7-9-2024

Dynamic Social Ecologies of Students' Motivational Resilience: The Complex Relationship between Family, Teacher, and Peer Support, and Students' Academic Coping and Reengagement

Kristen Elizabeth Raine
Portland State University

Dynamic Social Ecologies of Students' Motivational Resilience: The Complex Relationship between Family, Teacher, and Peer Support, and Students' Academic Coping and Reengagement

by

Kristen Elizabeth Raine

A dissertation submitted in partial fulfillment of the
requirements for the degree of

Doctor of Philosophy
in
Applied Psychology

Dissertation Committee:
Ellen A. Skinner, Chair
Karlyn R. Adams-Wiggins
Andrew J. Mashburn
Yue Ni

Portland State University
2024

Abstract

Drawing upon self-determination theory (SDT; Ryan & Deci, 2017) based models of motivational resilience (Skinner et al., 2020), the following dissertation contains three studies that expand upon the current literature by investigating how processes of motivational resilience, or children's general capacity to handle the everyday academic stressors they encounter at school, are connected to the complex social ecologies created by the intersecting contexts of school and home. Study 1 examined whether family motivational support predicted increases in student reengagement through its effect on subsequent levels of students' self-system processes of relatedness, competence, and autonomy in a sample of 590 early adolescents from an urban middle school in the pacific northwest using data collected at two-time points across a single school year. Results provided support for the hypothesized mediational model finding significant indirect effects from family support to increases in reengagement through these self-systems, suggesting that parents may be packing students' metaphorical "suitcase" full of personal resources they can utilize at school. Study 2 investigated whether student reengagement may serve as a mediator of the feedback effects from academic coping to changes in parental motivational support from fall to spring established in a previous study (Raine & Skinner, 2023) with a sample of 1,020 student in grades 3 – 6 from a rural-suburban school district in upstate New York. Results provided support for this hypothesis, indicating that for coping profiles and almost all individual ways of coping, reengagement was a mediator of coping effects on changes in parenting. Using the same sample, Study 3 utilized both variable- and pattern-centered approaches to investigate

possible collective mesosystem effects from parents, teachers, and peers on changes in academic coping across the school year. Specifically, potential cumulative, amplifying, and buffering effects were investigated, however, results from both variable- and pattern-centered analyses found support for only cumulative effects, with support from teachers appearing to be the most important. Latent profile analysis results had a similar pattern of findings with more differentiated subgroups. For all three studies, limitations, future directions, and educational implications were discussed, as were the larger contributions they can make to the literature concerning social partners and motivational resilience within a framework of developmental systems.

Dedication

I dedicate this dissertation to my children, Welly and Lily, who have both inspired my studies in applied developmental psychology and demonstrated remarkable resilience during difficult times.

Acknowledgements

The completion of this dissertation would not have been possible without the support and encouragement of a huge number of family and friends, and this accomplishment truly represents the strong community surrounding me. First, I would like to deeply thank and acknowledge my mentor and advisor Dr. Ellen Skinner, who has deftly provided developmentally attuned support throughout my time in graduate school. Second, I would like to acknowledge the assistance of my committee, Drs Karlyn Adams-Wiggins, Andrew Mashburn, and Yue Ni, who provided their thoughtful perspectives during this process. I would also like to recognize the late Dr. Thomas Kindermann, who was always my cheerleader, believing in me and encouraging me to consider the role of peers.

I would also like to thank my family, especially my children Welly and Lily, and my partner Cody. They have been enormously patient as I have worked through graduate school and completed this document and provided amazing levels of support. Thank you to my parents, Gwen and Alan Shusterman, my sister Alexis, and all of my friends, peers, and colleagues who have always leant an ear or a kernel of advice to spur me on in my endeavors.

Table of Contents

List of Tables

List of Figures

Chapter I: Introduction

Almost all students encounter difficult situations during their educational experiences where a task, concept, or interaction that is confusing, novel, or challenging activates their stress response system. For example, when a fourth grader encounters the concept of fractions for the first time in their math education, the newness of this content may elicit a stress response because they have had little exposure to this type of computation and are uncertain of how to approach it. These types of stressful events have the potential to serve as developmental "opportunities" where students can practice dealing with them constructively so that they can return to their task with renewed enthusiasm and dedication, promoting further productive action in the future. This capacity to "bounce back" can play an important role in students' larger academic functioning and achievement, and researchers across motivational and educational fields, studying disparate constructs, have all agreed that helping students to build the skills to handle every day difficulty is an important goal. Multiple constructs have been posited to represent children's ability to deal with academic hardship, including adaptive help-seeking, self-regulated learning, buoyancy, mindsets, productive persistence, academic coping, and reengagement (Skinner et al., 2020). Although occupying different theoretical and empirical niches, taken together, this large body of literature has emphasized how these capacities facilitate positive educational outcomes such as greater learning and achievement (Karabenick & Gonida, 2018; Putwain et al., 2012; Zimmerman & Cleary, 2009).

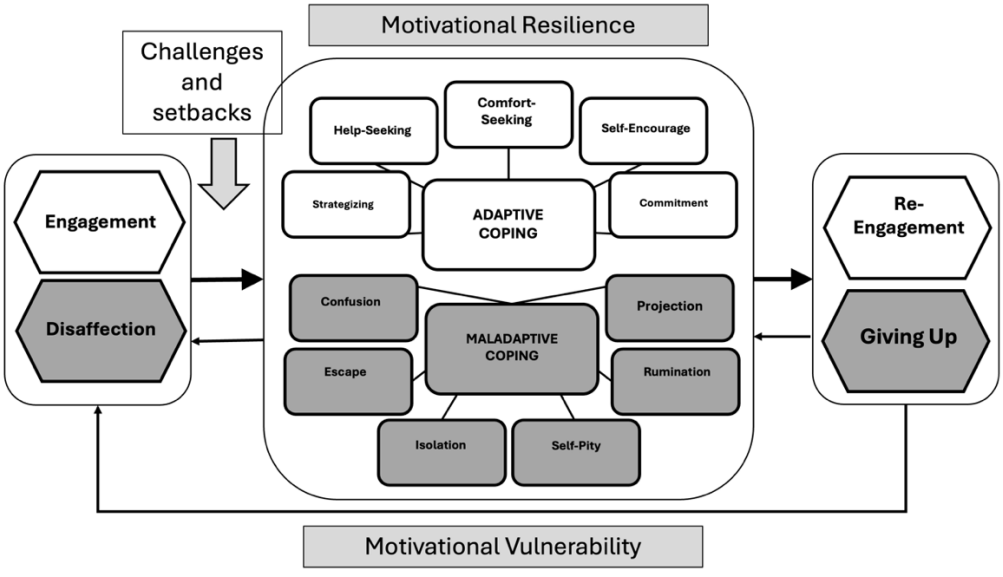
Model of Motivational Resilience

Despite consensus regarding their importance, these constructs have been investigated in isolation from each other, which has resulted in a lack of cohesion in the field, making integration across findings from different traditions difficult. Even further, this fragmentation has resulted in confusion surrounding the most effective supports to promote the development of these processes and their beneficial outcomes. Therefore, this isolation has emphasized the need for a larger theoretical framework that can encompass and organize disparate constructs as well as provide a process-based model regarding their connections, antecedents, pathways, and outcomes. One construct that can provide this type of "umbrella" framework is *motivational resilience*, defined broadly as how children handle the everyday challenges, setbacks, and stressors they experience at school. Because it is a form of everyday resilience, it generally focuses on the day-to-day challenges students experience, like failing a test or not understanding how to complete a homework problem (Skinner et al., 2020). Hence, it can be distinguished from "big R" resilience which is more concerned with why children develop along healthy pathways even when faced with extremely adverse conditions such as experiencing houselessness or other trauma (Masten et al., 2021).

Theorists focused on motivational resilience consider it to be made up of three distinguishable step-wise processes: (1) students' engagement or their enthusiastic, "heads on" participation in learning activities; then when students encounter obstacles to their engagement, (2) their academic coping, or the "on the ground", ways they handle these challenges and setbacks in the moment, and (3) their reengagement, or their more

general ability to bounce back to an engaged state after experiencing these challenges. More specifically, student engagement is posited as serving as an energizing resource, fueling the on the ground ways students cope when they run into trouble, which themselves facilitate or hinder reengagement with the task (Figure 1.1). Research on these individual processes has found evidence of their connection to important educational outcomes (e.g., learning and achievement; Datu & Yuen, 2018; Fredricks et al., 2004; Skinner & Saxton, 2019), but few of them are integrated with larger theoretical frameworks that could explain the personal and interpersonal factors that contribute to the development of motivational resilience.

Figure 1.1
Model of Motivational Resilience



The studies that make up this dissertation focus on the two later steps in the process of motivational resilience, namely, coping and reengagement. As a larger theoretical framework, studies draw upon self-determination theory (SDT; Ryan & Deci, 2017), which posits that students' academic functioning is result of whether they perceive that their fundamental needs for relatedness, competence, and autonomy are fulfilled or thwarted (Connell & Wellborn, 1991; Skinner & Wellborn, 1994, 1997). This framework nominates personal factors, like the self-system processes organized around these three needs, and interpersonal factors, like contextual supports for these needs, that should be important in promoting (or undermining) students' coping and reengagement. It also suggests that these processes may be linked and contribute to cycles of adaptive, or alternatively poorer, academic functioning.

Academic Coping

Research on coping in children and youth has primarily focused on the material ways they handle adverse life events or trauma such as the loss of parent, experiencing houselessness, major illness, war, or natural disaster. However, students regularly encounter more everyday stressors, especially during their experiences at school, and research has emerged around this concept of "everyday coping" (Wolchik & Sandler, 1997). Even further, the in-the-moment, on-the-ground, ways they deal with difficulties during their academic tasks is referred to as their academic coping and has been connected to numerous indicators of academic functioning and achievement (Skinner & Saxton, 2019). More specifically, students who rely on more constructive ways of dealing

with challenge also tend to show greater self-efficacy, persistence, deeper learning, and higher grade point average and standardized test scores (Morales-Castillo, 2022; Rijavec & Brdar, 1997; Shih, 2015a; Skinner & Saxton, 2020; Suldo et al., 2015). On the other hand, a greater use of less constructive or even maladaptive ways of coping has been connected to an increased risk of school dropout, lower grades, and reduced personal well-being (Boon, 2011; Putwain et al., 2016; Skinner et al., 2016; Suldo et al., 2018). This body of research has solidified academic coping as an important area of study, especially for researchers concerned with promoting educational outcomes.

Limitations of research on academic coping. However, much like the broader coping literature, research on academic coping is not without gaps that have limited the applicability of findings. First, despite agreement about the importance of coping in promoting optimal developmental and educational outcomes, there has been much less consensus regarding the individual ways of coping most central to the academic domain. Extensive exploratory analyses designed to capture all of the possible ways of coping that children have available to them have resulted in the inclusion of a wide-ranging numbers of ways, with many overlapping or incomplete lists (Compas et al., 2001; Skinner et al., 2003). Reviews of the larger coping literature have identified 400 ways included in these studies, however, investigation of core categories has uncovered 12 “families” of coping (Skinner et al., 2003). Within these categories, 11 ways have been identified as being present within the academic domain, five of which are adaptive (*strategizing, help-seeking, comfort-seeking, self-encouragement, and commitment*) and six of which are

considered maladaptive (*confusion, escape, concealment, self-pity, rumination, and projection*) (Gonçalves et al., 2019; Skinner et al., 2013).

A second limitation to the coping literature has been its lack of consensus regarding the most important factors that can support the development of academic coping. The larger field of coping has focused extensively on the role of social support and specifically parents in facilitating its development, but has primarily generally focused on the indistinct conceptions of support such as instrumental or emotional support that do not specify exactly what behaviors are supportive and have lacked an investigation of exactly why these supports are beneficial (Power, 2004). Despite this work in the larger stress and coping literature, it has not been specifically connected to the achievement domain. Academic coping has instead extensively focused on personal resources as antecedents, with a smaller number of studies examining social-contextual factors such as parenting, teaching, and peer relationships (Skinner & Saxton, 2019). These studies have emerged from motivational frameworks examining personal motivational factors and academic coping, and therefore have primarily reached for corresponding motivational contextual factors as likely facilitators of coping. However, this has meant that like the larger field of achievement motivation research, these attempts have been siloed within their individual domains (e.g., achievement goals), making integration across studies difficult. Even further, methodological approaches of these studies have limited the applicability of findings, with multiple, highly correlated

predictors fighting for variance explained, resulting in confusing recommendations regarding which social supports are the most impactful for students.

Altogether, these limitations have resulted in greater difficulty identifying relevant predictors, possible pathways through which these antecedents shape coping, and effective recommendations for teachers, educators, and families regarding how to support its optimal development. Overall, then these gaps and their consequences suggest the importance of using a strong theoretical framework rooted in motivational models to help elucidate how academic coping is related to other educational processes.

Reengagement

Reengagement, on the other hand, is concerned with children's more general ability to bounce back after experiencing challenges and setbacks in their academic work (Martin & Marsh, 2008; Skinner et al., 2016, 2020). This is distinguishable from academic coping because it not about the specific strategies students rely upon when they run into trouble, but instead whether they are able to return to an engaged state. However, it is likely that these processes are linked, with a proportionally higher reliance upon more constructive and productive ways of coping compared to maladaptive ones leading to increased reengagement after stressful encounters with academic tasks. This is because adaptive ways of coping are likely constructive due to their ability to draw out the instrumental, emotional, and social resources that facilitate students' productive reengagement. Maladaptive ways on the other hand amplify distress or interfere with recommitment to the task, therefore contributing to desistence. The small amount of

research examining this has supported these conceptualizations, with higher levels of adaptive versus maladaptive coping predicting increases in reengagement in middle childhood and early adolescence (Skinner et al., 2016).

Research on reengagement and related constructs (e.g., buoyancy, tenacity, persistence, grit) has found that students who are able to return to educational activities with renewed enthusiasm and participation have higher levels of academic functioning and achievement (Datu & Yuen, 2018). However, despite the consensus regarding the importance of these processes, research around them has been siloed, meaning that these different areas have remaining largely separate from each other. Despite commonalities in their definitions, each of these constructs has typically been approached as part of a distinct area with their own independent antecedents and outcomes. Therefore, applied researchers and practitioners alike have struggled to integrate across these many fragmented bodies of literature to make coherent recommendations for educational practices.

Summary

The larger framework of motivational resilience therefore provides not only a hypothesized process-based model delineating the connections between on the ground academic coping and reengagement, but also acts as a foundation for future theorizing about the external dynamics of motivational resilience, or the contextual conditions and social relationships that support its development (Skinner et al., 2020). In these dissertation studies, the framework provided by SDT is used to specify the kinds of

personal and interpersonal supports that could shape the development of motivational resilience.

Interpersonal Factors and Motivational Resilience

All students are going to run into difficulties in school, and how social contexts, including families and teachers, support and respond to children's actions in the face of difficulty may shape how these processes develop over time. Parents or primary caregivers, teachers, and peers are potential sources of support for children and youth that can both directly and indirectly bolster their efforts to deal with academic difficulties. The relatively small body of research on interpersonal supports has supported this notion, finding generally positive connections between parent, teacher, and peer support and both academic coping (Skinner & Saxton, 2019) and reengagement or related constructs (Datu & Yuen, 2018). However, despite a general consensus regarding the importance of interpersonal relationships to processes of motivational resilience, research has largely ignored these factors to either focus entirely on personal resources that fuel them, or failed to explicitly address how social partners are having their effect, instead relegating them to serve as just another antecedent in a long list of other antecedents. Much like other limitations and gaps in this literature, the lack of a clear delineation of effects has resulted in confusion regarding what specific supports from social partners have the most efficacious impact and how exactly these supports are having their effects.

Motivational models based in SDT can help fill in those gaps. They suggest that the extent to which social contexts fulfill or thwart students' fundamental needs for

relatedness, competence, and autonomy shapes students' self-conceptions or self-systems regarding these three needs, therefore both directly providing resources during difficult episodes and indirectly supporting students' own self-systems which themselves serve as personal resources to draw upon as well (Connell & Wellborn, 1991; Skinner & Wellborn, 1994, 1997). The "active ingredient" underlying social contextual effects on processes of motivational resilience is likely to be the everyday interactions students are having with social partners. These interactions are where students receive messages of warmth, guidance, and respect that serve as resources when they run into trouble and promote positive internal working models of themselves as worthy of love, capable of effecting change in their environment, and being self-determined that themselves serve as personal resources as well.

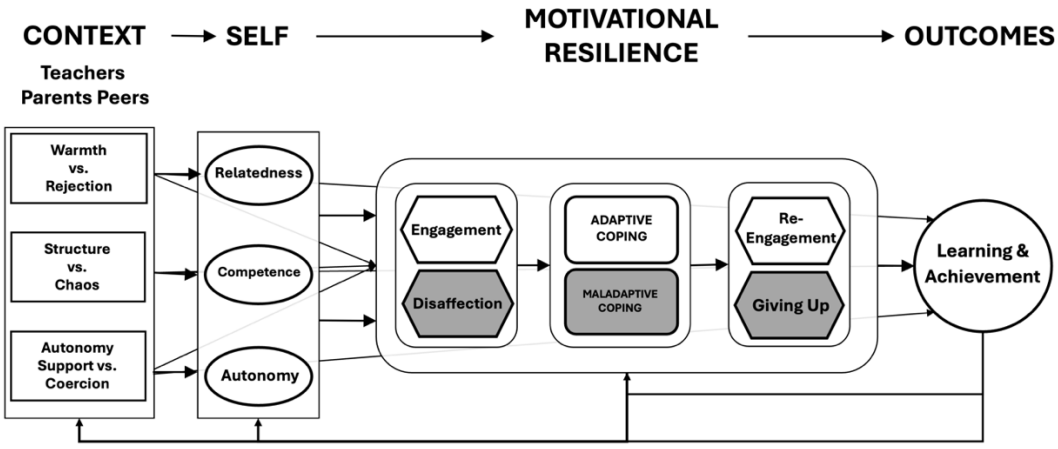
However, as emphasized in bioecological and transactional models of development, these proximal processes are not unidirectional but instead represent dynamic effects that shape the development of both members of the dyad (Bronfenbrenner & Morris, 1998; Sameroff, 2010). Therefore, contextual models of motivational resilience should also include reciprocal effects between these processes and social partners. However, these effects are rarely examined in research about social contexts and motivational resilience, and instead hypotheses either only investigate unidirectional effects from parents, teachers, or peers to children, or utilize cross-sectional data and assume this direction of effects (c.f., Raine & Skinner, 2023; Skinner & Edge, 2002). Therefore, except for one study and an empirical example, reciprocal

effects have remained essentially unexamined within the literature, and further investigation of these reciprocal processes and their underlying pathways could make important contributions to the literature.

Contextual Model of Motivational Resilience

All together, these gaps and limitations of the larger literature surrounding academic coping and reengagement suggest the importance of a larger, process-based theoretical framework combining motivational resilience with models based in SDT such as the motivational model of academic coping (Skinner & Wellborn, 1994) and self-system model (Connell & Wellborn, 1991). Specifically, as depicted in Figure 1.2, combining these models provides a multi-step process that delineates both the direct connections between social contextual supports, students' self-systems, and motivational resilience processes, as well as the indirect and reciprocal pathways through which they are all have their effects.

Figure 1.2
Contextual Model of Motivational Resilience



Current Studies

To begin to address these gaps in the literature, three studies were conducted that investigated three specific parts of this contextual model of motivational resilience. Study 1 (Chapter II) investigated self-system processes as mediators of social support, testing whether the effects of parental motivational support on changes in student reengagement over a single school year are transmitted through their effects on student perceptions of relatedness, competence, and autonomy in a sample of 590 early adolescents in grades 6 - 8. Study 2 (Chapter III) examined feedback effects from students' coping to the parenting they receive, by testing whether student reengagement acts as a pathway through which initial levels of academic coping predict changes in parental provisions of motivational support from fall to spring in a sample of 1,020 students in middle childhood and early adolescence. Finally, using the same sample as study 2, study 3 (Chapter IV) explored the social contexts of academic coping, by using both variable and person-centered

approaches to examine how interpersonal resources from parents, teachers, and peers work in combination to support changes in academic coping across the school year. All together these studies contribute to our understanding of how the complex social ecologies that students move through in their school and home lives are linked to processes of motivational resilience. Overall, the goal is to learn more about how the development of these processes can be promoted, thus creating the potential for more concrete recommendations for educators, practitioners, and families, as well as the design of more effective interventions.

Chapter II: Study 1

Family Context and Academic Reengagement: Adolescent Relatedness, Competence, and Autonomy as Mechanisms Facilitating Motivational Resilience

Introduction

Every day at school, students regularly encounter challenges and setbacks that have the potential to interfere with their academic functioning and success. The field of academic resilience, which generally studies how students manage to flourish despite these challenges, considers this question from two different perspectives. The first, which can be called "big R" resilience, focuses on major adverse experiences, such as discrimination, housing insecurity, and suspension/expulsion, that typically derail or interfere with normative academic development (Masten et al., 2021; M. C. Wang et al., 1994). The second perspective, sometimes called everyday resilience, examines the more mundane stressors students regularly experience in their schoolwork, such as doing poorly on a test, being assigned difficult or boring homework, or not understanding key concepts or material presented in class. Students' capacity to persist despite these repeated everyday challenges and *reengage* with coursework has been shown to have a material impact on their academic outcomes in both the short and long term (Datu & Yuen, 2018), and may even contribute to students' resilience to larger life adversities (Raine et al., 2023).

Processes of *reengagement*, defined as how students handle academic challenges and setbacks in ways that help them return to a state of engagement rather than

disaffection or giving up, have been studied under multiple construct labels, such as tenacity and productive persistence (Dweck et al., 2014; Farrington et al., 2012; Silva & White, 2013; Touroutoglou et al., 2020); the most common term is academic buoyancy (Martin, 2013; Martin & Marsh, 2009). Re-engagement can be distinguished from ongoing engagement, which refers to students' enthusiastic behavioral, emotional, and cognitive participation in learning activities (Skinner et al., 2020). It also differs from academic coping, which refers to the actions, on the ground and in the moment, that children actually employ to deal with academic stressors (Putwain et al., 2012; Skinner & Wellborn, 1997). From this perspective, reengagement can be seen as part of everyday motivational resilience (Skinner et al., 2020) which allow students to keep going or to return to academic tasks in the face of obstacles, interruptions, or setbacks.

Studies of academic buoyancy and reengagement have shown that they are associated with higher grades and test scores (Collie et al., 2015; Putwain et al., 2015), as well as indicators of academic motivation such as perceived competence or control (Collie et al., 2015) and engagement (Datu & Yang, 2018; Martin et al., 2013). They have also been shown to be associated with lower levels of anxiety (Putwain et al., 2022) and other negative motivational outcomes such as uncertain control and failure avoidance (Martin, 2013). Consistent connections between reengagement (and related constructs) and important academic and wellbeing outcomes suggest that it may be important as a target of study and interventions.

However, little research to date has examined how to best foster its healthy development. One factor that may be slowing progress in this area is that many target constructs, like academic buoyancy or tenacity, tend to be studied outside of larger theoretical frameworks that specify the role of social contexts, like parents and teachers, or suggest pathways through which such interpersonal relationships shape students' tendency to reengage with difficult or challenging academic tasks. Using a motivational model based in Self-Determination Theory, a primary goal of this study was to identify interpersonal supports that contribute to changes in students' reengagement over the course of a school year.

Family Support and Reengagement

Self-determination theory (SDT; Ryan & Deci, 2017) and motivational models of development (Connell & Wellborn, 1991; Skinner & Pitzer, 2012) suggest that there are a set of contextual conditions, provided by key social partners like parents, that foster the development of positive motivational outcomes such as reengagement through their support of children and youth's fundamental basic needs of competence, autonomy, and relatedness (Figure 1). Previous research has identified three specific parental supports that align with these needs, namely, *involvement*, or warmth and affection; *structure*, or parents' consistent enforcement of developmentally appropriate expectations, limits, guidance, and help; and *autonomy support*, or their genuine respect for their children's perspectives and opinions (Skinner et al., 2005).

Despite clear theoretical links affirming the importance of social contexts in fostering reengagement and academic buoyancy (e.g., Martin & Marsh, 2009; Skinner & Pitzer, 2012), however, little empirical work has directly investigated the connections between interpersonal resources, such as family support, and reengagement. Research investigating other key social partners, like teachers has found that their support is crucial to the promotion of motivational resilience processes such as reengagement (Pitzer & Skinner, 2017), suggesting the possibility that families may exert similar influences, despite their more distal connection to educational settings. This possibility is further bolstered by decades of research showing that parental motivational support is clearly associated with a host of positive educational and developmental outcomes for children and youth such as ongoing engagement, motivation, learning, and academic achievement (Barger et al., 2019; Farkas & Grolnick, 2010; Vasquez et al., 2016).

The few studies explicitly investigating parents and families as antecedents of reengagement have found that parenting that is characterized by high involvement, structure, and autonomy support, (or related dimensions) may directly and indirectly foster it (Gu et al., 2023; Shen et al., 2023). For example, consistent with the tenets of SDT, person centered analyses found that parenting profiles that were high on support for volition, connection to parents, and functional independence were associated with the highest levels of academic buoyancy, both cross-sectionally and longitudinally, than other combinations of these supports within a sample of Chinese adolescents (Shen et al., 2023). Outside of research based in SDT, findings from studies on parenting styles and

academic buoyancy show patterns consistent with these basic tenets, for example, positive parenting that emphasized child strengths was similarly associated with higher levels of academic buoyancy (Gu et al., 2023). Generally, this work suggests that high-quality family contexts may create the conditions necessary to foster reengagement in the face of academic difficulties. For example, students who have a history of experiences of parent as supportive (e.g., as providing strategies, warmth and affection, or genuinely listening when they want to talk about their difficulties) may have more instrumental and emotional resources to draw upon in the future when they encounter academic problems, like homework they don't understand.

Although SDT suggests that there are three parenting dimensions tied to the three fundamental human needs of relatedness, competence, and autonomy, theory and empirical research suggest that these dimensions, while distinguishable, are highly correlated (Skinner et al., 2005) and intricately related to one another. In fact, the absence of any one may undermine the positive effects of the others. For example, autonomy supportive parenting that is absent of warmth may reflect parenting that is more similar to neglect rather than genuine respect for children's thoughts, feelings, and values. Similarly, structure without autonomy support may resemble coercive parenting, where the structure provided is no longer calibrated to the individual child but is instead only in the interest of the parent. Research on conditional positive regard supports this conceptualization of parenting dimensions as dependent on one another, demonstrating that parents whose affection is only provided when students have high achievement and is

withheld when they perform poorly have increased maladaptive coping and negative self-views (Assor & Tal, 2012). Taken together, findings suggest synergistically positive effects of all three dimensions, such that the highest quality of support is provided by contexts that combine high levels of all three (e.g., Grolnick et al., 2014; Simpkins et al., 2006). Hence, for the purposes of the current study, we utilized an aggregate measure of family support that included items tapping general family and parent involvement, structure, and autonomy support.

Self-system Processes as Motivational Resources Supporting Reengagement

SDT also suggests that social contexts (e.g., families, teachers, and peers) shape student developmental outcomes through multiple pathways. They not only exert direct effects based on their own participation during in the moment interactions, but they can also exert indirect (and perhaps more far-reaching) effects, through their satisfaction of children's fundamental needs for relatedness, competence, and autonomy (Connell & Wellborn, 1991). Children's histories of these social interactions contribute over time to the construction of *self-system processes*, or internal, reworkable self-appraisals organized around these three needs. Their sense of *relatedness* encompasses the extent to which they feel connected to others such as their parents or caregivers, teachers, peers, and friends, and is akin to theories of attachment and belonging (Ainsworth, 1979; Baumeister & Leary, 1995). Students' *competence* refers to their sense of mastery or ability to enact desired change within their environment, and is similar to theories of perceived control, effectance motivation, and self-efficacy (Schunk & DiBenedetto,

2020; Skinner, 1996; White, 1959). *Autonomy* refers to children's feelings that their actions are in line with their true values and perspectives (E. L. Deci & Ryan, 1985; Ryan & Connell, 1989). These self-appraisals can in turn serve as personal resources that bolster students' motivation when they encounter everyday challenges and setbacks.

Self-system Processes and Reengagement. Almost no empirical research has explicitly examined relatedness and its connection with reengagement. However, research on school belongingness as a predictor of academic buoyancy can provide evidence suggesting the importance of more general relatedness to others as an important personal resource. Specifically, Bostwick et al. (2022) found that at both the student and school level, higher initial perceptions of school belongingness were associated with higher academic buoyancy a year later. It is likely that students who feel accepted, welcome, and loved feel less concerned that poor academic performance will lead to being rejected and therefore view these experiences as less threatening. Knowing that others, including family, teachers, and peers are there to provide emotional support and connection may buoy students, encouraging their continued persistence in the face of failure. For example, a student who fails a test but feels a sense of relatedness to their peers, teachers, and family may be more likely to seek out instrumental tools (e.g., study tips, advice, extra tutoring) from these interpersonal partners, allowing students to reengage directly with challenging learning activities.

Within the domain of reengagement, academic buoyancy, perseverance, and tenacity research, the most work has been done examining how students' perceived

competence (e.g., self-efficacy and locus of control) are associated with these highly related outcomes. Both self-efficacy and perceived control have been shown to be predictors of academic buoyancy (Martin, 2009; Martin & Marsh, 2008), while failure avoidance and uncertain control evinced the opposite pattern (Collie et al., 2015; Martin & Marsh, 2008). Students' sense of themselves as competent and capable of affecting desired change in their environment may be an especially potent resource to draw upon when they receive a poor grade on an exam. If they view themselves as competent, they are more likely to believe that greater effort can bring about better academic results, spurring them to study harder next time. Alternatively, and consistent with research on learned helplessness (Maier & Seligman, 2016), it is easy to imagine that students who feel that academic outcomes are outside of their control would be more likely to give up because-- Why bother studying if it is unlikely that they will be able to improve their grade next time?

Although most of the research on students' self-system processes and reengagement focuses on their sense of competence or perceived control, a handful studies have examined students' autonomous motivation as a predictor of their reengagement, academic buoyancy, persistence, or tenacity. This research has found that intrinsic or more autonomous motivation was positively associated with academic buoyancy in particular, while more controlled or external motivations were negatively associated (Aydın & Michou, 2020). Additional studies have found that autonomous motivation is similarly associated with learning persistence, specifically that higher

motivation predicted students' later, independent pursuit of further learning activities (Vansteenkiste et al., 2004). It is likely that students who have either a strong inner desire to engage in their schoolwork (i.e., intrinsic motivation) or who have internalized its value (i.e., identified motivation) are more likely to "bounce-back" from setbacks.

Only a small number of studies have investigated all three self-systems together as either independent or aggregated predictors of reengagement or related constructs. Research focused on processes of motivational resilience including engagement and academic coping in addition to reengagement in middle childhood and early adolescence found all three self-systems independently predicted increases in students' reengagement across the school year (Pitzer & Skinner, 2017). Other researchers, who have combined these three personal resources into a single variable representing "basic need satisfaction," found that students in early adolescence with higher basic need satisfaction also showed increased academic buoyancy over the school year (Gu et al., 2023). Overall, such findings support the idea that all three self-systems are important to students' everyday resilience and capacity to persist in their academic work, even when things go wrong. Students with abundant levels of these personal motivational resources can draw on them when they encounter challenges and setbacks, and it may be that these resources are one pathway through which supportive parents can have an impact on students' reengagement.

Present Study

Although there has been a burgeoning number of studies examining reengagement and other constructs closely related to processes of motivational resilience (like academic buoyancy, perseverance, and tenacity), the above literature review revealed relatively few studies explicitly examining the association between family support and reengagement, much less the mechanisms underlying their connection. Even further, relatively few studies have investigated how these supports predict change over time, making it difficult to establish consensus regarding the direction of effects. Therefore, the present study investigated a mediational model of family support and reengagement where children's self-system processes of relatedness, competence, and autonomy were hypothesized to be unique mediators of the predictive association between initial levels of family support in the beginning of a single school year and changes in reengagement from the beginning to the end of the same year in a diverse sample of sixth through eighth graders from an urban middle school in the Pacific Northwest.

Method

Sample and Procedure

The present study utilized data from a four-year longitudinal study of students' academic motivation and engagement in collaboration with an interdisciplinary garden education program at an urban middle school in the Pacific Northwest. The sample consisted of 590 students in grades 6 through 8 (123 in grade 6; 121 in grade 7; and 345 in grade 8; grade missing for one student), with 48.06% boys and 51.93% girls. The school had a diverse student body by race and ethnicity (16.7% Asian, 9.0% Black,

28.3% Hispanic, 3.0% Native American/Pacific Islander, 39.5% white, and 4.1% multiple ethnicities) with 19 languages spoken at home (18.1% English language learners). The middle school was located in a low-income area and, according to district records, 85.2% of student families qualified for free or reduced-price lunch.

Because data collection utilized a multi-year design where six waves of students were followed across their middle school years, measured at two-timepoints each year, the present study collapsed across years to combine each grade into a single sample consisting of two-timepoints, the fall (T1) and spring (T2). Trained researchers administered questionnaires twice a year to students in their classrooms with their teachers present, and parents or guardians provided informed consent before surveys were administered.

Measures

For the present study, all assessments were student-report and used a Likert-type scale ranging from one to five: 1 = totally not true, 2 = a little bit true, 3 = somewhat true, 4 = fairly true, 5 = totally true. Scale scores were calculated by averaging the items in their respective assessments; hence, scores could range from 1 to 5, with higher numbers indicating more of the respective construct.

Family support. Four items, adapted from previous established measures of parenting (Skinner et al., 2005), assessed the amount of family support students perceived. Two items tapped students' perception of their attachment to their family: "If I have a problem, I can go to my family," and "I feel like an important part of my family."

Two items tapped parent-specific support: “My parents respect and appreciate me,” and “My parents really care about me.” Internal consistency among family support items was satisfactory, $\alpha = .88$.

Students’ self-system processes. Three items, adapted from previous measures of relatedness (Furrer & Skinner, 2003), tapped students’ feelings of connection and belonging to their family, peers, and school, “I feel like a real part of [school],” “I feel close to my family,” and “I feel close to my friends”. Reliability for this three-item scale was acceptable, $\alpha = .74$. To assess students’ feelings of mastery or *competence*, three items tapped their perceptions of their ability to affect desired outcomes (e.g., “If I decide to learn something I can”). The internal consistency of this three-item scale was a bit low, $\alpha = .70$, although (as seen in its bivariate correlations) this did not seem to interfere with its covariation with other scale scores. Students’ autonomy, or the extent to which their motivation for learning was self-determined, was assessed using four items with the stem “Why do I do my schoolwork?” Two items tapped identified motivations for completing their schoolwork, or how much students had internalized the value of the task, “Because we are learning important things” and “Because doing well in school in important to me.” Two tapped their intrinsic motivations, or their own enjoyment and interest, “Because it’s fun” and “Because it’s interesting.” Intrinsic items were multiplied by three to reflect their higher level of autonomous motivation, as suggested by scale developers (Ryan & Connell, 1989). This four-item scale showed acceptable internal consistency, $\alpha = .84$.

Reengagement. Students' reengagement (Skinner et al., 2016) was assessed using three items designed to tap their ability to "bounce-back" after academic challenges and setbacks (e.g., "If I do badly on my homework, I work harder next time"). Internal reliability for reengagement was below standard cutoffs for acceptable at T1 (α = .66), however, reliability increased from T1 to T2 (α = .71), suggesting consistency of these measures increased over the school year. Moreover, its bivariate correlations with other measures (see Table 3) suggested that it was still functioning as expected.

Measurement Invariance. Due to the use of data across multiple grades, measurement invariance (weak, strong, and strict) was also investigated using multigroup SEM analyses to determine whether measurement properties for all constructs were comparable across grades using a four step procedure (Meredith, 1993). First, the full model was run unconstrained across grades; second, loadings were constrained to be equal (weak invariance); third, intercepts were also constrained to be equal (strong invariance); and finally, the error residuals for all items were constrained to be equal (strict invariance). The fit of each model was compared using chi-square difference tests to evaluate whether there was a significant difference in fit at each of these steps. Chi-square difference tests supported weak and strong invariance, but not strict invariance (Table 1). Because subsequent analyses included a latent factor structure for all included measures, group differences in measurement residuals would not impact the results and therefore all grades were included in the total sample.

Table 2.1
Measurement Invariance by Student Grade Level

Model	χ^2 (*df*)	Model Comparison	$\Delta\chi^2$ (Δ *df*)	Decision
M1: Unconstrained	729.98* (456)	-	-	-
M2: Weak Invariance	756.90 (484)	M1	26.92 (28)	Accept
M3: Strong Invariance	789.01 (512)	M2	32.11 (28)	Accept
M4: Strict Invariance	866.28 (552)	M3	77.27* (40)	Reject

Note: N = 590. Grade 6 = 123, grade 7 = 121, grade 8 = 345, grade level missing for one student. *$p \leq .001$.

Analytic Plan

A structural equation model with latent factors for all study predictors, mediators, and outcomes was used to examine study hypotheses. Percentile bootstrapping using 1000 samples was employed to estimate standard errors for hypothesized indirect effects of family support on changes in reengagement through students' self-system processes (Shrout & Bolger, 2002). Correlated errors were added to the hypothesized model *a priori* based on previous research and the wording of items. The errors of two family support items that referred to parents rather than family were correlated, and the identified autonomous motivation item errors were correlated as were the two for intrinsic autonomous motivation. Additionally, as is common in longitudinal research, errors were correlated between T1 and T2 reengagement items. Chi-square and

alternative fit indices, specifically the comparative fit index (CFI) and root mean square error of approximation (RMSEA) were used to evaluate overall model fit. Multi-group SEM was used to examine whether findings were consistent across grade levels, using a chi-square difference test to compare the fit of an unconstrained model with one where regression coefficients were constrained to be equal across age/grade groups.

Results

Missing Data

Due to the short-term longitudinal and multiple wave design of the present study, data were investigated for patterns of missingness. Missingness for all but one study variable ranged from 12.5% to 21.7%, with 43.1% missing on a single T2 relatedness item, "I feel close to my friends." 18.6% of students were missing data for all T2 variables, however, no T1 study variable means significantly differed depending on whether students were missing all T2 data or not. Therefore, full information maximum likelihood estimation (Dempster et al., 1977) was used for all of the following analyses to account for missing data within the lavaan package in R (Rosseel, 2012).

Initial Analyses

Descriptives and bivariate concurrent correlations were obtained for all study variables. Overall, mean levels for all variables were above the midpoint (3 for all variables except for autonomy which was 6), with the highest mean for family support at T1 and the lowest for reengagement at T2 (see Table 2). As expected, concurrent correlations were all significant and positive, with family support at T1 significantly and

positively correlated with all three hypothesized mediators as well as student reengagement at both T1 and T2 (see Table 3). All items loaded substantially onto their respective factors ($\lambda s \geq .04$).

Table 2.2
Summary of Descriptive Statistics

	Time 1			Time 2			
Scale	*M*	*SD*	*Range*	*M*	*SD*	*Range*	*Cross-time Stability*
Family Support	4.26	.94	1.00 – 5.00	4.08	1.04	1.00 – 5.00	.716
Relatedness	4.15	.79	1.33 – 5.00	4.08	.92	1.00 – 5.00	.620
Competence	4.20	.81	1.33 – 5.00	4.25	.81	1.00 – 5.00	.517
Autonomy	6.28	2.25	2.00 – 10.00	6.01	2.23	2.00 – 10.00	.645
Reengagement	3.82	.91	1.00 – 5.00	3.69	.96	1.00 – 5.00	.504

Note. N = 590. All variables could range from 1 – 5 except for autonomy, which could range from 2 – 10. All cross-time stabilities were significant at $p < .001$.

Table 2.3
Concurrent and Cross-time Correlations for all Study Variables

Variable	Family T1	Relatedness T2	Competence T2	Autonomy T2	Reengage T1	Reengage T2
Family Support T1	-				.	
Relatedness T2	.556	-				
Competence T2	.195	.303	-			
Autonomy T2	.227	.385	.305	-		
Reengagement T1	.363	.333	.383	.438	-	
Reengagement T2	.304	.452	.518	.532	.504	-

Note. N = 590. All correlations were significant $p < .001$.

Mediational Model

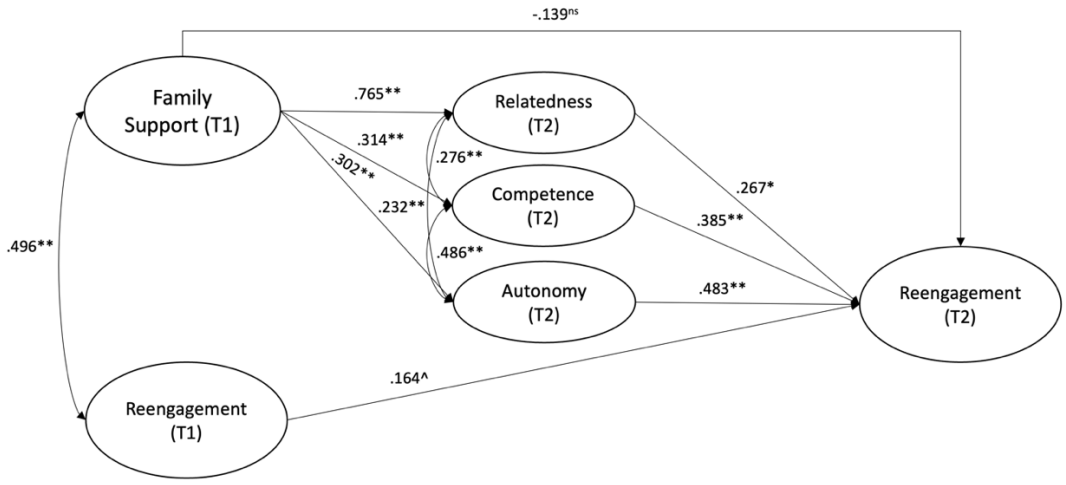
Within the lavaan package in R (Rosseel, 2012), a latent factor structural equation model was used to examine whether students' self-systems of relatedness, competence, and autonomy were mechanisms underlying the association between initial levels of perceived parental support and changes in reengagement across the school year. Overall, despite a significant chi-square, χ^2 (152) = 334.640, $p < .001$, the hypothesized model had adequate fit to the data according to standards for alternative fit indices as put forth by Hu and Bentler (1999), CFI = .954, RMSEA = .046 95% CI [.039, .053]. Complete model results are presented in Figure 1. Results indicated that perceived family support predicted relatedness, $\beta = .396$, $SE = .059$, $\beta^* = .765$, $p < .001$, competence, $\beta = .230$, $SE = .048$, $\beta^* = .314$, $p < .001$, and autonomy, $\beta = .320$, $SE = .066$, $\beta^* = .302$, $p < .001$. In turn, relatedness, $\beta = .446$, $SE = .208$, $\beta^* = .267$, $p = .032$, competence, $\beta = .454$, $SE = .102$, $\beta^* = .385$, $p < .001$, and autonomy, $\beta = .393$, $SE = .085$, $\beta^* = .483$, $p < .001$, also all positively and uniquely predicted reengagement at T2 over and above the effect of reengagement at T1, $\beta = .162$, $SE = .087$, $\beta^* = .164$, $p = .065$, which was only marginally significant after accounting for the other predictors. The indirect effects from parenting to reengagement through relatedness, competence, and autonomy were estimated using bootstrap standard errors from 1000 samples, and all were significant, $\beta = .177$, 95% CI[.023, .330], $\beta = .104$, 95% CI[.042, .166], and $\beta = .126$, 95% CI[.051, .201], respectively. The direct effect from family support to reengagement was not significant

when the mediators were added to the model, suggesting the effect represented full mediation, β = -.120, *SE* = .097, β* = -.139, p = .219.

Finally, multi-group SEM was used to compare the above unconstrained mediational model with a model where all regression coefficients were constrained to be equal across grade levels. A non-significant chi-square difference test suggested that these results did not differ by grade level $\Delta\chi^2(16) = 14.927, p = .530$. Overall, these results suggested that analyses were consistent across the grade levels included within the study.

Figure 2.1

Mediational Results of Family Support Predicting Increases in Reengagement through Students' Self-system Processes



Note: *N* = 590. *ns* = non-significant. ^$p \leq .10$, * $p \leq .05$, ** $p \leq .001$.

Discussion

Overall, study results supported the hypothesized mediational model, with significant indirect effects indicating that one way in which family motivational support

contributes to improvements in student reengagement is by supporting children's self-systems of relatedness, competence, and autonomy. These findings provide initial evidence of a pathway through which family effects present themselves in the distal context of school, demonstrating that parents and caregivers may be packing their children a "suitcase" of motivational resources, which they then bring with them to school and use when they run into trouble with their academic work. Even further, these results addressed three main gaps in the research on reengagement.

A first gap involves the social contexts that promote or undermine its development. Although research has demonstrated the important consequences of reengagement, most studies of antecedents have examined intrapersonal factors (e.g., self-efficacy). The current study is one of only a handful to investigate how interpersonal relationships may shape the development of reengagement. Results explicitly shed light on the role of family motivational support in helping youth return to an engaged state after academic setbacks. Parents who are able to regularly provide ample motivational supports for their children may be fostering students' view that the difficulties they encounter at school are challenges to be overcome rather than insurmountable setbacks because they have internalized that others are there to support them in good times and bad. This then suggests that the home context may be an important arena for intervention and promotion.

Second, studies examining the personal motivational resources that predict reengagement have focused primarily on students' competence (or related constructs such

as self-efficacy or perceived control). The framework provided by SDT suggests that additional self-appraisals may also play an important role in whether children are able to reengage following difficulty. Hence, the inclusion of relatedness, competence, and autonomy filled an important gap in the literature. And findings indicating that all three made unique contributions to reengagement suggest that each is important, over and above the effects of the other two. Students who have a positive view of themselves as connected to others, capable of enacting desired change through their academic efforts, and evincing high levels of autonomous motivation may have more personal resources to draw upon when experiencing everyday academic stressors, compared to those who feel competent but lack connections to others or autonomous motivation to fuel their continued efforts. Taken together, results underlined the importance of all three and suggested that parental practices or educational interventions that target all of them will have a larger impact on reengagement.

Lastly, no work to date has examined a process model. Personal, interpersonal, and contextual factors have primarily been investigated as predictors or correlates of reengagement and treated as a large list of beneficial elements without an explicit process theory of how these elements work together. Using SDT as a framework, the present study helped to fill that gap by providing initial evidence linking home and school contexts to reengagement through the mechanisms of students' self-systems regarding their three fundamental human needs. Such research is important because it begins to build a process-oriented understanding of how interpersonal and personal factors work

together and helps to explain how family effects travel with children into their everyday experiences at school when parents or other family members are no longer physically present to provide direct emotional or instrumental support.

Limitations

The current study also had two limitations that may impact the scope of the conclusions drawn. First, while the inclusion of two timepoints at the beginning and end of a single school year provided some initial evidence of the hypothesized processes, to truly examine a mediational model with temporal precedence, three timepoints would be required, with the antecedent and autoregressive path at T1, mediators at T2, and outcome at T3. Future work could provide additional evidence by including three timepoints across the school year. Second, all variables were student self-report and therefore results may be affected by common method variance. While study hypotheses were specifically concerned with children's perceptions of their families as providing motivational support, future studies would be strengthened by supplementing the student perspective with information from other reporters, such as parent-report of motivational support, teacher-report of reengagement, and observer reports of both.

Future Directions

Reviews of the literature identify many related, overlapping constructs that have been used to describe children and youth's capacity to bounce back after challenges and setbacks (e.g., academic buoyancy, tenacity, perseverance, grit; Skinner et al., 2020). However, differences in how these constructs have been conceptualized and the lack of a

guiding, process-based theoretical framework have made integration difficult and thus limited the overarching conclusions that can be drawn from these independent but clearly related bodies of research. Motivational models, like the SDT perspective used in the current study, have been helpful in bringing together many of these constructs under the larger umbrella of motivational resilience (Skinner et al., 2020). Future research may benefit from using these kinds of integrative frameworks to scaffold next theoretical and empirical steps in the study of reengagement, suggesting three potential pathways for investigation.

Processes of motivational resilience. First, research on reengagement may benefit from considering it as one step in the larger multi-step process of motivational resilience. Such models posit multiple "actions" students take when occupied with school tasks (Skinner et al., 2016; Skinner & Pitzer, 2012). Specifically, students' enthusiastic, "heads on" participation in learning activities (or engagement), may spur students to respond productively in the moment (or cope) when they run into academic trouble, suggesting that both engagement and adaptive coping may facilitate reengagement. Each of these processes may themselves then reciprocally shape the other, with high reengagement, for example, encouraging students to problem-solve more when they see a homework problem they don't understand (thus bolstering coping) or serving as a resource to help them return to an enthusiastic, engaged learning state.

Therefore, future research can expand upon the present findings by exploring additional pathways through which children and youth's self-system processes shape

reengagement, exploring both engagement and academic coping as potential mediators. Academic coping may be a particularly powerful mediator because it captures the specific actions students turn to when they are struggling with an academic task in the moment. If these ways of coping help students recommit to their learning or give them helpful strategies to solve their problem, students may be more likely to reengage after challenges rather than give up. Hence, future studies could test process-models hypothesizing that the connection between children's self-system processes of relatedness, competence, and autonomy and changes in their reengagement is mediated by their academic coping. Additionally, families themselves may be supporting youth's engagement and academic coping, and therefore these processes may also be pathways through which families shape the development of reengagement. Research has established connections between parenting and both engagement and academic coping (Reschly & Christenson, 2019; Skinner & Saxton, 2019), and therefore future work could examine these as potential mediators of the effects of parent support as well.

The contexts of parenting. Second, according to multi-level models of resilience and coping, the process-model investigated in the current study is itself embedded within multiple layers of higher order contexts that are also shaping its development (Masten et al., 2021; Skinner & Raine, 2023; Spencer, 2006). The families and students included in the current sample were highly heterogeneous, not only by race and ethnicity but also by languages spoken and immigration history. This suggests the possibility of rich information regarding how students' and families complex intersectional identities may

be shaping the development of these processes, as well as how families themselves are being supported by their communities, cultures, and workplaces. Therefore, future research could explore how community-level factors shape children's motivational resilience through their effect on families themselves. Research concerned with parents and families as contexts for development often ignores how family members are also individuals who have basic needs that may or may not be fulfilled through the many nested contexts they experience and have experienced throughout their lives. The extent to which these needs are fulfilled (or thwarted) may shape the available resources caregivers have to provide to their children. For example, a parent's stressful work conditions or obligations may have downstream effects on their children because they do not have the personal resources available when they return home to provide additional motivational support. Therefore, research could explicitly examine what social supports (or hinderances) are available to families through surveys or interviews of families, or even social network analysis, to investigate their complex social ecologies of support.

Additional social partners. Third, future research could examine how family supports shape reengagement in combination with supports present in school such as those from teachers and friends or peers. Although research has examined teacher support as a predictor of reengagement and related constructs such as academic buoyancy (e.g., Nicholson & Putwain, 2018; Pitzer & Skinner, 2017), little work has examined how students' peers, who they interact with on a daily basis at school, support these processes (c.f., Vollet & Kindermann, 2020). Even further, no research has examined these supports

from a person-centered perspective to investigate how supports from the microsystems of school and home may interact or add to have mesosystem level effects on youth's reengagement. Therefore, future work could significantly expand upon research in the field by using mixture modeling techniques to examine how combinations of supports from school and home potentially have distinguishable effects on changes in processes of motivational resilience across the school year.

Implications

Altogether, study results have implications for families, education professionals, and practitioners. Because reengagement is primarily concerned with actions undertaken during challenging or threatening academic experiences at school, the mediational model tested in the present study provides one pathway through which family effects present themselves at school. Therefore, results emphasize the importance of facilitating family support when practitioners and interventionists want to support adolescents' capacity to bounce back after difficulties. It also suggests that enabling families to have the resources available to provide these supports for their children may be crucial in their development of motivational resilience. Even further, the mediational role that students' self-system processes play in the effect of family support on reengagement suggests that these interventions or programs should focus on how families are supporting youth's development of healthy self-systems regarding the three basic needs of relatedness, competence, and autonomy, and not just on how they are directly intervening when adolescents run in trouble.

Conclusion

Overall, the present study contributed to research on reengagement through its use of a theoretical framework of motivational resilience based in self-determination theory that provided a process-based model of how the social context of the family can shape how youth generally handle challenges and setbacks in their academic tasks through its effect on their self-system processes of relatedness, competence, and autonomy. This, in addition to the use of short-term longitudinal data, allowed for some explication of the direction of these effects and provided one pathway through which the context of home may be carried by students into the school context.

Chapter III: Study 2

Visible Messages of Motivational Resilience: Reengagement as a Pathway through which Children's Academic Coping Shapes Changes in Parenting

Introduction

Research suggests that when students encounter challenges or setbacks in their schoolwork, their *academic coping*, that is, the on-the-ground, in the moment ways they handle these difficulties, can make a difference to their academic functioning and achievement (Skinner & Saxton, 2019). Students who cope constructively tend to show greater persistence, self-regulated learning, adjustment, and deeper processing while learning, as well as higher grades and standardized test scores (Morales-Castillo, 2022; Rijavec & Brdar, 2002; Shih, 2015a; Skinner & Saxton, 2020; Suldo et al., 2015). Students who respond maladaptively are at greater risk of desistence, disinterest, distress, burnout, poor performance, and even suspension (Boon, 2011; Putwain et al., 2012, 2016; Skinner et al., 2016; Suldo et al., 2018). Based on accumulating evidence of its importance, researchers and interventionists have tried to identify key predictors of academic coping. However, studies have focused primarily on individual predictors, like self-efficacy or goal orientations. And as a result, much less is known about the role of interpersonal factors. However, studies of social supports, typically focused on teachers, suggest that they do matter; for example, students cope more productively when they view their teachers as providing more instrumental and emotional support (Amemiya & Wang, 2018; Ben-Eliyahu & Kaplan, 2015; Causey & Dubow, 1993; Friedel et al., 2007;

Kahraman & Sungur, 2013; Lau & Nie, 2008; Raftery-Helmer & Grolnick, 2018; Reschly et al., 2008; Shih, 2015b; Skinner & Saxton, 2020; Subasi & Tas, 2016; Zimmer-Gembeck & Locke, 2007).

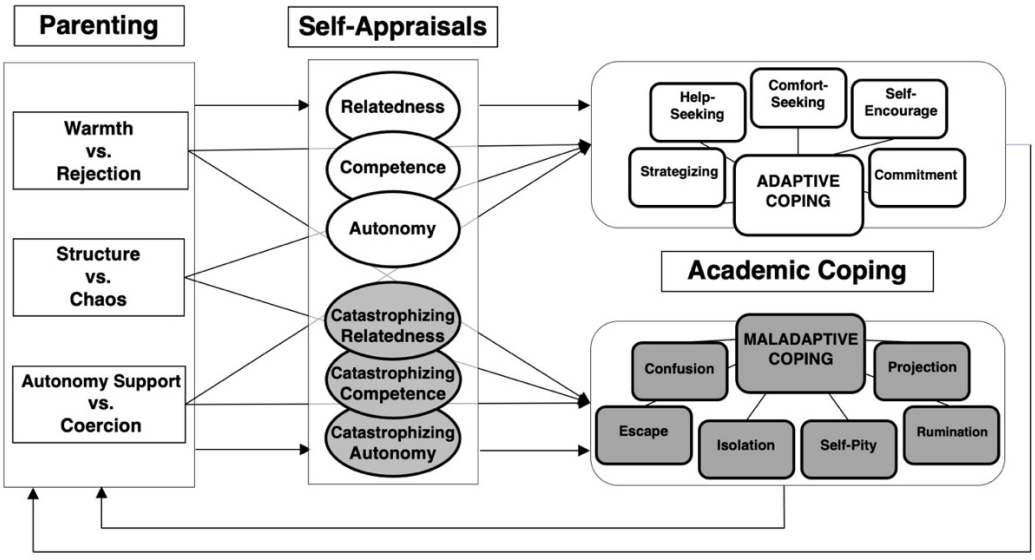
Perhaps because parents are more distal to the classroom, fewer studies have examined their impact, but those that do have found that, just like teachers, parents or caregivers who provide more support have children who rely more on adaptive versus maladaptive coping, in terms of both individual ways and profiles of coping (Assor & Tal, 2012; Boon, 2014; E. L. Deci et al., 1992; Raftery-Helmer & Grolnick, 2016, 2018; Zimmer-Gembeck & Locke, 2007). The results of these studies are encouraging but as a whole, the investigation of how parents shape the development of their children's academic coping is challenging for multiple reasons. First, there are few overarching theoretical frameworks that specify the kinds or dimensions of parenting that are beneficial; most studies (of both parents and teachers) examine generic "support." Second, few studies look at the pathways through which parenting has its impact on academic coping, which after all takes place largely in the classroom where parents are not present. Third, most studies are cross-sectional; hence, they are limited in at least two ways. They cannot determine whether parenting predicts *changes* in children's coping over time, and they cannot examine the alternative direction of effects, namely, whether children's coping has an impact on the parenting they subsequently receive. Many developmental models posit that parent effects are part of reciprocal transactions (Bell, 1964; Bronfenbrenner & Morris, 1998; Sameroff, 2010), suggesting the possibility of

recursive dynamics between parents and children that may underlie the development of children's academic coping or of parenting itself.

Motivational Model of Academic Coping

To frame this study of parenting and academic coping, a motivational theory rooted in Self-determination Theory (SDT; Ryan & Deci, 2017) was utilized because it provided a process model of academic coping that specifies core categories of parenting, explains why these kinds of parenting should shape the different ways children cope when they encounter academic difficulties, and posits reciprocal effects in which children's coping feeds back to shape subsequent parenting (see Figure 3.1; Skinner & Wellborn, 1994, 1997).

Figure 3.1
A Motivational Model of Academic Coping



Pathways of influence from parenting to academic coping. A fundamental tenet of SDT is that all people have three basic needs-- for relatedness, competence, and autonomy. The extent to which social contexts either promote or hinder these needs in turn shapes children's experiences of having these three needs satisfied, and overtime, their views of themselves. The accumulation of these interpersonal and contextual experiences results in the development of *self-systems* regarding these three needs (Connell & Wellborn, 1991). *Relatedness* refers to a person's sense of themselves as worthy of love and affection as well as connected to others and originated from research on the importance of the attachment relationship and belonging (Ainsworth, 1979; Allen et al., 2022; Baumeister & Leary, 1995). A students' sense of *competence* originated from research investigating effectance motivation and self-efficacy, and concerns the extent to which children feel that they can produce desired outcomes within their environment (Schunk & DiBenedetto, 2020; Skinner, 1996; White, 1959). Lastly, children's *autonomy*, the primary focus of SDT, concerns whether they view themselves as determining their own actions and the extent to which those actions are in line with their genuine goals and values (E. L. Deci & Ryan, 1985; Ryan & Connell, 1989).

The notion of fundamental psychological needs, as posited by SDT, not only identifies personal motivational resources, but also specifies 11 ways of coping that students may rely on when they run into difficulties with educational tasks, corresponding to whether academic stressors challenge or threaten their three basic needs for relatedness, competence, and autonomy (Skinner & Wellborn, 1994, 1997). As

described in Table 1, five of these ways of coping are adaptive (*strategizing, help-seeking, comfort-seeking, self-encouragement, and commitment)* and six are maladaptive (*confusion, escape, concealment, self-pity, rumination, and projection*). Studies of multiple ways of adaptive and maladaptive coping have shown that they can be combined to create markers of students' *coping profiles*, which reflect the extent to which an individual's overall repertoire of strategies relies on adaptive versus maladaptive strategies (Boekaerts, 1993). Such profiles of academic coping seem to be especially strong predictors of students' educational functioning and success (Skinner & Saxton, 2019).

Table 3.1
Ways of Coping in the Academic Domain

Adaptive	**Description**	**Item Examples** "When I have difficulty learning something…"
Strategizing	Tries to find solutions or keep problems from happening in the future	"I try to see what I did wrong."
Help-seeking	Goes to knowledgeable others for possible solutions or learning tools	"I ask for some help to understand the material better."
Comfort-seeking	Seeks trusted others for emotional supports	"I talk about it with someone I'm close to."
Self-encouragement	Tries to lift own emotions	"I tell myself I'll do better next time."
Commitment	Reminds oneself of the value of the difficult task	"I think about all the reasons it's important to me."
Maladaptive		
Escape	Mentally tries to avoid the problem	"I say it wasn't important."
Confusion	Uncertainty about what to do next	"My mind goes blank."

Concealment	Tries to hide poor outcomes or difficulty from others	"I try to hide it."
Self-pity	Lamenting one's situation	"I say, 'This always happens to me.'"
Rumination	Consuming focus on bad parts of a difficult situation	"I can't get it out of my head."
Projection	Blaming others for problems	"I say it was the teacher's fault."

Note. Adapted from Skinner et al., 2013 with permission.

Parental motivational supports. SDT suggests that parents can promote their children's personal motivational resources and academic functioning by offering three key motivational provisions, namely, involvement, structure, and autonomy support (Grolnick et al., 2009; Ryan & Deci, 2017; Skinner et al., 2005). *Involvement*, or the extent to which parents are warm, loving, and present in their children's lives (versus its opposite, *rejection* or *hostility*), has been shown to be connected with a host of positive developmental and educational outcomes including academic achievement and psychological well-being (Barger et al., 2019). *Structure*, or parenting that is characterized by consistent and age-appropriate limits and guidelines (in contrast to *chaos*), has similarly been associated with numerous positive outcomes such as increased achievement motivation and school performance (Farkas & Grolnick, 2010). Less research has focused on parental *autonomy support*, or the extent to which parents respect their children's genuine thoughts, preferences, and perspectives (in opposition to *coercion*), however, a meta-analysis of the available research has emphasized its connection to academic achievement and functioning (Vasquez et al., 2016).

While these reviews and meta-analyses have focused on more general positive outcomes, they have provided evidence suggesting that parenting that is rich in these motivational supports should similarly bolster children's reliance upon adaptive and reduce their reliance upon maladaptive ways of coping, while parenting that is low on these supports should evince the opposite pattern. Six studies confirm these connections. When parents provide higher levels of involvement, structure, and autonomy support (or supports that are very similar to these provisions), their children utilize more adaptive and fewer maladaptive coping strategies when they encounter challenges and problems in their academic tasks (Assor & Tal, 2012; Boon, 2014; E. L. Deci et al., 1992; Raftery-Helmer & Grolnick, 2016, 2018; Zimmer-Gembeck & Locke, 2007). A few studies, based on short-term longitudinal designs, have shown that parenting high in motivational supports predicts increases in adaptive and decreases in most maladaptive ways of coping (Raine & Skinner, 2023; Zimmer-Gembeck, Skinner, et al., 2023).

During coping episodes, such as when children are struggling with a difficult homework problem, parents are likely having direct effects on coping as suggested by the aforementioned studies. For example, children of parents who provide adequate structure by freely offering strategies to support their schoolwork and encouraging them to complete it at a regular time each day, may be more likely to turn to their parents for help when they run into trouble with a difficult homework problem (via *help-seeking*). However, it is also possible that these social interactions between parents and children are also packing students' "developmental suitcase" with personal motivational resources

such as relatedness, competence, and autonomy, that they then carry with them into school. Within the literature, students' competence, perceived control, and goal orientations have all been found to be mediators of the effects of parental resources (e.g., involvement, structure, autonomy support, or parent goal orientations) on academic coping (Assor & Tal, 2012; Friedel et al., 2007; Kahraman & Sungur, 2013; Raftery-Helmer & Grolnick, 2016), providing evidence that social interactions that involve academic coping may best be described as consisting of both direct and indirect effects.

Reciprocal effects between parenting and academic coping. Developmental models, including SDT, hypothesize that ongoing reciprocal interactions between developing individuals and their social or contextual partners are the "engines" of development, contributing to developmental trajectories over time (Bronfenbrenner & Morris, 1998; Ryan & Deci, 2017; Sameroff, 2010). This suggests not only that parents are providing or withholding motivational resources to children that supply essential nutriments to fuel academic coping, but also that parents may shift the level of these resources in response to their children's academic coping behaviors as well. For example, when children who are struggling with a homework problem try to come up with potential solutions and actively ask parents for helpful advice (via strategizing and help-seeking), these actions may then draw out additional scaffolding and support from their parents in the form of increased structure and involvement. Moreover, the quality of these interpersonal transactions has the potential to contribute to recursive cycles that amplify their effects over time, resulting in *virtuous* cycles where positive academic coping and

parenting spur further development in the other, or alternatively, in *vicious* cycles that exacerbate negative effects. However, very little research has focused on such effects, instead researchers using data collected at a single time point typically assume that the direction of effects flows from parental resources to child academic coping, or studies focus only on a single side of these hypothesized connections: that from parents to children.

Child Effects from Coping to Parenting. To date, only three studies have examined child *and* parent effects, with two finding some evidence for effects running in both directions (Raine & Skinner, 2023; Seiffge-Krenke & Pakalniskiene, 2011; Skinner & Edge, 2002). Consistent with the larger body of work on the effects of parenting, all showed that initial high-quality parenting can predict improvements in children's academic coping. Building on that body of work, two of these three studies also revealed that students' initial academic coping can (sometimes) predict changes in the parenting they receive. A first exploratory study found that a set of individual adaptive ways of coping (support-seeking, problem-solving, and accommodation) used by students in grades four to seven predicted increases across a single school year in the motivational support subsequently provided by their parents (Skinner & Edge, 2002); providing initial evidence of the presence of child effects from these specific ways of coping to changes in parenting. A second study of families with adolescents in Germany where data were collected once a year for four years also examined bidirectional effects (Seiffge-Krenke & Pakalniskiene, 2011). The study was designed to investigate whether parent coping

could serve as a model for later adolescent coping and whether the reciprocal was also true: that adolescent coping was also shaping later parent coping. As part of testing these models, parent and youth perceptions of parental autonomy support were also investigated as mediators of the connection between parent and adolescent coping, however, results only supported parent effects on youth coping; adolescent coping did not predict changes in parents' provision of autonomy support over the same period.

Lastly, in order to investigate whether the concurrent correlations between parenting and academic coping found in previous research could be more accurately construed as bidirectional effects, a study examined cross-lagged panel models with students in grades three to six, and found that not only did parental motivational support predict increases in adaptive versus maladaptive coping profiles, but that these coping profiles also predicted increases in parental motivational support across a single school year (Raine & Skinner, 2023). However, when the effects on parenting of individual ways of coping were examined separately, a more differentiated pattern of effects was found, with all adaptive ways shaping changes in parenting, but not all maladaptive ways. More specifically, maladaptive ways characterized by more covert, cognitive ways of coping such as mental escape, confusion, and rumination did not have significant effects on changes in parenting, even though students whose parents initially provided higher levels of motivational support did show reduced reliance upon these ways of coping over the school year. Those ways of maladaptive coping that contained more reactivity (self-pity) and visible negative behavior (projection) did predict decreases in parent support across

the year, perhaps because of their potential to elicit controlling and negative reactions or to push parents away. However, concealment also predicted significant decreases in support, suggesting that less overt ways of coping may also be having an effect on parents as well, possibly by hiding potential stressors, keeping parents from knowing when they need to provide additional motivational resources.

Taken together, these three studies provide initial support for the notion that the effects between parenting and academic coping may be bidirectional. Furthermore, the inconsistency of these effects across individual ways of coping involving more cognitive and interior responses like confusion and mental escape, suggests that some ways of coping may not have strong feedback effects because these ways may not be immediately visible to parents. It also suggests the importance of looking for pathways through which children's coping may be shaping parenting, specifically through observable child behaviors that are sending clearer messages to social partners. Coping researchers have consistently struggled with developing observational measures of coping, both academic and otherwise, because much of coping can be internal (Compas et al., 2001). Currently, the only observational measures that have been validated involve children coping with painful medical procedures, a highly acute situation that can elicit more overt and observable actions (Katz et al., 1980). Therefore, it is an open question of whether, in the everyday interactions children have with their schoolwork, there may be other manifestations of behavior that are themselves consequences of interior coping and that may be more observable to social partners, like parents. These more outward processes

may then serve as pathways through which academic coping is shaping changes in parenting, especially for ways that are not as visible to parents or other social partners.

Pathways from academic coping to changes in parenting. The primary goal of this study was to identify and test a set of processes that may help to explain how children's coping can shape their parents' responses over time. Because academic coping itself may be less visible to social partners (and even trained researchers), the goal was to locate aspects of motivational functioning that are outcomes of academic coping and examine whether they could serve as potentially more visible pathways through which coping impacts parenting. One of these processes includes persistence in the face of difficult academic tasks, otherwise known as *reengagement* (versus *giving up*). For example, when a student is sitting at the kitchen table trying to quickly finish their homework before they run off to school that day, parents may not be directly observing how they are coping (e.g., concealment) when they run into a series of math problems they don't understand. However, a parent may notice the child's disinterest in finishing the homework, their focus on other activities, or their lack of enthusiasm. These actions and emotions may not represent direct coping itself but instead be a result of whether these coping responses (like concealment) led to a return to a more engaged or disaffected state after running into trouble, and a parent may respond by admonishing their child for giving up, telling them that if they do not focus more they will take away their internet access later in the day (e.g., coercion). Parents may therefore be shifting

their provision of motivational support not just in direct response to coping but instead (or also) to their children's level of reengagement.

To serve as a pathway between academic coping and parenting, a potential mediator must be both an outcome of academic coping and a predictor of changes in parenting. With regard to reengagement, some empirical support can be found for both of these connections. On the one hand, multiple studies have found that academic coping is strongly and consistently linked to higher levels of reengagement, both concurrently and longitudinally. More specifically, in a sample of third through sixth graders, researchers found that an adaptive profile as well as all adaptive ways of coping were positively correlated with reengagement while a maladaptive profile and all maladaptive ways of coping except for rumination were negatively correlated (Skinner et al., 2013). A short-term longitudinal study with a similar population of third through sixth graders also found that an initial academic coping profile characterized as more adaptive versus maladaptive coping predicted increases in both student reports and teachers reports of student reengagement across a single school year (Skinner et al., 2016). Results diverged for individual ways of coping, however, with all adaptive ways predicting increases in student reports of reengagement but comfort-seeking and commitment not predicting changes in teacher reports. Maladaptive ways evinced a similar pattern with all except rumination predicting decreases in student reports of reengagement and all except concealment and rumination predicting decreases in teacher reports. Unexpectedly, rumination predicted increases in teacher reports of reengagement. Rumination has a

history of mixed results in the literature because it can contain both the negative affect characteristic of anxiety as well as obsessive thoughts which can be associated with further action on a task (Lyubomirsky et al., 2015). However, research has consistently found that it is not "good news" for kids (Nolen-Hoeksema et al., 2008), and its lack of significant connection with students' perceived reengagement is consistent with this idea. On the other hand, teachers may be perceiving it as linked to increases in reengagement because they see student on task behavior but are not picking up on the underlying negative affect.

To date no studies have investigated the other pathway, from reengagement to changes in parenting, however, a small number of studies have investigated how other motivational factors such as autonomous motivation shape parenting. For example, in two samples of adolescents in the Netherlands, autonomous motivation that is identified, or, characterized as aligning more with internalized values and goals, predicted increases in autonomy supportive parenting, while motivation that was more external, or originating from others, evinced the opposite pattern (Vansteenkiste et al., 2014). This provides some evidence that parents are shifting their parenting in response to children's motivational processes.

Taken together, these studies demonstrate that a motivational resilience process like reengagement could potentially be a pathway through which children are influencing their parents even when their coping behavior is not visible and obvious, or parents are not directly engaged with their academic activities. Therefore, even for ways of coping

that do not have direct effects on parenting, it is possible that coping is still having an indirect effect on parenting through reengagement. While traditional models of mediation require a significant direct effect as the initial testing step (e.g., Baron & Kenny, 1986), contemporary indirect effects models suggest that causal chains could exist where there are significant effects from variables a to b to c, but no significant association from a to c (Preacher & Hayes, 2008; Shrout & Bolger, 2002). This type of "stepping stone" model may be how more cognitive or interior ways of coping influence other people's behavior, specifically through their observable manifestation in outward processes like reengagement.

Proposed Study

Therefore, the proposed study aims to address these significant gaps in research examining the connection between academic coping and parenting by investigating student reengagement as a potential mediator, a visible message of motivational resilience to which parents may be responding. Specifically, initial levels of students' academic coping profiles (adaptive relative to maladaptive coping) in the fall (T1) are hypothesized to predict increases in parental provision of motivational support from fall to spring via students' level of reengagement in the spring (T2). To gauge whether reengagement serves as a mediator for both covert and overt coping responses, the study examines mediational models for individual ways of coping as well. Specifically, initial levels of all 5 adaptive ways of coping (strategizing, help-seeking, comfort-seeking, self-encouragement, and commitment) are posited to predict increases in parent motivational

support via reengagement in the spring, while initial levels of all 6 individual ways of maladaptive coping (escape, confusion, concealment, self-pity, rumination, and projection) are hypothesized to have significant indirect effects on decreases in parental motivational support via lower levels of reengagement in the spring.

This study has the potential to make three important contributions to our understanding of parenting and coping. First, examining child effects helps to more fully explore recursive cycles between parents and children, thus contributing to an understanding of the potential amplifying effects of these interactions over time. Second, investigating the mechanisms underlying these feedback effects helps paint a more complete picture regarding how social partners are shaping each other within interpersonal interactions. This gives us, lastly and most importantly, actionable information for parents and other social partners, such as teachers, about how to recognize bids for additional support from students. As previous research concerning direct effects of coping on parenting has demonstrated (e.g., Raine & Skinner, 2023), parents may be withdrawing motivational supports in the face of maladaptive coping, during a time when children most likely are in need of even more concrete support such as scaffolding (i.e., structure), emotional comfort (i.e., warmth or involvement), or respect for their genuine thoughts and feelings (i.e., autonomy support). Therefore, the more researchers can uncover about the kinds of behavior that could let parents know that their children's coping is faltering, the more motivated parents may be to provide

additional support and the more effective parenting interventions targeting these interactions might be.

Method

Sample and Procedure

The sample for the present study consisted of 1,020 third through sixth graders (13.43% third graders, 33.33% fourth graders, 16.57% fifth graders, and 35.78% sixth graders; grade level missing for nine students), ranging in age from 8 to 13 years old, representing an entire school district in a rural-suburban town in upstate New York. Students and their families were predominantly white (95%), with 3% of students identifying as Hispanic. 50.29% of students were girls, while 49.71% were boys, and families' socio-economic status was primarily working or middle class as measured by parents' education level and career.

Data were collected at two timepoints, the beginning (T1) and end (T2) of a single school year, as part of a larger four-year longitudinal study examining students' academic coping, motivation, and engagement at school. Research assistants administered student surveys as part of regularly occurring assessments when teachers were not present, with one explaining instructions to the class and the other available to answer individual questions. Human subjects review and approval was provided by the authors' university institutional review board, application #00032.

Measures

All measures included in the present study were student self-report and utilized a four-point Likert-type scale consisting of 1 = “not at all true”, 2 = “not very true”, 3 = “sort of true”, and 4 = “very true”. Additionally, except for academic coping, assessments consisted of roughly equal numbers of positively and negatively worded items, with negatively worded items reverse coded so that higher values indicated a greater level of that construct.

Academic coping. Students’ academic coping was measured for 11 individual ways, 5 adaptive and 6 maladaptive, all with 5 items each (Skinner et al., 2013). Items used one of four possible stems designed to tap situations where students encountered difficulty at school, such as, “When I run into a problem on an important test…” or “When I have trouble with a subject in school…”. Individual items tapped each of the 11 individual ways of coping by asking about the extent to which students utilized specific actions in the face of these difficulties. For example, “When something bad happens to me at school (like not doing well on a test or not being able to answer an important question), I try to figure out how to do better next time” tapped strategizing, while “When I run into a problem on an important test, I say the teacher isn’t fair” tapped projection (see Table 1 for full item examples). Previous studies have confirmed the structure of items tapping these ways of coping (Gonçalves et al., 2019; Skinner et al., 2013) and provided evidence of developmental measurement invariance in these coping measures across the grades included in this study, finding support for configural, metric, and scalar, but not strict invariance (Skinner & Saxton, 2020).

To calculate students' levels of academic coping, individual adaptive and maladaptive ways were combined into an aggregate score with maladaptive ways reverse coded. This method of creating an ipsative profile score allows for the consideration of the differential level of stress each child may be experiencing (Vitaliano et al., 1987). Therefore, higher scores represent a greater proportion of coping that was adaptive rather than maladaptive, while lower scores reflected higher amounts of maladaptive relative to adaptive coping. Combined in these scores, these items had acceptable internal reliability, $\alpha = .89$.

For all individual ways of coping allocation scores were used to factor in the amount of total coping children are undertaking. By their nature, coping scores contain the amount of stress a child experienced, thereby washing out adaptive ways and amplifying maladaptive ways. Allocation scores account for the different levels of stress students are experiencing by incorporating the total amount of coping they are engaged in. These scores are calculated by taking the average score for each individual way of coping and dividing it by the total score for all adaptive and maladaptive ways of coping combined *without* reverse coding maladaptive ways. Then this fraction is multiplied by 100 to create a score that represents the proportion of total coping represented by that individual way. See table 3.2 for internal consistencies for all individual ways of coping

Reengagement. Students' reengagement was be assessed using four items designed to tap the extent to which students persisted and returned to an engaged state after encountering challenges and setbacks in their academic work or alternatively gave

up (Skinner et al., 2016). Items included, “When I run into a difficult question, I try even harder,” and “When I come to a problem I can’t solve right away, I give up” (reverse-coded). All items loaded well onto a single factor with standardized loadings above .4 (λ = .581 - .708) and had acceptable internal reliabilityα = .72.

Parental motivational support. Students’ perceptions of their parents’ provision of motivational support were measured using 21 total items from three support subdimensions, eight parental involvement items, six structure items, and seven autonomy support items (Skinner et al., 2005). Involvement items were designed to tap the extent to which students felt that their parents were warm and affectionate, and included items such as “My parents enjoy hearing about my school day.” Parental structure items were designed to evaluate children’s perceptions of their parents as providing developmentally appropriate, consistent limits and guidance, and included items such as, “My parents always do what they say they are going to do.” Autonomy support items were designed to tap children’s perceptions of their parents as respecting their genuine thoughts and preferences such as “My parents listen to me when I have something to say about school.” Items were randomly put into four parcels for structural equation modeling and these parcels all had standardized loadings above .4 (λ_{fall} = .727 - .866; λ_{spring} = .801 - .877), and acceptable reliability at both timepoints (α_{fall} = .88, α_{spring} = .90).

Data Analytic Plan

Structural equation modeling within the lavaan package in R (Rosseel, 2012) was used to test mediational hypotheses, with bootstrap estimated standard errors using 1000 samples to calculate indirect effects (Shrout & Bolger, 2002). Due to the presence of missing data in the sample, full information maximum likelihood estimation was used to minimize biased results (FIML; Dempster et al., 1977). To investigate study hypotheses 12 separate models were run, one for students' total coping profile and 11 more for each individual way.

Overall, support for study hypotheses were evaluated based on indicators of good model fit including a non-significant chi-square test, a CFI over .95, and an RMSEA below .05 (Hu & Bentler, 1999). Additionally, significant, positive betas from children's coping profiles and ways at T1 to reengagement at T2, as well as from reengagement at T2 to parental motivational support at T2, while controlling for T1 parental motivational support, provided evidence supporting the hypothesized connections between these variables. Additionally, if the path from T1 coping to changes in parent support was no longer significant, then this effect represented full mediation, whereas if it remained significant, it reflected partial mediation. Significant indirect effects from students' T1 coping profiles and individual ways to changes in parental motivational support through student reengagement provided additional evidence supporting study hypotheses.

Results

Before study hypotheses were investigated, means, standard deviations, reliability, and bivariate correlations were examined for all study variables (see Tables 3.2 and 3.3).

Generally, bivariate correlations between study variables were consistent with the hypothesized connections between these variables, with coping profiles and adaptive ways of coping positively connected to both reengagement and parental motivational support, maladaptive ways of coping evincing the opposite pattern, and reengagement positively connected to parental support (see Table 3.3). Notable exceptions were found for rumination, which was not significantly correlated with parental motivational support at either timepoint and was positively correlated with student reengagement.

Table 3.2
Summary of Descriptive Statistics

Scale	Number of Items	α	*M*	*SD*
Total Coping Profile (T1)	55	.89	2.97	.39
Ind. Coping Ways (T1)				
Adaptive				
Strategizing	5	.72	11.25	2.11
Help-Seeking	5	.75	11.29	2.35
Comfort-seeking	5	.75	10.72	2.27
Self-encouragement	5	.62	10.96	2.03
Commitment	5	.68	10.67	2.04
Maladaptive				
Confusion	5	.75	8.01	2.09
Escape	5	.72	6.87	2.18
Concealment	5	.77	7.21	2.26
Self-pity	5	.80	7.40	2.25
Rumination	5	.68	9.31	1.86
Projection	5	.78	6.30	2.24
Reengagement (T2)	4	.72	3.37	.60
Parental Motivational Support (T1)	21	.88	3.08	.50
Parental Motivational Support (T2)	21	.90	3.06	.54

Note. N = 1,020. Parenting and reengagement items could range from 1 to 4. All individual ways of coping are allocation scores.

Table 3.3
Correlations between Study Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Total Coping Prof (T1)	-														
Adaptive Coping (T1)															
2. Strategizing	.770	-													
3. Help-seeking	.780	.573	-												
4. Comfort-seeking	.711	.382	.446	-											
5. Self-encouragement	.746	.470	.444	.402	-										
6. Commitment	.760	.513	.470	.382	.515	-									
Maladaptive Coping (T1)															
7. Confusion	-.689	-.512	-.551	-.416	-.586	-.537	-								
8. Escape	-.578	-.463	-.457	-.433	-.327	-.495	.202	-							
9. Concealment	-.756	-.555	-.624	-.581	-.513	-.565	.398	.408	-						
10. Self-pity	-.751	-.593	-.598	-.526	-.571	-.543	.466	.265	.472	-					
11. Rumination	-.285	-.115	-.175	-.242	-.354	-.183	.205	-.203	.117	.112	-				
12. Projection	-.698	-.654	-.524	-.471	-.456	-.534	.328	.515	.432	.493	-.148	-			
13. Reengagement (T2)	.608	.589	.500	.343	.372	.493	-.338	-.523	-.454	-.455	.129	-.635	-		
14. Parent Support (T1)	.549	.441	.483	.421	.311	.423	-.367	-.291	-.479	-.531	-.031^{ns}	-.397	.381	-	
15. Parent Support (T2)	.625	.526	.499	.471	.407	.465	-.449	-.370	-.545	-.557	.018^{ns}	-.485	.439	.817	-

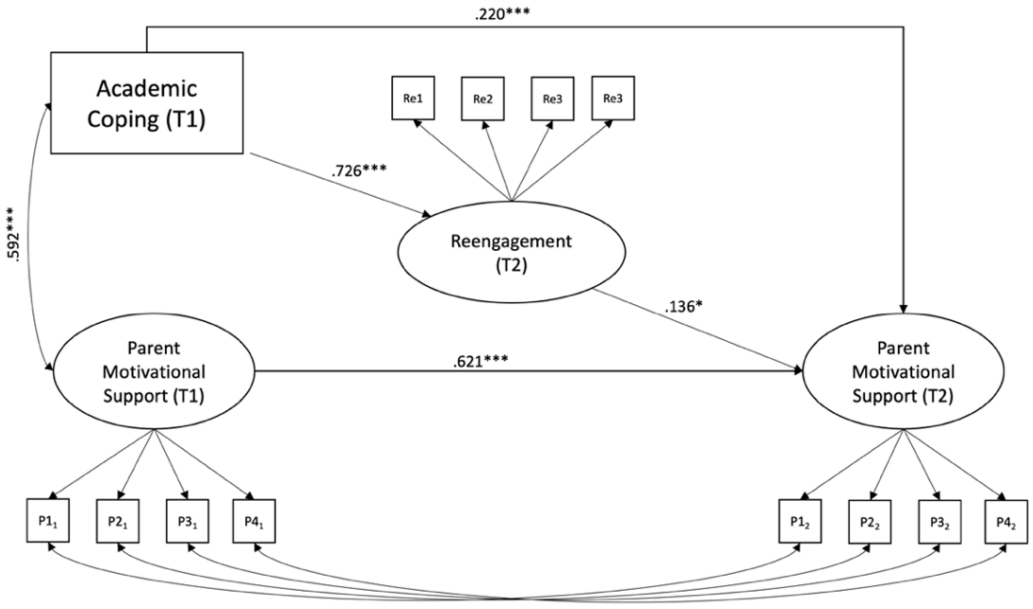
Note. N = 1,020. All individual ways of coping use allocation scores. All correlations are significant, $p < .001$, except when noted as *ns* (non-significant)

Mediational Results for Coping Profiles

Structural equation modeling was used to examine whether students' academic coping profiles predicted increases in parental provision of motivational support across the school year through its effect on students' reengagement (Figure 3.2). Overall, despite a significant chi-square ($\chi^2(57) = 88.18$, $p = .005$), alternative fit indices suggested that the model had an acceptable fit to the data (CFA = .993; RMSEA = .024 95% CI [.013, .033]; Hu & Bentler, 1999). Students' initial academic coping profiles significantly and positively predicted their time 2 reengagement. Reengagement, in turn, predicted parental motivational support at T2, while controlling for T1 parental support. Significant indirect effects from academic coping to parental motivational support through reengagement provided additional evidence in support of the mediational hypothesis. Even further, academic coping remained a significant predictor of changes in parental support when reengagement was included as a mediator, suggesting that this effect represented partial mediation.

Figure 3.2

Mediational Results of Academic Coping Predicting Changes in Parent Motivational Support through Reengagement



Note. *N* = 1,020. CFA .993; RMSEA .024, 95% CI [.013, .033]. Indirect Effect: .005 (.002), 95% CI [.0005, .010].

*$p < .05$, **$p < .01$, ***$p < .001$, ns = non-significant.

Mediational Results for Individual Ways of Coping

Hypotheses regarding whether reengagement mediated the effects of all 11 individual ways of coping on parental motivational support were also examined using structural equation modeling (see Figures 3.3 and 3.4). All 11 models evinced adequate fit to the data, despite significant chi-square tests (see Table 3.4 for a summary of fit statistics for these models). High initial levels of all adaptive individual ways of coping at T1 predicted higher levels of reengagement at T2. In turn, higher levels of reengagement then predicted increases in parental motivational support from T1 to T2, and significant indirect effects provided further evidence of the hypothesized mediational models (see Table 3.4 for indirect effects). For all maladaptive ways of coping except rumination, higher initial levels predicted lower levels of reengagement; in turn lower levels of reengagement were linked to decreases in parental motivational support across the school year. Rumination was a notable exception, with results suggesting that higher initial levels predicted higher levels of reengagement, which in turn predicted increases in motivational support. Significant indirect effects from rumination to changes in parenting through reengagement provided additional support for reengagement as a mediator (see Table 3.4).

Despite models mostly supporting the hypothesized mediations, individual ways of coping differed in whether mediational effects represented full or partial mediation. Unique, significant direct effects of strategizing and self-encouragement, respectively, on changes in parental motivational support were present even when reengagement was included as a mediator, suggesting that reengagement only partially mediated the

connections between these two ways of coping and parental support. Alternatively, help-seeking, comfort-seeking, commitment, confusion, escape, concealment, rumination, and projection had non-significant coefficients predicting changes in parent support in the full mediational model suggesting that these effects represented full mediation.

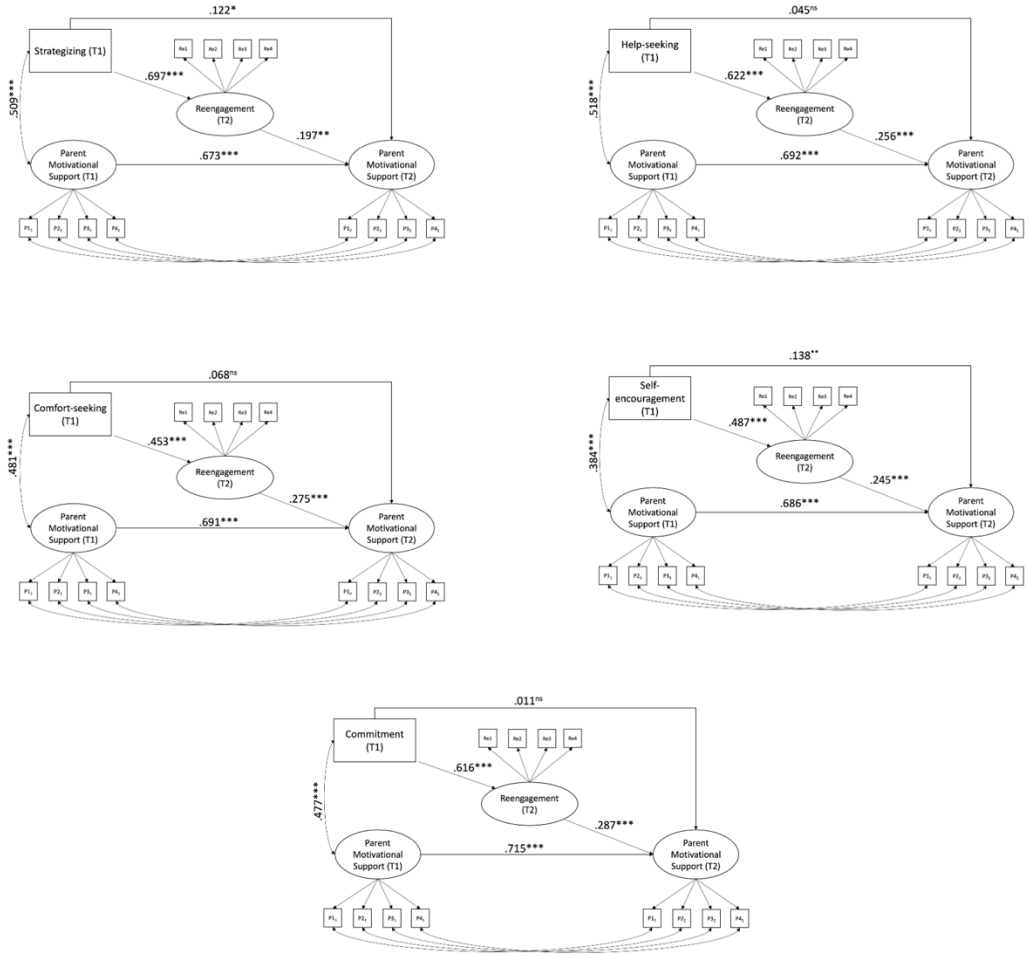
Table 3.4

Summary of Fit Statistics and Indirect Effects for Mediational Models for All Individual Ways of Coping

				Indirect Effect	
Way of Coping	χ^2 (*df*)	CFI	RMSEA	β (SE)	95% CI
Adaptive Ways					
Strategizing	112.554* (57)	.988	.032	.029 (.009)	.011, .049
Help-seeking	107.817* (57)	.988	.030	.031 (.007)	.017, .046
Comfort-seeking	127.067* (57)	.984	.035	.022 (.004)	.014, .031
Self-encouragement	150.574* (57)	.978	.041	.024 (.006)	.013, .035
Commitment	114.127* (57)	.987	.032	.035 (.007)	.022, .050
Maladaptive Ways					
Confusion	130.700* (57)	.983	.036	-.024 (.005)	-.033, -.015
Escape	132.170* (57)	.983	.037	-.037 (.009)	-.056, -.022
Concealment	112.167* (57)	.987	.031	-.026 (.006)	-.037, -.015
Self-pity	105.683* (57)	.989	.030	-.027 (.006)	-.040, -.016
Rumination	193.055* (57)	.967	.049	.011 (.004)	.003, .020
Projection	98.867* (57)	.991	.027	-.032 (.012)	-.057, -.009

Note: N = 1,020. Individual ways of coping used allocation scores. Betas for indirect effects are unstandardized.
*$p < .001$.

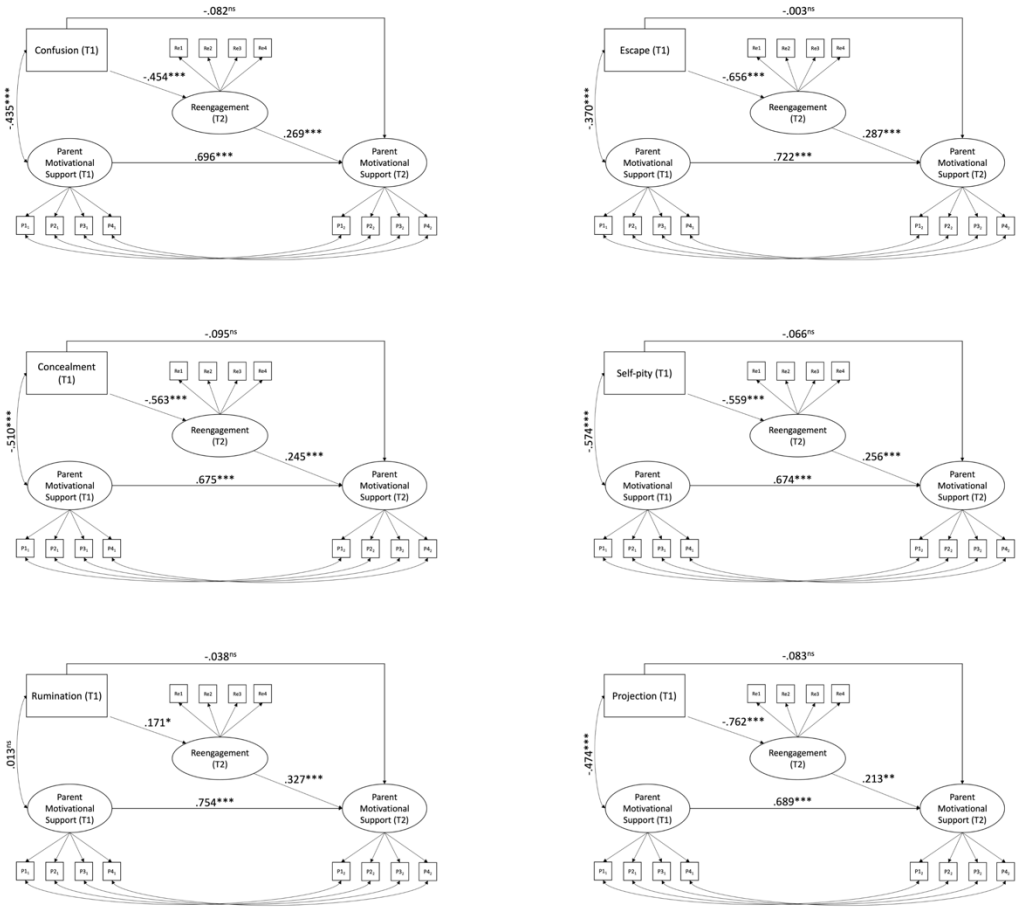
Figure 3.3
Mediational Results for All Individual Adaptive Ways of Coping



Note. N = 1,020. All individual ways of coping use allocation scores.
*$p < .05$, **$p < .01$, ***$p < .001$, ns = non-significant.

Figure 3.4

Mediational Results for All Individual Maladaptive Ways of Coping



Note. N = 1,020. All individual ways of coping use allocation scores.
*$p < .05$, **$p < .01$, ***$p < .001$, ns = non-significant.

Discussion

Overall, this study provided evidence of two understudied steps in parent-child interactions involving academic coping: the effects of students' academic coping on changes in parenting, and the role of reengagement as a potential mechanism underlying these connections. Patterns of findings generally supported study hypotheses, with both students' coping profiles and all individual ways of coping having significant effects on changes in parental motivational support through students' reengagement, albeit one (rumination) was not in the expected direction. Study results make at least three contributions to research on the role of parents in the development of their children's academic coping.

First, findings provide further support for feedback effects from students' coping to the parenting they subsequently receive. Although it makes intuitive sense that children's behaviors, emotions, and actions are having an effect on parenting, very few studies have focused on this direction of effects, despite evidence that parents shift their parenting according to these "bottom-up" effects (Grolnick, 2003; Grolnick & Apostoleris, 2002). Within the sphere of academic coping, only two studies and an empirical example have investigated these feedback effects (Raine & Skinner, 2023; Seiffge-Krenke & Pakalniskiene, 2011; Skinner & Edge, 2002). Therefore, an important contribution of the present study is to expand upon the parenting and academic coping literature by providing additional evidence documenting their operation. Taken together with the established literature regarding parents' influence on academic coping (Skinner & Saxton, 2019), results from the current study support conceptualizations of academic

coping and parenting as a transactional system made up of recursive cycles where parents and children are each having effects on the other, consistent with bioecological and transactional models of development. Documentation of feedback effects suggests that the accumulation of theses interactions over time may result in positive or negative loops of virtuous or vicious cycles. For example, as research on effects from parents on children's coping suggests, parents who are harsh, chaotic, and controlling have children who rely more upon maladaptive rather than adaptive ways of coping (Raftery-Helmer & Grolnick, 2018; Zimmer-Gembeck, Skinner, et al., 2023), which the present study suggests, may then in turn cause parents to become even more harsh, chaotic, and controlling, resulting in further poor family functioning. On the other hand, parenting that is high in motivational resources (e.g., warm and involved, providing individually and developmentally attuned structure, and autonomy supportive) is connected to a greater utilization of adaptive ways of coping (e.g., problem-solving and asking for help; Raftery-Helmer & Grolnick, 2018; Zimmer-Gembeck, Skinner, et al., 2023), which findings suggest will in turn result in parents providing additional resources when students run into trouble.

Second, by testing reengagement as a potential mediator of child effects on parenting, the study contributes additional important information about the role of this resilience process in academic coping and parenting. On the one hand, results suggested that reengagement may be an important motivational outcome of academic coping: It was positively connected to children's coping profiles and individual ways of coping and

negatively connected to their use of maladaptive ways, providing further support for coping's connection to academic functioning outcomes. It also provides additional support for the motivational model of coping and models of motivational resilience, which posit that the material ways students handle academic challenges and setbacks (i.e., their academic coping) should shape their ability to persist in such tasks (i.e., their reengagement). On the other hand, study results establishing the positive connection of reengagement to increases in parental support were consistent with other studies that suggest child effects are shaping parenting through children's motivation, when for example, adolescents' higher levels of autonomous motivation are associated with higher levels of subsequent parental autonomy support (Vansteenkiste et al., 2014). Hence, findings from the current study suggest that reengagement may represent another way in which students' motivational actions can shape the reactions of their social partners (Reeve, 2013).

Lastly, the inclusion of reengagement, a more visible process of motivational resilience, as the "messenger" that actively communicates to parents about their children's motivational state provides concrete guidance regarding what actions may serve as clues for parents as to how students are coping. Because coping can be difficult to observe within real world settings, even for trained researchers (Compas et al., 2001), parents may be responding to children's motivation (or lack thereof) and using these cues as a basis for subsequently providing additional or withdrawing supports. Results from the current study are consistent with this idea. Support for mediational hypotheses

suggested that parents are likely responding to both direct messages from coping as well as attending to the manifestation of these ways of coping in motivational outcomes (e.g., reengagement), and helps to elucidate how individual-level processes and outcomes may themselves be having impacts on social partners such as parents.

Full and Partial Mediational Results

Generally, results for individual ways of coping mirrored those for coping profiles, with all adaptive ways of coping predicting increases in parental motivational support through their positive effects on later reengagement levels and all maladaptive ways of coping except for rumination predicting decreases in parental motivational support through their negative effects on reengagement. Besides unexpected results for rumination (discussed below), results for individual ways of coping differed only in whether their effects on parenting were found to be fully or partially mediated by reengagement. Although in general, we were not expecting that reengagement would necessarily fully mediate feedback effects of coping, it is still worthwhile to consider possible factors that might underlie these differential mediational effects.

First, for those ways of coping and coping profiles that were only partially mediated, it is possible that there are additional mediators that were not included in the present study. For example, parallel to behavioral outcomes like reengagement, coping is likely to have an impact on children's emotions. Increased emotional reactivity can indicate that children's stress systems are overwhelmed and therefore may be a particularly potent mediator, especially of maladaptive ways, because it can send strong

messages to parents that could potentially push parents away or elicit harsher parenting responses. Children's emotions may serve as mediators because, like reengagement, they may be a more visible manifestation of covert coping actions. For example, a parent may suddenly become aware that their child is struggling because they see them crying, even if they did not "see" the child's coping via confusion with a homework problem that was above their level of understanding for the previous ten minutes.

Second, for all ways of coping and profiles, there are also likely mediating processes emanating from parents that serve as pathways through which coping is shaping parenting. For example, parents will also be interpreting their children's emotions and behaviors, including reengagement, and then determining what their course of action should be in response. However, these parent interpretations themselves will likely also be multiply determined, shaped not only by coping and its behavioral and emotional outputs, but also by parent characteristics, contextual factors (e.g., family stress), and the history of prior interactions with their children. Therefore, there are likely many influences, including additional stepping stones, that contribute to shifts in parent provision of support, that were not included in the present study but that may help to explain why profiles or ways of coping are fully or partially mediated.

Rumination. Unlike all other ways of maladaptive coping, study results for rumination were in the opposite direction of those hypothesized for maladaptive ways of coping, instead following the pattern found for all adaptive coping strategies, predicting higher levels of reengagement which in turn predicted increases in parental motivational

support. Rumination is classified as a maladaptive strategy for students because it is characterized by an obsessive focus on the stressful event and the negative emotions surrounding it which seems to interfere with active problem-solving (Nolen-Hoeksema et al., 2008), and research in adolescents and adults has linked it to negative outcomes such as higher levels of distressing emotions, including anxiety and depression (Aldao et al., 2010). However, it is possible that while obsessive worry may be strongly connected to increased negative emotions, rumination may still have links to some active behaviors such as reengagement, which also involves a continued focus on the challenging task. For example, students may be acting in a way that reflects behavioral reengagement with the task at hand, while also experiencing interior distress (like emotional reactivity or catastrophizing, Skinner & Saxton, 2020; Skinner et al., 2013), leading social partners such as parents to interpret this as a positive action and respond by providing additional motivational support.

Limitations

The present study is not without elements that may limit the scope and applicability of findings, including issues with measurement, sampling, and design. First, the use of only student-reported variables means that results could be inflated due to common-method variance. While the current study is primarily concerned with student perceptions of their parents' motivational support, the inclusion of parent reports of their own levels of support or of their children's reengagement could provide further

information regarding their reactions to coping and reengagement beyond student perceptions, potentially providing additional opportunities to test a bidirectional model.

Second, while the sample represented an entire school district in upstate New York, it was not reflective of the larger population of the United States, and therefore results may not generalize beyond the sample. Future studies should also be conducted to examine both whether results generalize to more diverse samples as well as whether the processes under study are also present when specific ecological niches or subgroups are examined. For example, researchers have posited culturally and contextually situated forms of coping that serve as additional personal resources in the presence of discrimination and other forms of stress that are not reflected in the ways of coping included in the present study (Gaylord-Harden et al., 2012; Perzow et al., 2021). Similarly, parenting style and provision of motivational support may also differ in cultural subgroups, especially under developmentally stressful conditions such as racism or poverty, and therefore may also vary in ways not captured in the current study (Domenech Rodríguez et al., 2009; Rious et al., 2019).

Lastly, the inclusion of only two timepoints limited the study's ability to ascertain the hypothesized connections between study variables. At least three measurement points are required to establish temporal precedence between the antecedent, mediator, and outcome, and therefore even if results support study hypotheses it is not possible to determine whether levels of reengagement are predicting later changes in parental support. Because they were measured concurrently, the connection between

reengagement and parenting at T2 while controlling for motivational support at T1 may have been inflated. Study designs involving three times of measurement would provide more complete information about mediation.

Future Research

Using these issues as springboards, study results can provide a road map for future research that will expand upon the study's contributions and address its limitations. First, current results suggest that a closer look is warranted at parent-child interactions while children are coping with academic challenges and problems. Observational studies within the home could directly examine proximal processes between children and their parents during stressful academic tasks such as difficult homework assignments, investigating how children's coping episodes shape parenting. Here it would be interesting to try to explicitly code children's actual coping and their reengagement to see whether it is possible to distinguish them in real time, or whether it is reengagement that is sending visible messages to parents rather than coping itself. Additionally, these observational studies also have the potential to explicitly investigate bidirectional effects, capturing both how parents are shaping later coping and how coping is shaping parenting through reengagement during coping episodes. By including both directions of effects and their potential mediators, future studies could more fully explore the transactional nature of these processes as well as the pathways through which they are shaping changes in each other (Patterson & Bank, 1989).

Once additional sources of information about parenting are incorporated, it is

possible that studies will show that all ways of coping are having both direct and indirect feedback effects. While reengagement may be a strong mediator because it is sending more visible behavioral and action-based messages to parents, it is likely that more social ways of coping such as help-seeking or projection are also actively drawing in or pushing away parents as well. More specifically, there may be other things parents are doing outside of their children's perceptions of their provision of motivational support that are being directly shaped by children's coping. For example, parents may be increasing their provision of structure in response to their students' help-seeking in ways that are not as perceptible to students, such as making the space their children work in more organized and free from distraction. This may not then be reflected in students' reports of their parents' support but could still represent parenting that shifts based on coping.

Second, the use of time series analyses could expand upon study results by examining how episodic transactions build into dynamic cycles of family and student functioning. Daily, weekly, or monthly diaries collected over multiple school years could illuminate the paths parenting may take in response to child coping and reengagement, especially during stressful school transitions such as into middle or high school as occurs in much of the United States (Eccles & Roeser, 2009). This could make a major contribution to the literature by establishing the connection between regular, everyday interactions around academic work on the one hand, and how parenting and parent provision of motivational support develop over time, on the other. Even further, time series analyses have the potential to capture how school and home stress can spill over

across contexts, shaping outcomes that have been studied as if they were separate from each other, in line with established daily diary research that has found links between children's negative moods, problems at school, and negative interactions with parents (Bai et al., 2017). Daily diary studies that explicitly examine academic coping and reengagement may help to disentangle some potential mechanisms behind how school and home effects interact.

Additionally, research could examine whether the hypothesized connections among coping, reengagement, and motivational support are also present with other social partners such as teachers and peers. It is likely that academic coping or its motivational consequences are also having an effect on these more proximal social partners within the school context. Research has firmly established that teachers' provision of motivational supports or other interpersonal resources are important to students' coping, showing that students who experience higher levels of teacher support also report higher levels of adaptive and lower levels of maladaptive coping (Amemiya & Wang, 2018; Ben-Eliyahu & Kaplan, 2015; Causey & Dubow, 1993; Friedel et al., 2007; Kahraman & Sungur, 2013; Lau & Nie, 2008; Raftery-Helmer & Grolnick, 2018; Reschly et al., 2008; Shih, 2015b; Skinner & Saxton, 2020; Subasi & Tas, 2016; Zimmer-Gembeck & Locke, 2007). At the same time, like parents, teachers may be calibrating their provision of supports in response to students' reengagement, providing more resources to those students who are actively reengaging with their schoolwork and alternatively becoming more coercive, hostile, or struggling to provide appropriate structure with those students who are

desisting. Additionally, a smaller body of research on peer support has found initial evidence for their positive effect on coping, demonstrating that connections to peers and peer support for learning were linked to greater use of adaptive versus maladaptive coping (Reschly et al., 2008; Shih, 2015b); hence, it seems possible that peers are also responding to each other during dynamic class interactions involving coping. This could mean that they are responding less to specific coping strategies, and more to other markers such as emotions, behaviors, and motivations, similar to the results found for parents in the present study. These more overt actions may then elicit more (or fewer) resources from peers as well, creating vicious or virtuous cycles where similarly motivationally resilient classmates coalesce into peer groups (Zimmer-Gembeck, Gardner, et al., 2023). Ultimately, academic coping may be shaping the behavior of other social partners indirectly, and potential mediators of these effects, such as reengagement, could be investigated for each of these academic social partners as well.

Lastly, the present study primarily maps students' perceptions of their coping, motivation, and parents' provision of motivational support. Therefore, it does not explore the perspective of the other social partner in this equation, the parent, who has their own perceptions and interpretations of the social interactions surrounding coping. Like children encountering a stressful task, parents interacting with their children are similarly appraising the situation and relying upon these appraisals (whether accurate or not) to guide their subsequent parenting actions (Bugental & Corpuz, 2019; Dix et al., 1986; Gavita et al., 2014; Lazarus & Folkman, 1984). However, when examining reciprocal

connections between parents and children, research has primarily focused on children and youth's own appraisal of parenting and how that is shaping the dynamic connection between them (Soenens & Vansteenkiste, 2020). Including parents' own appraisal processes may provide insights into how each social partner is interpreting the others' behaviors, helping to pinpoint how vicious cycles of family functioning get established. For example, parents may be appraising maladaptive coping that leads to giving up (i.e., low reengagement) as problem behavior where their child is not "minding" them. This interpretation of quitting may then lead them to become more coercive, using threats or taking away their children's autonomy by taking control of the situation. Future work could explicitly investigate this process by incorporating parents' perspectives, for example by using surveys to gather quantitative information about their appraisals and attributions regarding their children's behavior and provision of motivational supports. Even further, semi-structured or open-ended interviews with parents could capture more of the thought processes underlying their behaviors.

Implications for Researchers and Practitioners

The current study also has concrete implications for researchers, interventionists, practitioners, and parents themselves. Building on research showing that parents are important to the development of their children's academic coping, results emphasize that to improve academic coping outcomes, it may be important not only to help parents provide their children with increased motivational supports, but also to encourage them to consider the factors that shape their own behaviors. Even further, it suggests that an

effective lever of intervention or important mechanism to focus on may be how they react to their children's behavior and how their reactions may accidentally make things worse.

Results more specifically suggest the importance of helping parents to understand the ways of coping that may underlie students' visible behaviors and actions, so that parents can provide attuned responses that can support instead of undermine faltering coping. Study results, consistent with the few other investigations that have examined child effects, suggest that parents may be withdrawing supports when students evince low reengagement as a result of maladaptive coping (Raine & Skinner, 2023; Skinner & Edge, 2002). When combined with previous research that has established connections between low levels of parental support and increased use of maladaptive coping (Raftery-Helmer & Grolnick, 2018; Raine & Skinner, 2023), this suggests that a vicious cycle may be created where each social partner's functioning and support continues to worsen over time. If instead, children and youth's negative behaviors (such as giving up) could be viewed as a message to parents that their children are not able to cope productively, parents could see these actions as bids for more interpersonal resources. Therefore, interventions may be especially important to help social partners such as parents reframe negative child behaviors as requests for additional supports. Interventions of this sort provide a potential pathway for interrupting vicious cycles of family functioning where maladaptive coping leads to desistence, which in turn pushes parents away, leading them to provide lower levels of motivational support. If interventions can help parents increase their levels of involvement, structure, and autonomy support in the face of perceived

negative behavior, they may help to reverse poor coping and instead facilitate the formation of virtuous cycles where each family member is enhancing the other's constructive behaviors. Therefore, results of the current study contribute to applied efforts by pinpointing a potential behavioral "message" that parents respond to by adjusting their behavior, thereby helping to identify an effective lever of intervention: training parents to more positively interpret the struggling coping that may underlie student reengagement and desistence.

In line with the limitations stated earlier, it is also essential that researchers who design these types of interventions take into account the cultural and historical contexts within which both coping and parenting occur. Although the transactional nature of the processes under study is hypothesized to be consistent across contexts, it is likely that expressions of coping and parenting will vary in diverse ways. For example, even though parental autonomy support can be a considered a fundamental aspect of high quality parenting, it can look very different across cultural contexts based, for example, on the extent to which choice is emphasized (e.g., Canada versus Ghana; Marbell-Pierre et al., 2019). Additionally, avoidant coping (e.g., mental escape), which is typically considered a maladaptive category of coping, may help students experiencing chronic discrimination or poverty handle these stressors in the short term (Gonzales et al., 2001; Tolan et al., 1997). Escape may be adaptive in these short-term situations to reduce distress from acute stressors like stigma and discrimination, suggesting that compared to "maladaptive," a better label might be "stress-affected" (Wadsworth, 2015) or "reactive"

coping (Spencer, 2006). Although escape is not likely to assist students to meaningfully reengage with challenging academic work, it is essential that interventionists are cognizant of the larger contextual conditions that may be shaping students' reliance upon ways of coping and that the interventions themselves be holistic and culturally grounded in order to address the larger factors playing into students' patterns of coping, reengagement, and motivational resilience (Wadsworth et al., 2020).

Conclusion

In sum, the present study expands upon our current understanding of academic coping by continuing to examine its connection to social partners, exploring how it predicts changes in parenting, and investigating reengagement as a mechanism underlying these coping effects. This helps to both explicate the processes underlying such an important motivational resilience factor as well as provide guidance to researchers, practitioners, and parents in how to facilitate positive cycles of family functioning and work to repair negative ones.

Chapter IV: Study 3

The Collective Mesosystem Effects of Parents, Teachers, and Peers on Academic Coping: A Pattern-Centered Approach

Introduction

All students will encounter difficult, challenging, or stressful academic tasks during their time at school. How they handle these difficulties in the moment is referred to as their *academic coping* (Skinner & Wellborn, 1997), which research suggests can make a material difference to their academic achievement and functioning (Skinner & Saxton, 2019). More specifically, students' use of strategies that help them deal constructively with academic problems has been shown to be associated with better achievement and more positive academic functioning, including higher grades, standardized test scores, achievement motivation, persistence, and deeper learning (Morales-Castillo, 2022; Rijavec & Brdar, 1997; Shih, 2015a; Skinner & Saxton, 2020; Suldo et al., 2015), while a greater reliance upon ways of coping that are more maladaptive has been associated with lower levels of these outcomes as well as increased drop out, disaffection, and desistence (Boon, 2011; Putwain et al., 2016; Skinner et al., 2016; Suldo et al., 2018). Most central to positive outcomes are profiles of coping that reflect a repertoire of strategies that are adaptive (Cheng et al., 2014; Zimmer-Gembeck, 2021; Zimmer-Gembeck et al., 2018), helping students to constructively deal with these stressors head on (Boekaerts, 1993).

As a result of academic coping's connection to these important educational outcomes, researchers have been investigating its predictors, including the influence of larger contextual factors, like social partners, in facilitating or hindering the development of these processes. A small but growing body of research has found connections between support from parents, teachers, and peers and academic coping, however, this work has largely been siloed. Studies tend to examine them as separate facilitators of coping with little research investigating how all three may work together. The goal of the current study was to bring together interpersonal supports provided by parents, teachers, and peers into the same models in order to explore how they, in combination, shape third through sixth graders' profiles of academic coping, both concurrently and across a school year.

Interpersonal Supports for Academic Coping

Academic coping is intertwined with contextual and interpersonal processes. As students encounter academic difficulties, they are situated within environments such as school and home where they are surrounded by others who have the potential to create contextual conditions that may impact how their coping unfolds. Within the educational context, the two social partners studied most often are adults, namely teachers and parents, but researchers have continued to argue that peers may also play a role (Zimmer-Gembeck, Gardner, et al., 2023). All three social partners have been shown to be key to student academic functioning and success (Chen, 2005; Collie et al., 2016; Furrer &

Skinner, 2003; Kindermann, 2007; Nouwen & Clycq, 2019; M.-T. Wang & Eccles, 2012) and multiple studies link each of them to academic coping (Skinner & Saxton, 2019).

Because of their crucial role in the classroom, teachers are considered an especially important source of motivational support in educational contexts. Reviews and meta-analyses of teacher provided resources have shown that teaching that is characterized as rich in warm involvement, structure, and autonomy support promotes student achievement motivation and engagement (Ahmadi et al., 2023; Guay et al., 2017; Lei et al., 2018; Tao et al., 2022), emphasizing how important teachers are to the promotion of positive academic functioning outcomes. Although the research base targeting academic coping is much thinner, studies examining these connections have generally found positive links between teacher support and student coping (E. L. Deci et al., 1992; Raftery-Helmer & Grolnick, 2016; Reschly et al., 2008; Shih, 2015b; Skinner & Saxton, 2020; Zimmer-Gembeck & Locke, 2007). Overall, this accumulation of evidence, while not extensive, emphasizes teachers as an important supportive context for the development of academic coping.

Perhaps because they are more distal from the classroom, fewer studies have focused on parents as supports for their children's academic coping. However, parents may be providing much needed material supports during stressful homework problems, or their more general support may help students build coping resources that they can carry with them into the classroom. Parent support has been consistently linked with positive educational and developmental outcomes such as increased school performance,

achievement motivation, and personal well-being (Barger et al., 2019; Farkas & Grolnick, 2010; Vasquez et al., 2016), suggesting that it may bolster academic coping as well. The small body of research explicitly focused on parenting and coping generally bears this out, finding positive connections between parent support and adaptive academic coping (Assor & Tal, 2012; Boon, 2014; E. L. Deci et al., 1992; Friedel et al., 2007; Kahraman & Sungur, 2013; Raftery-Helmer & Grolnick, 2016, 2018; Reschly et al., 2008; Zimmer-Gembeck & Locke, 2007). In sum, the connections between parental support and academic coping suggest the important role they can play in its development.

The importance of adult social partners in facilitating academic functioning has a compelling rationale, as a fundamental part of our view of teachers' and parents' responsibilities is that they should help children and youth achieve optimal educational outcomes. However, the role of peers in supporting educational processes such as academic coping may be just as or even more important, as children and youth increasingly identify peers as having a larger influence on them compared to adult social partners as they move through middle childhood and into adolescence (Hartup & Stevens, 1999; Larson & Richards, 1991). Peers and friends may be a source of instrumental and emotional support when students run into trouble because they are often also actively working on similar tasks themselves and may be coping as well. The connections students have with these peers can serve as additional motivational resources to be drawn upon in the face of challenges, especially if peers are coping constructively (Zimmer-Gembeck, Gardner, et al., 2023). However, only two studies have focused on how

relationships with peers shape academic coping, with both finding generally positive connections. In a first study of Taiwanese adolescents, Shih (2015b) found that peer support, conceptualized as the extent to which students felt connected to their peers, was linked to higher levels of individual ways of adaptive coping such as problem-solving, help-seeking, and comfort-seeking, and lower levels of maladaptive coping. In a second study with a US-based sample, similar connections were found, with peer support for learning positively linked to both seeking further social support and problem-solving (Reschly et al., 2008). These two studies provide evidence supporting a conceptualization of peers as sources of motivational resources—either via support or through feelings of connection-- that students may rely upon when they run into difficulty, although more research is needed to fully establish their contributions.

Dimensions of interpersonal motivational support. As empirical and applied work on academic coping has progressed, researchers have become increasingly interested in specifying the kinds of social support that can benefit students' coping. One important pathway seems to entail the provision of motivational supports that serve as instrumental and emotional resources for students to fuel their coping efforts. Self-determination theory (SDT; Ryan & Deci, 2017) based motivational models of academic coping suggest that social partners are facilitating or thwarting academic functioning, motivation, and coping to the extent that they are nourishing students' sense of relatedness, or connection to others, competence, or feelings of mastery, and autonomy, or their self-determination (Skinner & Wellborn, 1994, 1997). This suggests three specific

motivational supports, namely, *involvement*, or the extent that social partners are warm and affectionate, *structure*, or their provision of developmentally and individually attuned limits and guidance, and *autonomy support*, or their genuine respect of students' authentic selves, goals, and values (Connell & Wellborn, 1991; Grolnick et al., 2000; Ryan & Deci, 2017; Skinner et al., 2005).

When students are coping with academic stressors, these interpersonal resources can be provided by multiple social partners, including teachers, parents, and peers. For example, teaching characterized as warm and involved, providing appropriate limits and guidance, and respectful of students' genuine preferences has been associated with all adaptive ways of coping in samples of students in middle childhood and early and middle adolescence (Skinner & Saxton, 2020; Zimmer-Gembeck & Locke, 2007), while teacher thwarts, a combination of rejection, chaos, and coercion, were linked with all maladaptive ways except for rumination (Skinner & Saxton, 2020).

Studies of parenting also show connections between motivational support and children's academic coping. More specifically, researchers have found links between parental support and increases in the use of adaptive compared to maladaptive coping across a single school year in a sample of US-based third through sixth graders (Raine & Skinner, 2023). In the same vein, a study examining Australian adolescents found that parental support was linked to higher levels of adaptive but lower of maladaptive coping (Zimmer-Gembeck & Locke, 2007). However, although suggestive, almost all of the research looking into these individual supports and their connections to academic coping

have utilized data collected at a single time-point and so cannot provide information about whether these supports predict changes in coping over time (c.f., Raine & Skinner, 2023; Skinner & Saxton, 2020). Therefore, the current study, which included two time points-- at the beginning and end of the school year—was designed to examine whether interpersonal supports from teachers, parents, and peers were connected to coping not only concurrently but also as it changed across the school year.

Collective Effects from Multiple Social Partners on Academic Coping

Research on the interpersonal supports provided by teachers, parents, or peers by themselves suggest that each may play a role in bolstering students' academic coping. However, these bodies of research are limited in that studies tend to examine one interpersonal support at a time. Given that school and home represent the two main contexts where children and youth spend the bulk of their time, it is likely that interpersonal relationships from these different microsystems (i.e., face-to-face settings) are all working together to shape student coping, exerting what have been referred to as *collective mesosystem effects* (Skinner et al., 2022). There are multiple ways that social partners may be exerting collective effects.

Cumulative effects of interpersonal supports. The combined effects of teachers, parents, and peers may be *cumulative*, where the resources provided by each partner are additive in their effects, contributing to academic coping over and above the effects of other partners. For example, academic coping could show patterns in which levels get higher and higher as students add supports from each additional partner, with

each evincing unique effects on more constructive coping over time. To date, only two studies have examined cumulative effects, and both studies considered the effects of only two partners. Zimmer-Gembeck and Locke (2007) examined parent and teacher motivational supports as predictors of adaptive and maladaptive coping (separated into avoidant and wishful-thinking coping), finding that family and teacher motivational support each uniquely predicted increases in adaptive, but not maladaptive coping at school. In a second study, Shih (2015b) looked at the connections between teacher and peer support and academic coping within a sample of Taiwanese adolescents, finding that both teacher provision of structure and connectedness to peers uniquely and positively predicted adaptive coping, while only teacher structure predicted lower levels of maladaptive coping. Taken together, these studies suggest the importance of investigating cumulative effects of multiple social partners together.

Contingent effects of interpersonal supports. Alternatively, the collective effects of social partners may be *contingent* on each other where the impact of one social partner depends on the level of another. This could include situations where the benefits of one are the most impactful in the presence of high levels of another, demonstrating *amplifying* effects, or these effects could be *buffering*, where high levels of one or two supports protect students from the damaging effects of low levels of others. The previously mentioned study of adolescents in Taiwan investigating the effects of teacher structure and peer relationships on coping also looked for potential contingent effects using a pattern-centered approach: Based on median splits of both variables, they created

subgroups of students with different combinations of each and examined whether they differed in their concurrent levels of adaptive and maladaptive coping (Shih, 2015b). Results of these analyses did not indicate the presence of contingent effects; only main effects were significant, suggesting collective effects may be better represented as cumulative (or additive).

Although they have not yet been found with academic coping, contingent effects have been found with other motivational outcomes, like engagement. For example, studies have shown that high relatedness to teachers and peers can buffer the otherwise deleterious effects of low relatedness to parents on student engagement (assessed via both student- and teacher-reports; Furrer & Skinner, 2003). And close relationships with teachers have been shown to render students less susceptible to the impact of peer groups on their engagement (Vollet et al., 2017). These kinds of findings emphasize the importance of examining contingent effects among all three social partners, since student coping is likely the product of such collective mesosystem effects.

Methodological strategies for investigating collective effects of teachers, parents, and peers. The combinations of social supports studied to date: parents and teachers, and teachers and peers, suggest that multiple social partners may be having cumulative or contingent collective effects on students' academic coping, yet up until now no studies have examined the impact of all three together. Hence, the primary goal of the current study was to investigate the possibility of cumulative and contingent effects of motivational support on current levels and changes in students' academic coping

profiles over a school year. A secondary goal was to explore methodological strategies for capturing such mesosystem effects. Up until now, at least in work on coping and other motivational outcomes, like engagement, researchers have largely relied on multiple regression or structural equation modeling (SEM), and examined cumulative effects by testing for the unique effects of multiple social partners on student outcomes and examining contingent effects by using interaction terms to test for moderation (Skinner et al., 2022).

However, this approach has two major limitations (Rutter, 1983; Wachs, 1992). First, in testing for cumulative or unique effects, correlations between interpersonal supports, which are often positive (e.g., Zimmer-Gembeck & Locke, 2007), may lead to multicollinearity that can make it difficult to discern the actual effects of each social partner. A second limitation is that in examining contingent effects by testing for moderation in regression or SEM analyses, the inclusion of an interaction term can be problematic (Rutter, 1983). Significant interaction terms often require the presence of a very large effect and therefore may not reveal subtler effects between predictors (McClelland & Judd, 1993). Therefore, alternative approaches may be required, in addition to multiple regression or SEM.

Pattern-centered Approaches to Examining the Effects of Multiple Interpersonal Supports. An alternative approach that has many advantages for capturing the collective effects of complex social ecologies (Skinner et al., 2022) involves a person- or pattern-centered approach (Magnusson & Bergman, 1988; Roeser & Peck, 2003; von

Eye et al., 2015). This strategy allows researchers to create or identify subgroups of students who inhabit mesosystem niches characterized by different combinations of supports from teachers, parents, and peers. For example, one subgroup of students may experience high levels of support from parents but not from teachers or peers, whereas another may experience support from all three. These groups could then be compared to see if they differ in levels of academic coping or changes in academic coping across time.

Although not yet common in work on academic coping, researchers have utilized such pattern-centered approaches in studies of other motivational processes to compare groups of students who experience different combinations of support from parents, teachers, and peers on mean levels or change in student motivation over time (Furrer & Skinner, 2003; Raine et al., 2023; Roeser & Peck, 2003; Vollet et al., 2017). For example, a study of middle school students identified subgroups who experienced distinguishable combinations of family, school, and peer contexts (labelled "lifespace configurations"), and showed that students from these subgroups evinced different patterns of change in motivational functioning and academic achievement across time (Roeser & Peck, 2003). These researchers were then able to examine the aspects of students' "lifespaces" that were contributing to resilient outcomes (e.g., educational attainment) despite a social context that should be expected to lead to negative educational outcomes (e.g., controlling families and a lack of peer support). Although this study was not specifically focused on coping, it demonstrates the possibility of finding different combinations of contextual supports involving families, teachers, and peers when examining academic

functioning, suggesting that similar patterns may exist when examining academic coping, a process that has been established as a predictor of many of those same educational outcomes (Skinner & Saxton, 2019).

Proposed study. Although research on interpersonal supports converges on the potential of teachers, parents, and peers to bolster students' academic coping, to date no studies have investigated the collective influences of all three. And studies that do examine cumulative or contingent collective effects, on either academic coping or related motivational processes, typically use variable-centered approaches, which have distinct methodological limitations. Hence, the goal of the present study is to explore the possibility of cumulative and contingent collective effects of parents, teachers, and peers on students' profiles of academic coping, utilizing both a variable-centered and a pattern-centered approach. Specifically, this study investigated whether students with differing levels of interpersonal resources in the form of motivational support from parents and teachers and feelings of connection to their peers evinced different concurrent levels and patterns of change in their proportion of adaptive versus maladaptive coping across a single school year.

First, variable-centered analyses were used to explore cumulative and contingent effects. To see whether the effects of all three social partners are cumulative (i.e., additive), analyses examined whether supports from parents, teachers, and peers were unique predictors of mean levels and changes in students' academic coping profiles across a single school year. If all three partners make unique contributions, over and

above the effects of the others, that will have comprised evidence of cumulative effects. To explore contingent effects, variable-centered analyses tested for moderation among the social partners. If moderation was found, that is if the effects of one social partner depended on the levels of another, this will have provided evidence for contingent effects. The specific interaction will have revealed the specific kind of contingent effect found. For example, an interaction between teacher and peer effects in which the effects of peers are greater when teachers provide high levels of support would comprise an amplifying effect—teacher support could be said to amplify the effects of peers.

A second set of analyses used a pattern-centered approach. To test for cumulative effects, groups of students were identified who experience different amounts of cumulative support. More specifically, using tertile splits, subgroups were created in which students report (1) high levels of support from all three social partners; (2) high support from any two partners; (3) high support from only one; and (4) high support from none. We then examined whether subgroups with different levels of cumulative support also show differential mean levels and changes in in their profiles of academic coping. If students' profiles of coping differed significantly across this gradient of support, that provided evidence for cumulative effects.

Contingent effects were also be explored using pattern-centered analyses by comparing more finely differentiated subgroups of students with all possible combinations of supports from parents, teachers, and peers. Here, specific patterns of differences among groups would indicate specific kinds of contingent effects. Amplifying

effects would be detected if the benefits of a social partner are greater in the presence of high levels of support from one of the other partners. For example, if students who experience high peer support by itself do not show higher levels of coping than students with no support, but students who experience peer *and* teacher support show higher coping that students who experience high teacher support alone, then support from teachers would amplify the effects of peers. Or configurations of support and their connection to academic coping could be represented by buffering effects, where high levels of support from one social partner protect against low levels from another. For example, if high teacher support can buffer students from low levels of support from parents or peers, then the coping of students who receive low levels of either parent or peer support should not differ from students who are high on all three, as long as teacher support is high.

In addition to investigations of these specific types of potential collective effects, a more exploratory approach to establishing heterogeneity within this sample was used to examine what subgroup combinations of support were present using latent profile analysis, providing additional evidence of distinguishable groupings. In sum, the proposed study will utilize variable-centered and person-centered strategies to more fully explore possible cumulative and contingent collective effects between parents, teachers, and peers, on the one hand, and current levels and changes in academic coping, on the other.

Method

Sample and Procedure

The proposed study utilized a subset of data comprising of 1,020 students aged 8 – 13 years old measured at two time points across a single year of a larger four-year study of children's academic coping, motivation, and engagement at school that represented an entire school district in upstate New York. Students were in grades three through six (13.43% third graders, 33.33% fourth graders, 16.57% fifth graders, and 35.78% sixth graders; grade level missing for nine students), were roughly evenly split between boys and girls (49.71% boys), and primarily white (95%), with the largest proportion of non-white students identifying as Hispanic (3%). Parents' education level ranged from less than high school to more than a masters' degree (high school, 34.96%; some college, 19.97%; 2 years of college, 13.10%; 4 years of college, 16.97%; master's degree, 9.08%; less than high school or more than Masters, < 3%).

Data were collected two times over the school year, once in the Fall at the beginning of the school year (T1) and once in the Spring towards the end (T2), as a part of regularly occurring assessments. Two trained research assistants administered surveys to students while their teachers were not in the classroom, with one reading questions aloud while the other was available to answer clarifying questions. Human subjects review and approval was provided by the authors' university institutional review board, application #00032.

Measures

Measures used for the proposed study were all student self-report that utilized a four-point Likert-type scale consisting of 1 = “not at all true”, 2 = “not very true”, 3 = “sort of true”, and 4 = “very true”, and consisted of roughly equal numbers of positively and negatively worded items, with negatively worded items reverse coded so that higher values indicated a greater level of that construct.

Academic coping. To assess students’ academic coping, a multidimensional measure was used that consisted of 11 individual ways of coping present in the academic domain, 5 which are considered adaptive (strategizing, help-seeking, comfort-seeking, self-encouragement, and commitment) and 6 of which are considered maladaptive (confusion, escape, concealment, self-pity, rumination, and projection; Skinner et al., 2013). Subscales for individual ways of coping consisted of 5-items each, using one of four possible stems that asked about stressful situations at school, such as, “When I run into a problem on an important test…” or “When I have trouble with a subject in school…”, and asked about the extent to which a student responded to these stressful events using that particular way (e.g., “When I run into a problem on an important test I blame the teacher” for *projection*). Previous studies utilizing heterogenous samples have provided evidence of the multidimensional structure of this measure (Gonçalves et al., 2019; Skinner et al., 2013), as well as evidence in support of configural, metric, and scalar, but not strict invariance across the ages included in the proposed study (Skinner & Saxton, 2020).

Students' academic coping profiles were calculated by creating an aggregate score across these 11 ways, combining adaptive and maladaptive ways into a single average score, with maladaptive ways reverse coded. Because coping measures inherently contain both the amount of coping each student uses as well as the amount of stress they are under, it is important that scores consider this in their calculation (Vitaliano et al., 1987). Computing a profile score allows for the consideration of the total amount of coping each student is experiencing by factoring in all ways of coping into a single score. Therefore, higher scores indicated more adaptive coping relative to maladaptive coping while lower scores indicate less adaptive coping and more maladaptive coping.

Teacher motivational support. Teacher motivational support was assessed using a 21 item scale combining teacher involvement, structure, and autonomy support (Skinner & Belmont, 1993). Seven items measured teacher involvement and were designed to tap the extent to which students feel that their teachers are affectionate, spend time with them and understand them. Teacher structure consisted of seven items designed to assess whether students felt their teachers provided them with appropriate guidance, limits, and scaffolding at school. Seven items measured the level of autonomy support students felt their teachers provided them by asking about whether their teachers respected their genuine thoughts and preferences, provided choices, and the relevance of course material.

These supports were combined into a single aggregate measure of motivational support because evidence suggests that these dimensions, while distinguishable, may

change their meaning when others are low or absent (Ryan & Deci, 2020). For example, teacher structure that is not autonomy supportive but instead coercive and controlling, no longer represents developmentally and individually attuned limits and guidance, and has been shown to be associated with worse academic functioning outcomes then when it is combined with autonomy supportive teacher practices (Jang et al., 2010).

Parent motivational support. As for teacher motivational support, parent motivational support was measured using 21 items that measured parent involvement, structure, and autonomy support (Skinner et al., 2005). Parental involvement consisted of eight items designed to measure how much children and youth felt their parents are warm, affectionate, and available. Structure was assessed using six items designed to tap the extent to which children felt their parents provided appropriate, consistent limits and guidance, and seven items measured parental autonomy support by assessing how much children thought their parents respected their genuine thoughts and preferences.

Research into these parenting dimensions has also found that they are highly related constructs that are most impactful in combination, and may even require the presence of the others to truly transmit their target effects (Pomerantz & Grolnick, 2017; Ryan & Deci, 2020; Skinner et al., 2005). This has been supported by research finding that parenting high on scaffolding and academic support but low on warmth was no longer associated with increased academic achievement (Simpkins et al., 2006). Therefore, the proposed study combined these three dimensions into a single construct representing parental motivational support, where higher levels indicated a greater

amount of support, with high correlations between all three dimensions and acceptable internal reliability (α = .86; see Table 4.1) providing empirical support for their aggregation.

Peer support. Students' level of peer support was assessed using an eight item measure of the extent to which students felt connected to their peers and friends that was adapted from measures of peer relatedness (Furrer & Skinner, 2003). Item examples included "When I'm with my classmates I feel like I belong" and "When I'm with my friends I feel left out" (reverse-coded).

Data Analytic Plan

RStudio was used to conduct all study analyses (RStudio Team, 2022).

Variable-centered Analyses

To examine whether parent, teacher, and peer support have cumulative (i.e., unique) effects on changes in academic coping across the school year, multiple regression was used with parent motivational support, teacher motivational support, and peer relatedness at T1 predicting students' academic coping profile at T2 while controlling for their profile at T1 using the lavaan package in R (Rosseel, 2012). Support for study hypotheses would result from significant standardized betas from all three interpersonal resources at T1 to coping at T2 and provide evidence in support of cumulative effects of all three social partners on changes in academic coping across a single school year.

To explore contingent effects using a variable-centered approach, moderation was also tested using multiple regression, where interaction terms were added to the

regression equation for all combinations of social supports: both combinations of two and all three together. Prior to running the moderation model, social support variables were mean centered to avoid multicollinearity between predictors and interaction terms. Significant betas for any interaction terms would provide support for contingent effects between the social support variables included in that term (e.g., parent and teachers, or peers and parents). If there was one or more significant interaction terms, simple slopes were examined at the mean and one standard deviation above and below the mean of one social support variable to determine how each was connected to each other when predicting changes in academic coping.

Pattern-centered Analyses

To evaluate cumulative and contingent effects using a pattern-centered approach, the first step was to create or identify distinguishable subgroups in this particular sample who differed in the patterns of social support they were experiencing. The specific subgroups differed depending on the types of effects that were examined.

Cumulative effects. For the examination of cumulative effects, first each social support variable was split into three levels (high, medium, and low) based on tertiles. Then, groups were created *a priori* based on participants' levels of support from each partner, with groups having 0, 1, 2, or 3 supports from different partners at the high level. Repeated-measures analysis of variance (RM-ANOVA) was used to determine whether these groups differed significantly in their mean levels of academic coping across the school year. Following a significant omnibus RM-ANOVA, paired t-tests were used to

examine the specific differences between groups. More specifically, if configurations that reflect incremental but significant increases in positive change of adaptive versus maladaptive coping as groups differed from 0 to 1 to 2 to 3 supports, then results would support a conceptualization of these collective effects as cumulative.

Contingent effects. For the examination of contingent effects, groups were identified using both theoretically and empirically driven methods in order to address the potential limitations of both methods. First, variables were split into high, medium, and low values by using tertile thresholds. Then 27 groups were created that reflected all possible combinations of parent, teacher, and peer support, and these groups were evaluated for whether they contain a large enough number of participants to be meaningful. If not, groups were omitted or similar groups were combined. This a priori strategy had the advantage that it allows specific subgroup comparisons that were more easily interpretable because subgroups could be compared who differed on only one feature. It had the disadvantage that subgroups might be small and comparisons among so many groups could be complex; to protect against Type I error with so many comparisons, a level of $p < .01$ was used.

Once groups were created, RM-ANOVA was used to determine whether groups differed in their academic coping over the two timepoints included in the study. If the RM-ANOVA was statistically significant, follow up tests (e.g., paired t-tests) were conducted to determine the more specific differences that are occurring. Additionally, a

significant RM-ANOVA would support study hypotheses and indicate that groups differed in their mean levels and patterns of change in academic coping over time.

The second, more empirically driven method used a latent profile analysis (LPA) modeling approach within the tidySEM package in R (Van Lissa et al., 2023). An iterative process was used where fit indices, including Akaike Information Criterion (AIC), Bayesian Information Criterion (BIC), and Sample Size-Adjusted Bayesian Information Criterion (SABIC), for a progressively larger number of profiles were examined and the number of profiles with optimal fit index values, adequate sample size, and that made theoretical sense were retained to conduct further analyses. This more empirically driven method was also used to examine whether the a priori groups created using the previous method had additional supportive evidence that they were a good fit to the data. The disadvantage of this strategy was that solutions can be sample-specific, and subgroups so created often differ on more than one feature, making subgroup comparisons theoretically inconclusive.

To determine whether LPA derived groups differed significantly in their coping profiles, auxiliary analyses were conducted using the Bolck-Croon-Hagenaars (BCH) approach, which uses a three-step estimation method for multi-group comparisons that accounts for classification error (Bolck et al., 2004; Nylund et al., 2007; Vermunt, 2017). Support for study hypotheses would result from significant deviations in fit when the LPA derived classes were constrained to be equal in their coping means according to likelihood ratio tests.

Support for the use of a pattern-centered approach to examine contingent effects would come from both a priori groups and an LPA that are a good fit to the data and identify distinguishable profiles of social support from parents, teachers, and peers that include some off diagonal subgroups in addition to just low, medium, and high amounts of support from all three partners. If only groups are found that show all high, all medium, and all low supports, this would suggest that a variable-centered approach would be sufficient. For both *a priori* and empirically driven methods, because contingent effects can be either amplifying or buffering, different patterns of results would support either one or the other.

Results

Before study hypotheses were investigated, data were investigated for patterns of missingness. Missingness on individual items ranged from 10.49% to 23.53% with the most missing on a single comfort-seeking item at T2, “When something bad happens to me in school (like not doing well on a test or not being able to answer an important question) I talk about it with someone I’m close to”, and 12.20% of students were missing on all spring (T2) items. To minimize bias from omitting students who were missing items but ensure that all study analyses could be completed, data were imputed using EM-ML estimation within the mice package in R (Buuren & Groothuis-Oudshoorn, 2011; Dempster et al., 1977).

Initial Analyses

To begin to investigate the hypothesized connections between mesosystem social supports and academic coping, descriptive statistics and bivariate correlations were obtained for all study variables (see Tables 4.1 and 4.2). In general, study variables were significantly and positively connected, with moderate to high correlations at both time points between parent and teacher motivational support, on the one hand, and students' coping profiles, on the other (*rs* = .57 - 74). Correlations between peer support and coping suggested that it may not have as strong of a connection to academic coping as parent and teacher support, however, correlation coefficients were still moderate (*rs* = .40 - .50). Additionally, parent and teacher motivational support were also moderately correlated with each other, suggesting that both may not act as unique predictors of academic coping in variable centered analyses (*r* = .62). Moreover, high cross-time stabilities for coping profiles (*r* = .77) may also make the prediction of changes in coping over the year difficult in variable centered analyses.

Table 4.1
Summary of Descriptive Statistics

Scale	Number of Items	α	*M*	*SD*
Total Coping Profile (T1)	55	.90	2.99	.35
Total Coping Profile (T2)	55	.92	2.99	.39
Teacher Mot. Support	21	.95	2.99	.46
Parental Mot. Support	21	.86	3.19	.40
Peer Relatedness	8	.80	3.35	.55

Note. N = 1,020 All variables could range from 1 to 4.

Table 4.2
Concurrent and Cross-time Correlations for all Study Variables

Variable	Teacher T1	Parent T1	Peer T2	Coping T1	Coping T2
Teacher Support T1	-				
Parent Support T1	.62	-			
Peer Relatedness T1	.45	.49	-		
Total Coping Profile T1	.74	.65	.50	-	
Total Coping Profile T2	.64	.57	.40	.77	-

Note. N = 1,020. All correlations were significant $p < .001$.

Variable Centered Analyses

Potential cumulative and compensatory effects between parent, teacher, and peer supports, and students' academic coping profiles were first investigated using a variable-centered approach.

Cumulative effects. Multiple regression was used to investigate whether parent motivational support, teacher motivational support, and peer relatedness all made unique contributions to changes in children's academic coping profile from T1 to T2. All three

supports and coping profiles at T1 were included as predictors of T2 coping. As seen in Table 4.3, results indicated that while parent and teacher motivational support uniquely predicted increases in coping from fall to spring, peer relatedness did not.

To further examine the connection between peer relatedness and academic coping, two additional regressions were conducted. First, T1 coping was removed as a predictor to determine whether all three could uniquely and significantly predict T2 coping. Results suggested that without the autoregressive path from T1 to T2 coping, all three social supports were unique, significant, positive predictors of T2 academic coping, including peers. Second, regression analyses were conducted with only peer relatedness at T1 predicting T2 coping while controlling for T1 coping. Even without the two other social support variables, peer relatedness did not significantly predict changes in coping, suggesting it was not significantly linked to T2 coping after accounting for T1 coping.

Table 4.3
Regression Analyses Predicting Coping Profiles at T2 From T1 Predictors

	Coping Profile (T2)			
T1 Predictors	*B*	β	*SE*	*t*
Teacher Support	.11	.12	.03	4.07***
Parent Support	.09	.09	.03	3.29**
Peer Relatedness	-.01	-.01	.02	-.52^{ns}
Coping Profile	.69	.63	.04	19.44***
R^2	.61		.24	
F	392.79***			
Teacher Support	.38	.45	.03	15.02***
Parent Support	.25	.26	.03	8.36***
Peer Relatedness	.05	.07	.02	2.69**
R^2	.46		.28	
F	290.10***			
Peer Relatedness	.02	.02	.02	.90^{ns}
Coping Profile	.84	.76	.03	32.96***
R^2	.59		.25	
F	743.20***			

Note. $N = 1{,}020$.
*$p < .05$, **$p < .01$, ***$p < .001$

Contingent effects. Multiple regression was also used to investigate whether one or more social partner could serve as a moderator of the effects of the others, and more specifically whether one or more partners could provide amplifying or buffering effects. Non-significant regression coefficients for both the three-way interaction and all possible two-way interactions suggested that contingent effects, either amplifying or buffering, between these three social supports could not be detected when using variable-centered approaches. Overall, variable-centered analyses suggested that parents and teachers showed cumulative but not contingent effects on changes in students' coping profiles,

whereas peers made unique contributions over and above the effects of adults, only when examining coping T2 without controlling for coping T1.

Pattern-centered Approaches

In addition to a variable-centered approach, the present study also utilized a pattern centered perspective to examine cumulative and contingent effects. These approaches were used to create or identify subgroups of students within this sample who experienced different combinations of supports form parents, teachers, and peers, and then tested whether they also evinced different mean levels or patterns of change in their coping profiles. Two methods were used to investigate possible types of collective mesosystem effects, *a priori*, where groups were established by creating high, medium, and low categories for each social support variable using tertile cutoffs, and *latent profile analysis*, where groups were created using a maximum-likelihood function based algorithm that estimated the probability that cases would fall within different classes or profiles depending on their scores on each support variable.

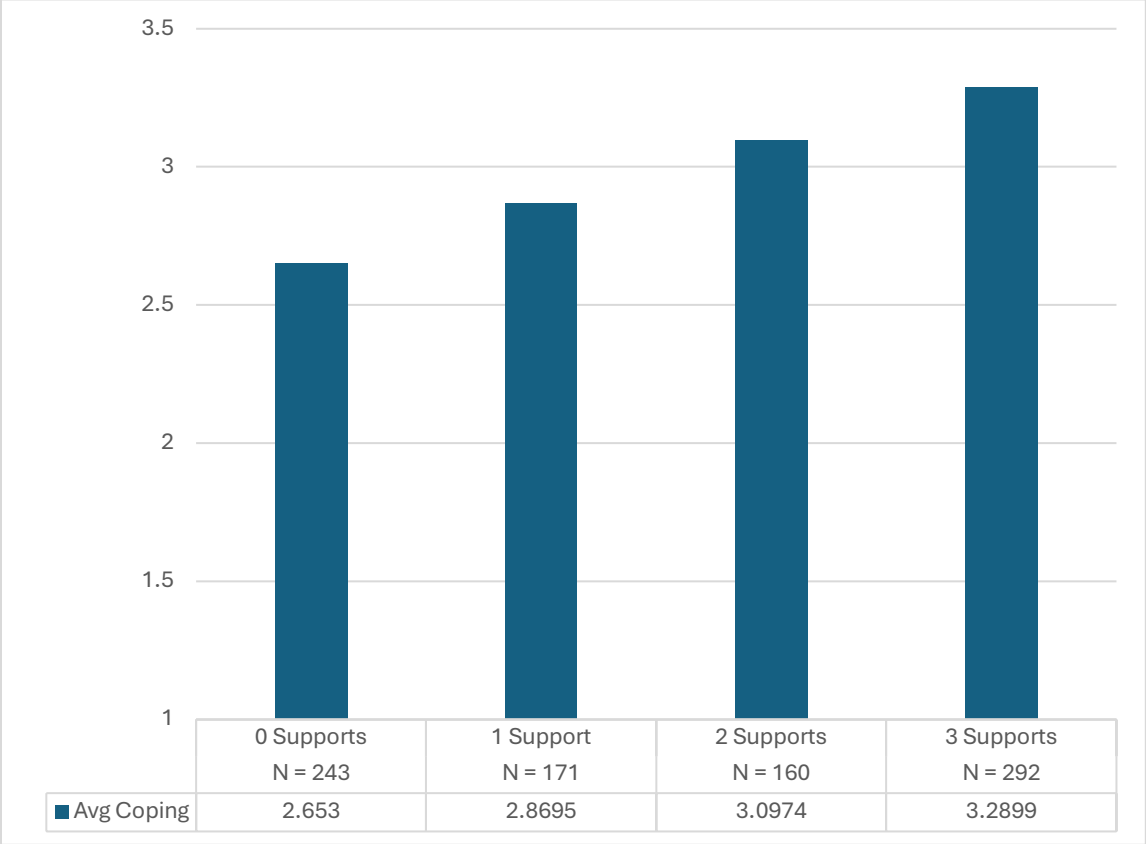
Cumulative effects. To test for cumulative effects, where levels and increases in coping are better for groups as they increase in the number of social partners providing high levels of support, four groups were created, where students were sorted based on whether they had 0, 1, 2, or 3 social partners that provided them with high vs. low levels of support. Medium levels of support were excluded from analyses; therefore, to ensure that groups had adequate N for analyses, medium was defined as the middle 10% of the sample, with students in the bottom 45% considered low and the 55% percentile and

above considered high. Students with high levels of support from all three social partners were the most numerous ($N = 292$), followed by students with low levels of all three supports ($N = 243$), then students with only one support ($N = 171$), and lastly those with two supports ($N = 160$).

These subgroups were then examined for whether they differed in membership by either gender or grade. Chi-square analysis indicated significant differences between the expected and observed proportions for both gender ($\chi^2(3) = 13.11$, $p = .004$) and grade level ($\chi^2(9) = 20.541$, $p = .015$). More specifically, there were a greater than expected number of boys and sixth graders in the zero supports group and a greater than expected number of girls and fifth graders in the three high supports group.

Turning to study hypotheses, RM-ANOVA indicated no significant differences in changes in mean levels between groups, $F(3, 862) = .267$, $p = .849$, most likely due to the high stability of coping mean levels, therefore subsequent analyses averaged across these two timepoints to examine whether students' average coping profiles across the year differed by number of high level social supports. As expected, means for coping profiles increased as number of supports increased (see Figure 4.1), and analysis of variance and post-hoc tests indicated that all differed significantly from each other.

Figure 4.1
Mean Levels of Average Coping across the School Year for Cumulative Support Groups

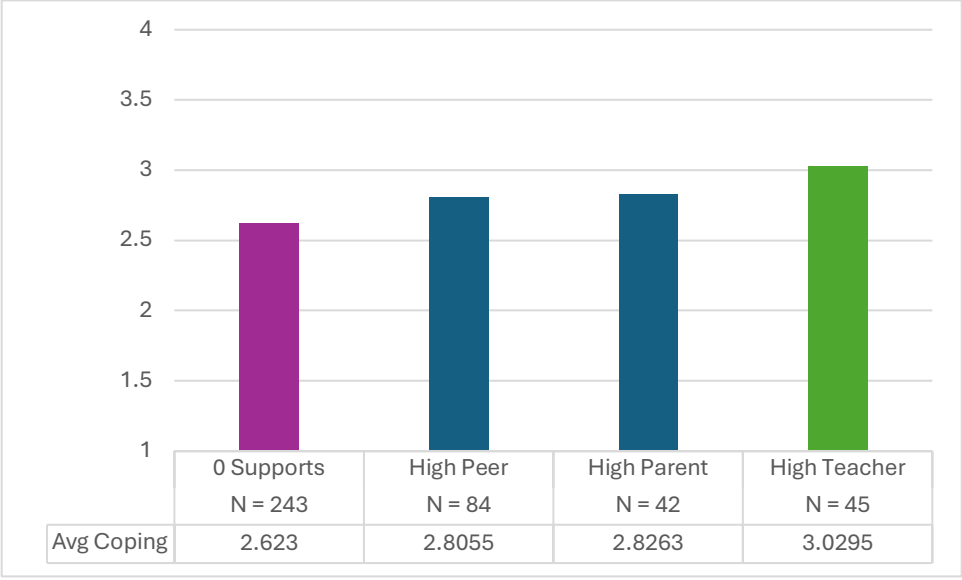


Note. Total N = 1,020. $F(3, 862) = 294.36$, $p < .001$, $\eta^2 = .51$. All means are significantly different based on Tukey HSD post-hoc mean comparisons.

Because results provided initial evidence of cumulative effects on mean levels of coping, follow up analyses were also conducted to examine whether *within* the groups with 1 or 2 high levels of support there were significant mean level differences in coping depending on the source of support; and whether these subgroup means differed significantly from, respectively, students with 0 or 3 high levels supports. Results indicated that there were significant differences in mean coping profiles depending on

which social partner was high in support or the combination of supports (see Figure 4.2). Specifically, for students who had high levels of support from only one social partner, mean levels for academic coping significantly differed by social partner as indicated by an overall significant analysis of variance, $F(3, 410) = 36.10$, $p < .001$, and were highest for those with only high teacher support ($M = 3.03$), followed by only parents ($M = 2.83$), then only peers ($M = 2.81$). Post-hoc tests indicated that mean levels of coping for high teacher support were significantly better than those for either high levels of parent or peer support, but that parent and peer support subgroups did not significantly differ in their mean levels of coping. However, all three one-high subgroups' coping profile means were significantly better than those for students with no social supports.

Figure 4.2
Mean Level Differences in Coping for None versus One Social Support Subgroups

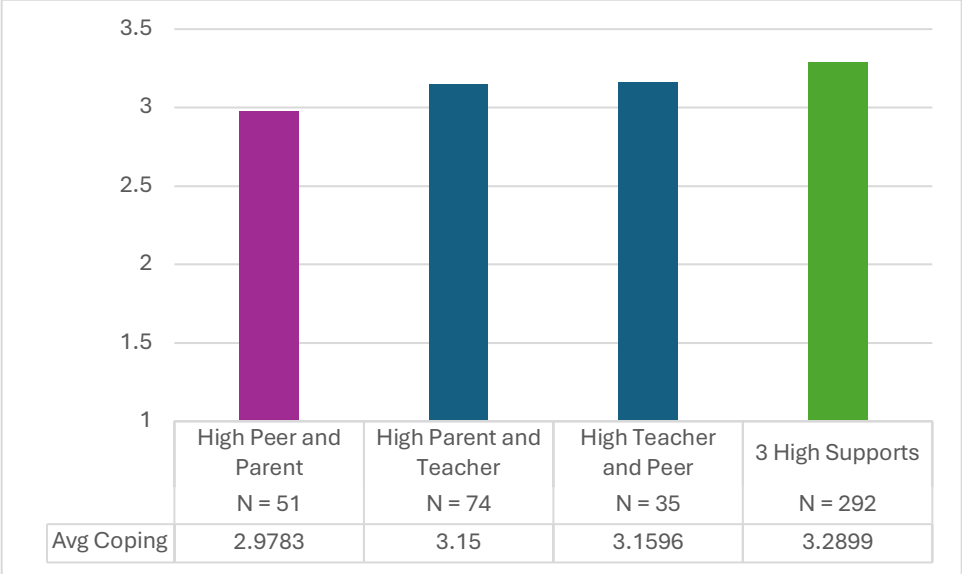


Note. Total N = 1,020. $F(3, 410) = 36.10$, $p < .001$, $\eta^2 = .21$. Different colors represent significantly different means based on Tukey HSD post-hoc mean comparisons.

Turning to students with high levels of support from two social partners, omnibus results indicated overall differences between subgroups, $F(3, 448) = 24.07$, $p < .001$, specifically that those with high support from either teachers and peers ($M = 3.16$) or teachers and parents ($M = 3.15$) were themselves not significantly different, but did have significantly higher mean levels of coping than those with high supports from peers and parents ($M = 2.98$; see Figure 4.3). Furthermore, high support from peers and parents did not significantly differ from high teacher support alone. Additionally, all three group coping profile means were also significantly lower than the group with all three high supports.

Figure 4.3

Mean Level Differences in Coping for Two versus Three Social Support Subgroups



Note. Total N = 1, 020. $F(3, 448) = 24.07$, $p < .001$, $\eta^2 = .14$. Different colors represent significantly different means based on Tukey HSD post-hoc mean comparisons.

Differentiated effects. To examine whether there were even more differentiated effects depending on students' level of support from each social partner, all 27 possible combinations of high, medium, and low support from parents, teachers, and peers were also examined for differences in mean level coping and changes in coping across the school year. Subgroups with fewer than 20 students (i.e., 2% of the sample) were omitted, and ANOVAs were conducted comparing all subgroups to the anchor subgroups of low, medium, and high levels of all three supports (i.e., low teachers-low parents-low peers; medium-medium-medium; and high-high-high). However, when examining these subgroups and their differences in levels of coping, there was a high degree of overlap and few significant differences between subgroups and these anchors. Therefore, findings from these analyses were not considered worth interpreting, although results are presented in supplementary materials (see Supplementary Figure 6.1).

Latent profile analysis. Potential distinguishable groups within the sample were also investigated using the more empirically driven method of latent profile analysis within the tidySEM package in R (Van Lissa et al., 2023). First, to determine the number of latent profiles present in the sample, an iterative process was used where multiple models were fit with progressively larger number of profiles as well as with varying constraints (variances and/or covariances constrained to be equal or allowed to freely vary) with fit indices for these models then evaluated to determine which was the best fit to the data (see Table 4.4). Additionally, solutions with groups that had less than 2% of the data were excluded from further analysis. Based on these fit indices, a solution with

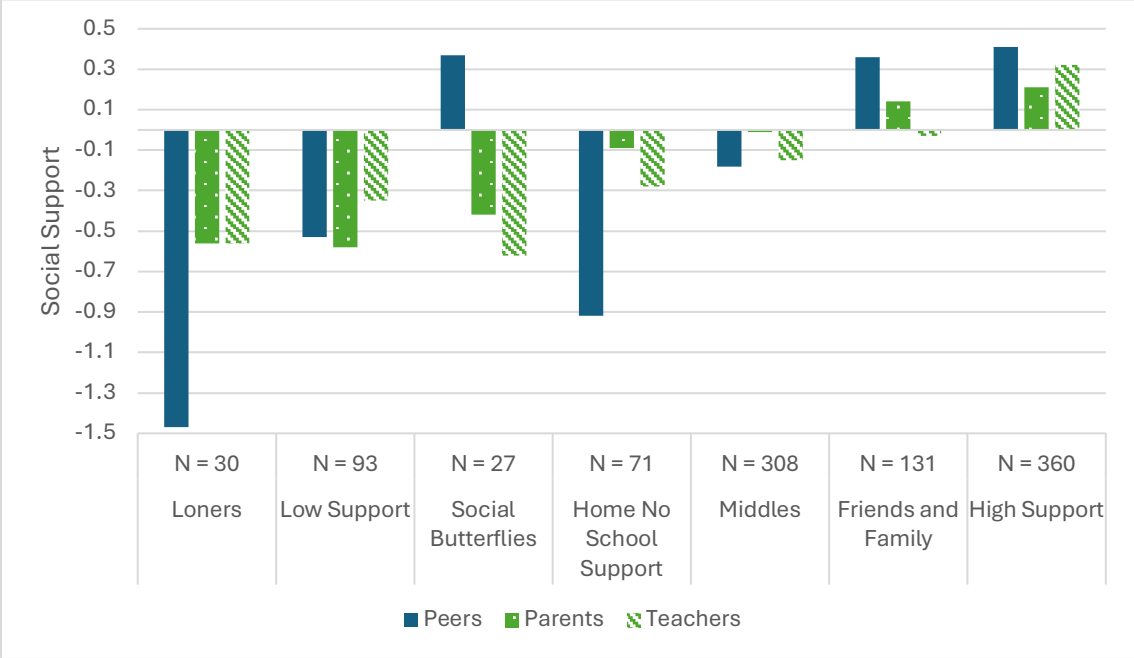
seven classes was used where variances were constrained to be equal across classes, but profiles were allowed to freely covary. Individual participants were placed into one of the seven profiles based on the probability that they were members of that class over all others and group Ns ranged from 27 – 360 (see Figure 4.4).

Table 4.4
Model Fit Statistics for Latent Profiles

Number of Latent Profiles	Constraints	AIC	BIC	SABIC	Entropy
1	Equal var	4048.79	4078.36	4059.3	1
2	Equal var	3328.09	3377.37	3345.61	0.74
1	Equal var, free cov	3241.51	3285.85	3257.27	1
3	Equal var	3176.88	3245.86	3201.4	0.7
4	Equal var	3117.28	3205.98	3148.81	0.74
5	Equal var	3081.01	3189.41	3119.54	0.72
7	Equal var	3002.68	3150.5	3055.22	0.73
2	Equal var, free cov	2970.88	3049.72	2998.9	0.45
3	Equal var, free cov	2860.25	2973.59	2900.54	0.58
7	Equal var, free cov	2755.73	3007.038	2845.06	0.72

Abbreviations: AIC = Akaike information criteria, BIC = Bayes information criteria, SABIC = Sample Size-Adjusted Bayesian Information Criterion. Profiles have been ordered from largest to smallest SABIC values.

Figure 4.4
LPA Group Levels of Peer, Parent, and Teacher Support



Note. Total N = 1,020. Support variables have been mean-centered.

LPA derived groups were then named based on their combination of levels of parent, teacher and peer support to ease with interpretation. The first group was labeled the "loners" who had particularly low connection to peers, and generally low levels of adult supports, while the second group had roughly similar mean levels of all three social supports and were labeled "low support". The third group evinced a very different pattern, with high peer relatedness and low motivational support from both adults, and therefore were labeled "social butterflies with low adult support". The fourth group had lower supports from peers and teachers, but higher support from parents, and therefore was named the "home but no classroom support" group, while the fifth group had mid-

levels of support from parents and peers, but low levels of teacher support and was therefore named the “middles”. The final two groups had higher levels of support and were named “friends and family” for higher levels of support from peers and parents, and “high support” due to high levels across all three, respectively.

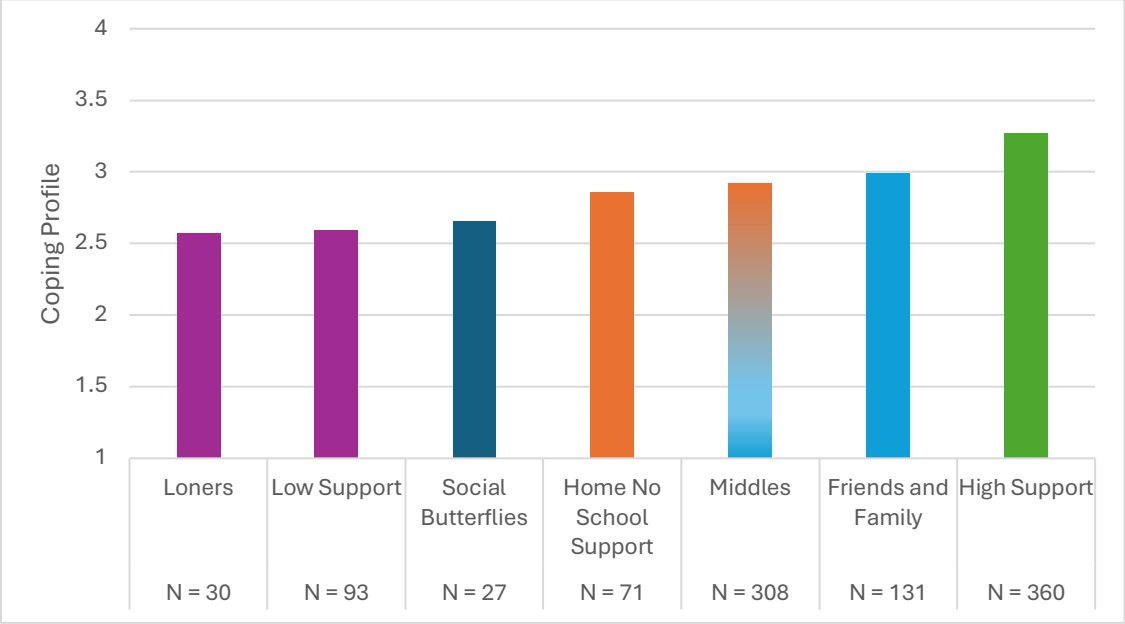
As with cumulative effects analyses, the LPA derived subgroups were then examined for differences in gender and grade level using the BCH method to minimize error from possible group misspecification (Bolck et al., 2004). Results for gender indicated no significant differences in fit $\Delta LL(12) = 12.92$, $p = .375$, while those for grade level suggested further investigation into grade level differences by subgroup was warranted, $\Delta LL(24) = 129.76$, $p < .001$. Pairwise comparisons between groups suggested significant differences in grade level proportions between multiple groups and probabilities for each group broken down by grade level suggested that students in grade six were more likely to be in the loner and low support groups, and less likely to be in social butterfly group than expected, while third and fifth graders were more likely to be in the social butterfly group.

Auxiliary analyses were also conducted using the BCH method (Bolck et al., 2004) to determine whether profiles differed significantly in their average levels of academic coping across the school year, with likelihood ratio tests evaluating whether fit for these models significantly worsened if coping means were constrained to be equal. As for cumulative effects analyses, no differences were found for mean level change in coping and therefore all auxiliary analyses also utilized averaged coping across the school

year. Results indicated overall group mean differences in averaged coping profiles across the school year, $\Delta LL(12) = 460.99$, $p < .001$. When comparing individual subgroups (see Figure 4.5), the loners and overall low support groups did not significantly differ on their coping level, however, students with high connection to peers but low support from parents and teachers (i.e., "social butterflies") were significantly higher than the two low support groups. Students with home but not classroom support were significantly higher than the peer-only group and significantly lower than the friends and family group, however, they were not significantly lower than students in the middles group, which was itself not significantly different from the friends and family group mean. As expected, students with high support from all partners had the highest mean coping profile score, which itself significantly differed from all other groups.

Figure 4.5

Mean Levels of Academic Coping Across the School Year by Latent Profile



Note. Total N = 1,020. Different colors represent significantly different means, $p < .01$.

Discussion

Building on research suggesting that teachers, parents, and peers each play a role in supporting students' academic coping, this study examined the possibility that together they show collective effects on concurrent levels and changes in students' academic coping over the school year. Based on previous studies of collective effects, targeting both coping and other related motivational processes (Ansong et al., 2017; Roeser & Peck, 2003; Shih, 2015b; Vollet et al., 2017), we found evidence of cumulative effects from both variable- and pattern centered analyses; with teachers being the most central social partner, most likely because they are in the classroom where most academic coping takes place; then parents who can affect coping both directly as students engage in schoolwork at home and indirectly by providing motivational resources; and then peers, who can provide feelings of connection but generally do not have the goal of supporting their age-mates academic coping or success. Neither variable-centered nor pattern-centered analyses provided clear evidence for contingent effects among teachers, parents, or peers.

Variable-centered Evidence for Cumulative Effects

Variable-centered analyses provided support for this pattern of results by revealing significant unique effects on changes in coping from both teachers and parents, but not peers, with the largest standardized beta from teachers ($\beta = .12$). Although these results could suggest that peer relatedness has little role to play in supporting academic

coping, when the autoregressive path from T1 coping was removed all three social supports were able to uniquely and significantly predict T2 coping, with standardized betas demonstrating the largest effect for teachers, followed by parents, then peers. These results again emphasized that teachers may be the more impactful social partner, but that all three can have a role to play, and therefore the effect of peers on coping should not be fully discounted. Even further, these results also suggested the importance of utilizing pattern-centered approaches to more fully uncover how peers may be having an effect.

Pattern-centered Evidence for Cumulative Effects

Pattern-centered analyses found clearer evidence for cumulative effects of parents, teachers, and peers on coping, showing that average levels of productive versus unproductive coping followed exactly along a gradient of support from none high to all three high, with significant differences found between every group in the mean levels of their coping profiles. However, follow-up analyses provided some more differentiated results than those that could be uncovered through only variable-centered approaches, suggesting that peers may play a role, and that (in some cases) it does matter which social partner these cumulative supports come from. More specifically, the potential importance of peers was apparent in comparisons between the group of students with no supports and that with support only from peers; higher mean levels of coping were found in the subgroup with high support only from peers, and students in this subgroup did not differ in their mean levels of coping from students in the group where only parents provided high support. However, among the one-high subgroups, peers were not the most central

social partner. Highest levels of coping were found for students with high levels of support from only their teachers; they had significantly higher coping profiles compared to students with either support only from parents or peers, or no support at all, suggesting that teachers may have an especially impactful effect on coping, while parents and peers may be having less differentiated, but still important effects. Even further, it appeared that a single high support from teachers was statistically equivalent to having supports from both parents and peers together, providing even further evidence of teachers' importance.

Teachers' essential role in supporting coping was even clearer when comparing students with multiple social supports. Students who had either both adult supports or both classroom supports evinced higher levels of coping than those with just parents and peers. Despite this, two supports were not enough to compensate for a lack of support from either parents or peers, in that students with three high supports showed significantly higher levels of coping than any other subgroup. This suggested the presence of cumulative effects, where essentially more supports are better, but with a more differentiated pattern that was consistent with but expanded upon multiple regression results. Specifically, peers still have an important role to play in the support of student coping, but primarily in combination with teachers and for those students who were low on parent and teacher support.

Latent Profile Analysis Results

Latent profile analysis results provided further insight into the nature of the groups within this sample and how they were dissimilar in their academic coping. This

provided more nuanced information regarding the distinguishable social ecologies students may be experiencing and how these shape coping in divergent ways. Although two groups contained roughly 67% of the sample (the middles and high copers), suggesting that most students were in these more traditionally linear combinations of supports, the identification of additional combinations suggested the presence of specific mesosystem level social ecologies. Even further, significant differences in average coping between these groups provided further evidence of distinguishable social ecologies. More specifically, students with low supports from all three partners did not differ significantly from "loner" students but did differ from students with high peer but no adult support. This suggested that while a lack of peer connection may not pull your coping down even further, support from friends in the form of feeling a connection to them may help bolster your coping compared to those with fewer supports.

Summary of Findings

Ultimately, these three methods, by providing alternative lines of sight on mesosystem social ecologies of academic coping, could illuminate a larger picture of how social partners in the classroom and at home shape academic coping. Generally, all three of these methods found evidence of cumulative effects, where those with more supports from social partners had higher levels of adaptive versus maladaptive coping, with no clear evidence from either variable- or pattern-centered analyses of contingent effects. Where they diverged was in their conclusions about whether social supports could predict changes in coping over time, most likely due to both the high cross-time stability of

coping and the stability of mean levels of coping over the school year. Taken together, these results make four contributions to the literature that begin to address research gaps regarding the collective effects of interpersonal supports on academic coping.

First, the study addresses a gap in our understanding of how motivational resources from key social partners are linked to academic coping, providing additional evidence of the important role parents, teachers, and peers can each play in its development. Second, the current study adds to the extremely sparse literature examining all three of these social partners together to disentangle exactly how they work in combination to shape changes or levels of academic coping. By examining all three in the same models it was possible to determine the nature of these effects more clearly and whether the effects were cumulative, amplifying, or buffering, with results primarily finding support for cumulative effects. Third, by using multiple methodological approaches, both variable-centered and person-centered, the present study could begin to capture the complex social ecologies that surround students in the mesosystem of home and school (Skinner et al., 2022). In addition to using traditional variable-centered approaches like moderation to test for complex interactions between multiple interpersonal resources as predictors of academic coping, this study explored the possibility that variable-centered approaches, whether focused on cumulative or contingent effects, could not fully capture the social ecologies that shape students' academic coping. Compared to analytic strategies that "hold constant" the effects of other social partners, pattern-centered analyses were able to look explicitly at groups who

experienced different combinations of interpersonal supports from teachers, parents, and peers, and found that (some of them) evinced correspondingly different profiles of academic coping over the school year.

Limitations of Current Study

Despite the important expansions of the literature the present study provided, there are limitations that should be considered when interpreting its findings. First, although the sample represents an entire school district and therefore is reflective of that specific population, it is not representative of the broader United States population and therefore findings and interpretations may not generalize beyond this upstate New York school district. Researchers have posited both culturally situated and socio-economic status-based categories of coping not present in the measure of coping used for the proposed study, and therefore results may not fully capture how social partners are shaping these ways of coping as well (Gaylord-Harden et al., 2012; Perzow et al., 2021; Wadsworth, 2015). Future work could include both more diverse samples as well investigate the hypothesized effects within different cultural or SES-based ecological niches to determine whether the groups identified in the present sample and their impact on coping trajectories are found more broadly.

Similarly, the present study collapsed across grade levels three through six to create a single sample. However, students in these grades are potentially experiencing both differences in their social ecologies as they move from elementary to middle grades as well as developmental differences in coping as they move from middle childhood into

early adolescence. These changes, while not necessarily impacting variable-centered analyses where initial levels of coping can account for individual differences in coping, may have impacted mean level analyses conducted in pattern-centered approaches. High cross-time stabilities (r = .77) and a lack of significant differences in changes in mean levels of coping across the school year may not reflect a real lack of changes in the entire sample, but instead that students in one grade are increasing while those in another are decreasing. Research on developmental differences in coping has found some evidence of differentiated coping trajectories, with third, fourth, and fifth graders showing general increases that get larger as they progress in school, until hitting sixth grade when they start to show normative declines (Ben-Eliyahu & Kaplan, 2015; Skinner & Saxton, 2020). Results from the present study also suggested differences in social ecological make-up depending on grade, with students in sixth grade more likely to have lower levels of support than fifth graders. Therefore, future research could build on the present study by disaggregating the sample and comparing results by grade level, which will be discussed further in a subsequent section.

In addition to potential sample limitations, there are some methodological limitations as well. Study hypotheses were focused on students' perceptions of the interpersonal resources they were receiving and therefore all study variables were student reported. As a result, covariation may be inflated due to shared common method variance. For variable centered analyses, controlling for T1 coping allowed for some mitigation of these effects, however, all analyses of means may have suffered from an inflation of

effects due to measurements all originating from the same reporter. Therefore, future work could also examine whether similar groups exist when including parent, teacher, and peer reported supports, and whether they produce similar changes in coping over time.

Additionally, although the use of both a priori and algorithmically derived groups for analyses provided a fuller picture of the social ecologies under study, they did not fully address the limitations of each. Specifically, the use of latent profile analysis, a data-driven rather than theory-driven method of establishing groups, may mean that the seven groups identified as being the best fit to the data were specific only to the sample under study. Alternatively, the use of predetermined groups utilizing tertile splits resulted in numerous groups that had too few members and were not distinguishable from one another in terms of their coping profiles. Cumulative effects analyses provided more interpretable and distinguishable subgroups, however, the lack of directly comparable groups created by both a priori and empirical methods (i.e., LPA), meant that the conclusions drawn from both results remain descriptive and that further replication and expansion upon study findings would be required for larger conclusions to be drawn.

Differentiated and Collective Effects of Teachers, Parents, and Peers

Despite the limitations described above, results from both variable- and pattern-centered analyses provided important information regarding our knowledge of the collective effects of parents, teachers, and peers on academic coping. First, results from theoretically derived differentiated groups of high, medium, and low support (see

Supplemental Table 6.1) indicated that the majority of the sample could be characterized as having high, medium, or low levels of each support, consistent with variable-centered results. This suggested that generally, the higher the level of support, the higher students' level of adaptive versus maladaptive coping and that parents and teachers were having the most impactful effects. However, the presence of some off-diagonal subgroups suggested that, for some students, the variable-centered approach was not fully capturing their social ecology of academic coping.

Cumulative effects provided more nuanced information regarding these subgroups of coping. Analyses demonstrated that, despite some evidence to the contrary in regression analyses, all three social partners had a role to play in supporting coping, with students' coping increasing as their number of supports increased. However, a more detailed picture emerged when these groups were disaggregated into which social partner was providing high levels of support. Consistent with established research that has found connections between teacher supports and academic coping (E. L. Deci et al., 1992; Raftery-Helmer & Grolnick, 2016; Reschly et al., 2008; Shih, 2015b; Skinner & Saxton, 2020; Zimmer-Gembeck & Locke, 2007), subgroups with high levels of support from teachers always had the top mean levels of coping, demonstrating that these social supports were not interchangeable, and that teachers were an irreplaceable support for coping. This is most likely because they are an extremely impactful classroom presence, available (or not) to provide direct supports when students run into trouble with their schoolwork. Therefore, no matter the level of support you receive from your parents or

peers, you need support from your teachers to reach the highest levels of coping. However, support from teachers alone was still not capable of bolstering students against lower levels of supports from either other social partner at school or at home, suggesting their importance did not rise to the level of a buffering effect.

Results from both cumulative and latent profile analyses also suggested that parents, despite their potentially more distal presence in students' academic lives, are also having an impact on their academic coping. Parents may not be able to provide direct supports when students are coping with difficult schoolwork, however, parenting that is characterized as high on motivational supports may "pack" students' motivational "suitcase" to serve as additional resources to draw upon when they run into trouble, consistent with research on parenting and motivational resilience (see Chapter II; Raftery-Helmer & Grolnick, 2016). Although groups with higher parent support differed significantly from those without adult support, suggesting parents' overall importance to coping, without high teacher support, neither parents alone nor in combination with peers could reach the levels of coping of students who had high support from all three. Therefore, results emphasized that the resources that come from parents are most impactful in the presence of supports from both classroom social partners, especially those from teachers.

Where findings across methodologies differed was in the role of peers in supporting academic coping. Variable-centered results suggested that they did not evince unique effects on changes in coping across the school year but could uniquely predict

spring coping without controlling for fall coping at a smaller magnitude than parents and teachers. Cumulative effects and latent profile analyses unpacked this more by demonstrating that peer support was better than no support. It is possible that these smaller effects are due to the fact that the positive effects of peers may not be through direct instrumental support such as that provided by teachers, but instead indirectly through their increased desire to attend school at all, which could then help them gain some additional motivational supports that serve as coping resources in times of stress. However, results also indicated that peers alone, no matter how strong the connection, cannot lift you up to the level of coping of students with parent or teacher support, suggesting that these benefits cannot match those provided by adults. This could be because, while peers and friends may provide important benefits such as a strong motivation to attend school each day, feeling a strong connection to them may not benefit coping at the same level as involvement, structure, and autonomy support provided by adults.

Alternatively, results for peers may have been weaker than those for adults due to measurement considerations. Peer support was the only variable that was not measured as motivational support but instead as a sense of relatedness and consisted of fewer aggregated items (8 vs. 21). Therefore, its predictive power may have been reduced in comparison to the other two social support variables due to its lower internal reliability. Furthermore, it is possible that peer relatedness, being a measure of both an interpersonal resource and students' self-systems regarding their relatedness, was not fully capturing

how peers bolster academic coping. Peers may instead be supportive through their own coping or through more collaborative actions (e.g., communal coping; Helgeson et al., 2018).

Social Ecologies of Academic Coping

In addition to the more direct interpretations described above, results from the present study also made contributions to the literature through the use of three methodological approaches (variable-centered, pattern-centered analyses of cumulative effects, and latent profile analysis), providing some initial evidence regarding how to most usefully represent the different kinds of mesosystem-level social ecologies that surround students' academic coping, or what could be called each student's *ecological niche*. Overall, the use of multiple methodologies emphasized the importance of looking directly for distinguishable subgroups within a sample, rather than assuming homogeneity. Variable-centered approaches assume that phenomena under study are consistent across individuals and ignores the potential presence of differentiated effects depending on the ecological niches inhabited by students (Bergman et al., 2002; Magnusson, 1998; Magnusson & Bergman, 1988; von Eye et al., 2015). Therefore, the determination of whether or not such subgroups are present is an important empirical question that is often neglected in favor of focusing on how variables are related to one another averaged across the sample.

Taken together, study results also provided some guidance about the most useful methods for examining social ecologies of academic coping, although no one method appeared to provide a complete picture, and all had both strengths and drawbacks.

Strengths and drawbacks of variable-centered approaches. Multiple regression and moderation analyses, as the variable centered approaches included in the present study, provided important information regarding the direction and "force" of specific interpersonal effects on academic coping within the broader mesosystem that included home (parents) and school (teachers, peers). Results provided useful information regarding whether each social partner could contribute to academic coping over and above the effects of the other as well as whether one social partner could moderate this connection. However, this method was not without drawbacks. Most importantly, these analyses rendered invisible the different ecological niches students may occupy with their specific combinations of supports from multiple partners. Because effects were calculated across all subgroups of students, distinguishable differences between subgroups could have been "washed out" because they represented a relatively small amount of the sample. As developmentalists, these "off diagonal" ecological niches, while sometimes treated as outliers or aberrations, are of particular importance because they represent subgroups that may have particular needs or patterns of effects that are ignored if we focus only on general processes in the entire sample (von Eye et al., 2015).

Strengths and drawbacks of pattern-centered approaches. The two pattern-centered approaches included in the final study provided valuable information regarding

the structure of these social ecologies, telling a story about what these differentiated social worlds may look like for the students within them. First, the cumulative effects approach provided a theory-grounded frame (Skinner et al., 2022), positing the presence of a specific type of collective mesosystem effect that could be tested through the creation of certain subgroups. This meant that results were easily interpretable and were able to answer direct questions such as, Did the effects of these social partners on academic coping represent cumulative effects where more support resulted in significantly higher levels of academic coping? When only some partners are providing high support, does it matter which ones are the sources of that support? However, this method was also not without its own drawbacks, because it necessitated the removal of a portion of the sample to ensure that high and low levels of support were meaningfully different from one another, as well as an adjustment of the definition of "high" and "low" support to create group Ns large enough to provide adequate statistical power to conduct post-hoc mean comparisons.

On the other hand, latent profile analysis results provided information regarding distinguishable ecological niches present in the sample that were not previously hypothesized, providing further insight into what students may be experiencing in their day-to-day lives at school and home and how these experiences may be shaping coping. These results were able to "paint a picture" of different subgroups of students, such as the "loners" or "friends and family", whose academic functioning, specifically coping, was differentiated depending on their perception of these supports and where they originated.

For example, through these analyses, one could imagine that students who felt supported by their friends and families were able to feel bolstered when they were stressed by a difficult school assignment, knowing that they could rely upon these strong social connections despite poor school performance, even if their teacher provided little instrumental support in the classroom. However, these students could not manage the level of coping of their peers with high support from all three; this suggested that the lack of in-class adult support still had deleterious effects, as the addition of teacher provided instrumental guidance, such as further instructions or scaffolded assignments, could aid these students as they cope with difficulty. LPA findings were also limited by the small number of students in many of the subgroups. Roughly 67% of the sample was in either the middle-low group or the high support group, suggesting that the more differentiated groups may have represented a small number of students. However, these two large N groups significantly differed in their level of coping (see Figure 4.5), and therefore results may still provide important information regarding how these more detailed ecological niches shape academic coping.

In sum, all three methodological approaches provided important information regarding the complex mesosystem created between home and school with each contributing complementary insights into the collective effects of teachers, parents, and peers on academic coping. However, results emphasized the importance of pattern-centered approaches because these subgroups were not discernable through traditional variable-centered regression. Therefore, study results suggest that researchers should

purposefully consider whether their target phenomena could potentially have differentiated patterns of effects depending on whether there is heterogeneity within their sample or population, and then include appropriate person-centered methods.

Future Directions for the Study of Interpersonal Influences on Academic Coping

The exploratory nature of the present study meant that results suggested numerous options for future studies. Three important directions can be highlighted. First, as mentioned in study limitations, future work could take a more purposefully developmental lens and disentangle potentially differentiated social ecologies and trajectories in academic coping for students by grade level. Research could expand upon present findings by disaggregating the sample into separate grades and determining whether the different subgroups found in the total sample were also present within each grade and whether these subgroups evinced similar differences in mean levels of in coping. Separating the sample into these grade level groupings may also allow for subgroup differences in changes in academic coping to be examined, which they could not be for the whole sample, because no changes in mean level were found across the school year.

Age-graded patterns of mean level change may become evident once the sample is broken up by age group. The present study found initial evidence of age differences in group make-up, with sixth graders more present in the groups with lower levels of support. Future longitudinal studies could investigate whether these age differences represent true age-graded changes where students move in or out of these subgroups as

they progress in school, consistent with the larger literature that has found students have fewer classroom supports as they make the transition from smaller elementary schools to larger, more impersonal and less autonomy supportive middle or high schools (Eccles & Roeser, 2009). Students may experience differential changes in patterns of support as they transition to middle school, for example, some students may continue to have supportive parents but lose the close, personal connections to teachers they had in elementary school, while others may experience so much stress from this transition that their relationship with their parents deteriorates as well. Latent transition analysis could then be employed to examine which students are more likely to transition group membership over time, and how these transitions may shape academic coping outcomes.

Second, future studies can take a more differentiated look at students' coping. The measure of students' academic coping profile used in the present study consisted of 11 individual ways of coping present in the academic domain, five adaptive and six maladaptive (Skinner et al., 2013). Future work could therefore expand upon the present findings by examining whether students' complex social ecologies are shaping individual ways of coping in distinguishable ways. For example, it is possible that students who have high levels of support from their teachers are more likely to use constructive strategies like strategizing and help-seeking, but those primarily with support from parents and peers are more likely to utilize comfort-seeking and self-encouragement. Although the aggregate coping profile score used in the current study provided general information regarding whether students were using more productive versus unproductive

ways of coping overall, next studies can examine more nuanced information about the specific coping repertoires students use within these differentiated ecologies. Even further, work could examine students' coping repertoires themselves using pattern-centered approaches, investigating whether there are distinguishable subgroups that evince a reliance upon different combinations of individual ways of coping. Once these groups are established, studies could examine whether they differ in the supports provided by teachers, parents, and peers. It would also be possible to consider whether some students transition between different coping repertoire groups depending on their social ecologies. For example, students with high levels of support from classroom sources may be more likely to transition out of a coping repertoire that relies upon more maladaptive than adaptive ways of coping into one that utilizes more help-seeking.

Third, and beyond the scope of the current study, but consistent with the larger body of work contained in this dissertation, this social ecological, mesosystem-level perspective could be applied to other processes of motivational resilience, such as engagement and reengagement (Skinner et al., 2020). It is likely that the subgroups found in this sample may also show mean levels or changes in engagement or reengagement given the research showing the importance of social supports to both of these constructs (Datu & Yuen, 2018; Skinner et al., 2022). Like coping, other motivational resilience processes are shaped by multiple factors, including both personal and interpersonal motivational resources, and can be either facilitated or thwarted by whether students perceive their social contexts as supportive or hindering of their basic needs to feel

related to others, competent, and self-determined (Connell & Wellborn, 1991; Ryan & Deci, 2017; Skinner et al., 2020). Therefore, the complex combinations of collective mesosystem-level supports may be similarly comprising distinguishable ecological niches that shape whether students are enthusiastically participating in their classroom and learning activities (i.e., student engagement), or able to "bounce-back" and return to an engaged state after encountering challenges and setbacks (i.e., student reengagement). For example, students who are part of the "social butterfly" subgroup (who had higher levels of adaptive vs. maladaptive coping than those who had low supports across social partners) may similarly show higher reengagement as they are benefiting from at least some motivational resources from their social connection to their peers, which serves to sustain their rededication to the academic task at hand. Alternatively, students who do not have a strong connection to their peers but have high levels of motivational resources from both adults in their lives (parents and teachers) may have even higher levels of reengagement than those in the social butterfly group because they are receiving more direct supports in the form of developmentally attuned scaffolds (i.e., structure) or warmth and comfort (i.e., involvement) that can help them continue on after challenges.

Educational Implications

Study results also have concrete implications for researchers, practitioners, and educators. First, cumulative effects and multiple regression results suggest that the most effective avenue for promoting academic coping via interpersonal supports will be through intervention and promotion efforts that involve all three social partners. As has

been hinted at through research on these social partners individually (e.g., Raftery-Helmer & Grolnick, 2018; Shih, 2015b; Skinner & Saxton, 2020), this provides further evidence that the greatest impact can be made through multisystem interventions at the mesosystem level that address the motivational and interpersonal supports provided by parents, teachers, and peers together. For example, researchers or practitioners whose aim is to optimize students' academic coping could focus on programs designed to help educate families on the importance of providing adequate involvement, structure, and autonomy support, as well as updating teacher education programs or professional development so that they include information about these motivational supports and the importance of facilitating positive peer relationships in school.

However, cumulative, variable-centered, and LPA results all together suggest that, despite the clear presence of additive, cumulative effects from all three social partners, teachers seem to be having the largest impact. Therefore, if resources for program development and intervention are scarce, results suggest that teachers may be the most effective "lever" of intervention. Although results provide further evidence of multi-system, multi-level intervention as a gold standard of coping promotion, results also indicate that effective, important changes can also be made if interventions focus primarily on helping teachers to provide increased motivational supports to their students. Research suggests teachers support positive academic function (including academic coping) through both the provision of direct resources and through more general support for their students' academic motivation, and interventions that promote these classroom

behaviors have been found to be connected to better student outcomes (Ahmadi et al., 2023). However, currently, most coping interventions focus on direct trainings that aim to teach children to cope more effectively and promote the use of constructive strategies in the face of challenges (Forman, 1993; Lochman et al., 2012). Although these types of direct interventions may be helpful, the current study suggests that it is also important for social partners to provide more general motivational supports that can serve as resources to draw upon when setbacks are encountered. The even brighter side of this type of more general intervention, especially if focused especially on teachers, is that it may provide benefits to other academic functioning and achievement outcomes beyond coping, as suggested by previous intervention research, and therefore be especially efficacious.

Conclusion

In sum, through the use of both variable- and pattern-centered analyses the current study expanded upon our understanding of how the complex social ecologies students move through during their everyday experiences may be shaping the ways they handle the regular stressors they encounter during academic tasks. Specifically, this study was the first to examine collective effects from parents, teachers, and peers, as well as to use methodologies capable of examining the nature of these effects. This allowed for a greater understanding of exactly how these collective mesosystem effects are shaping academic coping and provided the literature surrounding interpersonal contexts and academic coping with clearer guidelines about how to optimize its development.

Chapter V: Discussion

This dissertation is part of a larger program of applied research that aims to shed light on the ways in which social contexts and interpersonal relationships at home and at school can promote (or undermine) the development of students' motivational resilience during the crucial years of middle childhood and early adolescence. Overall, results from all three studies provided additional evidence regarding the connections between school and home contexts and processes of motivational resilience in two ways: through the explication of both the processes or functions (Studies 1 and 2, described in Chapter II & III) and organization or structure (Study 3, described in Chapter IV) of parts of this mesosystem-level social ecology. Specifically, results from Study 1 suggested that families are not only directly supporting their children's reengagement, but also having an effect through their influence on children's self-system processes of relatedness, competence, and autonomy. For Study 2, results provided support for the idea that student academic coping is reciprocally shaping parental provision of motivational support through its impact on student reengagement. And Study 3 explored how the collective mesosystem effects of parents, teachers, and peers shape changes in coping, uncovering differentiated cumulative effects that revealed how these effects are working in conjunction.

All together these results provided important information regarding the reciprocal connections between social contexts and processes of motivational resilience. Although research has found consistent links between academic coping and reengagement, on the

one hand, and positive academic functioning and achievement outcomes, on the other, less work has focused on how social contexts may facilitate these processes, with almost no studies investigating the complex ecologies or possible dynamic systems created between social partners (Datu & Yuen, 2018; Skinner & Saxton, 2019). More specifically, although studies have investigated specific interpersonal antecedents, like teacher support, they have generally lacked a cohesive and comprehensive theoretical or empirical account of the most impactful supports, limiting the kind of integration across the field that would be needed to develop efficacious interventions or make recommendations to teachers and parents. Therefore, these three studies not only expanded upon the current field by explicitly examining the functioning of these interpersonal supports, but also hopefully will contribute to a greater number of theoretically-grounded contextual studies that investigate how students' complex social ecologies shape their motivational resilience (Skinner et al., 2022).

Limitations and Contributions: The Inherent Incompleteness of Studies from a Developmental Systems Perspective

Underlying all three studies was a developmental systems perspective on motivational resilience that emphasized the complex, multidimensional and multilevel contexts which afford and constrain its development, as well as the dynamic, bidirectional processes that can describe how these contexts interact with individuals and their own personal factors (Bronfenbrenner & Morris, 1998; Overton, 2013; Skinner & Raine, 2023). Developmental systems perspectives argue that these personal and

interpersonal levels and functions are inextricable integrated (Lerner & Castellino, 2002). Therefore, these paradigms suggest that to more completely study such systems, we need to be able to capture three facets, the *structure* of these systems, how they *function,* and how they *dynamically develop* over time (Skinner et al., 2019). But even further, it suggests that reducing these elements to separate parts may keep us from fully understanding them, and that instead we need to look at them as a cohesive, irreducible whole.

From this perspective, developmental systems researchers distinguish two kinds of limitations or shortcomings in research studies. The first pertains to theoretical or methodological problems in reaching a study's explicit goals, that is, in answering the study's specific research questions. These kinds of shortcomings, such as sample composition or reliance on student self-reports, were described in the Limitations sections of each of the studies in this dissertation. The second kind of shortcoming, addressed in this section, reflects the inherent incompleteness of any study conducted within a developmental systems framework. More specifically, none of the studies in this dissertation were able to capture the organization *and* processes of these phenomena all together. From a more Cartesian point of view, this limitation could represent a dilemma facing systems researchers: 1) to focus on the structure (i.e., nested contexts or levels) and provide a more complete picture of the ecology surrounding their phenomena of interest or 2) to provide an explanation of the "engines" or "forces" of their phenomena through a focus on their functions (i.e., processes). But in reality, this so-called

"dilemma" may be better represented as a recognition of the limited line of sight a single study, especially one focused on only structure, function, or developmental dynamics individually, can provide. Therefore, in the context of these three manuscripts, a developmental systems paradigm emphasizes both looking at these three studies holistically, all together, and the importance of future work attempting to integrate these findings in their research questions, sampling, measurement, and design.

Integrative Interpretations of Study Findings

On their own, none of the studies in this dissertation address structure, function, and developmental dynamics together, however, in conjunction they can provide further information regarding these views of social ecologies of motivational resilience. First, Studies 1 and 2 examined the pathways through which either families shaped reengagement or academic coping shaped parenting. Therefore, these two studies, although examining different processes of motivational resilience, provided information regarding the mechanisms underlying the bidirectional connections between parent or family motivational support and motivational resilience, thereby examining both the functions of these perceptions of interpersonal transactions and their dynamics. On their own, these studies were only able to provide information regarding the functioning or "forces" of these processes, however, viewed together, they get closer to ideas about dynamic processes by suggesting that there are both *feedforward* effects from parents to children's reengagement through their self-system processes and *feedback* effects from children's coping to parenting through their more visible reengagement. The reciprocal

system suggested by these two studies together implies that these feedforward and feedback effects could potentially build over time into *virtuous* or *vicious* cycles of family functioning, where each social partner is either positively or negatively impacting the other leading to either increases in positive or negative functioning as the cycle perpetuates itself over time. In addition, these two studies together provide further information about the functioning of these processes by linking together reengagement and academic coping, with results supporting previous conceptualizations of the connections between the two, with "on the ground" coping shaping students' subsequent capacity to rededicate themselves to the task (i.e., their reengagement; Skinner et al., 2016, 2020).

Second, viewing findings from these two studies in light of the results from Study 3 (Chapter IV) provides some additional information about how the structure of motivational resilience ecologies may also contain information regarding the dynamic processes within them. More specifically, students in the zero supports group (i.e., low from parents, teachers, and peers) with their significantly lower coping mean compared to all other groups, may be demonstrating the effects of the vicious dynamic cycle suggested by the feedforward (Study 1) and feedback (Study 2) effects found in these two variable-centered, parent-focused studies. Within this low support social ecology, parents may be providing less motivational support (i.e., being more coercive, less involved, and providing less scaffolding and guidance), resulting in the use of more maladaptive and less adaptive coping, which in turn may lead parents to provide even less supports as they

respond to their children's desistence or giving up, as suggested by Study 2 and previous research (Raine & Skinner, 2023; Skinner & Edge, 2002). Similarly, students within the three high supports group (in either cumulative effects or latent profile analyses) likely evince a virtuous cycle of functioning, with higher initial levels of parental support leading to increases in more constructive coping and reengagement, which in turn elicits further parental support. Both of these patterns could represent *amplifying* effects whereby each part of the system (i.e., social partner supports and processes of motivational resilience), exacerbate or promote the effects of the other, building on one another over time. Therefore, by looking at these three studies together through the lens of developmental systems, one can envision how these functional and dynamic processes are hinted at by the structural ecologies of academic coping uncovered in Study 3.

Future Directions Suggested by a Developmental Systems Perspective

Results from these three studies also provide a road map for developing a cohesive body of research surrounding the functioning of the complex social ecologies of motivational resilience that addresses some of the incompleteness inherent in developmental research. More specifically, future research could take either the structure of these ecologies or functioning of these processes deeper, to expand the scope of the studies included in this dissertation. Two potential pathways are discussed below.

Future research on proximal processes of motivational resilience. Future work could explore functioning and development more deeply by moving beyond short-term longitudinal data collected over a single school year to that collected using more densely

spaced time points to encapsulate dynamic effects between social contexts and processes of motivational resilience. This could include the use of more complex developmental methods such as time series analyses that are capable of more truly capturing proximal processes and interactions as they unfold. However, as described, this would not address how these proximal processes build into developmental trajectories over time. Although this study may be able to determine more precisely the nature of these dynamics between motivational resilience and social partners, it would not address longer-term effects and how they may change over developmental or educational transitions such as adolescence or middle school. Therefore, time series studies could be combined with survey data following these students over a longer period of time or stressful transitions (e.g., the transition to middle school; Eccles & Roeser, 2009) that could investigate how these proximal processes may shape trajectories of motivational resilience.

Future research on ecological niches of motivational resilience. Alternatively, future work could use students' distinguishable social ecological niches as a jumping off point for an investigation of whether these processes and dynamics differ in particular subgroups and then whether this combination of ecology and dynamics shape changes in trajectories of motivational resilience over time. More practically, this could entail collecting data from a sample of late childhood and early adolescent students that contains both survey data from two or three timepoints each school year across multiple school years in addition to more densely spaced observation or daily diary data collections that could capture proximal processes in the classroom and at home. This

would allow for the examination of the structure of students' initial ecological niches and how these subgroups differ on their interpersonal interactions *and* their trajectories of motivational resilience. It is possible that students in the "off-diagonal" groups may demonstrate patterns of dynamic effects that are not amplifying, but instead *compensatory* or *contingent*. For example, these studies could investigate the social ecological conditions under which teachers might become more involved when things are going poorly for students (i.e., compensatory effects) or whether teachers might become more involved when students start hanging out with a peer group that is more engaged (i.e., contingent effects). Although this type of study would most likely be very complex to implement, it may be able to expand the "viewfinder" of the three present studies to better illuminate the structure, function, and dynamics of how social ecologies of motivational resilience work together over time.

This research would also allow for the investigation of other directions of effects including whether specific patterns of dynamics (e.g., amplifying, compensatory, or contingent) can shape the structure of students' later ecologies or whether they transition in or out of these ecologies over time. For example, students whose interactions with their parents could be characterized as an amplifying pattern of negativity, but whose ecological niches consist of high or medium levels of support from peers and teachers, may be in danger of falling into the subgroups with low support from both adults (i.e., social butterflies) or low across supports. This may be because this vicious cycle of family functioning at home has "spillover" effects into other microsystems

(Bronfenbrenner, 1976; Skinner et al., 2022), where students bring their internal working models that have been partially constructed during these negative patterns of interactions at home with them to use as lenses to interpret other social interactions. This then has the potential to create similar amplifying cycles at school (e.g., Liu et al., 2020), especially if they have initial negative interactions with teachers or peers.

Implications for Educators, Families, Researchers, and Practitioners

All together, these three studies also provide some overarching guidance for applied researchers and educators, families, and practitioners working or living in the field. Results from all three emphasize both the importance of social contexts to processes of motivational resilience as well as how the effects of both social supports and academic coping are either carried with students or communicated to social partners. More specifically, the two mediational studies (Chapters II and III), while concerned with different directions of effects and processes of motivational resilience, address gaps in the literature concerning exactly how home effects are carried into schools and how more interior or less visible coping processes are impacting social partners who may not be able to pick up on them in the moment. These studies both highlight that although interventions that train social partners such as parents to provide direct aid during stressful episodes may have immediate effects, it is also important to help parents understand that their more everyday behaviors, especially ones that support their children's fundamental needs for relatedness, competence, and autonomy, will also support motivational resilience because they contribute to resources children can

subsequently draw upon in times of stress. Similarly, by identifying reengagement as a potential pathway through which academic coping shapes changes in parenting, parents can be helped to recognize desistence as an indicator that tasks are stressful and children's academic coping is overwhelmed, and therefore begin to see this (otherwise puzzling or irritating) behavior as a signal that children need increased levels of motivational support.

In conjunction with Study 3 (Chapter IV), these implications can be expanded to provide further recommendations regarding how to intervene or promote optimal support from social partners at school and home. While the first two studies focus on the family context, Study 3 expanded this to include the combined school and home context in order to address how these social supports work in combination to exert their effects. Therefore, it is important to follow up on whether similar effects are present for classroom social partners so that recommendations could be made for teachers, who provide both direct support as instructors but also have a major influence on peer relations in the classroom as well (Endedijk et al., 2022; Farmer et al., 2011). This research could then help to inform both teacher education and interventions to encourage classroom level bolstering of motivational resilience. Even further, taking a developmental systems perspective to the promotion of these practices may help to validate knowledge that teachers already have (e.g., the effects of spillover from home into the classroom), but also potentially provide some important additional knowledge

such as an emphasis on the malleability of these processes and that there may be multiple effective levers of change.

But most importantly, altogether results suggest the importance of all three social partners to processes of motivational resilience. Therefore, when promoting motivational resilience outcomes, recommendations for families should consider the effects of teachers and peers when they are thinking about how they can support coping or reengagement, recommendations for teachers should consider the effects of families and peers, and interventionists must keep in mind the effects of all three.

Conclusion

In summary, these three studies expanded upon the disparate but compelling body of literature surrounding students' motivational resilience by focusing on how families and other social contexts such as teachers and peers interact with these processes. Even further, while no one study fully explicated the structure, function, and dynamic components of social ecologies of motivational resilience during middle childhood and early adolescence, taken holistically, they were able to provide different lines of sight that contributed to our understanding of some aspects of these components. Specifically, findings clarified the mechanisms underlying connections between family motivational support and changes in academic coping and those between academic coping and changes in parental motivational support, as well as delineated how the combined supports from parents, teachers, and peers work collectively to shape changes in academic coping. These findings then have the potential to inform future work that can itself expand upon

our understanding of these processes as well as aid in the development of effective interventions to support optimal social connections and processes of motivational resilience.

References

Ahmadi, A., Noetel, M., Parker, P., Ryan, R. M., Ntoumanis, N., Reeve, J., Beauchamp, M., Dicke, T., Yeung, A., Ahmadi, M., Bartholomew, K., Chiu, T. K. F., Curran, T., Erturan, G., Flunger, B., Frederick, C., Froiland, J. M., González-Cutre, D., Haerens, L., … Lonsdale, C. (2023). A classification system for teachers' motivational behaviors recommended in self-determination theory interventions. *Journal of Educational Psychology*. https://doi.org/10.1037/edu0000783

Ainsworth, M. S. (1979). Infant–mother attachment. *American Psychologist*, *34*(10), 932–937. https://doi.org/10.1037/0003-066X.34.10.932

Aldao, A., Nolen-Hoeksema, S., & Schweizer, S. (2010). Emotion-regulation strategies across psychopathology: A meta-analytic review. *Clinical Psychology Review*, *30*(2), 217–237. https://doi.org/10.1016/j.cpr.2009.11.004

Allen, K.-A., Gray, D. L., Baumeister, R. F., & Leary, M. R. (2022). The need to belong: A deep dive into the origins, implications, and future of a foundational construct. *Educational Psychology Review*, *34*(2), 1133–1156. https://doi.org/10.1007/s10648-021-09633-6

Amemiya, J., & Wang, M.-T. (2018). African American adolescents' gender and perceived school climate moderate how academic coping relates to achievement. *Journal of School Psychology*, *69*, 127–142. https://doi.org/10.1016/j.jsp.2018.05.001

Ansong, D., Okumu, M., Bowen, G. L., Walker, A. M., & Eisensmith, S. R. (2017). The role of parent, classmate, and teacher support in student engagement: Evidence from Ghana. *International Journal of Educational Development*, *54*, 51–58. https://doi.org/10.1016/j.ijedudev.2017.03.010

Assor, A., & Tal, K. (2012). When parents' affection depends on child's achievement: Parental conditional positive regard, self-aggrandizement, shame and coping in adolescents. *Journal of Adolescence*, *35*(2), 249–260. https://doi.org/10.1016/j.adolescence.2011.10.004

Aydın, G., & Michou, A. (2020). Self-determined motivation and academic buoyancy as predictors of achievement in normative settings. *British Journal of Educational Psychology*, *90*(4), 964–980. https://doi.org/10.1111/bjep.12338

Bai, S., Reynolds, B. M., Robles, T. F., & Repetti, R. L. (2017). Daily links between school problems and youth perceptions of interactions with parents: A diary study of school-to-home spillover. *Social Development*, *26*(4), 813–830. https://doi.org/10.1111/sode.12229

Barger, M. M., Kim, E. M., Kuncel, N. R., & Pomerantz, E. M. (2019). The relation between parents' involvement in children's schooling and children's adjustment: A meta-analysis. *Psychological Bulletin*, *145*(9), 855–890. https://doi.org/10.1037/bul0000201

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations.

Journal of Personality and Social Psychology, *51*(6), 1173–1182. https://doi.org/10.1037/0022-3514.51.6.1173

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, *117*(3), 497–529.

Bell, R. Q. (1964). The effect on the family of a limitation in coping ability in the child: A research approach and a finding. *Merrill-Palmer Quarterly of Behavior and Development*, *10*(2), 129–142.

Ben-Eliyahu, A., & Kaplan, A. (2015). Growth curve modeling analysis of social and academic coping during elementary school. *Journal of Applied Developmental Psychology*, *41*, 99–109. https://doi.org/10.1016/j.appdev.2015.09.001

Bergman, L. R., Magnusson, D., & Khouri, B. M. E. (2002). *Studying individual Development in an interindividual Context: A Person-oriented Approach*. Psychology Press. https://doi.org/10.4324/9781410606822

Boekaerts, M. (1993). Being concerned with well-being and with learning. *Educational Psychologist*, *28*(2), 149. https://doi.org/10.1207/s15326985ep2802_4

Bolck, A., Croon, M., & Hagenaars, J. (2004). Estimating latent structure models with categorical variables: One-step versus three-step estimators. *Political Analysis*, *12*(1), 3–27.

Boon, H. J. (2011). School moves, coping, and achievement: Models of possible interactions. *The Journal of Educational Research*, *104*(1), 54–70. https://doi.org/10.1080/00220670903567372

Boon, H. J. (2014). Parenting, coping and motivation of Australian at-risk adolescents. In M. T. Garrett (Ed.), *Youth and adversity: Psychology and influences of child and adolescent resilience and coping* (pp. 1–26). Nova Biomedical Books.

Bostwick, K. C. P., Martin, A. J., Collie, R. J., Burns, E. C., Hare, N., Cox, S., Flesken, A., & McCarthy, I. (2022). Academic buoyancy in high school: A cross-lagged multilevel modeling approach exploring reciprocal effects with perceived school support, motivation, and engagement. *Journal of Educational Psychology*, *114*(8), 1931–1949. https://doi.org/10.1037/edu0000753

Bronfenbrenner, U. (1976). The experimental ecology of education. *Teachers College Record*, *78*(2), 1–37. https://doi.org/10.1177/016146817607800201

Bronfenbrenner, U., & Morris, P. A. (1998). The ecology of developmental processes. In W. Damon & R. M. Lerner (Eds.), *Handbook of child psychology: Theoretical models of human development (Volume 1, 5th ed.)* (pp. 993–1028). John Wiley & Sons Inc.

Bugental, D. B., & Corpuz, R. (2019). Parental Attributions. In *Handbook of Parenting* (3rd ed.). Routledge.

Buuren, S. van, & Groothuis-Oudshoorn, K. (2011). mice: Multivariate imputation by chained equations in R. *Journal of Statistical Software*, *45*(1), Article 1. https://doi.org/10.18637/jss.v045.i03

Causey, D. L., & Dubow, E. F. (1993). Negotiating the transition to junior high school: The contributions of coping strategies and perceptions of the school environment. *Prevention in Human Services*, *10*(2), 59–81. https://doi.org/10.1300/J293v10n02_05

Chen, J. J.-L. (2005). Relation of academic support from parents, teachers, and peers to Hong Kong adolescents' academic achievement: The mediating role of academic engagement. *Genetic, Social, and General Psychology Monographs*, *131*(2), 77–127. https://doi.org/10.3200/MONO.131.2.77-127

Cheng, C., Lau, H.-P. B., & Chan, M.-P. S. (2014). Coping flexibility and psychological adjustment to stressful life changes: A meta-analytic review. *Psychological Bulletin*, *140*(6), 1582–1607. https://doi.org/10.1037/a0037913

Collie, R. J., Martin, A. J., Malmberg, L.-E., Hall, J., & Ginns, P. (2015). Academic buoyancy, student's achievement, and the linking role of control: A cross-lagged analysis of high school students. *British Journal of Educational Psychology*, *85*(1), 113–130. https://doi.org/10.1111/bjep.12066

Collie, R. J., Martin, A. J., Papworth, B., & Ginns, P. (2016). Students' interpersonal relationships, personal best (PB) goals, and academic engagement. *Learning and Individual Differences*, *45*, 65–76. https://doi.org/10.1016/j.lindif.2015.12.002

Compas, B. E., Connor-Smith, J. K., Saltzman, H., Thomsen, A. H., & Wadsworth, M. E. (2001). Coping with stress during childhood and adolescence: Problems, progress, and potential in theory and research. *Psychological Bulletin*, *127*(1), 87–127. https://doi.org/10.1037/0033-2909.127.1.87

Connell, J. P., & Wellborn, J. G. (1991). Competence, autonomy, and relatedness: A motivational analysis of self-system processes. In M. R. Gunnar & L. A. Sroufe (Eds.), *Self processes and development* (pp. 43–77). Lawrence Erlbaum Associates, Inc.

Datu, J. A. D., & Yang, W. (2018). Psychometric validity and gender invariance of the academic buoyancy scale in the Philippines: A construct validation approach. *Journal of Psychoeducational Assessment*, *36*(3), 278–283. https://doi.org/10.1177/0734282916674423

Datu, J. A. D., & Yuen, M. (2018). Predictors and consequences of academic buoyancy: A review of literature with implications for educational psychological research and practice. *Contemporary School Psychology*, *22*(3), 207–212. https://doi.org/10.1007/s40688-018-0185-y

Deci, E. L., Hodges, R., Pierson, L. H., & Tomassone, J. (1992). Autonomy and competence as motivational factors in students with learning disabilities and emotional handicaps. *Journal of Learning Disabilities*, *25*(7), 457–471. https://doi.org/10.1177/002221949202500706

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. Plenum.

Dempster, A. P., Laird, N. M., & Rubin, D. B. (1977). Maximum likelihood from incomplete data via the EM algorithm. *Journal of the Royal Statistical Society: Series B (Methodological)*, *39*(1), 1–22. https://doi.org/10.1111/j.2517-6161.1977.tb01600.x

Dix, T., Ruble, D. N., Grusec, J. E., & Nixon, S. (1986). Social cognition in parents: Inferential and affective reactions to children of three age levels. *Child Development*, *57*(4), 879–894. https://doi.org/10.2307/1130365

Domenech Rodríguez, M. M., Donovick, M. R., & Crowley, S. L. (2009). Parenting styles in a cultural context: Observations of "protective parenting" in first-generation Latinos. *Family Process*, *48*(2), 195–210. https://doi.org/10.1111/j.1545-5300.2009.01277.x

Dweck, C. S., Walton, G. M., & Cohen, G. L. (2014). Academic tenacity: Mindsets and skills that promote long-term learning. In *Bill & Melinda Gates Foundation*. Bill & Melinda Gates Foundation. https://eric.ed.gov/?id=ED576649

Eccles, J. S., & Roeser, R. W. (2009). Schools, academic motivation, and stage-environment fit. In R. M. Lerner & L. Steinberg (Eds.), *Handbook of adolescent psychology: Individual bases of adolescent development* (3rd ed., Vol. 1, pp. 404–434). John Wiley & Sons Inc. https://doi.org/10.1002/9780470479193.adlpsy001013

Endedijk, H. M., Breeman, L. D., van Lissa, C. J., Hendrickx, M. M. H. G., den Boer, L., & Mainhard, T. (2022). The teacher's invisible hand: A meta-analysis of the relevance of teacher–student relationship quality for peer relationships and the contribution of student behavior. *Review of Educational Research*, *92*(3), 370–412. https://doi.org/10.3102/00346543211051428

Farkas, M. S., & Grolnick, W. S. (2010). Examining the components and concomitants of parental structure in the academic domain. *Motivation and Emotion*, *34*(3), 266–279. https://doi.org/10.1007/s11031-010-9176-7

Farmer, T. W., McAuliffe Lines, M., & Hamm, J. V. (2011). Revealing the invisible hand: The role of teachers in children's peer experiences. *Journal of Applied Developmental Psychology*, *32*(5), 247–256. https://doi.org/10.1016/j.appdev.2011.04.006

Farrington, C. A., Roderick, M., Allensworth, E., Nagaoka, J., Keyes, T. S., Johnson, D. W., & Beechum, N. O. (2012). Teaching adolescents to become learners: The role of noncognitive factors in shaping school performance--A critical literature review. In *Consortium on Chicago School Research*. Consortium on Chicago School Research. https://eric.ed.gov/?id=ED542543

Forman, S. G. (1993). *Coping skills interventions for children and adolescents* (pp. xv, 209). Jossey-Bass.

Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research*, *74*(1), 59–109. https://doi.org/10.3102/00346543074001059

Friedel, J. M., Cortina, K. S., Turner, J. C., & Midgley, C. (2007). Achievement goals, efficacy beliefs and coping strategies in mathematics: The roles of perceived parent and teacher goal emphases. *Contemporary Educational Psychology*, *32*(3), 434–458. https://doi.org/10.1016/j.cedpsych.2006.10.009

Furrer, C., & Skinner, E. (2003). Sense of relatedness as a factor in children's academic engagement and performance. *Journal of Educational Psychology*, *95*(1), 148–162. https://doi.org/10.1037/0022-0663.95.1.148

Gavita, O. A., David, D., & DiGiuseppe, R. (2014). You are such a bad child! Appraisals as mechanisms of parental negative and positive affect. *The Journal of General Psychology*, *141*(2), 113–129. https://doi.org/10.1080/00221309.2013.874971

Gaylord-Harden, N. K., Burrow, A. L., & Cunningham, J. A. (2012). A cultural-asset framework for investigating successful adaptation to stress in African American youth. *Child Development Perspectives*, *6*(3), 264–271. https://doi.org/10.1111/j.1750-8606.2012.00236.x

Gonçalves, T., Lemos, M. S., & Canário, C. (2019). Adaptation and validation of a measure of students' adaptive and maladaptive ways of coping with academic problems. *Journal of Psychoeducational Assessment*, *37*(6), 782–796. https://doi.org/10.1177/0734282918799389

Gonzales, N. A., Tein, J.-Y., Sandler, I. N., & Friedman, R. J. (2001). On the limits of coping: Interaction between stress and coping for inner-city adolescents. *Journal of Adolescent Research*, *16*(4), 372–395. https://doi.org/10.1177/0743558401164005

Grolnick, W. S. (2003). *The psychology of parental control: How well-meant parenting backfires*. L. Erlbaum Associates.

Grolnick, W. S., & Apostoleris, N. H. (2002). What makes parents controlling? In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 161–181, Chapter x, 470 Pages). University of Rochester Press.

Grolnick, W. S., Friendly, R. W., & Bellas, V. M. (2009). Parenting and children's motivation at school. In K. R. Wenzel & A. Wigfield (Eds.), *Handbook of motivation at school* (pp. 279–300). Routledge/Taylor & Francis Group.

Grolnick, W. S., Kurowski, C. O., Dunlap, K. G., & Hevey, C. (2000). Parental resources and the transition to junior high. *Journal of Research on Adolescence*, *10*(4), 465–488.

Grolnick, W. S., Raftery-Helmer, J. N., Marbell, K. N., Flamm, E. S., Cardemil, E. V., & Sanchez, M. (2014). Parental provision of structure: Implementation and correlates in three domains. *Merrill-Palmer Quarterly*, *60*(3), 355–384. https://doi.org/10.13110/merrpalmquar1982.60.3.0355

Gu, J., Zhan, P., Liu, J., & Wang, J.-L. (2023). Strength-based parenting and academic buoyancy: A short-term longitudinal chain mediation model. *Current Psychology:*

A Journal for Diverse Perspectives on Diverse Psychological Issues. https://doi.org/10.1007/s12144-023-04892-8

Guay, F., Roy, A., & Valois, P. (2017). Teacher structure as a predictor of students' perceived competence and autonomous motivation: The moderating role of differentiated instruction. *British Journal of Educational Psychology*, *87*(2), 224–240. https://doi.org/10.1111/bjep.12146

Hartup, W. W., & Stevens, N. (1999). Friendships and adaptation across the life span. *Current Directions in Psychological Science*, *8*(3), 76–79. https://doi.org/10.1111/1467-8721.00018

Helgeson, V. S., Jakubiak, B., Van Vleet, M., & Zajdel, M. (2018). Communal coping and adjustment to chronic illness: Theory update and evidence. *Personality and Social Psychology Review*, *22*(2), 170–195. https://doi.org/10.1177/1088868317735767

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*(1), 1–55. https://doi.org/10.1080/10705519909540118

Jang, H., Reeve, J., & Deci, E. L. (2010). Engaging students in learning activities: It is not autonomy support or structure but autonomy support and structure. *Journal of Educational Psychology*, *102*(3), 588–600. https://doi.org/10.1037/a0019682

Kahraman, N., & Sungur, S. (2013). Antecedents and consequences of middle school students' achievement goals in science. *Asia-Pacific Education Researcher*

(Springer Science & Business Media B.V.), *22*(1), 45–60. https://doi.org/10.1007/s40299-012-0024-2

Karabenick, S. A., & Gonida, E. N. (2018). Academic help seeking as a self-regulated learning strategy: Current issues, future directions. In D. H. Schunk & J. A. Greene (Eds.), *Handbook of self-regulation of learning and performance* (2nd ed., pp. 421–433). Routledge/Taylor & Francis Group.

Katz, E. R., Kellerman, J., & Siegel, S. E. (1980). Behavioral distress in children with cancer undergoing medical procedures: Developmental considerations. *Journal of Consulting and Clinical Psychology*, *48*(3), 356–365. https://doi.org/10.1037/0022-006X.48.3.356

Kindermann, T. A. (2007). Effects of naturally existing peer groups on changes in academic engagement in a cohort of sixth graders. *Child Development*, *78*(4), 1186–1203. https://doi.org/10.1111/j.1467-8624.2007.01060.x

Larson, R., & Richards, M. H. (1991). Daily companionship in late childhood and early adolescence: Changing developmental contexts. *Child Development*, *62*(2), 284–300. https://doi.org/10.2307/1131003

Lau, S., & Nie, Y. (2008). Interplay between personal goals and classroom goal structures in predicting student outcomes: A multilevel analysis of person-context interactions. *Journal of Educational Psychology*, *100*(1), 15–29. https://doi.org/10.1037/0022-0663.100.1.15

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. Springer Publishing Company.

Lei, H., Cui, Y., & Chiu, M. M. (2018). The relationship between teacher support and students' academic emotions: A meta-analysis. *Frontiers in Psychology*, *8*. https://www.frontiersin.org/articles/10.3389/fpsyg.2017.02288

Lerner, R. M., & Castellino, D. R. (2002). Contemporary developmental theory and adolescence: Developmental systems and applied developmental science. *Journal of Adolescent Health*, *31*(6, Supplement), 122–135. https://doi.org/10.1016/S1054-139X(02)00495-0

Liu, L., He, X., Li, C., Xu, L., & Li, Y. (2020). Linking parent–child relationship to peer relationship based on the parent-peer relationship spillover theory: Evidence from China. *Children and Youth Services Review*, *116*, 105200. https://doi.org/10.1016/j.childyouth.2020.105200

Lochman, J. E., Boxmeyer, C. L., Powell, N. P., Qu, L., Wells, K., & Windle, M. (2012). Coping power dissemination study: Intervention and special education effects on academic outcomes. *Behavioral Disorders*, *37*(3), 192–205. https://doi.org/10.1177/019874291203700306

Lyubomirsky, S., Layous, K., Chancellor, J., & Nelson, S. K. (2015). Thinking about rumination: The scholarly contributions and intellectual legacy of Susan Nolen-Hoeksema. *Annual Review of Clinical Psychology*, *11*(1), 1–22. https://doi.org/10.1146/annurev-clinpsy-032814-112733

Magnusson, D. (1998). The logic and implications of a person-oriented approach. In *Methods and models for studying the individual* (pp. 33–64). Sage Publications, Inc.

Magnusson, D., & Bergman, L. R. (1988). Individual and variable-based approaches to longitudinal research on early risk factors. In *Studies of psychosocial risk: The power of longitudinal data* (pp. 45–61). Cambridge University Press.

Maier, S. F., & Seligman, M. E. P. (2016). Learned helplessness at fifty: Insights from neuroscience. *Psychological Review*, *123*(4), 349–367. https://doi.org/10.1037/rev0000033

Marbell-Pierre, K. N., Grolnick, W. S., Stewart, A. L., & Raftery-Helmer, J. N. (2019). Parental autonomy support in two cultures: The moderating effects of adolescents' self-construals. *Child Development*, *90*(3), 825–845. https://doi.org/10.1111/cdev.12947

Martin, A. J. (2009). Motivation and engagement across the academic life span: A developmental construct validity study of elementary school, high school, and university/college Students. *Educational and Psychological Measurement*, *69*(5), 794–824. https://doi.org/10.1177/0013164409332214

Martin, A. J. (2013). Academic buoyancy and academic resilience: Exploring 'everyday' and 'classic' resilience in the face of academic adversity. *School Psychology International*, *34*(5), 488–500. https://doi.org/10.1177/0143034312472759

Martin, A. J., & Marsh, H. W. (2008). Academic buoyancy: Towards an understanding of students' everyday academic resilience. *Journal of School Psychology*, *46*(1), 53–83. https://doi.org/10.1016/j.jsp.2007.01.002

Martin, A. J., & Marsh, H. W. (2009). Academic resilience and academic buoyancy: Multidimensional and hierarchical conceptual framing of causes, correlates and cognate constructs. *Oxford Review of Education*, *35*(3), 353–370. https://doi.org/10.1080/03054980902934639

Martin, A. J., Nejad, H. G., Colmar, S., & Liem, G. A. D. (2013). Adaptability: How students' responses to uncertainty and novelty predict their academic and non-academic outcomes. *Journal of Educational Psychology*, *105*(3), 728–746. https://doi.org/10.1037/a0032794

Masten, A. S., Lucke, C. M., Nelson, K. M., & Stallworthy, I. C. (2021). Resilience in development and psychopathology: Multisystem perspectives. *Annual Review of Clinical Psychology*, *17*, 521–549. https://doi.org/10.1146/annurev-clinpsy-081219-120307

McClelland, G. H., & Judd, C. M. (1993). Statistical difficulties of detecting interactions and moderator effects. *Psychological Bulletin*, *114*(2), 376–390. https://doi.org/10.1037/0033-2909.114.2.376

Meredith, W. (1993). Measurement invariance, factor analysis and factorial invariance. *Psychometrika*, *58*(4), 525–543. https://doi.org/10.1007/BF02294825

Morales-Castillo, M. (2022). Coping, school adjustment and academic achievement in early adolescence. *Educational and Developmental Psychologist*, 1–10. https://doi.org/10.1080/20590776.2022.2109959

Nicholson, L. J., & Putwain, D. W. (2018). The importance of psychological need satisfaction in educational re-engagement. *Research Papers in Education*, *33*(2), 169–186. https://doi.org/10.1080/02671522.2016.1271004

Nolen-Hoeksema, S., Wisco, B. E., & Lyubomirsky, S. (2008). Rethinking rumination. *Perspectives on Psychological Science*, *3*(5), 400–424. https://doi.org/10.1111/j.1745-6924.2008.00088.x

Nouwen, W., & Clycq, N. (2019). The role of social support in fostering school engagement in urban schools characterised by high risk of early leaving from education and training. *Social Psychology of Education*, *22*(5), 1215–1238. https://doi.org/10.1007/s11218-019-09521-6

Nylund, K. L., Asparouhov, T., & Muthén, B. O. (2007). Deciding on the number of classes in latent class analysis and growth mixture modeling: A monte carlo simulation study. *Structural Equation Modeling: A Multidisciplinary Journal*, *14*(4), 535–569. https://doi.org/10.1080/10705510701575396

Overton, W. F. (2013). A new paradigm for developmental science: Relationism and relational-developmental systems. *Applied Developmental Science*, *17*(2), 94–107. https://doi.org/10.1080/10888691.2013.778717

Patterson, G. R., & Bank, L. (1989). Some amplifying mechanisms for pathologic processes in families. In *Systems and Development*. Psychology Press.

Perzow, S. E. D., Bray, B. C., Wadsworth, M. E., Young, J. F., & Hankin, B. L. (2021). Individual differences in adolescent coping: Comparing a community sample and a low-SES sample to understand coping in context. *Journal of Youth and Adolescence*, *50*(4), 693–710. https://doi.org/10.1007/s10964-021-01398-z

Pitzer, J., & Skinner, E. (2017). Predictors of changes in students' motivational resilience over the school year: The roles of teacher support, self-appraisals, and emotional reactivity. *International Journal of Behavioral Development*, *41*(1), 15–29. https://doi.org/10.1177/0165025416642051

Pomerantz, E. M., & Grolnick, W. S. (2017). The role of parenting in children's motivation and competence: What underlies facilitative parenting? In A. J. Elliot, C. S. Dweck, & D. S. Yeager (Eds.), *Handbook of competence and motivation: Theory and application* (pp. 566–585). The Guilford Press.

Power, T. G. (2004). Stress and coping in childhood: The parents' role. *Parenting*, *4*(4), 271–317. https://doi.org/10.1207/s15327922par0404_1

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, *40*(3), 879–891. https://doi.org/10.3758/BRM.40.3.879

Putwain, D. W., Connors, L., Symes, W., & Douglas-Osborn, E. (2012). Is academic buoyancy anything more than adaptive coping? *Anxiety, Stress, & Coping*, *25*(3), 349–358. https://doi.org/10.1080/10615806.2011.582459

Putwain, D. W., Daly, A. L., Chamberlain, S., & Sadreddini, S. (2015). Academically buoyant students are less anxious about and perform better in high-stakes examinations. *British Journal of Educational Psychology*, *85*(3), 247–263. https://doi.org/10.1111/bjep.12068

Putwain, D. W., Daly, A. L., Chamberlain, S., & Sadreddini, S. (2016). "Sink or swim": Buoyancy and coping in the cognitive test anxiety—Academic performance relationship. *Educational Psychology*, *36*(10), 1807–1825. https://doi.org/10.1080/01443410.2015.1066493

Putwain, D. W., Wood, P., & Pekrun, R. (2022). Achievement emotions and academic achievement: Reciprocal relations and the moderating influence of academic buoyancy. *Journal of Educational Psychology*, *114*(1), 108–126. https://doi.org/10.1037/edu0000637

Raftery-Helmer, J. N., & Grolnick, W. S. (2016). Children's coping with academic failure: Relations with contextual and motivational resources supporting competence. *The Journal of Early Adolescence*, *36*(8), 1017–1041. https://doi.org/10.1177/0272431615594459

Raftery-Helmer, J. N., & Grolnick, W. S. (2018). Parent and teacher effects on academic coping and classroom engagement: Testing a motivational model. *Motivation and Emotion*, *42*(5), 638–652. https://doi.org/10.1007/s11031-018-9676-4

Raine, K. E., & Skinner, E. A. (2023). Dynamics of parenting and children's coping: Bidirectional effects between parent motivational support and children's academic coping during late childhood and early adolescence. *International Journal of Behavioral Development*, *47*(5), 397–409. https://doi.org/10.1177/01650254231187905

Raine, K. E., Zimmer-Gembeck, M. J., & Skinner, E. A. (2023). The role of coping in processes of resilience: The sample case of academic coping during late childhood and early adolescence. *Development and Psychopathology*, 1–17. https://doi.org/10.1017/S095457942300072X

Reschly, A. L., & Christenson, S. L. (2019). The intersection of student engagement and families: A critical connection for achievement and life outcomes. In J. A. Fredricks, A. L. Reschly, & S. L. Christenson (Eds.), *Handbook of Student Engagement Interventions* (pp. 57–71). Academic Press. https://doi.org/10.1016/B978-0-12-813413-9.00005-X

Reschly, A. L., Huebner, E. S., Appleton, J. J., & Antaramian, S. (2008). Engagement as flourishing: The contribution of positive emotions and coping to adolescents' engagement at school and with learning. *Psychology in the Schools*, *45*(5), 419–431. https://doi.org/10.1002/pits.20306

Rijavec, M., & Brdar, I. (1997). Coping with school failure: Development of the school failure coping scale. *European Journal of Psychology of Education*, *12*(1), 37–49. https://doi.org/10.1007/BF03172868

Rijavec, M., & Brdar, I. (2002). Coping with school failure and self-regulated learning. *European Journal of Psychology of Education*, *17*(2), 177–194. https://doi.org/10.1007/BF03173257

Rious, J. B., Cunningham, M., & Beale Spencer, M. (2019). Rethinking the notion of "hostility" in African American parenting styles. *Research in Human Development*, *16*(1), 35–50. https://doi.org/10.1080/15427609.2018.1541377

Roeser, R. W., & Peck, S. C. (2003). Patterns and pathways of educational achievement across adolescence: A holistic-developmental perspective. *New Directions for Child and Adolescent Development*, *2003*(101), 39–62. https://doi.org/10.1002/cd.81

Rosseel, Y. (2012). lavaan: An R package for structural equation modeling. *Journal of Statistical Software*, *48*, 1–36. https://doi.org/10.18637/jss.v048.i02

RStudio Team. (2022). *RStudio: Integrated development environment for R.* [Computer software]. RStudio. http://www.rstudio.com/

Rutter, M. (1983). Statistical and personal interactions: Facets and perspectives. In D. Magnusson & V. L. Allen (Eds.), *Human development: An interactional perspective* (pp. 295–319). Academic Press.

Ryan, R. M., & Connell, J. P. (1989). Perceived locus of causality and internalization: Examining reasons for acting in two domains. *Journal of Personality and Social Psychology*, *57*(5), 749–761. https://doi.org/10.1037/0022-3514.57.5.749

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. The Guilford Press. https://doi.org/10.1521/978.14625/28806

Ryan, R. M., & Deci, E. L. (2020). Intrinsic and extrinsic motivation from a self-determination theory perspective: Definitions, theory, practices, and future directions. *Contemporary Educational Psychology*, *61*, 101860. https://doi.org/10.1016/j.cedpsych.2020.101860

Sameroff, A. (2010). A unified theory of development: A dialectic integration of nature and nurture. *Child Development*, *81*(1), 6–22. https://doi.org/10.1111/j.1467-8624.2009.01378.x

Schunk, D. H., & DiBenedetto, M. K. (2020). Motivation and social cognitive theory. *Contemporary Educational Psychology*, *60*, 101832. https://doi.org/10.1016/j.cedpsych.2019.101832

Seiffge-Krenke, I., & Pakalniskiene, V. (2011). Who shapes whom in the family: Reciprocal links between autonomy support in the family and parents' and adolescents' coping behaviors. *Journal of Youth and Adolescence*, *40*(8), 983–995. https://doi.org/10.1007/s10964-010-9603-9

Shen, J., Jia, J., Wang, L., & Fang, X. (2023). Autonomy-relatedness patterns and their association with academic and psychological adjustment among Chinese adolescents. *Journal of Youth and Adolescence*, *52*(6), 1272–1286. https://doi.org/10.1007/s10964-023-01745-2

Shih, S.-S. (2015a). An examination of academic coping among Taiwanese adolescents. *The Journal of Educational Research*, *108*(3), 175–185. https://doi.org/10.1080/00220671.2013.867473

Shih, S.-S. (2015b). The relationships among Taiwanese adolescents' perceived classroom environment, academic coping, and burnout. *School Psychology Quarterly*, *30*(2), 307–320. https://doi.org/10.1037/spq0000093

Shrout, P. E., & Bolger, N. (2002). Mediation in experimental and nonexperimental studies: New procedures and recommendations. *Psychological Methods*, *7*(4), 422–445. https://doi.org/10.1037/1082-989X.7.4.422

Silva, E., & White, T. (2013). *Pathways to improvement: Using psychological strategies to help college students master developmental math*. Carnegie Foundation for the Advancement of Teaching.

Simpkins, S. D., Weiss, H. B., McCartney, K., Kreider, H. M., & Dearing, E. (2006). Mother—Child relationship as a moderator of the relation between family educational involvement and child achievement. *Parenting*, *6*(1), 49–57. https://doi.org/10.1207/s15327922par0601_2

Skinner, E. A. (1996). A guide to constructs of control. *Journal of Personality and Social Psychology*, *71*(3), 549–570. https://doi.org/10.1037/0022-3514.71.3.549

Skinner, E. A., & Belmont, M. J. (1993). Motivation in the classroom: Reciprocal effects of teacher behavior and student engagement across the school year. *Journal of Educational Psychology*, *85*(4), 571–581. https://doi.org/10.1037/0022-0663.85.4.571

Skinner, E. A., & Edge, K. (2002). Parenting, motivation, and the development of children's coping. In L. J. Crockett (Ed.), *Agency, motivation, and the life course* (pp. 77–143). University of Nebraska Press.

Skinner, E. A., Edge, K., Altman, J., & Sherwood, H. (2003). Searching for the structure of coping: A review and critique of category systems for classifying ways of coping. *Psychological Bulletin*, *129*(2), 216–269. https://doi.org/10.1037/0033-2909.129.2.216

Skinner, E. A., Graham, J. P., Brule, H., Rickert, N., & Kindermann, T. A. (2020). "I get knocked down but I get up again": Integrative frameworks for studying the development of motivational resilience in school. *International Journal of Behavioral Development*, *44*(4), 290–300. https://doi.org/10.1177/0165025420924122

Skinner, E. A., Johnson, S., & Snyder, T. (2005). Six dimensions of parenting: A motivational model. *Parenting: Science and Practice*, *5*(2), 175–235. https://doi.org/10.1207/s15327922par0502_3

Skinner, E. A., Kindermann, T., & Mashburn, A. (2019). *Lifespan developmental systems: Meta-theory, methodology and the study of applied problems*. Routledge.

Skinner, E. A., & Pitzer, J. R. (2012). Developmental dynamics of student engagement, coping, and everyday resilience. In S. L. Christenson, A. L. Reschly, & C. Wylie (Eds.), *Handbook of Research on Student Engagement* (pp. 21–44). Springer US. https://doi.org/10.1007/978-1-4614-2018-7_2

Skinner, E. A., Pitzer, J. R., & Steele, J. S. (2016). Can student engagement serve as a motivational resource for academic coping, persistence, and learning during late elementary and early middle school? *Developmental Psychology*, *52*(12), 2099–2117. https://doi.org/10.1037/dev0000232

Skinner, E. A., Pitzer, J., & Steele, J. (2013). Coping as part of motivational resilience in school: A multidimensional measure of families, allocations, and profiles of academic coping. *Educational and Psychological Measurement*, *73*(5), 803–835. https://doi.org/10.1177/0013164413485241

Skinner, E. A., & Raine, K. E. (2023). Fostering the development of academic coping: A multi-level systems perspective. In E. A. Skinner & M. J. Zimmer-Gembeck (Eds.), *The Cambridge handbook on the development of coping*. Cambridge University Press. 10.1017/9781108917230.034

Skinner, E. A., Rickert, N. P., Vollet, J. W., & Kindermann, T. A. (2022). The complex social ecology of academic development: A bioecological framework and illustration examining the collective effects of parents, teachers, and peers on

student engagement. *Educational Psychologist*, *57*(2), 87–113. https://doi.org/10.1080/00461520.2022.2038603

Skinner, E. A., & Saxton, E. A. (2019). The development of academic coping in children and youth: A comprehensive review and critique. *Developmental Review*, *53*. https://doi.org/10.1016/j.dr.2019.100870

Skinner, E. A., & Saxton, E. A. (2020). The development of academic coping across late elementary and early middle school: Do patterns differ for students with differing motivational resources? *International Journal of Behavioral Development*, *44*(4), 339–353. https://doi.org/10.1177/0165025419896423

Skinner, E. A., & Wellborn, J. G. (1994). Coping during childhood and adolescence: A motivational perspective. In D. L. Featherman, R. M. Lerner, & M. Perlmutter (Eds.), *Life-span development and behavior, Vol. 12* (pp. 91–133). Lawrence Erlbaum Associates, Inc.

Skinner, E. A., & Wellborn, J. G. (1997). Children's coping in the academic domain. In S. A. Wolchik & I. N. Sandler (Eds.), *Handbook of children's coping: Linking theory and intervention* (pp. 387–422). Plenum Press. https://doi.org/10.1007/978-1-4757-2677-0_14

Soenens, B., & Vansteenkiste, M. (2020). Taking adolescents' agency in socialization seriously: The role of appraisals and cognitive-behavioral responses in autonomy-relevant parenting. *New Directions for Child and Adolescent Development*, *2020*(173), 7–26. https://doi.org/10.1002/cad.20370

Spencer, M. B. (2006). Phenomenology and ecological systems theory: Development of diverse groups. In R. M. Lerner & W. Damon (Eds.), *Handbook of child psychology: Theoretical models of human development* (Vols. 1, 6th ed., pp. 829–893). John Wiley & Sons Inc.

Subasi, M., & Tas, Y. (2016). The role of motivating tasks and personal goal orientations in students' coping strategies in science. *Asia-Pacific Forum on Science Learning and Teaching*, *17*(2), 16.

Suldo, S. M., Dedrick, R. F., Shaunessy-Dedrick, E., Fefer, S. A., & Ferron, J. (2015). Development and initial validation of the Coping with Academic Demands Scale: How students in accelerated high school curricula cope with school-related stressors. *Journal of Psychoeducational Assessment*, *33*(4), 357–374. https://doi.org/10.1177/0734282914552165

Suldo, S. M., Shaunessy-Dedrick, E., Ferron, J., & Dedrick, R. F. (2018). Predictors of success among high school students in advanced placement and International Baccalaureate programs. *Gifted Child Quarterly*, *62*(4), 350–373. https://doi.org/10.1177/0016986218758443

Tao, Y., Meng, Y., Gao, Z., & Yang, X. (2022). Perceived teacher support, student engagement, and academic achievement: A meta-analysis. *Educational Psychology*, *42*(4), 401–420. https://doi.org/10.1080/01443410.2022.2033168

Tolan, P. H., Guerra, N. G., & Montaini-Klovdahl, L. R. (1997). Staying out of harm's way: Coping and the development of inner-city children. In S. A. Wolchik & I. N.

Sandler (Eds.), *Handbook of children's coping: Linking theory and intervention* (pp. 453–479). Plenum Press.

Touroutoglou, A., Andreano, J., Dickerson, B. C., & Barrett, L. F. (2020). The tenacious brain: How the anterior mid-cingulate contributes to achieving goals. *Cortex*, *123*, 12–29. https://doi.org/10.1016/j.cortex.2019.09.011

Van Lissa, C. J., Garnier-Villarreal, M., & Anadria, D. (2023). Recommended practices in latent class analysis using the open-source R-package tidySEM. *Structural Equation Modeling: A Multidisciplinary Journal*, *0*(0), 1–9. https://doi.org/10.1080/10705511.2023.2250920

Vansteenkiste, M., Simons, J., Lens, W., Sheldon, K. M., & Deci, E. L. (2004). Motivating learning, performance, and persistence: The synergistic effects of intrinsic goal contents and autonomy-supportive contexts. *Journal of Personality and Social Psychology*, *87*(2), 246–260. https://doi.org/10.1037/0022-3514.87.2.246

Vansteenkiste, M., Soenens, B., Van Petegem, S., & Duriez, B. (2014). Longitudinal associations between adolescent perceived degree and style of parental prohibition and internalization and defiance. *Developmental Psychology*, *50*(1), 229–236. https://doi.org/10.1037/a0032972

Vasquez, A. C., Patall, E. A., Fong, C. J., Corrigan, A. S., & Pine, L. (2016). Parent autonomy support, academic achievement, and psychosocial functioning: A meta-

analysis of research. *Educational Psychology Review*, *28*(3), 605–644. https://doi.org/10.1007/s10648-015-9329-z

Vermunt, J. K. (2017). Latent class modeling with covariates: Two improved three-step approaches. *Political Analysis*, *18*(4), 450–469. https://doi.org/10.1093/pan/mpq025

Vitaliano, P. P., Maiuro, R. D., Russo, J., & Becker, J. (1987). Raw versus relative scores in the assessment of coping strategies. *Journal of Behavioral Medicine*, *10*(1), 1–18. https://doi.org/10.1007/BF00845124

Vollet, J. W., & Kindermann, T. A. (2020). Promoting persistence: Peer group influences on students' re-engagement following academic problems and setbacks. *International Journal of Behavioral Development*, *44*(4), 354–364. https://doi.org/10.1177/0165025419880614

Vollet, J. W., Kindermann, T. A., & Skinner, E. A. (2017). In peer matters, teachers matter: Peer group influences on students' engagement depend on teacher involvement. *Journal of Educational Psychology*, *109*(5), 635–652. https://doi.org/10.1037/edu0000172

von Eye, A., Bergman, L. R., & Hsieh, C.-A. (2015). Person-oriented methodological approaches. In *Handbook of Child Psychology and Developmental Science* (pp. 1–53). John Wiley & Sons, Ltd. https://doi.org/10.1002/9781118963418.childpsy121

Wachs, T. D. (1992). *The nature of nurture*. SAGE Publications.

Wadsworth, M. E. (2015). Development of maladaptive coping: A functional adaptation to chronic, uncontrollable stress. *Child Development Perspectives*, *9*(2), 96–100. https://doi.org/10.1111/cdep.12112

Wadsworth, M. E., McDonald, A., Joos, C. M., Ahlkvist, J. A., Perzow, S. E. D., Tilghman-Osborne, E. M., Creavey, K., & Brelsford, G. M. (2020). Reducing the biological and psychological toxicity of poverty-related stress: Initial efficacy of the BaSICS intervention for early adolescents. *American Journal of Community Psychology*, *65*(3–4), 305–319. https://doi.org/10.1002/ajcp.12400

Wang, M. C., Haertel, G. D., & Walberg, H. J. (1994). Educational resilience in inner cities. In *Educational resilience in inner-city America: Challenges and prospects* (pp. 45–72). Lawrence Erlbaum Associates, Inc.

Wang, M.-T., & Eccles, J. S. (2012). Social support matters: Longitudinal effects of social support on three dimensions of school engagement from middle to high school. *Child Development*, *83*(3), 877–895. https://doi.org/10.1111/j.1467-8624.2012.01745.x

White, R. W. (1959). Motivation reconsidered: The concept of competence. *Psychological Review*, *66*(5), 297–333. https://doi.org/10.1037/h0040934

Wolchik, S. A., & Sandler, I. N. (Eds.). (1997). *Handbook of children's coping: Linking theory and intervention*. Plenum Press. https://doi.org/10.1007/978-1-4757-2677-0

Zimmer-Gembeck, M. J. (2021). Coping flexibility: Variability, fit and associations with efficacy, emotion regulation, decentering and responses to stress. *Stress and Health*, *37*(5), 848–861. https://doi.org/10.1002/smi.3043

Zimmer-Gembeck, M. J., Gardner, A. A., & Kindermann, T. A. (2023). Peer stressors and peer relationship dynamics in the development of coping. In E. A. Skinner & M. J. Zimmer-Gembeck (Eds.), *The Cambridge Handbook of the Development of Coping* (pp. 538–559). Cambridge University Press. https://doi.org/10.1017/9781108917230.028

Zimmer-Gembeck, M. J., & Locke, E. M. (2007). The socialization of adolescent coping behaviours: Relationships with families and teachers. *Journal of Adolescence*, *30*(1), 1–16. https://doi.org/10.1016/j.adolescence.2005.03.001

Zimmer-Gembeck, M. J., Skinner, E. A., Modecki, K. L., Webb, H. J., Gardner, A. A., Hawes, T., & Rapee, R. M. (2018). The self-perception of flexible coping with stress: A new measure and relations with emotional adjustment. *Cogent Psychology*, *5*(1), 1537908. https://doi.org/10.1080/23311908.2018.1537908

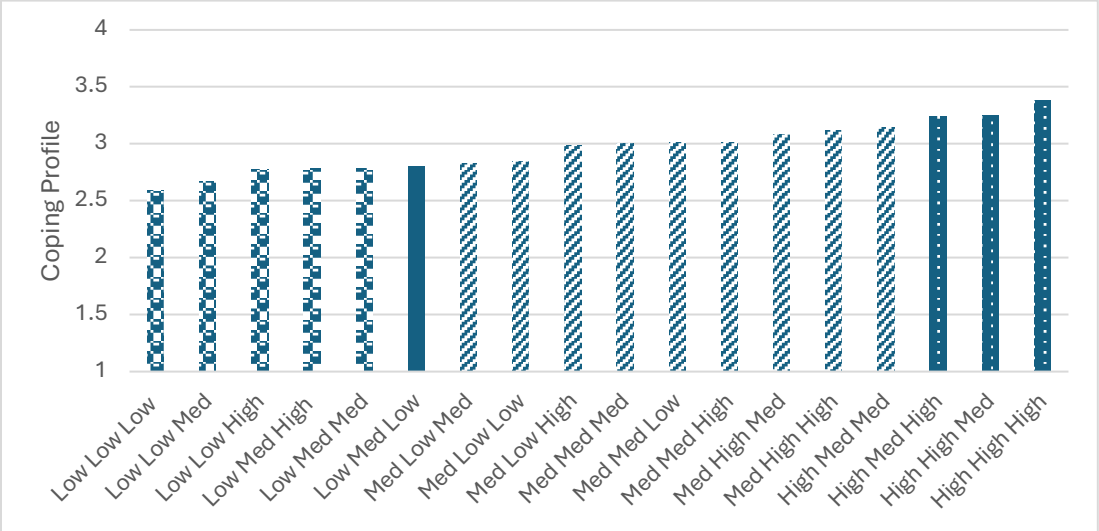
Zimmer-Gembeck, M. J., Skinner, E. A., Scott, R. A., Ryan, K. M., Hawes, T., Gardner, A. A., & Duffy, A. L. (2023). Parental support and adolescents' coping with academic stressors: A longitudinal study of parents' influence beyond academic pressure and achievement. *Journal of Youth and Adolescence*, *52*(12), 2464–2479. https://doi.org/10.1007/s10964-023-01864-w

Zimmerman, B. J., & Cleary, T. J. (2009). Motives to self-regulate learning: A social cognitive account. In K. Wentzel & A. Wigfield (Eds.), *Handbook of Motivation at School* (pp. 247–264). Routledge.

Appendix A: Supplemental Analyses

Figure 7.1

Mean Levels of Coping for Groupings of High, Low, and Medium Peer, Parent, and Teacher Support



Note. N = 1,020. Group names reflect support levels from peers, parents, and teachers in that order. Patterns reflect whether groups significantly differed from Low/low/low support (large dots), med/med/med (stripes), or high/high/high (small dots). Solid fill represents the group that differed from all three of these groups.

Appendix B: Study 1 Measures

Family Motivational Support

If I have a problem, I can go to my family.

I feel like an important part of my family.

My parents respect and appreciate me.

My parents really care about me.

Relatedness

I feel like a real part of [school]

I feel close to my family

I feel close to my friends

Autonomy

Why do I do my homework?

Because I want to understand the subject.

Because homework helps me learn more.

Why do I do my school work?

Because we are learning important things.

Because doing well in school is important to me.

Why do I do my homework?

Because it's fun.

Because it's interesting.

Why do I do my school work?

Because it's fun.

Because it's interesting.

Competence

If I decide to learn something hard, I can.

I can do well in school if I want to.

I can get good grades in school.

Academic Reengagement

If I do badly on my homework, I work harder next time.

If something bad happens in school, I don’t let it get me down.

If I have trouble with a class, I usually do well in the end.

Appendix C: Study 2 Measures

Academic Coping

Adaptive Coping

1. *Strategizing (5-items)*

   When something bad happens to me in school (like not doing well on a test or not being able to answer an important question),

   I try to figure out what I did wrong so that it won't happen again.

   I try to see what I did wrong.

   I think about some way to keep this from happening again.

   I try to figure out how to do better next time.

   I think of some things that will help me next time.

2. *Help-seeking (5-items)*

   When I have trouble with a subject in school,

   I ask for some help with understanding the material.

   I get some help to understand the material better.

   I ask the teacher to go over it with me.

   I ask the teacher to explain what I didn't understand.

   I get some help on the parts I didn't understand.

3. *Comfort-seeking (5-items)*

   When something bad happens to me in school (like not doing well on a test or not being able to answer an important question),

I talk about it with someone who will make me feel better.

I spend time with someone who will cheer me up.

I talk about it with someone I'm close to.

I discuss it with someone who will help me feel better about it.

I talk with someone who will keep me from feeling bad about it.

4. *Self-encouragement (5-items)*

When I run into a problem on an important test,

I think about the times I did it right.

I tell myself it's not so bad to make a mistake.

I tell myself I'll do better next time.

I tell myself I'll have another chance.

I tell myself it'll be okay.

5. *Commitment (5-items)*

When I have difficulty learning something,

I think about all the reasons it's important to me.

I remind myself that it's worth it to me in the long run.

I remind myself that this is important in reaching my own goals.

I remind myself that it's something that I really want to do.

I think about how this is important for my own personal goals.

Maladaptive Coping

6. *Confusion (5-items)*

When I run into a problem on an important test,

I'm not sure what to do next.

I can't remember what to do.

My mind goes blank.

I get all confused.

It's difficult for me to think.

7. *Escape (5-items)*

When something bad happens to me in school (like not doing well on a test or not being able to answer an important question),

I quit thinking about it.

I tell myself it's not such a big deal.

I tell myself it didn't matter.

I say it wasn't important.

I say I didn't care about it.

8. *Concealment (5-items)*

When something bad happens to me in school (like not doing well on a test or not being able to answer an important question),

I try to keep people from finding out.

I make sure nobody finds out.

I try to hide it.

I don't tell anyone about it.

I don’t let anybody know about it.

9. *Self-pity (5-items)*

When something bad happens to me in school (like not doing well on a test or not being able to answer an important question),

I think about all the times this happens to me.

I say ‘‘This always happens to me.’’

I ask myself ‘‘Why is this always happening to me?’’

I say ‘‘Here we go again.’’

I can’t believe this is always happening to me.

10. *Rumination (5-items)*

When something bad happens to me in school (like not doing well on a test or not being able to answer an important question),

I just can’t stop thinking about it.

I keep thinking about it over and over.

I think about it all the time.

I’m always thinking about it afterwards.

I can’t get it out of my head.

11. *Projection (5-items)*

When I run into a problem on an important test,

I say it was the teacher’s fault.

I say the teacher didn’t tell us the right thing to study.

I say the teacher isn't fair.

I say the test was too hard.

I say the test was not fair.

Academic Reengagement

If a problem is really hard, I keep working at it.

When I run into a difficult question, I try even harder.

If I can't get a problem right the first time, I just keep trying.

When I do badly on a test, I work harder the next time.

Parent Motivational Support

My parents don't know a lot about what happens to me in school. (-)

My parents spend time with me on schoolwork.

My parents talk with me about schoolwork.

My parents enjoy hearing about my school day.

Sometimes I think my parents don't care about what goes on for me in school. (-)

My parents have plenty of time to talk to me about school.

My parents are too busy to hear about my school day. (-)

My parents don't seem to have enough time for me. (-)

I can count on my parents when I have problems in school.

When things go wrong in school, I can depend on my parents.

I can't always depend on my parents when things get hard in school. (-)

I can't count on my parents for help with my schoolwork. (-)

A lot of times I don't know what my parents want me to do. (-)

My parents let me get away with things I shouldn't do. (-)

When my parents find out I did something at school they don't like, they listen to me before they decide what they are going to do.

My parents listen to me when I have something to say about school.

My parents know a lot about what is important to me in school.

My parents think that what I have to say about school is important.

My parents aren't interested in what happens to me in school. (-)

When decisions are made about my schoolwork, my parents usually don't ask me what I think. (-)

My parents don't seem to know how I feel about school. (-)

Appendix D: Study 3 Measures

Teacher Motivational Support

My teacher spends time with me.

My teacher talks with me.

My teacher really cares about me.

I can count on my teacher to be there for me.

My teacher is never there for me. (-)

I can't depend on my teacher for important things. (-)

I can't count on my teacher when I need him/her. (-)

My teacher treats me fairly.

I know what my teacher expects of me in class.

My teacher keeps changing the rules in our class. (-)

My teacher doesn't help me, even when I need it. (-)

My teacher doesn't seem to know when I need help. (-)

My teacher shows me how to solve problems for myself.

My teacher doesn't know when I'm ready to go on. (-)

My teacher lets me do things my own way.

My teacher doesn't give me many choices when it comes to doing assignments. (-)

It seems like my teacher is always telling me what to do. (-)

My teacher makes me do everything his/her way. (-)

My teacher encourages me to do things my own way.

My teacher listens to my ideas.

My teacher doesn't explain why we have to learn certain things in school. (-)

Parent Motivational Support

See items in Appendix 3

Peer Relatedness

When I'm with my classmates, I feed accepted.

When I'm with my classmates, I feel like I belong.

When I'm with my classmates, I feel left out. ***(-)***

When I'm with my classmates, I feel unimportant. ***(-)***

When I'm with my friends, I feel like I belong.

When I'm with my friends, I feel accepted.

When I'm with my friends, I feel unimportant. (-)

When I'm with my friends, I feel left out. (-)

Academic Coping Profile

See items in Appendix C