



Adolescent Attachment, Affect, and Behavior as Related to Coping Responses to a Psychosocial Stressor

Shuai Shao¹ · Anna Stanzel^{1,2} · Tz-yu Duan¹ · Stacey L. McKay³ · Catherine Ann Cameron^{1,3}

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Abstract

Background Certain individual factors are associated with adaptive and effective stress-coping strategies, which can buffer the negative impact of stress on mental and physical health.

Objective The present study investigated adolescents' coping responses to a psychosocial stressor with respect to their self-reported attachment relationships, trait affects, and parent-reported internalizing and externalizing behaviors.

Methods Early adolescents from a community sample were tasked to cope with a frustration-provoking stressor, the *Frustration Social Stressor for Adolescents (FSS-A)*. We conducted correlational and regression analyses between individual differences measures (parental and peer attachment, trait anger and anxiety, and externalizing and internalizing behaviors) and stress-coping responses.

Results Detailed correlations were delineated among all variables. Subsequently, regression analyses revealed that positive parental attachment significantly predicted low levels of maladaptive involuntary disengagement coping with stress; greater trait anger predicted higher levels of involuntary engagement coping; and greater trait anxiety predicted higher levels of secondary control disengagement coping.

Conclusion Early adolescents reporting higher levels of trait anger or trait anxiety tended to use fewer adaptive coping strategies under a frustrating stressor while those with more positive parental attachment were less likely to engage in maladaptive strategies. These findings contribute to previous literature by identifying the association between parental attachment, trait affect, and the utilization of coping strategies. These findings have important practical insights into designing stress-coping interventions for teenagers.

Keywords Adolescence · Attachment · Trait anger · Trait anxiety · Coping strategies · Psychosocial stress

✉ Catherine Ann Cameron
acameron@psych.ubc.ca

¹ Department of Psychology, University of British Columbia, 2136 West Mall, Vancouver, BC V6T 1Z4, Canada

² Department of Psychology, University of Leipzig, Leipzig, Germany

³ University of New Brunswick, Fredericton, Canada

Introduction

Adolescence is a period when individuals experience rapid and often stressful developments. Transitions during adolescence can have a profound influence on current and future physical and mental health (Grant et al., 2003). Fortunately, previous research has found that some adaptive and effective coping skills can alleviate the adverse impact of transitional developmental stress (e.g., Compas et al., 2017; Dabrowska & Pisula, 2010; Jang et al., 2019). However, one question warrants further exploration: What dispositional factors are associated with adaptive coping? This question has important implications for adolescents' subjective well-being as they come to terms with the increasing academic and interpersonal demands unique to this phase. To address this question, the current paper employs the *Frustration Social Stressor for Adolescents (FSS-A)* (McKay et al., 2021) to investigate how adolescents' attachments, trait affects, and behavioral problems relate to coping strategies under a psychosocial stressor in a laboratory setting.

Coping

Compas and colleagues (2001, p.89) defined coping as “conscious volitional efforts to regulate emotion, cognition, behavior, physiology, and the environment in response to stressful events or circumstances.” Specifically, research has identified two major types of coping strategies: engagement coping and disengagement coping (Connor-Smith et al., 2000). Engagement coping, such as cognitive reappraisal, problem-solving, and acceptance, are seen as adaptive as they enhance mental health in the face of stress or adversity (Eschenbeck et al., 2018). By contrast, the disengagement strategies, such as avoidance, suppression, aggressive, and ruminative coping, are classified as maladaptive as they positively relate to poor psychosocial outcomes, such as symptoms of depression and anxiety (Schäfer et al., 2017).

Attachment and Coping

Attachment experiences have important implications for an individual's affectional bonding in relationships (Bowlby, 1988; Walsh et al., 2009) and are fundamental for understanding emotional responses and regulation from childhood through adulthood (Mikulincer & Shaver, 2007). Original attachment theory focused on avoidance and anxiety in infancy and early childhood (Ainsworth, 1978; Bretherton, 2013). The later attachment framework on adolescence proposed by Armsden & Greenberg (1987; and updated, Andretta, et al., 2017) focuses on trust, communication, and alienation associated with parents and peers.

Recent studies have suggested significant relationships between attachment and coping styles. For example, Howard & Medway (2004) surveyed a group of adolescent-parent dyads and found that the insecure attachment style was positively related to avoidance coping with stress, while the secure attachment style showed a reverse pattern. In another study with older adolescents, Greenberger and McLaughlin (1998) found that secure attachment was related to active support-seeking and problem-solving coping strategies. Similarly, a study with veterans and active-duty military personnel showed that avoidant attachment was positively associated with avoidant coping and negatively related to problem-focused coping (Romero et al., 2020). Despite such evidence, little is known about the differences

between *parental* attachment and *peer* attachment in their relationships with coping, considering the persisting influence of the former and the unique influence of the latter on adolescents (Brown & Larson, 2009).

Affect and Coping

Trait affects refer to long-lasting emotional tendencies that are distinguished from state emotions provoked by specific contexts and environments. One trait affect that concerns developmental psychologists is trait anger—the stable tendency of an individual to perceive irritation, annoyance, frustration, and rage across numerous situations or in various environments, resulting in frequent experiences of anger (Deffenbacher et al., 1996). Compared to low trait-anger adolescents, high trait-anger adolescents reported more frequent and intensive anger reactions (Quinn et al., 2014; Spielberger et al., 1995) and reported feeling more threatened under stress (Bolgar et al., 2008). These findings point to the possibility that high trait-anger teenagers may lack the effective skills necessary for navigating stressful life events. Indeed, Diong et al., (2005) found that anger experiences were related to higher levels of perceived stress, less adaptive coping strategies, and poorer health in adults. Similarly, Arslan (2010) found that college students high in trait-anger showed less problem-focused coping and had poorer interpersonal problem-solving skills.

Another trait emotion of central interest to the current study is anxiety. Trait anxiety reflects an individual's tendency to experience anxiety across multiple contexts. Previous research shows that higher trait-anxiety is linked to more negative interpretations of ambiguous situations in children, adolescents, and adults (Stuijzand et al., 2018; Walsh et al., 2015), and prolonged responses to conditioned fear in adults (Sehlmeyer et al., 2011). In addition, research with young adults showed that compared to low trait-anxiety individuals, high trait-anxiety individuals reported more ineffective coping strategies such as emotional venting, mental disengagement, and less use of active coping strategies (Villada et al., 2016). One explanation for the association between trait anxiety and maladaptive coping is that high trait-anxiety individuals have lower inhibitory control capacity, and thus are worse at directing their attention away from unpleasant stimuli (Edwards, 2017).

Behavior and Coping

In addition to attachment and trait affects, another line of research pertaining to children's well-being has focused on children's internalizing and externalizing problems. Internalizing problems refer to inner-directed and overcontrolled behaviors such as social withdrawal and depressive symptoms (Gresham & Kern, 2004), whereas externalizing problems are described as behaviors that have negative effects on the external environment, such as "disruptive, hyperactive, and aggressive behaviors" (White & Renk, 2012). These two behavioral types are often highly correlated with one another (Liu, 2004).

Existing evidence of the relationships between behavioral problems and coping in older adolescents has shown that behavioral problems are positively related to greater use of maladaptive coping strategies such as disengagement and involuntary coping; furthermore, they are negatively associated with control engagement coping, an adaptive coping strategy (Compas et al., 1988; Connor-Smith et al., 2000; Hampel & Petermann, 2006). However, limited research has examined how behavioral problems are associated with the coping strategies individuals adopt in specific frustration-provoking contexts.

The Present Study

As described above, interpersonal factors including attachment, affect, and behavior can play an important role in stress reactions and coping strategies. Here we aim to investigate how these interpersonal factors are linked to adolescents' coping with a specific type of psychosocial stress – frustration. Understanding these relationships has important implications for promoting adolescents' well-being and designing appropriate interventions, as frustration is pervasive during adolescence with individuals facing tremendous intrapersonal, interpersonal, and academic pressures.

Building on previous research on the *Frustration Social Stressor for Adolescents (FSS-A)*, Cameron et al., 2017; McKay et al., 2021; Pollak et al., 2019), a laboratory-based frustration-provoking psychosocial stressor, the present study examines teenagers' attachments to parents and peers, trait anger and anxiety, and internalizing and externalizing behavioral indices in relation to their coping during the *FSS-A*. Specifically, we hypothesized that (1) more positive parental and peer attachment are related to greater use of adaptive coping (i.e., primary control engagement and secondary control engagement) and less use of maladaptive coping (i.e., primary control disengagement, secondary control disengagement, involuntary engagement, and involuntary disengagement) during psychosocial stress; (2) higher levels of internalizing and externalizing behavioral problems are predictive of more use of maladaptive coping and less use of adaptive coping; and (3) higher trait anger and/or trait anxiety are related to more extensive use of maladaptive coping.

Method

Participants

A total of 74 participants (37 girls, 37 boys), ranging in age from 13 to 16 years ($M = 14.01$; $SD = 0.84$) were recruited from public high schools in Canada. The majority of the sample were Euro-Canadian (60%) adolescents from two-parent families (54%), whose parents had college/university education (64% of mothers; 58% of fathers) and were employed (70% of mothers; 92% of fathers).

The study was reviewed and approved by institutional ethics boards at the host universities and their associated school district boards of education. Self-selected volunteering teenagers and their parents/guardians provided detailed demographic information and informed consents, respectively. After participation, the adolescents received refreshments, a small fast-food voucher, and the chance to win a larger voucher from a music store.

Procedure

We employed the McKay et al., (2021) *FSS-A* protocol which spans 90 min and consists of three phases—anticipation, stress-provoking, and post-experiment questionnaire.

Anticipation Phase

Participants had 15 min to sign the consent form and answer a series of background information questions. Afterwards, participants had five minutes to rank a list of value-laden issues adapted from the popular board game, *Scruples*[®]. Specifically, participants rated the

amount of frustration they would feel arguing with a peer who disagreed with their position (e.g., “Your friend gets drunk at a party and insists they can drive home. Do you let them drive?”). The topic with the highest individual frustration rating was designated as the topic for that participant’s peer debate.

Stress-Provoking Phase

Participants were told that they would defend their position on the chosen topic with a same-sex research assistant arguing the opposing view in a five-minute debate, and then prompted to prepare for the upcoming debate for five minutes in a secluded debate room. The room was set up in a way to appear challenging, with a large clock, a video camera, and two podiums. There were two unfamiliar research assistants—a same-sex research assistant played the debater who disagreed with the participant’s position, and an opposite-sex research assistant played the judge who observed and pretended to rate their argument. It was assumed that a same-sex peer debater could evoke more familiarity and an opposite-sex still-faced judge would induce more stress, thereby enhancing ecological validity.

After the five-minute preparation phase, the judge instructed the participant and the peer debater to discuss and defend their positions on the issue for five minutes. If the debate was completed before five minutes were over, the judge told the pair to continue in a still face. Following the debate, participants performed an oral serial-subtraction task (e.g., subtracting from 2047 to 13) for three minutes, having to start over with each failure.

Post-Experiment Questionnaire Phase

Participants were debriefed and they then completed questionnaires on individual-difference factors and coping responses to the stress-provoking phase.

Independent Variables

While concluding their engagement in the *FSS-A* protocol, participants responded to the individual-differences questionnaires pertaining to the following factors: attachment, trait anger, and trait anxiety. Then, they also completed a survey on their coping strategies with the frustrating-provoking stressor. Participants’ parents or guardians completed a questionnaire on internalizing and externalizing behavior problems online.

Attachment Relationships

The *Inventory of Parent and Peer Attachment (IPPA)* (Armsden & Greenberg 1987) assesses adolescents’ perceptions of their relationships with their mother, father, and peers. Each index (*mother*, *father*, and *peer*) consists of 25 items pertaining to trust, alienation, and communication with 5-point scales from “almost never or never true” to “almost always or always true.” Higher scores on trust and communication and lower scores on alienation represent more positive attachment. Scores on trust, communication, and reverse-coded alienation were combined to form an overall parent or peer attachment score. For the current study, IPPA demonstrated good internal consistency (for parental attachment, Cronbach’s $\alpha = 0.96$; for peer attachment, Cronbach’s $\alpha = 0.94$).

Trait Anger

The *State-Trait Anger Expression Inventory-2 (STAXI-2)*; Spielberger 1999) is a 57-item measure consisting of an Anger Expression Index with six subscales. This study focused on the Trait Anger subscale (Angry Temperament and Angry Reaction, 10 items), which provides a measure of anger-proneness as a personality trait (Spielberger et al., 1995). Each item is rated on a 4-point scale from “not at all or almost never” to “very much so or almost always”, where higher scores indicate greater trait anger. The internal consistency in the current study was high (Cronbach’s $\alpha = 0.83$).

Trait Anxiety

The *State-Trait Anxiety Inventory (STAI)*; Spielberger 1988) is a 40-item self-report questionnaire that measures trait anxiety and state anxiety. This study focused on the *Trait Anxiety* subscale (20 items). Each item is rated on a 4-point scale from “not at all or almost never” to “very much so or almost always”, where higher scores indicate greater trait anxiety. The internal consistency for the *Trait Anxiety* subscale (20 items) was high in the current sample (Cronbach’s $\alpha = 0.86$).

Internalizing and Externalizing Behaviors

The *Child Behavior Checklist – Parent Form (CBCL)*; Achenbach & Rescorla 2001) is a measure of parents’ perceptions of internalizing and externalizing problems in their 6- to 18-year-old offspring. Two problem scales, Rule Breaking Behavior and Aggressive Behavior, were combined to provide the measure of externalizing problems (35 items) in the present study. Three problem scales, Anxious/Depressed, Withdrawn/Depressed, and Somatic Complaints, make up the measure of internalizing problems (32 items). Higher scores indicate more frequent problematic behaviors reported by the parent. The internal consistency in the current sample was $\alpha = 0.92$ for externalizing problems and $\alpha = 0.89$ for internalizing problems.

Dependent Variables: Responses to Stress

Participants’ coping responses to the *FSS-A* protocol were measured with the *Responses to Stress Questionnaire (RSQ)*; Connor-Smith et al., 2000), a 57-item self-report instrument that measures adolescent psychological stress responses. In cooperation with, and following consultations with Compas, Connor-Smith, and colleagues, item wording and questions concerning the perceived stress induced by the various aspects of the psychosocial stressor (e.g., being judged and having to complete the math problem) were adapted to reflect the nature of the psychosocial stressors used in the current study. In addition, two items were omitted because of their irrelevance to the stressors encountered in this study. The questionnaire assessed (1) *Primary Control Engagement Coping* (i.e., Problem Solving, Emotion Regulation, and Emotional Expression); (2) *Secondary Control Engagement Coping* (i.e., Positive Thinking, Cognitive Restructuring, and Acceptance); (3) *Primary Control Disengagement Coping* (i.e., Avoidance and Denial); (4) *Secondary Control Disengagement Coping* (i.e., Wishful Thinking and Distraction); (5) *Involuntary Engagement* (i.e., Rumination, Intrusive Thoughts, Physiological

Arousal, Emotional Arousal, and Involuntary Action), and (6) *Involuntary Disengagement* (e.g., Emotional Numbing, Cognitive Interference, Inaction, and Escape). Items were rated on 4-point scales from “not at all” to “a lot” with higher ratings indicating a greater degree or frequency of corresponding stress experiences or uses of coping strategies. The modified *RSQ* demonstrated good reliability in general ($0.60 < \alpha < 0.87$) except for the Primary Control Disengagement Coping subscale. We report the statistics for this latter subscale below but acknowledge that those related results may be interpreted with caution.

Data Analytic Plan

First, zero-order correlations were calculated among all variables of interest, including parental attachment, peer attachment, trait anger, trait anxiety, internalizing behavior problems, externalizing behavior problems, and six coping strategies reported to the *FSS-A* stress condition. Multiple linear regression analyses were computed to investigate whether these variables of central interest predicted participants’ coping strategies at the six indexed coping levels. Specifically, to assess the goodness of fit of the regression models, stepwise regressions were applied to identify which predictors best account for the variance. All data collected and analyzed in this study are available upon request.

Results

Gender was not significantly related to any variable of central interest and was therefore omitted from the following analyses. Descriptive statistics of independent variables (i.e., attachment, affect, and behaviors) are presented in Table 1; descriptive statistics of dependent variables are presented in Table 2.

Correlational Analyses

Table 3 presents correlations among all variables. Correlations among personal-trait factors showed that parental attachment was negatively correlated with the two trait affects (trait anger: $r(72) = -.43, p < .001$; trait anxiety: $r(72) = -.63, p < .001$). More positive parental attachment was associated with lower negative trait affects. Peer attachment was significantly correlated with trait anxiety ($r(72) = -.27, p = .021$) and marginally significantly correlated with trait anger ($r(72) = -.23, p = .051$). Parent-reported internalizing behaviors and externalizing behaviors were inter-correlated ($r(68) = .67, p < .001$), but not significantly related to the other variables investigated. Consequently, internalizing and externalizing behaviors were not included in the following regression models.

Analyses of attachment and coping showed that parental attachment was negatively correlated with maladaptive coping strategies (primary control disengagement: $r(72) = -.25, p = .03$; involuntary engagement: $r(71) = -.27, p = .02$; and involuntary disengagement: $r(72) = -.30, p = .01$). Positive parental attachment was also negatively related to involuntary engagement ($r(69) = -.27, p = .02$) and involuntary disengagement ($r(70) = -.20, p = .01$). However, we did not find the hypothesized positive correlations between parental attachment and voluntary engagement coping (i.e., primary and secondary control engagement).

Table 1 Descriptive Statistics for Individual Traits

| | <i>M</i> | <i>SD</i> | <i>Min.</i> | <i>Max.</i> |
|---------------------------------|----------|-----------|-------------|-------------|
| <i>IPPA</i> parental attachment | | | | |
| Communication | 60.69 | 13.65 | 28 | 88 |
| Trust | 78.25 | 14.08 | 36 | 100 |
| Alienation | 30.95 | 9.56 | 12 | 52 |
| Total | 108.24 | 35.11 | 13 | 176 |
| <i>IPPA</i> peer attachment | | | | |
| Communication | 28.99 | 6.49 | 15 | 40 |
| Trust | 40.36 | 7.49 | 19 | 50 |
| Alienation | 16.39 | 4.56 | 9 | 27 |
| Total | 52.95 | 16.08 | 10 | 79 |
| <i>STAXI/STAI</i> affect | | | | |
| Trait anger | 21.51 | 5.55 | 10 | 38 |
| Trait anxiety | 42.98 | 9.10 | 23 | 63 |
| <i>CBCL</i> Behaviors | | | | |
| Internalizing behaviors | 9.26 | 7.62 | 0 | 40 |
| Externalizing behaviors | 8.60 | 8.25 | 0 | 40 |

*M*Mean; *SD*Standard deviation; *Min.* Minimum; *Max.* Maximum; *CBCL*Child behavior checklist; *IPPA*Inventory of parent and peer attachment; *STAI*State-trait anxiety inventory; *STAXI*State-trait anger expression inventory

Table 2 Descriptive Statistics for Coping Strategies

| | <i>M</i> | <i>SD</i> | <i>Min.</i> | <i>Max.</i> |
|---------------------------------|----------|-----------|-------------|-------------|
| <i>RSQ</i> coping strategies | | | | |
| Primary control engagement | 17.32 | 4.86 | 9 | 29.5 |
| Secondary control engagement | 22.37 | 5.37 | 11 | 34 |
| Primary control disengagement | 11.55 | 2.98 | 6 | 22 |
| Secondary control disengagement | 12.63 | 3.49 | 6 | 21 |
| Voluntary disengagement | 24.18 | 5.76 | 12 | 40 |
| Involuntary disengagement | 21.82 | 5.67 | 12 | 35 |

*RSQ*Responses to stress questionnaire

As for trait affect and coping, significant positive correlations were found between trait anger and voluntary disengagement (primary and secondary control disengagement: $r(74) = .35, p = .003$ and $r(74) = .023, p = .047$, respectively) and involuntary engagement ($r(73) = .34, p = .003$), demonstrating that adolescents with higher trait-anger were more likely to exhibit both voluntary disengagement and involuntary engagement under the stress condition. In addition, trait anxiety was significantly correlated with secondary control disengagement ($r(74) = .33, p = .004$), involuntary engagement ($r(73) = .31, p = .007$), and involuntary disengagement ($r(74) = .36, p = .002$), suggesting that adolescents with higher trait anxiety were more likely to report both voluntary and involuntary disengagement strategies and involuntary engagement. The six coping indices were, with two exceptions (secondary control engagement and involuntary engagement; secondary control engagement and involuntary disengagement), positively moderately interrelated.

Table 3 Correlations of Attachment, Affect, Behavior, and Coping

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|-------------------------------------|---------|-------|--------|-------|--------|------|--------|--------|--------|--------|--------|----|
| 1. Parental attachment | .12 | | | | | | | | | | | |
| 2. Peer attachment | -.43*** | -.23 | | | | | | | | | | |
| 3. Trait anger | -.63*** | -.27* | .51*** | | | | | | | | | |
| 4. Trait anxiety | -.08 | -.13 | .04 | .21 | | | | | | | | |
| 5. Internalizing behaviors | -.15 | .06 | .06 | .07 | .67*** | | | | | | | |
| 6. Externalizing behaviors | .02 | .14 | .16 | .09 | .00 | -.03 | | | | | | |
| 7. Primary control engagement | .16 | .20 | -.02 | -.06 | .00 | .12 | .53*** | | | | | |
| 8. Secondary control engagement | -.21 | .01 | .35** | .21 | .04 | -.03 | .33** | .43*** | | | | |
| 9. Primary control disengagement | -.25* | -.06 | .23* | .33** | .07 | .05 | .37** | .25* | .58*** | | | |
| 10. Secondary control disengagement | -.27* | -.09 | .34** | .31** | -.07 | .04 | .35** | -.02 | .44*** | .58*** | | |
| 11. Involuntary engagement | -.30* | -.04 | .16 | .36** | -.09 | .02 | .27* | -.03 | .30* | .54*** | .68*** | |
| 12. Involuntary disengagement | | | | | | | | | | | | |

* $p < .05$, ** $p < .01$, *** $p < .001$.

Multiple Regression Models

Subsequent to the correlational analyses, six linear regression models were computed with each of the six coping indices (i.e., primary control engagement, secondary control engagement, primary control disengagement, secondary control disengagement, voluntary disengagement, and involuntary disengagement) as outcome variables. These multiple regression analyses were conducted with R studio. The requirements for regression analyses (homoscedasticity, linearity, and normal distribution of residuals) were all met. The first analysis used full models including all four factors (i.e., trait anger, trait anxiety, parental attachment, and peer attachment) as independent variables (see Table 4 for the full models). Next, to identify the factors that best explain model variance, (i.e., the model with the lowest Akaike Information Criterion) the “step ()” function in R *stats* package (Version 3.6.2) was applied (see Table 4 for best-fit models). Given that a total of six linear regression analyses were conducted and that family-wise error should be cautioned and avoided, the concrete adjusted R^2 and p -value for each model are provided.

For the full models, only the involuntary engagement model (arousal) was significant (see the upper part of Table 4). That is, parental attachment, peer attachment, trait anger, and trait anxiety accounted for a total 9% of the variance in involuntary engagement ($p = .04$). However, only trait anxiety served as a significant predictor ($\beta = .29, p = .04$). Next, stepwise regressions (see lower part of Table 4) showed trait anger to be a significant predictor of involuntary engagement (Adjusted $R^2 = .11, p = .003$), trait anxiety was a significant predictor of secondary control disengagement (i.e., wishful thinking and distraction; Adjusted $R^2 = .05, p = .04$), and parental attachment was a negative predictor of involuntary disengagement (Adjusted $R^2 = .05, p = .04$).

Discussion

The current study investigated the relationships between young adolescents' individual traits (i.e., attachment, affect, behavior) and coping with a frustration-provoking stressor. The central research question concerned how these interpersonal factors were associated with the coping strategies adopted by adolescents when managing psychosocial stress. Overall, we found significant roles of parental attachment, trait anger, and trait anxiety in elucidating the adolescents' differential adoptions of coping strategies under psychosocial stress. However, we did not find significant roles for peer attachment or internalizing and externalizing behaviors.

We showed that for young adolescents, parental attachment, but not peer attachment, had unique impacts on coping. That is, more positive parental attachment was associated with less use of negative involuntary coping strategies, whereas no associations were found between peer attachment and coping strategies at any index level. This may be because participants in this study were in early adolescence when parental attachment still exerts a prioritizing effect on the lived experiences of adolescents (Nickerson & Nagle, 2005; Umemura et al., 2021). Previous research has shown that the influences of parental attachment on a large variety of psychosocial outcomes, such as internalizing symptomatology and self-esteem, remain salient even into late adolescence and young adulthood (Laible et al., 2004; McGinley & Evans, 2020). Therefore, the prevalent effects of parental attachment on coping may not be limited to childhood and early adolescence, but rather persist throughout

Table 4 Multiple Regression Models

| Outcome variable | Parental attachment | | Peer attachment | | Trait anger | | Trait anxiety | | Adjusted R ² | Model p-value |
|---|---------------------|------------|-----------------|-----|-------------|-------------|---------------|------------|-------------------------|---------------|
| | β | p | β | p | β | p | β | p | | |
| <i>Full multiple regression models</i> | | | | | | | | | | |
| Primary control engagement | .12 | .48 | .16 | .23 | .16 | .28 | .07 | .68 | -.02 | .63 |
| Secondary control engagement | .25 | .12 | .16 | .21 | .00 | .99 | .12 | .49 | .01 | .34 |
| Primary control disengagement | -.06 | .72 | .01 | .91 | .21 | .16 | .00 | .98 | -.01 | .46 |
| Secondary control disengagement | -.13 | .42 | .03 | .81 | .03 | .83 | .17 | .33 | .02 | .29 |
| Involuntary engagement | -.12 | .42 | .04 | .73 | .29 | .04 | .05 | .76 | .09 | .04 |
| Involuntary disengagement | -.23 | .16 | -.02 | .86 | -.10 | .48 | .09 | .59 | .01 | .33 |
| <i>Best-fit multiple regression models*</i> | | | | | | | | | | |
| Primary control engagement | - | - | - | - | - | - | - | - | - | - |
| Secondary control engagement | .21 | .10 | - | - | - | - | - | - | .03 | .10 |
| Primary control disengagement | - | - | - | - | .23 | .06 | - | - | .04 | .06 |
| Secondary control disengagement | - | - | - | - | - | - | - | .04 | .05 | .04 |
| Involuntary engagement | - | - | - | - | .36 | .003 | - | - | .11 | .003 |
| Involuntary disengagement | -.25 | .04 | - | - | - | - | - | - | .05 | .04 |

Significant associations ($p < .05$) are printed in bold; *factors with no statistics provided are not included in the best-fit model

adolescence and even into young adulthood. Future research can investigate how parental and peer attachment affect coping strategies in later adolescence.

Surprisingly, internalizing and externalizing behaviors did not form significant relationships with any of the coping indices, contrary to previous research that reported significant associations between behavioral problems and coping strategies (e.g., Compas et al., 1988; Connor-Smith et al., 2000; Hampel & Petermann, 2006). This inconsistency may be attributed to one or several sources. First, the behavioral problems relied on parental reports in this study, which may not accurately reflect behaviors outside the home (Berg-Nielsen et al., 2003). Second, previous research mainly focuses on the relationship between behavioral problems and coping styles against non-specified, general stressors in life, whereas our study concentrates on adolescents' coping with a specific stressor aimed to elicit frustration.

Importantly, the regression models answered the question as to which factors predicted which coping strategies. Specifically, we found that parental attachment predicted less involuntary disengagement. This finding was consistent with previous research showing that parental attachment contributes to less frequent use of avoidant coping (Howard & Medway, 2004), which in turn contributes to more positive psychological outcomes for adolescents, such as better adjustment to college (Bishop et al., 2019). These findings further demonstrate that perceived parental attachment may provide a helpful buffer for adolescents' coping with stress, with those who perceive their parents as caring and warm adopting fewer ineffective coping strategies than those who do not. As individuals with a secure parental attachment tend to view others as responsive and reliable, it is likely that securely attached adolescents have had more previous successes in solving interpersonal issues and have thus fostered effective strategies in dealing with related stressors. Considering the interpersonal aspect of the stress elicited by the *FSS-A* protocol (i.e., debating with others), it makes sense that a secure parental attachment would better-equip adolescents to cope with such a stressor.

In addition, trait anger was predictive of involuntary engagement, indicating that trait anger associates with participants' emotional and cognitive arousal in an automatized fashion, and suggesting that high trait-anger individuals may be less likely to inhibit unpleasant, unconscious engagement with a frustration-provoking stressor. This result maps onto the finding of Wilkowski & Robinson (2008) that high trait-anger individuals performed less well than low trait-anger participants in a cognitive-control task after experiencing a hostile stimulus. Moreover, trait anxiety was predictive of secondary control disengagement, suggesting that anxious individuals may actively distract themselves from anxiety-inducers by shifting attention or engaging in wishful thinking, comparable to the evidence found with some special groups, such as college athletes (Giacobbi & Weinberg, 2000) and ballet-dancers (Barrell & Terry, 2003). Taken together, these findings demonstrate that adolescents reporting high trait-anger or trait-anxiety may not have efficacious cognitive resources to employ under stressful circumstances, thus resorting to less effective coping strategies when facing stress. Further, these findings complement the literature by documenting a clearer picture of the specific coping strategies adopted by adolescents high in trait-anger and trait-anxiety.

Another contribution of the current study is the intercorrelations emerging among all six coping indices in a frustration-provoking context. That is, the six coping indices were binarily correlated except that secondary control engagement (i.e., positive thinking, acceptance, and cognitive restructuring) were not significantly correlated with involuntary engagement (i.e., rumination, intrusive thoughts, physiological arousal, emotional arousal, involuntary action) and involuntary disengagement (i.e., emotional

numbing, cognitive interference, inaction, escape). These findings indicate that secondary control engagement and involuntary coping strategies may involve fundamentally different cognitive or physiological mechanisms. For example, secondary control engagement is positively associated with cognitive reappraisal (Andreotti et al., 2013), a controlled process that consumes cognitive resources and energy, whereas involuntary coping is more automatized (Vaillant, 2011).

In sum, the current paper enhances our understanding of adolescents' coping under frustration-provoked stress. Empirically, we documented the specific individual-level factors that contributed to different aspects of coping when adolescents faced a frustrating psychosocial stressor. Future research could aim to explore other individual variables that might account for the differences in coping strategies, such as state affect (Gruszczyńska, 2013), self-esteem, and perceived social support (Puskar et al., 2008). Theoretically, we proposed an integrated model that includes attachment, affect, behavior, and coping with stress. This Attachment-Affect-Behavior-Coping model can be further tested with other age groups (e.g., early childhood, late adolescence, and emerging adulthood) and contexts (e.g., anger- or fear-provoking situations), providing new perspectives in investigating adolescents' psychological well-being. Practically, the current research provides important insights for prevention and intervention programs. The findings could also be helpful to professionals working with adolescents (e.g., school or clinical psychologists) in supporting adolescents who may cope poorly with stress.

Limitations and Future Directions

The current study has several limitations. First, this research was conducted with a community sample of volunteering adolescents that could have restricted the prevalence of behavioral problems and a full range of self-reported attachment relationships and targeted trait affects. Future research could investigate more diverse populations such as adolescents identified with affective or behavioral disorders. Second, it remains an open question whether the conclusions drawn from the current research can be applied to populations in other cultures, as cultural values and social norms could moderate coping styles (Kuo, 2011). Third, most variables in this study relied on either self- or parent-reports that can be accompanied by social desirability issues and may succumb to individual differences in the interpretation of scales (Soubelet & Salt-house, 2011; Stone et al., 1991). Therefore, a multisource data set, such as one incorporating peer assessments, teachers' reports, or natural observations might be informative in future research. It is also worth noting that the reliability of the Primary Control Disengagement subscale (avoidance and denial) was relatively low, although previous research reported excellent internal consistency for that subscale (see Connor-Smith et al., 2000). One possible reason is that the coping measures used in this study were adapted to reflect the nature of the *FSS-A* protocol. Even though we consulted with the original *RSQ* developers before making the adjustments, the revised subscale did not reliably measure the usage of avoidance and denial when dealing with the frustration-provoking stressor. Finally, further research might apply more advanced statistical techniques such as the chained mediation model to explore the underlying mechanisms and construct a computational model of those critical variables.

Conclusion

Adolescents invariably encounter daily pressures and significant life challenges. Using the reliable *FSS-A* protocol, the current study explored how individual traits (i.e., attachment, trait affect, and behavior) were linked to coping strategies under a psychosocial stressor. Major findings suggest that adolescents with relatively high negative trait affects tended to adopt specific less effective coping strategies. Parental attachment predicted reduced use of the less adaptive involuntary disengagement strategy. The current study has promoted our understanding of stress coping in adolescents and provided important theoretical and practical implications.

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Data Availability All data generated or analyzed can be found in a repository managed by the first author. R studio Version 1.2.5033 was used for data analysis and the R Code can be made available upon request.

Declarations

Conflict of interest The authors declare that they have no conflict of interest.

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