Regular Paper

Exploring the Pathways Through Which Teacher Support Predicts Changes in Students' Academic Coping Across the School Year: A Self-Determination Theory Approach

Kristen E. Raine[1] , **Kristina S. Tucker**[2], **and Ellen A. Skinner**[2]

Abstract

Students regularly encounter challenges and difficulties in their schoolwork. Mounting evidence suggests that the ways they cope with them can make a difference to their subsequent tenacity, engagement, learning, and achievement. To learn more about the factors that can foster productive coping, we conducted a study using a model based on Self-Determination Theory that specifies a set of personal motivational resources (self-appraisals of relatedness, competence, and autonomy) and interpersonal supports (teacher motivational provisions). Results showed that teacher motivational support at the beginning of the school year predicted changes in students' profiles of academic coping across the year, and all three self-appraisals uniquely and fully mediated these effects. Follow-up analyses of individual coping responses

[1]Highline College, USA
[2]Portland State University, USA

Corresponding Author:
Kristen E. Raine, Psychology, Highline College, 23-3, 2400 S. 240th St., Des Moines, WA 98198-9800, USA.
Email: kraine@highline.edu

suggested similar mediational patterns, although for some responses the effects of teachers were only partially mediated. Findings highlight the importance of perceived competence and of teacher motivational provisions, which seem to promote coping by supporting students' needs.

Keywords

academic coping, motivation, teachers

Introduction

Every day at school, children and youth encounter a range of academic stressors, such as difficult tasks, boring assignments, impending exams, or poor performance. Students can deal with these demands using a range of *academic coping* responses, which refer to in-the-moment ways individuals react to and manage the daily challenges, obstacles, and setbacks they encounter in their educational activities. Mounting evidence suggests that such coping can be important to students' subsequent academic functioning and development, including their emotional reactions, tenacity, engagement, learning, and achievement (Morales-Castillo, 2023; Skinner & Saxton, 2019). The beneficial effects of specific individual ways of coping, like problem-solving, have been well documented (e.g., McCann et al., 2011; Shih, 2015). However, the most powerful predictors of students' academic functioning and well-being seem to be their *profiles of coping*, or the repertoire of coping strategies they rely on when they encounter problems in their schoolwork (Gonçalves et al., 2019; Griffith et al., 2000; Morales-Castillo, 2023). Several studies even show that positive coping profiles, reflecting a balance favoring adaptive over maladaptive coping responses, predict changes in academic outcomes over time (e.g., over a school year, Skinner et al., 2016; or over the transition to junior high, Causey & Dubow, 1993).

Because of its centrality to academic development, researchers are interested in the factors that allow students to cope more productively. Early adolescence may be an especially important time to investigate ways to support constructive coping, because many students are approaching and managing the transition to middle school. Research shows that this transition typically brings new challenges and demands (Burnett & Fanshawe, 1997; Byrne et al., 2007). In general, compared to elementary school, schoolwork becomes more difficult and less interesting; homework increases; the quality of teacher-student relationships declines; teachers become more controlling and less autonomy supportive in their teaching and management strategies; and classrooms become less mastery oriented and more focused on social comparison and performance goals (Aldridge et al., 2024; Eccles & Roeser, 2011; Goldstein et al., 2015; Symonds & Hargreaves, 2016). In fact, by

adolescence school has become the biggest source of stress in many students' lives (Anniko et al., 2019). Reviews of age differences and age changes in coping across this transition suggest that, just as more and better coping is needed to deal with these pressures, students instead show normative declines in their use of most adaptive coping strategies along with an increasing reliance on maladaptive coping responses (Skinner & Saxton, 2019).

Hence, information about the factors that bolster the development of a repertoire of adaptive coping strategies for dealing with academic stressors could be useful in supporting adolescents up to and over the transition to middle school. To date, studies have focused on both personal predictors (e.g., self-efficacy) and interpersonal factors (e.g., teacher support). For example, one of the most consistent personal predictors of adaptive profiles of coping are students' perceived competence and control (Causey & Dubow, 1993; Gonçalves et al., 2019; Mantzicopoulos, 1997). Students who report higher confidence in their academic abilities are more likely to respond to challenges in their schoolwork with a balance of adaptive as opposed to maladaptive strategies. In a similar fashion, studies indicate that students who experience their relationships with teachers as more supportive are also more likely to show an adaptive profile of academic coping (Causey & Dubow, 1993; Raftery-Helmer & Grolnick, 2018), although studies that tested multiple dimensions of teacher support in the same models have found less consistent results (Raftery-Helmer & Grolnick, 2016; Zimmer-Gembeck & Locke, 2007).

According to recent reviews (Skinner & Saxton, 2019), many studies have documented links between personal factors and student academic coping, and several others have shown connections to teacher support. However, only a handful have tried to see how personal and interpersonal factors work together. In fact, to date, only three have done so. One focused on goal orientations and found that the effects of teacher mastery goal orientations on student coping were mediated by students' own mastery goal orientations; however, no such mediational effects were found for performance goal orientations (Friedel et al., 2007). A second study examined multiple dimensions of teacher behavior but found that they had few unique effects (either direct or indirect) on children's coping (Raftery-Helmer & Grolnick, 2018). And a third study, examining a complex model that included a range of personal factors and supports from both teachers and parents, did not find any direct or indirect effects of teacher support (Kahraman & Sungur, 2013).

These studies are difficult to interpret for multiple reasons. They consider a variety of dimensions of teacher support (e.g., mastery goal orientations, autonomy support), a range of mediators (e.g., goal orientations, threat appraisals, self-efficacy), and many different individual coping responses (e.g., denial, projection, mastery coping). Sometimes dimensions of teacher support showed considerable overlap (e.g., in Raftery-Helmer & Grolnick, 2018,

teacher dimensions were intercorrelated between .65 and .69, all $p < .001$) and sometimes many mediators were included (e.g., Kahraman & Sungur, 2013, included six). The inclusion of multiple correlated antecedents or mediators can make it difficult to discern their unique effects. Moreover, no studies targeted *changes* in coping over time as the outcome.

If some of these problems could be solved, studies that bring personal and interpersonal factors together in the same models could be instructive. Some of the confusion about interpersonal factors might be alleviated if studies were focused on the kinds of supports hypothesized to shape specific personal factors. For example, the one study that did detect mediational effects included teacher achievement goal orientations as antecedents and corresponding student goal orientations as mediators (Friedel et al., 2007). Moreover, some of the questions about why interpersonal supports are effective could be answered if it turns out that one way they exert their impact is by shaping the personal re-sources students use when coping with academic stressors. Such information could be helpful to interventionists, who could better calibrate the teacher behaviors their programs target to those that are effective in bolstering students' own coping resources. By bringing personal and interpersonal factors together in the same models, especially if they are well aligned, questions could be answered about both. We could learn more about the interpersonal antecedents of personal factors, and at the same time uncover some of the mediational pathways through which interpersonal factors have their effects.

The current investigation was designed to address this gap in research on coping. We tried to solve some of the problems in previous studies examining both personal and interpersonal factors by utilizing a motivational model of academic coping (Skinner & Raine, 2023; Skinner & Wellborn, 1997), based in Self-Determination Theory (SDT; Raftery-Helmer & Grolnick, 2023; Ryan & Deci, 2017). As pictured in Figure 1, this model: (1) identifies ways of coping that contribute to coping profiles in the academic domain; (2) specifies a set of personal motivational resources that support the development of adaptive profiles of coping; and (3) anchors teacher support in specific provisions that promote these personal motivational resources. As a result, the model suggests multiple pathways through which teacher provisions could shape students' coping. Most importantly, it helps to align the nature of personal and interpersonal factors by integrating previous work on academic coping with larger perspectives on SDT in ways that can guide future research and classroom practices to support student coping, motivation, and development.

Motivational Model of Academic Coping

The motivational model of academic coping is grounded in a key tenet of SDT, namely, that individuals, including children and youth in schools, have three
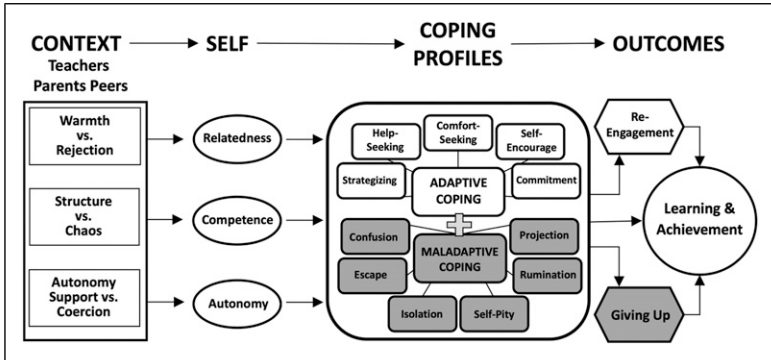
Figure 1. Motivational model of academic coping.

basic psychological needs: for relatedness, competence, and autonomy (Connell & Wellborn, 1991; Deci & Ryan, 1985; Ryan & Deci, 2017). The need for *relatedness*, consistent with theories of attachment (Bowlby, 1973) and belonging (Baumeister & Leary, 1995), refers to the desire to experience close and caring connections with trusted others. The need for *competence*, consistent with theories of perceived competence and control (Elliot et al., 2017; Skinner, 1996; White, 1959), refers to the desire to experience oneself as efficacious and capable of producing desired and preventing undesired outcomes. The need for *autonomy* refers to the desire to express and act in ways that are authentic and self-endorsed, that is, that are congruent with one's genuine and deep-seated values, principles, and preferences (Deci & Ryan, 1985). When these needs are met, individuals tap into wellsprings of underlying motivation, energy, and vitality (Connell & Wellborn, 1991; Ryan & Deci, 2017). In schools, such motivation can be expressed as enthusiasm, willing and constructive participation, and tenacious engagement with educational activities (Reeve et al., 2020; Skinner et al., 2016).

Coping Profiles

An SDT approach is also useful in identifying core ways of coping that should be included in adaptive profiles (e.g., Skinner et al., 2013). From this perspective, children's needs for relatedness, competence, or autonomy can be challenged or threatened during interactions with educational activities (e.g., when difficult tasks or poor performance challenge or threaten feelings of competence). When this happens, students must find ways to deal with these stressors. One set of ways of coping are considered constructive or adaptive because they bring psychological, emotional, motivational, and social resources to bear on the stressful transaction. These include *strategizing*

(i.e., problem-solving) and *help-seeking* (i.e., requests for instrumental aid), which provide ideas for effectively re-engaging with challenging schoolwork. Or students can *seek comfort* (i.e., go to others for solace or cheer) in order to help regulate negative emotions; or they can bolster their own flagging emotions via *self-encouragement* (i.e., reassurance) or support their motivation via *commitment* (i.e., reiterating the value of schoolwork).

In contrast, a set of coping responses have been identified that are maladaptive or unproductive. These include *escape* (i.e., physical or mental avoidance) and *confusion* (i.e., helplessness) which interfere with effective action; *concealment* (i.e., hiding the problem from others) which cuts off access to social resources; *self-pity* (i.e., feelings of victimization and whining) and *rumination* (i.e., repetitive negative thoughts), which escalate distress; and *projection* (i.e., blaming others) which escalates frustration and may alienate potential supporters. Sometimes referred to as "stress-affected" coping (Wadsworth, 2015) because such responses can be triggered by highly or chronically stressful situations, these coping reactions are maladaptive in the academic domain because they can derail action, amplify negative emotion, and repel support.

These adaptive and maladaptive coping responses can be combined into profiles that reflect the extent to which individual students show a balance favoring a range of adaptive strategies combined with low reliance on unproductive coping responses (e.g., Gonçalves et al., 2019; Skinner et al., 2013). For example, when a student with a high adaptive coping profile encounters a challenging academic task, they may try strategizing combined with commitment, and then fall back on self-encouragement and help-seeking. It is such coping profiles that show the strongest links with academic outcomes, including higher levels of positive affect, engagement, tenacity, and performance, and lower levels of disaffection, emotional reactivity, distress, giving up, and underperformance (Skinner & Saxton, 2019). These findings suggest that it is not any single way of coping, but the *repertoire* of strategies a student brings to bear, that shapes their subsequent academic functioning and development. In the present study, we utilized students' coping profiles as the primary target outcomes and then followed up with the examination of individual adaptive and maladaptive ways of coping.

Self-System Processes as Personal Motivational Resources for Coping

As can be seen in Figure 1, the SDT model of coping views students' *self-system processes*, or their internal working models of relatedness, competence, and autonomy, as personal motivational resources that support constructive coping in the face of challenges and problems. A strong sense of *relatedness*, that is feelings of closeness to teachers and peers and a sense of community and belonging (Allen et al., 2022; Osterman, 2000; Slaten et al., 2016), can support productive coping.

These feelings may make it more likely that, when students run into problems with their academic work, they will turn to trusted others for strategies (via help-seeking coping) or solace (via comfort-seeking). A history of such felt security may also make it more likely that students will try out their own ideas (via strategizing), regulate their own emotions (via self-encouragement), and encourage themselves to persist (via commitment).

Students' sense of *competence* (i.e., perceived control, self-efficacy, mastery; Harter, 1981; Schunk & DiBenedetto, 2020) can also promote adaptive coping by bolstering problem-solving (i.e., strategizing), optimism (i.e., self-encouragement), and determination (i.e., commitment). Interestingly, a sturdy sense of competence also makes in more likely that students will go to others for appropriate instrumental and emotional support (i.e., information- and comfort-seeking; Karabenick & Gonida, 2018). Finally, when students feel *autonomous* in their learning, that is experience feelings of authenticity, integrity, and coherence (Ryan & Deci, 2020), they are more likely to show engaged and tenacious coping (via strategizing, commitment, and self-encouragement) and to look for support in order to reengage with challenging tasks (via help- and comfort-seeking). By the same token, when students are low on these self-systems, this can create vulnerabilities in their coping. For example, if students feel incompetent, they may be more likely to become helpless or attempt to escape. Or, if students feel unconnected, they may be more likely to conceal their problems or fall into self-pity. And, if students feel pressured in their school participation, they may be more likely to blame themselves (via rumination) or others (via projection) for their problems.

Each of these self-systems has been studied as a personal motivational resource that students can call on to deal with academic problems and setbacks. According to recent reviews (Skinner & Saxton, 2019), about 30 studies have linked them to higher levels of adaptive and lower levels of maladaptive coping, although some self-systems and ways of coping have been examined more thoroughly than others. For example, over 20 studies have shown that students who report higher perceived competence or control also show more adaptive coping profiles and higher levels of individual adaptive ways of coping (e.g., strategizing, support- and information-seeking, self-encouragement, commitment). In contrast, students lower in perceived competence show higher maladaptive profiles as well as higher levels of individual ways of maladaptive coping (e.g., escape, helplessness, social isolation, and projection; Skinner & Saxton, 2019). In contrast, only about a dozen studied have examined relatedness or autonomy, but they have generally found a similar pattern, namely, links to higher levels of adaptive and lower levels of maladaptive coping (Skinner & Saxton, 2019). To date, however, no studies have examined all these self-systems in the same model, investigated whether they uniquely predict *changes* in student coping over the

school year, or considered them as potential mediators of the effects of need-supportive teacher behavior.

Teacher Motivational Supports

Self-Determination Theory also specifies three kinds of teacher provisions that support students basic motivational needs, namely, warm involvement, structure, and autonomy support (Ahmadi et al., 2023; Connell & Wellborn, 1991; Reeve, 2012; Ryan & Deci, 2017; Skinner & Wellborn, 1997). *Warm involvement* refers to interactions with teachers that communicate caring, affection, acceptance, understanding, interest, and emotional dependability; its opposite, *rejection*, undermines these experiences (e.g., Lei et al., 2018; Tao et al., 2022). *Structure* involves teacher provision of clear expectations, appropriate help, and attunement to student understanding, learning, and progress; its opposite, *chaos*, involves lack of clarity, misalignment, and absence of help and support (Guay et al., 2017). *Autonomy support* entails teacher practices, such as choice, respect, and perspective taking, that encourage student ownership of their learning; its opposite, referred to as *coercion* or *controllingness*, entails pressure to conform to the teacher's agenda (Ahmadi et al., 2023).

From an SDT perspective, such teacher behaviors are expected to contribute to students' use of adaptive coping strategies when they encounter academic stressors and to buffer their reliance on maladaptive ways of coping (Raftery-Helmer & Grolnick, 2023; Skinner & Raine, 2023; Skinner & Wellborn, 1997). Although research is somewhat thin and inconsistent across age groups, in general, correlational evidence supports these connections. For example, teacher involvement has been linked to higher levels of individual adaptive ways of coping like problem-solving and support-seeking (Reschly et al., 2008), and to profiles that combine multiple adaptive ways (Raftery-Helmer & Grolnick, 2018). It is also associated with lower levels of maladaptive coping like projection (Deci et al., 1992) and maladaptive profiles (Raftery-Helmer & Grolnick, 2018). Similarly, teacher provision of classroom structure is connected to higher levels of adaptive coping, such as problem-solving and support-seeking (Shih, 2015) as well as adaptive profiles (Raftery-Helmer & Grolnick, 2018). It is also associated with lower levels of unproductive coping, like escape (Shih, 2015) and profiles of maladaptive coping (Raftery-Helmer & Grolnick, 2018). The same pattern holds for teacher autonomy support. It is correlated with higher profiles of adaptive coping (Raftery-Helmer & Grolnick, 2018) and with lower levels of individual ways of maladaptive coping (Deci et al., 1992) and maladaptive profiles (Raftery-Helmer & Grolnick, 2018).

Especially powerful as predictors of coping seem to be indices that combine multiple teacher supports and/or thwarts into aggregate indicators of

teacher need-relevant behaviors (Reschly et al., 2008; Skinner & Saxton, 2020; Zimmer-Gembeck & Locke, 2007). These findings suggest that it is the fulfillment of all three needs that creates the most synergistically positive experiences for students. Such results are consistent with other studies that have examined the effects of combinations of teacher supports on motivational processes. For example, in two studies using naturalistic observational (Jang et al., 2010) and experimental (Cheon et al., 2020) designs, researchers examined the effects of structure and autonomy support individually and in combination. They found that each predicted student active engagement, the two were positively correlated, and it was high levels of both-- that is, when teachers provided structure in an autonomy supportive manner-- that were most effective in fostering student engagement.

These findings may also help explain why previous studies of the unique effects of multiple dimensions of teaching on academic coping have produced inconclusive results (Raftery-Helmer & Grolnick, 2016; Zimmer-Gembeck & Locke, 2007). If these dimensions are positively correlated, then multicollinearity may interfere with clear results when they are tested all together in the same structural equation or multiple regression models. Examining multiple dimensions simultaneously also makes it difficult to discern their potentially synergistic effects. Hence, the current study focuses on an aggregate indicator of teacher involvement, structure, and autonomy support, as most likely to support all three student self-system processes, and through these self-appraisals, positive profiles of academic coping.

Purpose of Current Study

Building on research demonstrating the importance of students' coping to their school success and well-being, we conducted a study to examine the role of students' self-systems and teacher supports in bolstering adaptive coping and buffering maladaptive responses to academic stressors. We relied on a model grounded in SDT (see Figure 1) to guide our investigation of these processes. The model helped us align antecedents, mediators, and coping outcomes by identifying key personal motivational resources (self-systems of relatedness, competence, and autonomy) and the interpersonal teacher supports that should bolster them (combination of involvement, structure, and autonomy support). The model also specified need-relevant ways of coping that should be included in adaptive coping profiles (balance of adaptive to maladaptive coping) in the academic domain. We used data from students approaching and negotiating the transition to middle school (grades 4–6) collected twice during the same school year (beginning and end), to test three facets of this model: (1) whether teacher supports predict changes in students' profiles of academic coping across the school year; (2) whether teacher support predicts all three self-systems; and (3) whether the three self-systems

mediate the effects of teacher supports on changes in coping. We expected that levels of teacher motivational supports at time 1 (the beginning of the school year) would predict increases in children's coping profiles as the year progressed (from time 1 to time 2), and that this relationship would be mediated by children's self-system processes of relatedness, competence, and autonomy.

The primary goal of the study was to identify the personal and interpersonal contributors to changes in students' overall coping profiles, since this profile is the strongest predictor of academic functioning and wellbeing (Skinner & Saxton, 2019). However, we also decided to examine the mediators of individual adaptive and maladaptive ways of coping as well. To frame these exploratory analyses, we considered two possibilities. The first was resource specificity, in which specific self-systems would be the strongest or only unique predictors of changes in particular individual coping strategies. For example, early iterations of the motivational model of coping (e.g., Skinner & Wellborn, 1997) posited that, consistent with attachment theory (Ryan et al., 1994), relatedness would be the primary predictor of comfort seeking coping; and, based on research on perceived control (Skinner et al., 2013), that competence would be the main predictor of strategizing. The second possibility was that self systems, like relatedness, competence, and autonomy, are all purpose motivational resources. In that case, they would have generally positive effects across the entire coping repertoire, bolstering multiple adaptive ways and buffering students from a range of maladaptive responses to academic stressors. From this perspective, for example, the use of an adaptive coping strategy like help-seeking would depend not only on students' confidence in their abilities (competence) but also on their trust in the teacher as a source of help (relatedness) and the value they place on the task (autonomy). By the same token, the use of a maladaptive way of coping like concealment would be more likely not only when students feel insecure in their relationship to the teacher (relatedness) but also when their feel overwhelmed by task demands (competence) or devalue the task (autonomy).

Studies of personal and interpersonal predictors are important because they help to identify intervention levers educators and program developers can utilize to promote students use of adaptive profiles of coping. Such studies may be especially valuable during early adolescence, when students' academic coping otherwise shows normative declines in adaptive and corresponding increases in maladaptive coping responses over the transition to middle school (e.g., Skinner & Saxton, 2020). By bringing theoretically-aligned personal and interpersonal predictors into the same models, it is possible to learn more about both: whether teacher need-relevant support is an antecedent of student self-systems and whether student self-systems provide an explanation for why teacher need-relevant support shapes changes in how students cope with academic stressors.

Method

Overview of Sample and Design

The current study utilizes data from a study of students' academic coping, learning motivation, and engagement at school, collected during the Fall (T1) and Spring (T2) of one academic school year. Participants represented an entire rural-suburban school district in upstate New York and consisted of 869 students in grades four through six (340 fourth graders, 169 fifth graders, 365 sixth graders). Students were evenly split between girls and boys (49.7% girls) with students' age ranging from 9 to 13 years old at the beginning of the school year. The majority of students (95%) were white and predominantly lower and middle class as defined by parents' occupation and level of education.

Students were nested within 33 classrooms across two schools, one middle school and one elementary school for the entire school district. However, intra-class correlation coefficient (ICC) values for all individual ways and students' coping profile ranged from .002 to .067, suggesting that there was not enough within-classroom versus between-classroom variation to require multi-level analyses (Musca et al., 2011).

Surveys were conducted by trained research assistants who administered survey questionnaires to students within their classrooms for approximately 40-minutes over three sessions. Human subjects research approval was provided by the authors' institution, application #00032.

Measures

Self-report questionnaires included measures that assessed students' coping, teacher motivational supports, and three self-system processes (relatedness, competence, and autonomy). All utilized a 1–4 Likert-type scale which consisted of agreement or disagreement: "*not at all true for me*", "*not very true for me*", "*sort of true for me*", or "*very true for me*". All scales except for autonomy and individual ways of coping were composed of both positively and negatively worded items with negatively worded items reversed coded and all items averaged to calculate a composite score with higher scores reflecting more of the specific construct.

Academic Coping. Students' academic coping was assessed using a multidimensional measure of adaptive and maladaptive ways of coping in response to day-to-day stressors in the classroom that consisted of 11 individual ways of coping with five items each (Skinner et al., 2013). Subscales asked students to evaluate the choices and decisions they make when dealing with everyday stressors which were aspects of larger categories of either adaptive or

maladaptive coping using one of four different stems: "When I have trouble with a subject in school…", "When something bad happens to me in school (like not doing well on a test or not being able to answer an important question)…", "When I have difficulty learning something…", and "When I run into a problem on an important test…". The five adaptive ways consisted of *strategizing* (e.g., "I think of some things that will help me next time;" α = .77), *help-seeking* (e.g., "I ask the teacher to explain what I didn't understand;" α = .76), *comfort-seeking* (e.g., "I talk about it with someone who will make me feel better;" α = .81), *commitment* (e.g., "I remind myself that it's something that I really want to do;" α = .77), and *self-encouragement* (e.g., "I tell myself I'll have another chance;" α = .67).

The six maladaptive ways included *confusion* (e.g., "My mind goes blank;" α = .79), *escape* (e.g., "I try not to think about it;" α = .74), *concealment* (e.g., "I don't let anybody know about it;" α = .80), self-pity (e.g., "I ask myself 'Why is this always happening to me?'"; α = .86), *rumination* (e.g. "I just can't stop thinking about it"; α = .76), and *projection* (e.g., "I say the teacher isn't fair"; α = .79). Previous factor analyses in grade heterogenous samples have provided empirical support for the multidimensional structure of this measure (Gonçalves et al., 2019; Skinner et al., 2013). Additionally, previous work has established developmental measurement equivalence for this measure across middle childhood and early adolescence for the grade levels included in the present study, including configural, metric, and scalar invariance (Skinner & Saxton, 2020).

Students' academic coping profiles were calculated by creating an aggregate score of all 11 coping responses, with maladaptive responses reverse coded (α = .92). For individual coping responses, allocation scores were used to account for the different levels of coping students employed (Vitaliano et al., 1987). These scores are calculated by combining all adaptive and maladaptive coping responses without reverse coding maladaptive responses, then dividing the aggregate score for the individual coping response by this total and multiplying this number by 100. Thus, these scores represent the proportion of a students' total coping that was comprised of that individual response.

Teacher Motivational Support. Students' perceptions of their teachers' provision of overall motivational support were measured along three dimensions: involvement, structure, and autonomy support (Skinner & Belmont, 1993). Teacher *involvement* was assessed using a 16-item scale tapping students perceptions of their interpersonal closeness and connection to their teacher, including affection (e.g., "My teacher likes me"), dependability (e.g., "I can count on my teacher to be there for me"), time spent ("My teacher spends time with me"), availability (e.g., My teacher never seems to be around for me," reverse coded), and knowledge (e.g., "My teacher doesn't know very much about what goes on for me outside of school," reverse coded). Internal

consistency reliability for this subscale was α = .88. Teacher provision of *structure* was assessed using a 29-item scale designed to tap students' experiences of consistent and developmentally appropriate rules, guidance, and limits within the classroom including contingency (e.g., "My teacher treats me fairly"), expectations (e.g., "I know what my teacher expects of me in class"), help/support (e.g., "My teacher shows me how to solve problems for myself") and adjustment/monitoring (e.g., "My teacher doesn't know when I'm ready to go on," reverse coded). Internal consistency reliability for this subscale was α = .89.

Teacher *autonomy support* was assessed using a 22-item scale capturing students' perceptions of the extent to which teachers respected their individuality, agency, and valued their opinions, including choice (e.g., "My teacher gives me a lot of choices about how I do my schoolwork"), control (e.g., "My teacher tries to control everything I do," reverse coded), respect (e.g., My teacher listens to my ideas"), and relevance (e.g., "My teacher talks about the connection between schoolwork and things in my life"). Internal consistency reliability for this subscale was α = .88. These three dimensions, which were positively and highly intercorrelated (involvement and structure, $r = .82$, $p < .001$; involvement and autonomy support, $r = .74$, $p < .001$; structure and autonomy support, $r = .76$, $p < .001$) were then combined into a single measured variable (α = .93).

Self-System Processes. Children and youth's *relatedness* was evaluated using a four-item scale (Connell & Wellborn, 1991; Furrer & Skinner, 2003) that assessed a students' sense of belonging and connection to their teachers including "When I'm with my teacher, I feel like someone special" and "I wish I was closer to my teacher"; reverse coded (α = .83).

Competence was assessed using a 11-item scale (Skinner et al., 1998) which was designed to tap students' beliefs about their personal ability to generate desirable academic outcomes and prevent unwanted outcomes including "When I'm doing classwork, I can really work hard on it" and "If I decide to learn something hard, I can." Although the internal consistency of this scale did not reach acceptable levels (α = .69), this did not appear to interfere with its functioning, as shown, for example, in its bivariate correlations (see Table 2).

Autonomy was assessed using a 17-item scale (Ryan & Connell, 1989) which evaluated four types of autonomous motivation forming the foundation of their academic goals including external (e.g., "Why do I work on my classwork? Because that's the rule"), introjected (e.g., "Why do I try to do well in school? Because I'll feel really bad about myself if I don't do well"), identified (e.g., "Why do I do my classwork? Because I want to learn new things"), and intrinsic (e.g., "Why do I work on my classwork? Because it's fun"). To create an aggregate score, items were weighted by type of

motivation, with external items multiplied by -3, introjected by -1, identified by 1, and intrinsic by 3, as suggested by Ryan and Connell (1989). Internal consistency for this scale was $\alpha = .82$.

Analytic Plan

To evaluate study hypotheses, mediational path analyses were used within the lavaan package in R (Rosseel, 2012), with 1000 bootstrap samples to estimate standard errors for indirect effects (Shrout & Bolger, 2002) to provide clear results regarding study hypotheses despite potential measurement error. Model fit was evaluated using chi-square, the comparative fit index (CFI), and standardized root mean square residual (SRMR), with a non-significant chi-square, CFI $\geq .95$, and SRMR $\leq .08$ indicating acceptable fit (Hu & Bentler, 1999). Significant regression coefficients from teacher motivational support at T1 (the beginning of the school year) to all three student self-system processes, relatedness, competence, and autonomy at T2 (the end of the school year), as well as significant coefficients from self-system processes at T2 to student academic coping profiles at T2 while controlling for T1 profiles, will provide support for study hypotheses, as will significant indirect effects from teacher support to academic coping through each self-system process. Full mediation will be supported if the regression coefficient from teacher support to coping is not significant when the self-systems are included in the model. The same analytic strategy will be used to test mediational models for individual ways of coping. Because the sample included students from multiple grades and genders, multigroup analyses were also conducted to examine whether model fit was significantly different when regressions were constrained to be equal across groups for both grade level and gender, respectively. If they were not significantly different, then models derived from the whole sample would be considered a good fit across grade and gender.

Results

Initial Analyses

Means, standard deviations, ranges, and bivariate correlations were obtained for all study variables. All variable means were above the midpoint of their respective ranges (0 for autonomy; 2.5 for all other scales; see Table 1). As expected, coping profiles, adaptive ways of coping, self-system processes, and teacher motivational support were significantly and positively correlated with each other at both time points, while almost all individual maladaptive ways of coping were negatively correlated with self-system processes and teacher

Table 1. Summary of Descriptive Statistics.

Scale	M	SD	Range
Teacher motivational support (T1)	2.99	.43	1.37 – 3.81
Relatedness (T2)	3.08	.79	1.00 – 4.00
Competence (T2)	3.13	.39	1.45 – 4.00
Autonomy (T2)	.01	1.15	−2.24 to 3.06
Total coping profile (T1)	3.02	.36	1.73 – 3.82
Total coping profile (T2)	3.00	.41	1.82 – 3.89

Note. N = 869. All variables could range from 1–4, except for autonomy, which could range from -4 to +4.

motivational support (see Tables 2 and 3). The only exception to this pattern was rumination, which was not correlated with teacher motivational support, relatedness, and competence, but did have the expected negative association with autonomy. Additionally, moderate correlations among the self-system processes suggested that they may not all act as unique mediators; and the cross-time correlation for coping was relatively high ($r = .76$) indicating that it might be difficult to predict change across time.

Before mediational hypotheses were investigated, data were examined for patterns of missingness. Missingness on study items ranged from 8.9 to 23.5%, with the most missing on a single projection item at T2 ("When I run into a problem on an important test, I say the teacher didn't tell us the right thing to study"). Overall, 21.2% of students were missing all of their data at T2, however, mean levels of either teacher support or coping profiles at T1 did not differ based on whether students were completely missing T2 data. Therefore, multiple imputation using the mice package in R was used for all subsequent analyses (Buuren & Groothuis-Oudshoorn, 2011; Rubin, 1987).

Mediational Model for Coping Profiles

Mediational hypotheses were investigated using path analysis within the lavaan package in R (Rosseel, 2012). Altogether, fit indices for the path model depicted in Figure 2, showed an adequate fit to the data ($\chi^2(3) = 67.98$, $p < .001$; CFI = .96; SRMR = .05) according to standards of fit as established by Hu and Bentler (1999). Initial teacher support was a significant predictor of students' relatedness, competence, and autonomy. In turn, relatedness, competence, and autonomy all significantly and positively predicted students' adaptive coping profiles at T2, over and above the effect of their coping profiles at T1. The indirect effects of teacher support on academic coping through relatedness, competence, and autonomy support were all significant, and a non-significant coefficient from teacher support at T1 to academic

Table 2. Correlations Among all Study Variables.

Variable	Teacher Support (T1)	Relatedness (T2)	Competence (T2)	Autonomy (T2)	Coping Profile (T1)	Coping Profile (T2)
Teacher support (T1)	-					
Relatedness (T2)	.60	-				
Competence (T2)	.43	.31	-			
Autonomy (T2)	.34	.37	.23	-		
Total coping profile (T1)	.69	.43	.52	.44	-	
Total coping profile (T2)	.62	.56	.56	.53	.77	-

Note. N = 869. All correlations were significant $p < .001$.

Table 3. Correlations Between Study Variables and Individual Ways of Coping.

Variable	Teacher Support (T1)	Relatedness (T2)	Competence (T2)	Autonomy (T2)
Adaptive ways of coping (T1)				
Strategizing	.472*	.284*	.379*	.285*
Help-seeking	.631*	.364*	.404*	.278*
Comfort-seeking	.503*	.300*	.331*	.216*
Self-encouragement	.479*	.319*	.409*	.345*
Commitment	.459*	.304*	.292*	.270*
Maladaptive ways of coping				
Confusion	−.432*	−.248*	−.349*	−.248*
Escape	−.425*	−.270*	−.199*	−.186*
Concealment	−.524*	−.320*	−.389*	−.295*
Self-pity	−.502*	−.361*	−.430*	−.303*
Rumination	.005^{ns}	−.019^{ns}	.004^{ns}	−.085^{ns}
Projection	−.679*	−.392*	−.464*	−.263*
Adaptive ways of coping (T2)				
Strategizing	.466*	.392*	.434*	.359*
Help-seeking	.559*	.444*	.423*	.347*
Comfort-seeking	.402*	.383*	.334*	.306*
Self-encouragement	.412*	.321*	.436*	.331*
Commitment	.469*	.376*	.391*	.397*
Maladaptive ways of coping (T2)				
Confusion	−.425*	−.299*	−.367*	−.273*
Escape	−.329*	−.350*	−.310*	−.301*

Table 3. (continued)

Variable	Teacher Support (T1)	Relatedness (T2)	Competence (T2)	Autonomy (T2)
Concealment	−.518*	−.370*	−.366*	−.300*
Self-pity	−.580*	−.402*	−.518*	−.368*
Rumination	−.019^{ns}	−.024^{ns}	.010^{ns}	−.094^{ns}
Projection	−.545*	−.528*	−.453*	−.413*

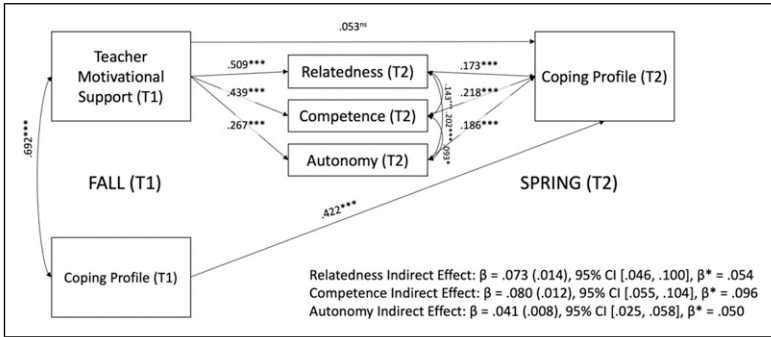Note. N = 869. Ways of coping use allocation scores. *p < .001, ns = non-significant.

Figure 2. Mediational path model of the effects of teacher motivational support on changes in children's coping profile from fall to spring through their self-system processes of relatedness, competence, and autonomy. *Note.* N = 869. All coefficients are standardized betas. β = unstandardized coefficients; β* = standardized coefficients. Confidence intervals that do not contain zero indicate significance. *p < .05, **p < .01, ***p < .001, ns = non-significant.

coping at T2, once coping at T1 and students' self-system processes were added to the model, suggested that this effect represented full mediation. As can be seen, teacher motivational provisions, although a significant predictor of all three self-systems, showed the strongest connection (i.e., highest coefficient) to students' subsequent sense of relatedness. By the same token, although all three self-systems made unique contributions to changes in students' coping profiles, competence was a particularly strong predictor (i.e., showed the highest coefficient).

Multigroup analyses indicated that model fit did not significantly decrease when regression coefficients were constrained to be equal across grade ($\Delta\chi^2(16) = 24.325$, $p = .075$) or gender ($\Delta\chi^2(8) = 6.541$, $p = .587$), indicating that models were similar for boys and girls across grades four to six.

Results for Individual Ways of Coping. To explore how mediational processes functioned across the different ways of coping included in the coping profile, the same mediational models were tested for individual adaptive and maladaptive coping responses separately (see Figures 3 and 4). Correlations of the individual ways of coping with teacher support and the three self-systems, shown in Table 3, indicated the expected significant and positive connections to proposed antecedents and mediators for all adaptive coping responses and corresponding negative connections for maladaptive responses, with one exception. Rumination did not show significant links to teacher support or the three self-systems. Hence, the mediational model was not tested for rumination. For all the other adaptive and maladaptive ways of coping, relatedness, competence, and autonomy were generally significant, unique mediators of teacher motivational support, with the
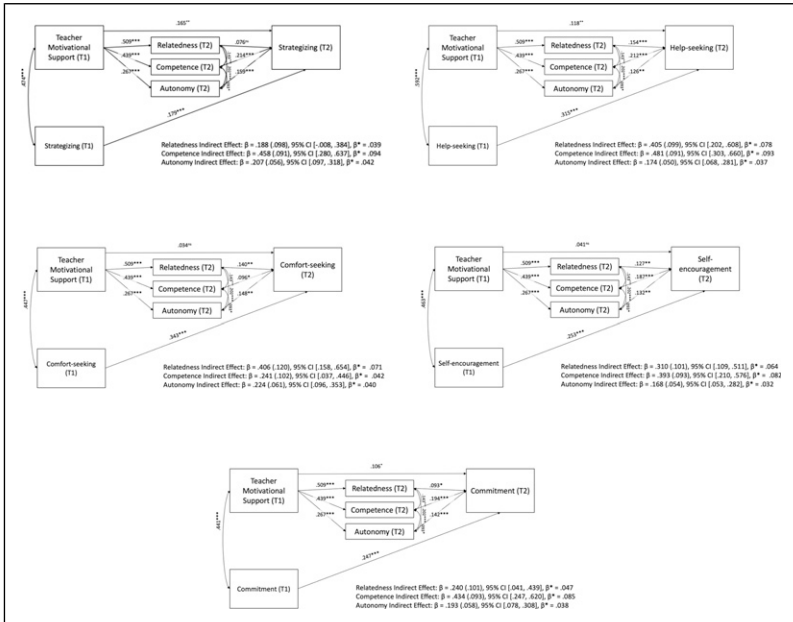
Figure 3. Mediation results for all adaptive ways of coping. *Note.* N = 869. All coefficients in path model are standardized betas. β = unstandardized coefficients; β* = standardized coefficients. Confidence intervals that do not contain zero indicate significance. All individual ways of coping are allocation scores. *p < .05, **p < .01, ***p < .001, ns = non-significant.

only exception being a marginally significant result for relatedness as a unique mediator of changes in strategizing. As in the model focused on coping profiles, students' perceived competence was the strongest predictor of changes in most individual ways of coping; relatedness and autonomy were the strongest predictors for only a few coping responses (i.e., comfort-seeking, confusion, and projection). Moreover, individual ways of coping differed as to whether these effects represented full or partial mediation, with students' self-system processes fully mediating the effect of teacher provision of motivational support on changes in coping for comfort-seeking, self-encouragement, confusion, escape, and self-pity, but only partially mediating changes in strategizing, help-seeking, commitment, concealment, and projection.

Discussion

With the present study, our goal was to examine the role of both personal and interpersonal resources in supporting students' construction of productive
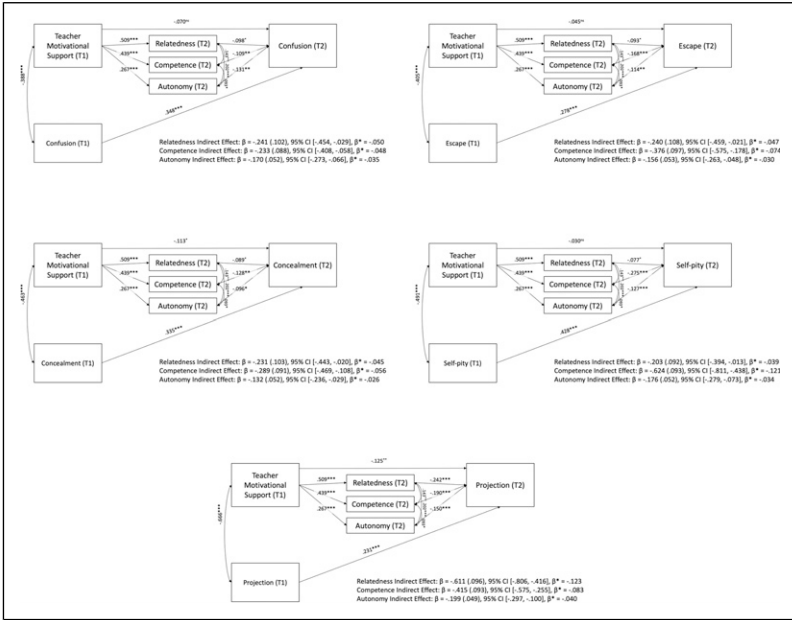
Figure 4. Mediation results for maladaptive ways of coping. *Note.* N = 869. All coefficients in path model are standardized betas. β = unstandardized coefficients; β* = standardized coefficients. Confidence intervals that do not contain zero indicate significance. All individual ways of coping are allocation scores. *$p < .05$, **$p < .01$, ***$p < .001$, ns = non-significant.

repertoires of academic coping during a developmental window, early adolescence, when the support of coping seems to be especially important. Specifically, we relied on Self-Determination Theory to help us identify key personal resources (i.e., students' self-systems of relatedness, competence, and autonomy) and interpersonal teacher supports (a combination of involvement, structure, and autonomy support). Then we examined whether self-systems processes act as pathways through which aggregate teacher motivational supports have their effects on changes in fourth through sixth grade students' coping over the school year. Primary results of model testing indicated that these processes fully mediated the association between teacher motivational provisions at the beginning of the school year and changes in coping profiles across the year. Follow-up analyses suggested that they also acted as mediators for changes in most individual ways of coping as well.

Findings from the present study build on research that has examined how personal and interpersonal factors shape students' academic coping in four important ways. First, results add to research on the effects of teacher

motivational support. Consistent with other studies examining some or all of these teacher provisions (e.g., Deci et al., 1992; Raftery-Helmer & Grolnick, 2018; Reschly et al., 2008; Shih, 2015; Skinner & Saxton, 2020; Zimmer-Gembeck & Locke, 2007), we found links in the current study from teacher motivational support to students' coping profiles, as well as to most individual ways of coping. Compared to studies that considered the unique effects of multiple teacher dimensions in the same models (e.g., Raftery-Helmer & Grolnick, 2018; Zimmer-Gembeck & Locke, 2007), the current investigation produced more consistent findings, perhaps because we tested an aggregate indicator of teacher support. The high correlations among dimensions found in this study suggest that multicollinearity might have interfered with the examination of unique effects in past studies.

Moreover, the current investigation also expanded on previous research by documenting links for teacher support to a fuller range of coping strategies than have typically been examined in such studies to date (Skinner & Saxton, 2019). And by using short-term longitudinal data gathered across a single school year, the present study also showed that high levels of these interpersonal motivational supports can predict improvements in students' coping from the beginning to the end of the school year. Taken together with previous research, findings suggest a menu of interpersonal resources teacher can provide or interventionists can promote if they wish to help students cope more productively with academic challenges and difficulties (Ahmadi et al., 2023).

Second, findings from the present study add to the larger body of research on the effects of teacher interpersonal supports on the self-systems of relatedness, competence, and autonomy (Connell & Wellborn, 1991; Ryan & Deci, 2017; Wigfield et al., 2015). The combined provision of involvement, structure, and autonomy support at the beginning of the school year showed the expected connections to each self-system at the end of the school year. A small amount of differentiation could be seen, in that teacher support seemed to be the strongest predictor of students' sense of relatedness and then their perceived competence. However, the overall pattern, indicating that teacher motivational support is linked to all three self-systems, suggests that the same teacher provisions that fortify students' coping have the potential to support adolescents more generally. By enhancing students' feelings of relatedness, competence, and autonomy, teachers can also benefit other aspects of their academic functioning and success, like engagement, tenacity, achievement, and well-being (Ryan & Deci, 2017; Wigfield et al., 2015).

Third, results from the current investigation build on other research suggesting that relatedness, competence, and autonomy may act as personal motivational resources for academic coping (e.g., Causey & Dubow, 1993; Gonçalves et al., 2019; Ryan & Connell, 1989; Shih, 2015; Skinner et al., 2013). That is, study findings confirm that students who feel connected to the teacher (relatedness), confident in their academic abilities (competence), and

find schoolwork both interesting and important (autonomy) are more likely to show adaptive repertoires of coping when they encounter problems and setbacks in their schoolwork. This pattern holds across most of the individual adaptive and maladaptive ways of coping that make up these repertoires as well. At the same time, the present investigation expanded on previous studies by systematically examining the contributions of these self-systems to a much wider range of coping strategies than have been targeted by most previous researchers (Skinner & Saxton, 2019). Moreover, unlike much of the past research, models tested in the current study examined the links from self-systems to *changes* in student coping across the school year.

This is also one of the few studies to investigate the unique effects of all three of these self-systems on academic coping. As expected, each self-system made its own contribution to changes in coping profiles over and above the effects of the other two, and in exploratory analyses, each uniquely predicted most individual ways of coping as well. The only exceptions were for strategizing, where the unique effects of relatedness did not reach significance, and for rumination, which couldn't be tested because it was not even cor-related with any of the self-systems (see discussion below). At the same time, and consistent with research examining the effects of these self-systems individually (Skinner & Saxton, 2019), the most robust personal predictor in this study appeared to be students' perceived competence. Descriptively, this self-system tended to exhibit the highest unique coefficients in models targeting both coping profiles and individual ways of coping. It makes sense that students' convictions about their capacity to do well in school (i.e., perceived competence) would be central to the way they respond when they encounter obstacles and setbacks in their schoolwork (Causey & Dubow, 1993; Gonçalves et al., 2019; Mantzicopoulos, 1997). Such findings are consistent with the larger literatures demonstrating the importance of students' perceived competence, self-efficacy, and expectancies of success (Eccles & Wigfield, 2020; Schunk & DiBenedetto, 2020).

For that reason, it was interesting to note, also descriptively, the individual ways of coping for which competence did *not* show the strongest unique effect. As can be seen in Figure 3, among the adaptive ways of coping, relatedness and autonomy made stronger contributions to comfort-seeking, while autonomy also contributed to commitment coping. And among the maladaptive ways (see Figure 4), autonomy made a bigger unique contri-bution to confusion coping and relatedness to projection. These more dif-ferentiated contours, while not pronounced, also make sense. For example, students' feelings of connection to teachers (relatedness) should be central to their decisions about whether to turn to them for comfort (comfort-seeking) or blame them (projection) when they encounter academic stressors. And stu-dents' intrinsic and autonomous motivation for schoolwork (i.e., autonomy) should be important to their commitment coping, which involves reminding

oneself that schoolwork really matters. Such exploratory findings may suggest some threads to follow up in future studies.

However, the overall picture provided by analyses of unique effects uncovered little evidence for resource specificity-- in which a given self-system makes unique contributions only to one or another particular coping response. Instead, all three self-systems seem to act as general-purpose coping resources. For example, even if competence is most central, its effects are spread broadly across all different ways of coping. In fact, each self-appraisal seems to add personal motivational resources to a range of adaptive coping strategies as well as protect students from most maladaptive responses to academic stressors. Such findings should encourage educators and interventionists interested in fostering students' academic coping to focus on practices designed to support all three self-systems (Ahmadi et al., 2023), even if they attend most carefully to competence.

The fourth and most important contribution of the current study's findings come from testing the effects of corresponding personal and interpersonal resources together in the same models. Results from mediational analyses were generally consistent with the expectation that students' self-systems of relatedness, competence, and autonomy could provide one explanation for why teacher motivational supports predict improvements in students' academic coping profiles as well as increases in their use of individual adaptive strategies and decreases in reliance on most maladaptive ways of coping. While temporal precedence could not be established for all hypothesized processes, the use of two time points and an autoregessive path from T1 coping to T2 coping provided additional evidence consistent with the notion that teacher supports can shape students' later academic coping through their impact on student self-systems.

Mediational findings were largely similar for coping profiles and individual ways of adaptive and maladaptive coping, with two exceptions. The first involved the maladaptive coping response rumination, which unexpectedly was not correlated with either teacher motivational supports or student self-systems (c.f., Skinner et al., 2013). Findings about the causes and effects of this way of coping, which entails prolonged focus on the negative features of stressful events (Lyubomirsky et al., 2015), suggest that it may represent a double-barreled response to academic stressors. On the one hand, the sustained attention to academic tasks characteristic of rumination seems to link it to positive consequences like behavioral engagement. On the other hand, the persistent focus on stress-inducing features of these tasks can link it to negative consequences like emotional reactivity (especially catastrophizing; Skinner & Saxton, 2020). To learn more about the personal and interpersonal factors that shape rumination, it may be useful in future studies to examine a more differentiated set of teacher behaviors (like conditional positive regard; Assor & Tal, 2012) and self-systems (like introjected self-regulation; Ryan & Connell, 1989) that are specifically tailored to predict this complex maladaptive response.

Second, mediational models for individual coping responses differed as to whether they indicated full or partial mediation. These findings are considered exploratory, but multiple reasons for such differentiated effects can be suggested. In general, we did not necessarily expect full mediation. There are additional markers of these self-system processes that were not included in the present study. For example, it did not include relatedness to classmates or friends, and it is possible that teacher supports bolster some kinds of student coping, like help-seeking or commitment, by promoting students' connections to peers who cope adaptively (Zimmer-Gembeck et al., 2023). Or external self-regulation could be included in future studies, since it is a likely pathway through which teacher (lack of) motivational support may trigger coping via projection (blaming others; Ryan & Connell, 1989).

SDT also suggests that need fulfillment may affect student coping through channels other than self-systems. For example, teacher motivational support can fuel engagement, enthusiasm, and tenacity, which may directly augment constructive ways of coping like strategizing or help-seeking, as part of motivational resilience (Skinner et al., 2020). And some effects may not be mediated by self-systems because teachers provide motivational nutriments like warmth, structure, or autonomy support directly when they interact with students who are in the middle of coping. For example, when teachers offer strategies or well-attuned help (structure), such direct participation may elicit student coping though strategizing or help-seeking; and when teachers thwart students' needs during coping episodes, this may make it more likely students will conceal their problems or blame the teacher (projection). Future studies can follow up on these ideas by including observations of teacher-student interactions while students are coping. It is possible that some ways of coping, perhaps those that are more interior (like self-encouragement or confusion), are more likely to be fully mediated by self-systems. However, other more social and interactive ways of coping (like strategizing and help-seeking) may also be impacted directly by interpersonal interactions with teachers, and so only partially mediated by self-systems.

In sum, results from mediational models add to previous work that has established links between coping and personal or interpersonal resources separately (Skinner & Saxton, 2019). These findings provide preliminary evidence of how social interactions could accumulate over time to shape interior self-beliefs, that in turn have effects on students' actions in the face of academic stressors that challenge or threaten their basic needs. Mediational models provide evidence consistent with the notion that teachers are shaping their students' academic coping in two ways: both directly, through their participation in individual coping episodes, and indirectly, through their impact on students' beliefs regarding their connections to other people (i.e., relatedness), ability to produce desired outcomes (i.e., competence), and self-determination (i.e., autonomy).

Limitations

Although the present study makes multiple contributions to research on academic coping, it also had some limitations regarding sample, measurement, and design. First, while the sample included an entire school district and therefore was representative of its local area, the demographics of this district were not reflective of the US population at large, and therefore findings are not necessarily generalizable to that population. Study conclusions could be strengthened through replication with more diverse samples as well as within specific cultural, racial, and ethnic groups to investigate whether these processes differ across groups. Future studies can also consider incorporating culturally-specific ways of coping that may not be present or efficacious across all students (Gaylord-Harden et al., 2012; Wadsworth, 2015).

Second, all variables included in this study were student self-report, and therefore correlations and regression coefficients may be inflated due to common method variance. In the present study, hypotheses were specifically concerned with students' perceptions of their teachers and the inherently interior nature of both self-system processes and many coping actions made both constructs particularly difficult to measure outside of self-reports. However, future work could add in teacher-report or observational measures of both teacher motivational support and academic coping to provide a more "thick and rich" account of these processes. In addition, the use of an aggregate measure of teacher motivational support may obscure possible differential effects of teacher involvement, structure, and autonomy support on students' self-systems or coping. Research on motivational support (from both parents and teachers) suggests that these supports work in concert, with involvement supporting not only student relatedness, but also their feelings of competence and their sense of autonomy (Rickert & Skinner, 2022). However, future work could investigate these dimensions separately to explore whether all three are important for each self-system and way of coping. If researchers wish to examine unique or cumulative effects, it may be better to use person-centered approaches (e.g., Hornstra et al., 2021), in order to avoid potential problems of multicollinearity among these provisions.

Third, the design of the present investigation limited the conclusions that can be drawn from its findings. The study incorporated only two timepoints, whereas at least three would be required to establish temporal precedence for predictor and mediators. Two time points allowed for both change over time in academic coping to be investigated and temporal precedence to be established between teacher motivational supports and students' self-system processes. However, these processes and academic coping were assessed concurrently, meaning that their correlations could be inflated. To address this shortcoming, future studies could add a third time of measurement within the same school year. Finally, the study also used a naturalistic design, which precludes direct

inferences about causal processes. Although predictions of change over time are consistent with theories about the causal effects of teacher supports, future studies can take advantage of experiments, interventions, or interrupted time series designs to directly test for causal effects. For example, many interventions (including randomized control trials) have been conducted that successfully increase teachers' use of autonomy supportive practices while also improving the quality of the involvement and structure they provide (Su & Reeve, 2011). Many of these experimental studies also show that such interventions result in improvements in students' self-systems (Reeve & Cheon, 2021). In future, intervention studies could add measures of academic coping. This would allow researchers to determine whether experimental changes in teacher autonomy support produce changes in student coping, and whether those changes are mediated by corresponding changes in students' self-systems.

Future Directions

Both study findings and limitations suggest avenues for additional research. As mentioned previously, future investigations could build upon the current study by adding multiple data sources such as teachers and trained observers. Teacher reports of the motivational supports they provide to individual students would allow researchers to explore not only whether findings hold for both reporters, but also potential differences between student and teacher perceptions of these supports. Classroom observations of both teacher motivational support and student coping would afford a more well-rounded description of the processes under study. Observational studies of coping are rare due to the difficulty of capturing actions that may be more interior, such as internalized obsessive worry (e.g., rumination) or silent words of support (e.g., self-encouragement). However, observational methods have been employed, often within highly specific circumstances (e.g., medical procedures; Altshuler et al., 1995) or artificial laboratory settings (Diener & Dweck, 1978; Fabes et al., 1994). Multiple sources of information about teacher motivational support may also aid in the development of interventions or advice to practitioners. Observer reports and student perceptions can help inform teachers about whether the motivational supports they provide are actually being viewed as they intended (Kincade et al., 2020). The combination of observational, teacher, and student reports would create a more holistic picture of the ecology of the classroom and its effects on academic coping.

A second avenue for future research involves investigating alternative time frames. The current study included two time points-- at the beginning and end of a single school year. However, it is likely that the actual interpersonal interactions and coping episodes happening in the classroom operate over a much shorter time scale—perhaps days or weeks. Future studies could add more densely

spaced measurement points, or even daily diary surveys or observations, to attempt to capture these accumulating experiences as they unfold. The use of multiple sources over denser time points could illuminate the effects of teacher support on changes in academic coping as children's self-system processes are themselves changing. Such time series analyses could provide information about in the moment interactions involving teacher support and academic coping. This would allow researchers to investigate potential reciprocal effects, in which student coping feeds back to shape the motivational supports teachers subsequently provide. It is possible that virtuous and vicious motivational cycles are being established (Reeve, 2016). If so, then children's self-system processes may not only mediate the association between teacher support and academic coping, but could also be developing themselves as the cumulative result of episodes of academic coping. For example, students who use strategizing and help-seeking may, because of the effectiveness and prosociality of these coping responses, be augmenting their own feelings of competence or relatedness to helpful others. Alternatively, students who are using more projection (blaming the teacher for their difficulties) may be irritating teachers and undermining their own autonomous motivation at the same time, reinforcing their belief that they only engage in their schoolwork for external reasons.

Implications for Practitioners and Interventionists

Current study findings, interpreted within the lens of Self-Determination Theory, can also be used to formulate recommendations for preservice teachers, professional development programs, and researchers designing interventions to foster student coping. We highlight three. First, discussions of educational practices that foster resilience processes like student coping often focus on the direct effects of teachers, that is, their personal participation in actual episodes of student coping (e.g., Skinner & Raine, 2023). However, results from the present study suggest that this may not be the only or most impactful way that teachers can shape students' coping responses. Instead, teachers and other social partners may also be able to help indirectly by contributing to the beliefs students hold about themselves regarding their relatedness to others, perceived competence, and autonomous motivation. This suggests that in addition to developing interventions in which teachers instruct students about effective coping or coach students while they are struggling during ongoing coping episodes, programs or trainings should also focus on helping teachers learn how to support their students' motivation more generally, through the provision of involvement or warmth, structure or appropriate limits and guidance, and autonomy support or a genuine respect for the student's opinions and perspectives.

Second, a motivational perspective on the direct and indirect ways teachers can support the development of student coping opens up teacher interventions

and professional development programs to the much wider array of teacher practices that have been shown to meet students' motivational needs (Ahmadi et al., 2023). For example, advice and programs could be informed by all that has been learned about the ways teachers can support student autonomy (Reeve & Cheon, 2021) as well as about interventions that can help teachers become more autonomy supportive (Su & Reeve, 2011). Although not tested directly in the current study, results are consistent with the notion that it is the provision of all three of these kinds of need supportive nutriments, and not just any one, that should have the biggest impact on the development of students self-systems and coping (Cheon et al., 2020; Jang et al., 2010; Wadsworth et al., 2020).

Third, findings suggest the importance of interventions that highlight teachers' crucial role in supporting academic coping, especially for students who show maladaptive coping responses. Research investigating reciprocal connections between coping and interpersonal relationships suggests that social partners may perceive maladaptive coping (like escape or projection) as "bad behavior." As a result, they can withdraw their support, becoming more coercive, rejecting, and chaotic in response, potentially contributing to vicious cycles (Raine & Skinner, 2023). However, findings from the current study suggest that students who show maladaptive coping could benefit from *more* (not less) of these supports. Hence, it could be useful for teachers to view maladaptive coping as a sign of motivational vulnerability, based on a history of social interactions that have communicated to students that they are incompetent, not worthy of affection, or have little say about their schoolwork. As a result, when such students encounter problems or obstacles in their schoolwork, they do not have the personal motivational resources required to cope adaptively. They are simply overwhelmed. From this perspective, maladaptive coping (which may be better labeled as "stress-affected" coping, Wadsworth, 2015) could be viewed by teachers not as "problem behavior" but as a bid for more motivational support. Teachers may be more motivated to provide need-supportive resources to these students when they realize that they can help students rework their self-system processes, which in turn should support more productive academic coping and a host of other positive outcomes.

Conclusion

In summary, the present study integrated and expanded current research regarding the role of teachers in supporting academic coping by uncovering evidence consistent with the notion that children's self-systems can serve as mechanisms through which teacher actions exert their effects over the school year. The motivational model of coping proved useful in bringing some coherence to theory and research on personal and interpersonal supports for academic coping by identifying core ways students can cope with academic

stressors, specifying that teacher motivational support can promote changes in productive coping, and underscoring self-system processes of relatedness, competence, and autonomy as pathways through which need-supportive teacher-student interactions operate when students encounter academic challenges and problems.

Declaration of Conflicting Interests

Funding

ORCID iD

Kristen E. Raine https://orcid.org/0000-0001-5164-4672

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., … (2023). A classification system for teachers' motivational behaviors recommended in self-determination theory interventions. *Journal of Educational Psychology*, *115*(8), 1158–1176. https://doi.org/10.1037/edu0000783

Aldridge, J. M., Blackstock, M. J., & McLure, F. I. (2024). School climate: Using a person–environment fit perspective to inform school improvement. *Learning Environments Research*, *27*(2), 411–430. https://doi.org/10.1007/s10984-023-09490-w

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

Altshuler, J. L., Genevaro, J. L., Ruble, D. N., & Bonstein, M. H. (1995). Children's knowledge and use of coping strategies during hospitalization for elective surgery. *Journal of Applied Developmental Psychology*, *16*(1), 53–76. https://doi.org/10.1016/0193-3973(95)90016-0

Anniko, M. K., Boersma, K., & Tillfors, M. (2019). Sources of stress and worry in the development of stress-related mental health problems: A longitudinal investigation from early- to mid-adolescence. *Anxiety, Stress & Coping*, *32*(2), 155–167. https://doi.org/10.1080/10615806.2018.1549657

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

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.

Bowlby, J. (1973). *Attachment and loss* (Vols. 1 and 2). Basic Books.

Burnett, P. C., & Fanshawe, J. P. (1997). Measuring school-related stressors in adolescents. *Journal of Youth and Adolescence*, *26*(4), 415–428. https://doi.org/10.1023/A:1024529321194

Buuren, S. v., & Groothuis-Oudshoorn, K. (2011). mice: Multivariate imputation by chained equations in R. *Journal of Statistical Software*, *45*(3), Article 1. https://doi.org/10.18637/jss.v045.i03

Byrne, D. G., Davenport, S. C., & Mazanov, J. (2007). Profiles of adolescent stress: The development of the adolescent stress questionnaire (ASQ). *Journal of Adolescence*, *30*(3), 393–416. https://doi.org/10.1016/j.adolescence.2006.04.004

Causey, D. L., & Dubow, E. E. (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

Cheon, S. H., Reeve, J., & Vansteenkiste, M. (2020). When teachers learn how to provide classroom structure in an autonomy-supportive way: Benefits to teachers and their students. *Teaching and Teacher Education*, *90*, Article 103004. https://doi.org/10.1016/j.tate.2019.103004

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.

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.

Diener, C. I., & Dweck, C. S. (1978). An analysis of learned helplessness: Continuous changes in performance, strategy, and achievement cognitions following failure. *Journal of Personality and Social Psychology*, *36*(5), 451–462. https://doi.org/10.1037/0022-3514.36.5.451

Eccles, J. S., & Roeser, R. W. (2011). Schools as developmental contexts during adolescence. *Journal of Research on Adolescence*, *21*(1), 225–241. https://doi.org/10.1111/j.1532-7795.2010.00725.x

Eccles, J. S., & Wigfield, A. (2020). From expectancy-value theory to situated expectancy-value theory: A developmental, social cognitive, and sociocultural

perspective on motivation. *Contemporary Educational Psychology*, *61*(4), Article 101859. https://doi.org/10.1016/j.cedpsych.2020.101859

Elliot, A. J., Dweck, C. S., & Yeager, D. S. (Eds.), (2017). *Handbook of competence and motivation: Theory and application*. Guilford Publications.

Fabes, R. A., Eisenberg, N., Karbon, M., Troyer, D., & Switzer, G. (1994). The relations of children's emotion regulation to their vicarious emotional responses and comforting behaviors. *Child Development*, *65*(6), 1678–1693. https://doi.org/10.1111/j.1467-8624.1994.tb00842.x

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

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

Goldstein, S. E., Boxer, P., & Rudolph, E. (2015). Middle school transition stress: Links with academic performance, motivation, and school experiences. *Contemporary School Psychology*, *19*(1), 21–29. https://doi.org/10.1007/s40688-014-0044-4

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

Griffith, M. A., Dubow, E. F., & Ippolito, M. F. (2000). Developmental and cross-situational differences in adolescents' coping strategies. *Journal of Youth and Adolescence*, *29*(2), 183–204. https://doi.org/10.1023/A:1005104632102

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

Harter, S. (1981). A model of mastery motivation in children: Individual differences and developmental change. In W. A. Collins (Ed.), *The Minnesota symposia on child psychology* (Vol. *14*, pp. 215–255). Erlbaum.

Hornstra, L., Stroet, K., & Weijers, D. (2021). Profiles of teachers' need-support: How do autonomy support, structure, and involvement cohere and predict motivation and learning outcomes? *Teaching and Teacher Education*, *99*, Article 103257. https://doi.org/10.1016/j.tate.2020.103257

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*, *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.

Kincade, L., Cook, C., & Goerdt, A. (2020). Meta-analysis and common practice elements of universal approaches to improving student-teacher relationships. *Review of Educational Research*, *90*(5), 710–748. https://doi.org/10.3102/0034654320946836

Lei, H., Cui, Y., & Zhou, W. (2018). Relationships between student engagement and academic achievement: A meta-analysis. *Social Behavior and Personality: International Journal*, *46*(3), 517–528. https://doi.org/10.2224/sbp.7054

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

Mantzicopoulos, P. (1997). How do children cope with school failure? A study of social/emotional factors related to children's coping strategies. *Psychology in the Schools*, *34*(3), 229–237. https://doi.org/10.1002/(sici)1520-6807(199707)34:3<229::aid-pits5>3.3.co;2-r

McCann, T. V., Lubman, D. I., Clark, E., & Litt, M. (2011). Responding to stigma: First-time caregivers of young people with first-episode psychosis. *Psychiatric services (Washington, D.C.)*, *62*(5), 548–550. https://doi.org/10.1176/ps.62.5.pss6205_0548

Morales-Castillo, M. (2023). Coping, school adjustment and academic achievement in early adolescence. *Educational and Developmental Psychologist*, *40*(2), 171–180. https://doi.org/10.1080/20590776.2022.2109959

Musca, S., Kamiejski, R., Nugier, A., Méot, A., Er-rafiy, A., & Brauer, M. (2011). Data with hierarchical structure: Impact of intraclass correlation and sample size on type-I error. *Frontiers in Psychology*, *2*, 74. https://doi.org/10.3389/fpsyg.2011.00074

Osterman, K. F. (2000). Students' need for belonging in the school community. *Review of Educational Research*, *70*(3), 323–367. https://doi.org/10.3102/00346543070003323

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

Raftery-Helmer, J. N., & Grolnick, W. S. (2023). Social context, psychological needs, and the development of coping. In E. A. Skinner & M. J. Zimmer-Gembeck (Eds.), *The cambridge handbook of the development of coping* (pp. 109–127). Cambridge University Press. https://doi.org/10.1017/9781108917230.006

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

Reeve, J. (2012). A self-determination theory perspective on student engagement. In S. L. Christenson, A. L. Reschly, & C. Wylie (Eds.), *Handbook of research on student engagement* (pp. 149–172). Springer US. https://doi.org/10.1007/978-1-4614-2018-7_7

Reeve, J. (2016). Autonomy-supportive teaching: What it is, how to do it. In W. C. Liu, J. C. K. Wang, & R. M. Ryan (Eds.), *Building autonomous learners: Perspectives from research and practice using Self-Determination Theory* (pp. 129–152). Springer. https://doi.org/10.1007/978-981-287-630-0_7

Reeve, J., & Cheon, S. H. (2021). Autonomy-supportive teaching: Its malleability, benefits, and potential to improve educational practice. *Educational Psychologist*, *56*(1), 54–77. https://doi.org/10.1080/00461520.2020.1862657

Reeve, J., Cheon, S. H., & Jang, H. (2020). How and why students make academic progress: Reconceptualizing the student engagement construct to increase its explanatory power. *Contemporary Educational Psychology*, *62*, Article 101899. https://doi.org/10.1016/j.cedpsych.2020.101899

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

Rickert, N. P., & Skinner, E. A. (2022). Parent and teacher warm involvement and student's academic engagement: The mediating role of self-system processes. *British Journal of Educational Psychology*, *92*(2), Article e12470. https://doi.org/10.1111/bjep.12470

Rosseel, Y. (2012). lavaan: An R package for structural equation modeling. *Journal of Statistical Software*, *48*(2), 1–36. https://doi.org/10.18637/jss.v048.i02

Rubin, D. B. (1987). *Multiple imputation for nonresponse in surveys*. Wiley.

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*, Article 101860. https://doi.org/10.1016/j.cedpsych.2020.101860

Ryan, R. M., Stiller, J. D., & Lynch, J. H. (1994). Representations of relationships to teachers, parents, and friends as predictors of academic motivation and self-esteem. *The Journal of Early Adolescence*, *14*(2), 226–249.

Schunk, D. H., & DiBenedetto, M. K. (2020). Motivation and social cognitive theory. *Contemporary Educational Psychology*, *60*, Article 10183101832. https://doi.org/10.1016/j.cedpsych.2019.101832

Shih, S.-S. (2015). 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

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

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., 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.

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., 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., & 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. https://doi.org/10.1017/9781108917230.034

Skinner, E. A., & Saxton, E. A. (2019). The development of academic coping in children and youth: A comprehensive review and critique. *Developmental Review*, *53*, Article 100870. 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. (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

Skinner, E. A., Zimmer-Gembeck, M. J., & Connell, J. P. (1998). Individual differences and the development of perceived control. *Monographs of the Society for Research in Child Development*, *63*(2–3), 1–220. https://doi.org/10.2307/1166220

Slaten, C. D., Ferguson, J. K., Allen, K.-A., Brodrick, D.-V., & Waters, L. (2016). School belonging: A review of the history, current trends, and future directions. *Educational and Developmental Psychologist*, *33*(1), 1–15. https://doi.org/10.1017/edp.2016.6

Su, Y.-L., & Reeve, J. (2011). A meta-analysis of the effectiveness of intervention programs designed to support autonomy. *Educational Psychology Review*, *23*(1), 159–188. https://doi.org/10.1007/s10648-010-9142-7

Symonds, J., & Hargreaves, L. (2016). Emotional and motivational engagement at school transition: A qualitative stage-environment fit study. *The Journal of Early Adolescence*, *36*(1), 54–85. https://doi.org/10.1177/0272431614556348

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

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

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

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

Wigfield, A., Eccles, J. S., Fredricks, J. A., Simpkins, S., Roeser, R. W., & Schiefele, U. (2015). Development of achievement motivation and engagement. In M. E. Lamb & R. M. Lerner (Eds.), *Handbook of child psychology and developmental science:*

Socioemotional processes (Vol. *3*, pp. 657–700). John Wiley & Sons Inc. https://doi.org/10.1002/9781118963418.childpsy316

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

Author Biographies

Kristen E. Raine is a faculty member in the psychology department at Highline College in Des Moines, WA. Her research interests primarily concern the reciprocal relationship between interpersonal contexts and children's academic coping, and how this shapes students' motivational resilience, including their engagement, re-engagement, and persistence, in school settings. She is also interested in how these dynamic systems between social partners are embedded in higher-order contexts, and how to improve structural conditions to promote healthy family and academic functioning.

Kristina S. Tucker is a doctoral student in Applied Developmental Psychology at Portland State University. Her primary research is focused on youth motivation, engagement, and resilience. She has a deep-seated passion for understanding how the intricate interplay of belonging, competence, and coping mechanisms in young individuals shapes their identity and academic outcomes. She hopes her research will shed light on how these factors can positively influence youth development, especially for youth who have been historically minoritized and youth from different socioeconomic backgrounds. She has a strong commitment to rigorous research and dedication to addressing societal disparities.

Ellen A. Skinner is a leading expert on the development of children's motivation, coping, and academic identity in school. She is a professor in the Psychology Department, Portland State University, Portland, Oregon. As part of Psychology's concentration in Developmental Science and Education, her research explores ways to promote students' constructive coping, ongoing classroom engagement (marked by hard work, interest, and enthusiasm), and perseverance in the face of obstacles and setbacks. She is especially focused on two ingredients that shape motivational resilience: (1) close relationships with teachers, parents, and peers; and (2) academic work that is authentic and intrinsically motivating.