B., & Kendall, P. C. (2020). Person-centered profiles among treatment-seeking children and adolescents with anxiety disorders. *Journal of Clinical Child and Adolescent Psychology*, *49*(5), 626–638. https://doi.org/10.1080/15374416.2019.1602839

Nylund-Gibson, K., Grimm, R. P., & Masyn, K. E. (2019). Prediction from latent classes: a demonstration of different approaches to include distal outcomes in mixture models. *Structural Equation Modeling*, *26*(6), 967–985. https://doi.org/10.1080/10705511.2019.1590146

Oattes, N., Kosmerly, S., & Rogers, M. (2018). Parent emotional well-being and emotion lability in young children. *Journal of Child and Family Studies*, *27*(11), 3658–3671. https://doi.org/10.1007/s10826-018-1188-z

Oddo, L. E., Felton, J. W., Meinzer, M. C., Mazursky-Horowitz, H., Lejuez, C. W., & Chronis-Tuscano, A. (2021). Trajectories of depressive symptoms in adolescence: the interplay of maternal emotion regulation difficulties and youth ADHD symptomatology. *Journal of Attention Disorders*, *25*(7), 954–964. https://doi.org/10.1177/1087054719864660

Oddo, L. E., Miller, N. V., Felton, J. W., Cassidy, J., Lejuez, C. W., & Chronis-Tuscano, A. (2020). Maternal emotion dysregulation predicts emotion socialization practices and adolescent emotion lability: Conditional effects of youth ADHD symptoms. *Journal of Abnormal Child Psychology*, *50*(2), 211–224. https://doi.org/10.1007/s10802-020-00686-9

Osborne, K. R., Duprey, E. B., O', M., Caughy, B., & Oshri, A. (2021). Parents' maltreatment histories, dimensions of emotion regulation, and connections to offspring self-regulation: a sex-specific transmission pathway. *Journal of psychopathology and behavioral assessment*, *43*(4), 717–729. https://doi.org/10.1007/s10862-021-09881-4

Ostlund, B. D., Measelle, J. R., Laurent, H. K., Conradt, E., & Ablow, J. C. (2017). Shaping emotion regulation: attunement, symptomatology, and stress recovery within mother–infant dyads. *Developmental Psychobiology*, *59*(1), 15–25. https://doi.org/10.1002/dev.21448

Park, J. L., Hudec, K. L., & Johnston, C. (2017). Parental ADHD symptoms and parenting behaviors: A meta-analytic review. *Clinical Psychology Review, 56,* 25–39. Elsevier Inc. https://doi.org/10.1016/j.cpr.2017.05.003

Perlman, S. B., & Pelphrey, K. A. (2011). Developing connections for affective regulation: Age-related changes in emotional brain connectivity. *Journal of Experimental Child Psychology*, *108*(3), 607–620. https://doi.org/10.1016/j.jecp.2010.08.006

Peterson, R. A. (1994). A meta-analysis of Cronbach's coefficient alpha. *Journal of Consumer Research*, *21*(2), 381–391. https://doi.org/https://doi.org/10.1086/209405

Podolski, C. L., & Nigg, J. T. (2001). Parent stress and coping in relation to child ADHD severity and associated child disruptive behavior problems. *Journal of Clinical Child Psychology*, *30*(4), 503–513. https://doi.org/https://doi.org/10.1207/S15374424JCCP3004_07

Price, N. N., & Kiel, E. J. (2022). Longitudinal links among mother and child emotion regulation, maternal emotion socialization, and child anxiety. *Research on Child and Adolescent Psychopathology*, *50*(2), 241–254. https://doi.org/10.1007/s10802-021-00804-1

Priel, A., Zeev-Wolf, M., Djalovski, A., & Feldman, R. (2020). Maternal depression impairs child emotion understanding and executive functions: The role of dysregulated maternal care across the first decade of life. *Emotion*, *20*(6), 1042–1058. https://doi.org/10.1037/emo0000614

Rapee, R. M., Oar, E. L., Johnco, C. J., Forbes, M. K., Fardouly, J., Magson, N. R., & Richardson, C. E. (2019). Adolescent development and risk for the onset of social-emotional disorders: A review and conceptual model. *Behaviour Research and Therapy*, *123*. Elsevier Ltd. https://doi.org/10.1016/j.brat.2019.103501

Ratliff, E. L., Morris, A. S., Cui, L., Jespersen, J. E., Silk, J. S., & Criss, M. M. (2023). Supportive parent-adolescent relationships as a foundation for adolescent emotion regulation and adjustment. *Frontiers in Psychology*, *14*. https://doi.org/10.3389/fpsyg.2023.1193449

Riva Crugnola, C., Ierardi, E., Ferro, V., Gallucci, M., Parodi, C., & Astengo, M. (2016). Mother-Infant Emotion Regulation at Three Months: The Role of Maternal Anxiety, Depression and Parenting Stress. *Psychopathology*, *49*(4), 285–294. https://doi.org/10.1159/000446811

Rosenberg, J., Beymer, P., Anderson, D., van Lissa, C. j., & Schmidt, J. (2018). tidyLPA: An R package to easily carry out latent profile analysis (lpa) using open-source or commercial software. *Journal of Open Source Software*, *3*(30), 978. https://doi.org/10.21105/joss.00978

Ross, R. A., Foster, S. L., & Ionescu, D. F. (2017). The role of chronic stress in anxious depression. *Chronic Stress*, *1*. doi:10.1177/2470547016689472

Rosseel, Y. (2012). *Journal of Statistical Software lavaan: An R Package for Structural Equation Modeling*. http://www.jstatsoft.org/

Rutherford, H. J. V., Wallace, N. S., Laurent, H. K., & Mayes, L. C. (2015). Emotion regulation in parenthood. *Developmental Review*, *36,* 1–14. Mosby Inc. https://doi.org/10.1016/j.dr.2014.12.008

Saritaş, D., Grusec, J. E., & Gençöz, T. (2013). Warm and harsh parenting as mediators of the relation between maternal and adolescent emotion regulation. *Journal of Adolescence*, *36*(6), 1093–1101. https://doi.org/10.1016/j.adolescence.2013.08.015

Schafer, J. L., & Graham, J. W. (2002). Missing data: Our view of the state of the art. *Psychological Methods*, *7*(2), 147–177. https://doi.org/10.1037/1082-989X.7.2.147

Schwarz, G. (1978). Estimating the dimension of a model. In *The Annals of Statistics* (Vol. 6, Issue 2).

Shaw, Z. A., & Starr, L. R. (2019). Intergenerational transmission of emotion dysregulation: The role of authoritarian parenting style and family chronic stress. *Journal of Child and Family Studies, 28*(12), 3508–3518. https://doi.org/10.1007/s10826-019-01534-1

Shaw, P., Stringaris, A., Nigg, J., & Leibenluft, E. (2014). Emotion dysregulation in attention deficit hyperactivity disorder. In *American Journal of Psychiatry, 171*(3), 276–293. American Psychiatric Association. https://doi.org/10.1176/appi.ajp.2013.13070966

Shields, A., & Cicchetti, D. (1995). *Emotion Regulation Checklist* [Database record]. APA PsycTests. https://doi.org/10.1037/t08132-000

Silk, J. S., Shaw, D. S., Skuban, E. M., Oland, A. A., & Kovacs, M. (2006). Emotion regulation strategies in offspring of childhood-onset depressed mothers. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, *47*(1), 69–78. https://doi.org/10.1111/j.1469-7610.2005.01440.x

Silva, E., Freire, T., & Faria, S. (2018). The emotion regulation strategies of adolescents and their parents: An experience sampling study. *Journal of Child and Family Studies*, *27*(6), 1774–1785. https://doi.org/10.1007/s10826-018-1015-6

Silvers, J. A. (2022). Adolescence as a pivotal period for emotion regulation development. *Current opinion in psychology*, *44*, 258-263. https://doi.org/10.1016/j.copsyc.2021.09.023

Sobanski, E., Banaschewski, T., Asherson, P., Buitelaar, J., Chen, W., Franke, B., Holtmann, M., Krumm, B., Sergeant, J., Sonuga-Barke, E., Stringaris, A., Taylor, E., Anney, R., Ebstein, R. P., Gill, M., Miranda, A., Mulas, F., Oades, R. D., Roeyers, H., … Faraone, S. V. (2010). Emotional lability in children and adolescents with attention deficit/hyperactivity disorder (ADHD): Clinical correlates and familial prevalence. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, *51*(8), 915–923. https://doi.org/10.1111/j.1469-7610.2010.02217.x

Spinrad, T. L., Stifter, C. A., Donelan-McCall, N., & Turner, L. (2004). Mothers' regulation strategies in response to toddlers' affect: links to later emotion self-regulation. *Social Development*, *13*(1), 40–55. https://doi.org/10.1111/j.1467-9507.2004.00256.x

Spurk, D., Hirschi, A., Wang, M., Valero, D., & Kauffeld, S. (2020). Latent profile analysis: A review and "how to" guide of its application within vocational behavior research. *Journal of Vocational Behavior*, *120*. Academic Press Inc. https://doi.org/10.1016/j.jvb.2020.103445

Steinberg, E. A., & Drabick, D. A. G. (2015). A developmental psychopathology perspective on adhd and comorbid conditions: the role of emotion regulation. *Child Psychiatry and Human Development, 46*(6), 951–966). Springer New York LLC. https://doi.org/10.1007/s10578-015-0534-2

Suveg, C., Shaffer, A., Morelen, D., & Thomassin, K. (2011). Links between maternal and child psychopathology symptoms: Mediation through child emotion regulation and moderation through maternal behavior. *Child Psychiatry and Human Development*, *42*(5), 507–520. https://doi.org/10.1007/s10578-011-0223-8

Taber, K. S. (2018). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in Science Education*, *48*(6), 1273–1296. https://doi.org/10.1007/s11165-016-9602-2

Tan, L., & Smith, C. L. (2019). Intergenerational transmission of maternal emotion regulation to child emotion regulation: moderated mediation of maternal positive and negative emotions. *Emotion*, *19*(7), 1284–1291. https://doi.org/10.1037/emo0000523

Turpyn, C. C., Chaplin, T. M., Cook, E. C., & Martelli, A. M. (2015). A person-centered approach to adolescent emotion regulation: Associations with psychopathology and parenting. *Journal of Experimental Child Psychology*, *136*, 1–16. https://doi.org/10.1016/j.jecp.2015.02.009

Van Leeuwen, K. G., & Vermulst, A. A. (2004). Some psychometric properties of the ghent parental behavior scale. *European Journal of Psychological Assessment*, *20*(4), 283–298. https://doi.org/10.1027/1015-5759.20.4.283

van Stralen, J. (2016). Emotional dysregulation in children with attention-deficit/hyperactivity disorder. In *ADHD Attention Deficit and Hyperactivity Disorders*, *8*(4), 175–187. Springer-Verlag Wien. https://doi.org/10.1007/s12402-016-0199-0

Venables, W. N., Ripley, B. D., & Tierney, L. (2002). *Modern Applied Statistics with S.*

Vermunt, J. K. (2010). Latent class modeling with covariates: Two improved three-step approaches. *Political Analysis*, *18*(4), 450–469. https://doi.org/10.1093/pan/mpq025

Vermunt, J. K., & Magidson, J. (2016). *Technical Guide for Latent GOLD 5.1: Basic, Advanced, and Syntax 1*. http://www.statisticalinnovations.com

Vermunt, J. K., & Magidson, J. (2020). How to perform three-step latent class analysis in the presence of measurement non-invariance or differential item functioning. *Denzin, Norman*. SAGE Publications Ltd. https://doi.org/10.4135/9781526421036

Visser, M., & Depaoli, S. (2022). A guide to detecting and modeling local dependence in latent class analysis models. *Structural Equation Modeling*, *29*(6), 971–982. https://doi.org/10.1080/10705511.2022.2033622

Vrieze S. I. (2012). Model selection and psychological theory: a discussion of the differences between the Akaike information criterion (AIC) and the Bayesian information criterion (BIC). *Psychological methods, 17*(2), 228–243. https://doi.org/10.1037/a0027127

Vuong, Q. H. (1989). Likelihood ratio tests for model selection and non-nested hypotheses. *Econometrica, 57*(2). https://doi.org/10.2307/1912557

Wang, Y., Wang, M., & Xing, X. (2018). Parental harsh discipline and child emotion regulation: The moderating role of parental warmth in China. *Children and Youth Services Review*, *93*, 283–290. https://doi.org/10.1016/j.childyouth.2018.07.035

Weinberg, M. K., & Tronick, E. Z. (1998). Emotional characteristics of infants associated with maternal depression and anxiety. *Journal of Clinical Psychiatry*, *102*(5 Suppl E). 1298-1304.

Weller, E. B., Weller, R. A., Fristad, M. A., Rooney, M. T., & Schecter, J. (2000). Children's Interview for Psychiatric Syndromes (ChIPS). *Journal of the American Academy of Child and Adolescent Psychiatry*, *39*(1), 76–84. https://doi.org/10.1097/00004583-200001000-00019

Withers, M. C. (2020). A latent profile analysis of the parent–adolescent relationship: assessing both parent and adolescent outcomes. *Family Process*, *59*(1), 244–256. https://doi.org/10.1111/famp.12411

Zahn-Waxler, C., Duggal, S., & Gruber, R. (2002). Parent psychopathology. In: Bornstein MH, editor. *Handbook of parenting.* (2nd ed), *3*, 295–327. Lawrence Erlbaum Associates; Mahwah

Zeman, J. M., Cassano, M. A., Carisa, P.-P., & Stegall, M. A. S. (2006). Emotion regulation in children and adolescents. *Journal of Developmental and Behavioral Pediatrics. 27*(2). 155–168. https://doi.org/10.1097/00004703-200604000-00014

Zimmer-Gembeck, M. J., Rudolph, J., Kerin, J., & Bohadana-Brown, G. (2022). Parent emotional regulation: A meta-analytic review of its association with parenting and child adjustment. *International Journal of Behavioral Development*, *46*(1), 63–82. https://doi.org/10.1177/01650254211051086

Zimmermann, P., & Iwanski, A. (2014). Emotion regulation from early adolescence to emerging adulthood and middle adulthood: Age differences, gender differences, and emotion-specific developmental variations. *International Journal of Behavioral Development*, *38*(2), 182–194. https://doi.org/10.1177/0165025413515405

Zitzmann, J., Rombold-George, L., Rosenbach, C., & Renneberg, B. (2024). Emotion regulation, parenting, and psychopathology: a systematic review. *Clinical Child and Family Psychology Review*, *27*(1), 1–22. Springer. https://doi.org/10.1007/s10567-023-00452-5

Tables and Figures

Table 1. Adolescent and Caregiver Sample Demographics

Adolescent Demographics (*N*=266)	
Age at Timepoint 5 (*M*±*SD*; *in years*)	15.72 ± 0.38
Sex	
Female	45.9%
Male	54.1%
Race	
American Indian or Alaskan	0.04%
Asian	4.9%
Black of African American	6.0%
Native Asian or Pacific Islander	0.0%
White	81.6%
Biracial or Multiracial	7.1%
Ethnicity	
Not Hispanic or Latino	95.9%
Hispanic or Latino	4.1%
ADHD Status	
ADHD	51.1%
Comparison	48.9%
Primary Caregiver Demographics (*N* = 266)	
Age at Baseline (*M*±*SD*; *in years*)	44.33 ± 5.74
Caregiver Type	
Mother	83.8%
Father	13.9%
Other	2.3% (*N* = 4 grandparent; *N* = 1 stepparent; *N* = 1 great aunt)

Table 2. Intercorrelations and Descriptive Statistics for Study Variables

	1	2	3	4	5	6	7	8	9	10	11	12
1. Adolescent ADHD Status	--	.253**	.149*	.220**	.112	-.132*	.094	.280**	-.082	.118	.211**	.411**
2. Annual income	--	--	.381**	-.222**	-.102	.034	-.332	-.703	-.118	-.017	-.120*	-.221**
3. Parent ADHD	--	--	--	.506**	.482**	-.213**	-.076	-.014	-.192**	.085	.243**	.353**
4. Parent Total Depression, Anxiety, Stress	--	--	--	--	.541**	-.233**	-.121*	-.022	-.191**	.139*	.263**	.348**
5. Parent ED	--	--	--	--	--	-.350**	-.075	-.010	-.211**	.066	.326**	.315**
6. Positive Parenting	--	--	--	--	--	--	.205**	.293**	.515**	-.068	-.448**	-.281**
7. Discipline	--	--	--	--	--	--	--	.255**	.344**	-.031	-.002	.102
8. Material Reward	--	--	--	--	--	--	--	--	.241**	.030	-.005	.135*
9. Teaching Rules	--	--	--	--	--	--	--	--	--	-.019	-.224**	-.043**
10. Adolescent ED	--	--	--	--	--	--	--	--	--	--	.188**	.317**
11. Adolescent Negativity/Lability	--	--	--	--	--	--	--	--	--	--	--	.649**
12. Adolescent ER	--	--	--	--	--	--	--	--	--	--	--	--
M(SD)	.54 (.490)	93073.09 (34856.010)	1.33 (.303)	7.57 (6.718)	29.90 (7.373)	33.40 (6.560)	12.22 (3.772)	6.40 (2.833)	19.21 (3.257)	37.74 (12.361)	1.82 (.497)	1.64 (.399)
N	302	301	266	267	267	267	267	267	267	272	267	267

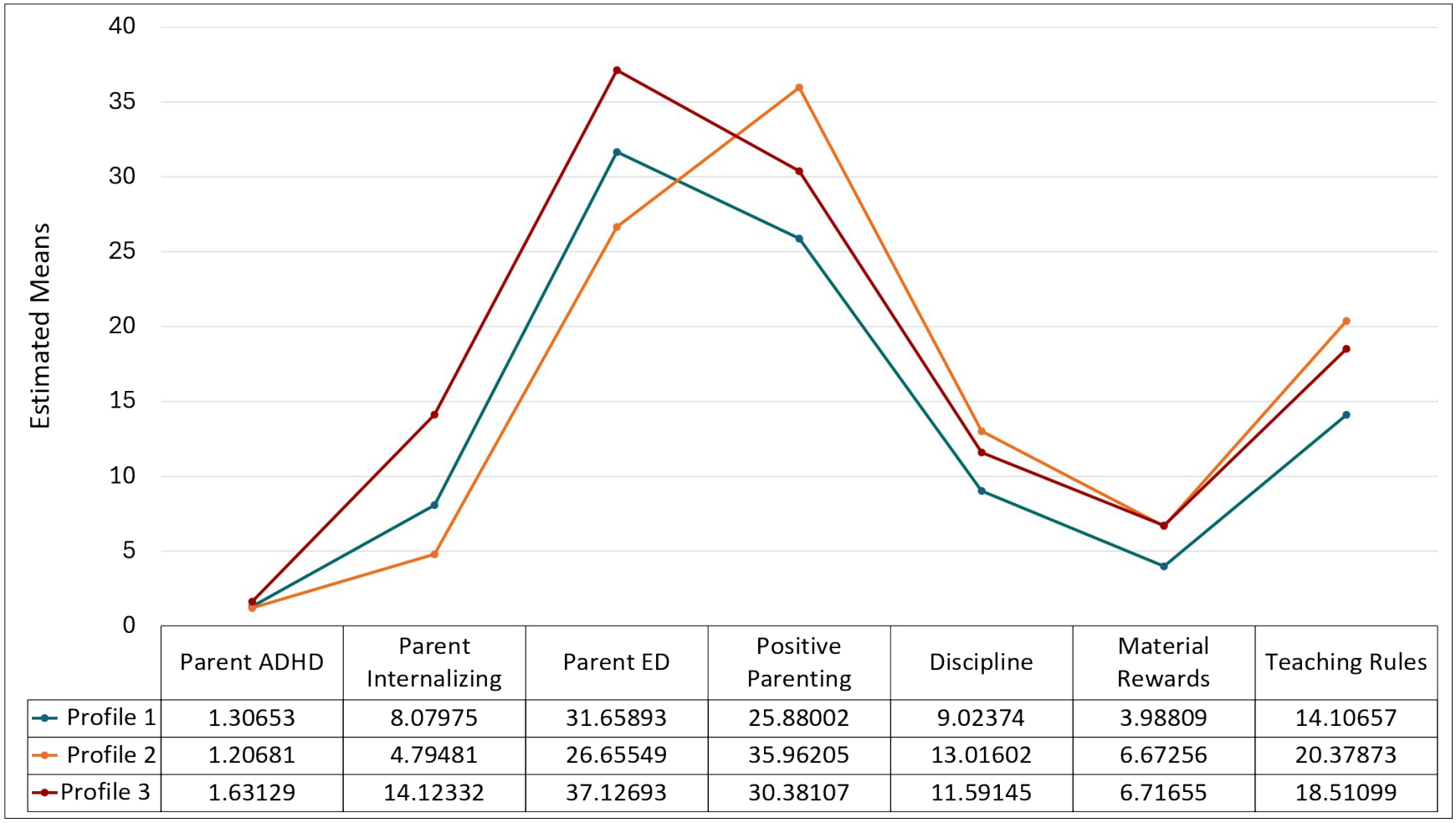
Note. Bivariate correlations and significance (*$p < .05$; **$p < .01$) for indicator and demographic variables for this study sample. Means and standard deviations of each variable are included in the last row of the table.

Table 3. Model Fit Statistics

Profiles	AIC	BIC	Entropy	Log-Likelihood	VLMR	BLRT	Percent in Profile (%)
2	9797.357	9897.449	0.750	-4871.679	-4999.778*	-4999.778*	70.5, 29.5
3	9741.837	9882.707	0.773	-4832.918	-4871.679	-4871.679*	10.9, 62.5, 26.6
4	9753.658	9935.306	0.822	-4827.829	-4865.393	-4865.393*	10.8, 61.5, 1.0, 26.6

Note. Displayed in this table are the Akaike Information Criterion (AIC), Bayesian Information Criterion (BIC), Log-Likelihood, Vuong-Lo-Mendel-Rubin (VLMR) Test, Bootstrapped Likelihood Ratio Test (BLRT), and Entropy for each solution conducted in selecting the best LPA model fit. Proportions of caregivers in classes for each solution are provided in the last column as percentage values.

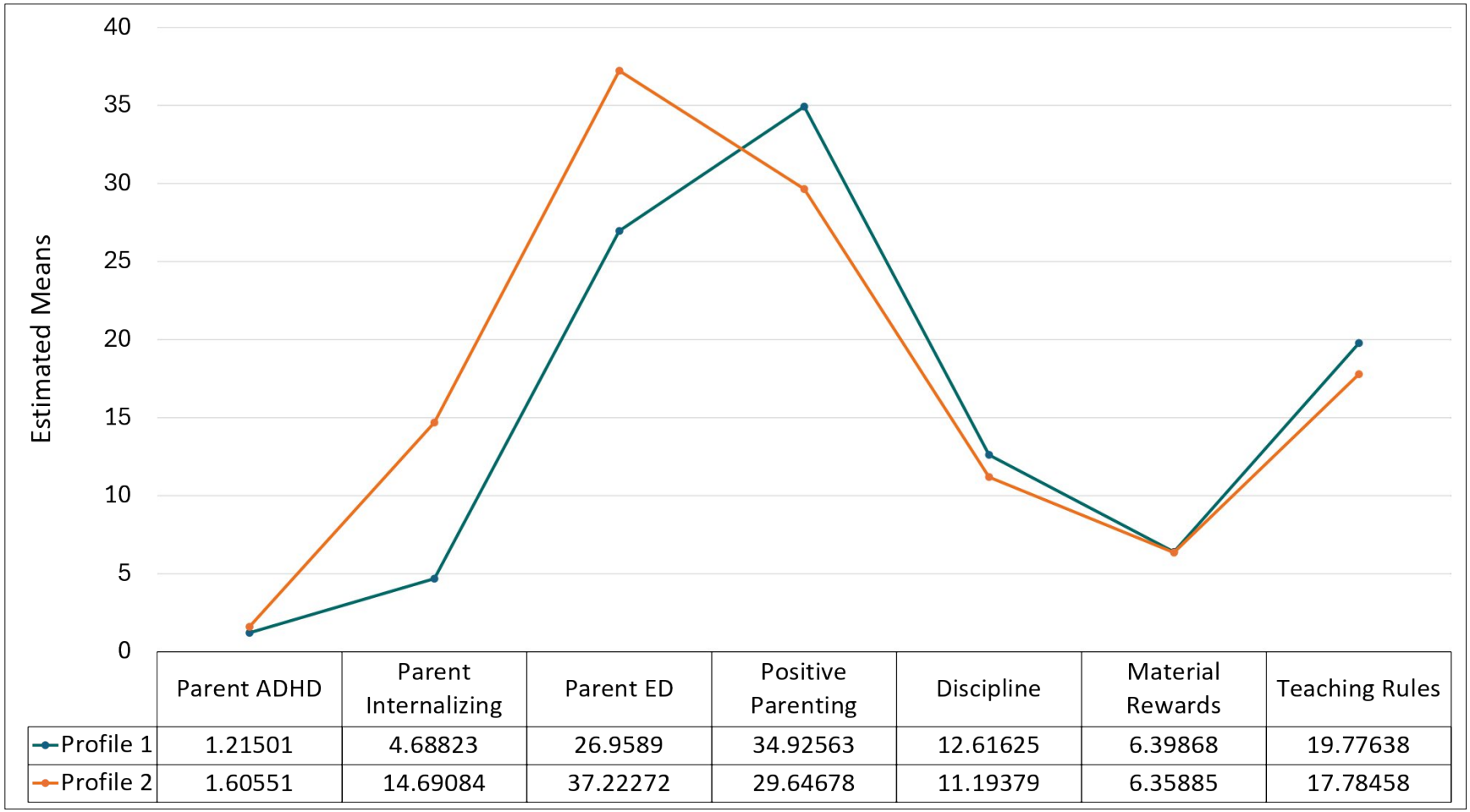
Figure 1. 3-Profile Solution Plot



	Parent ADHD	Parent Internalizing	Parent ED	Positive Parenting	Discipline	Material Rewards	Teaching Rules
Profile 1	1.30653	8.07975	31.65893	25.88002	9.02374	3.98809	14.10657
Profile 2	1.20681	4.79481	26.65549	35.96205	13.01602	6.67256	20.37873
Profile 3	1.63129	14.12332	37.12693	30.38107	11.59145	6.71655	18.51099

Note. Plot displaying the unstandardized mean values for each indicator in a 3-profile solution. Indicator mean values are connected to display mean values belonging to each profile. Each profile is identified as follows: Profile 1 = Moderate Internalizing/ED and Permissive Parenting; Profile 2 = Low Internalizing/ED and Authoritative Parenting; Profile 3 = High Internalizing/ED and Authoritative Parenting.

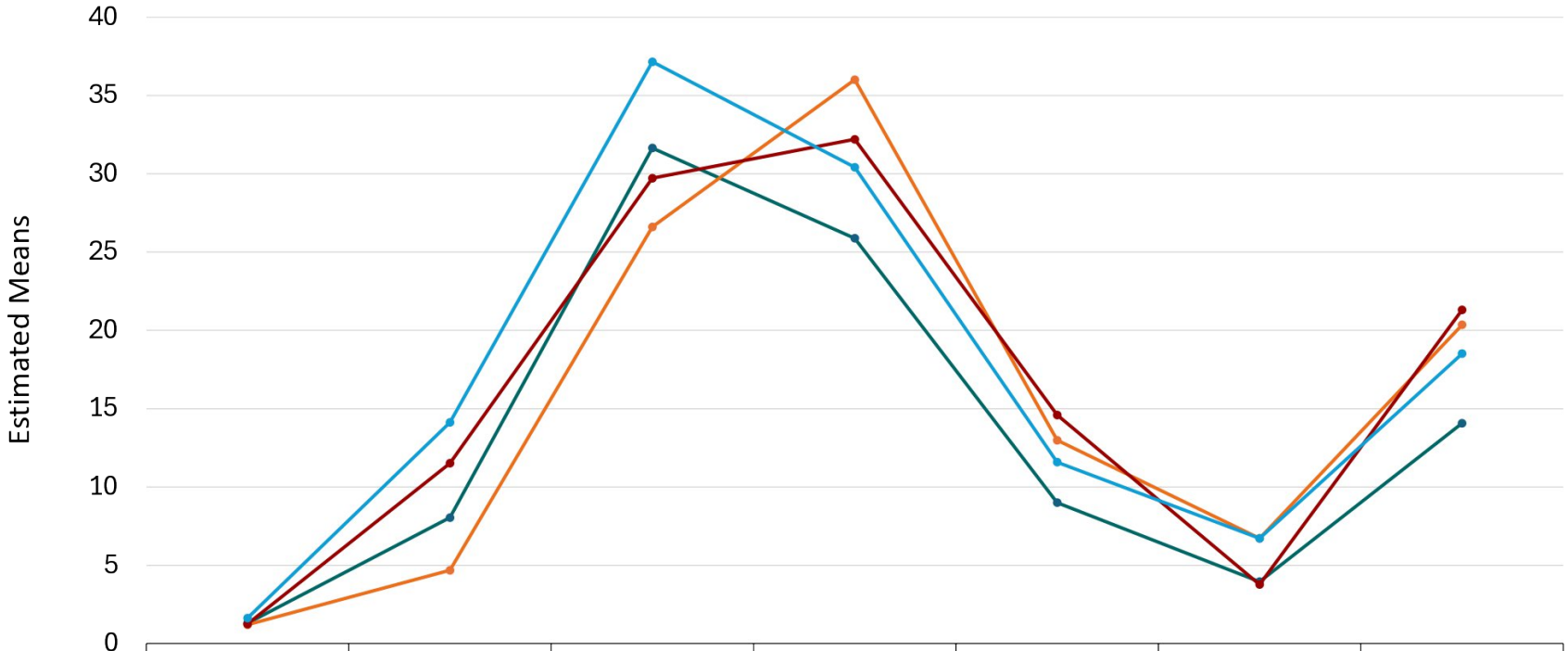
Figure 2. 2-Profile Solution Plot



	Parent ADHD	Parent Internalizing	Parent ED	Positive Parenting	Discipline	Material Rewards	Teaching Rules
Profile 1	1.21501	4.68823	26.9589	34.92563	12.61625	6.39868	19.77638
Profile 2	1.60551	14.69084	37.22272	29.64678	11.19379	6.35885	17.78458

Note. Plot displaying the unstandardized mean values for each indicator in a 2-profile solution. Indicator mean values are connected to display mean values belonging to each profile.

Figure 3. 4-Profile Solution Plot



	Parent ADHD	Parent Internalizing	Parent ED	Positive Parenting	Discipline	Material Rewards	Teaching Rules
Profile 1	1.30659	8.04819	31.64358	25.88095	9.00275	3.95976	14.07508
Profile 2	1.20568	4.68379	26.6027	36.00249	12.98696	6.72518	20.35738
Profile 3	1.25108	11.51591	29.71453	32.19957	14.6001	3.77476	21.31357
Profile 4	1.63276	14.12453	37.15003	30.41222	11.58576	6.72157	18.51208

Note. Plot displaying the unstandardized mean values for each indicator in a 4-profile solution. Indicator mean values are connected to display mean values belonging to each profile.