RESEARCH ARTICLE

Advanced strategies for cognitive and emotional coping among high school students

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ABSTRACT
Adolescence represents a pivotal stage in human development marked by numerous challenges and stressors. This research delves into the cognitive-emotional coping strategies deployed by adolescent girls and boys, with a particular focus on gender disparities. Our study aligns with prior research, affirming substantial gender-based distinctions in coping strategies. Adolescent girls predominantly employ maladaptive strategies, notably catastrophizing and rumination, underscoring a proclivity for negative thought patterns amidst stressors. Conversely, boys demonstrate a more equitable distribution of coping mechanisms, encompassing both maladaptive and adaptive strategies, implying heightened coping versatility. Engaging in a scholarly debate, we discuss the implications of this gender divergence in coping strategies. While diverse coping repertoires, as seen in boys, may contribute to resilience, the noteworthy prevalence of maladaptive strategies among adolescents, regardless of gender, raises concerns regarding emotional well-being. This study not only advances our comprehension of adolescent coping but also holds implications for mental health interventions.

INTRODUCTION

Adolescence is widely recognized as a transitional phase that serves as a bridge between puberty and adulthood. This developmental period is marked by the attainment of physical, intellectual, and moral maturity, yet it often falls short in terms of emotional maturity. Adolescents remain reliant on the need for affection and emotional support from those around them (Feingold et al., 2022). This phase is known by various names, including the "turbulent revolution," "second birth" (Griffin et al., 2022), "storm and stress," or simply a time of heightened anxiety. Adolescence is universally acknowledged as a challenging and tumultuous stage of life, characterized by heightened stress levels and emotional volatility, primarily due to the numerous lives changes they must navigate.
Biologically, adolescence encompasses rapid physical growth, ongoing bodily transformations, hormonal imbalances, and a remarkable reshaping of the brain's architecture, all of which significantly impact an individual's self-esteem and self-confidence (Abedzadeh Zavareh et al., 2015; Cîndea & Balaci, 2022). While for a long time, the turbulent nature of adolescence was primarily attributed to the surge in hormonal activity during this period, contemporary understanding underscores the crucial role of brain development in shaping the unique characteristics of adolescents. In his book, "Brainstorm: The Power and Purpose of the Teenage Brain," Daniel J. Siegel delves into how the adolescent mind functions differently in terms of memory, thinking, judgment, focus, decision-making, emotional regulation, and interpersonal relationships due to the ongoing brain changes during this transformative phase. Among these changes, the process of organizing cerebral connections and myelination, predominantly in the cortical regions of the brain, assumes a pivotal role (Mideksa et al., 2021).

Psychosocially, adolescence is characterized by shifting dynamics in relationships. Adolescents tend to distance themselves from their parents, challenging parental authority, while simultaneously intensifying their bonds with peers (Wang et al., 2023). This shift is driven by their burgeoning need for autonomy and authority. Through experimentation with novel behaviors within their peer groups, even if occasionally risky, adolescents are refining new skills, exercising decision-making autonomy, and nurturing self-evaluation capabilities. Consequently, they embark on a journey of self-discovery, becoming increasingly aware of their evolving identities (Reid et al., 1998; Shaunessy & Suldo, 2010). Additionally, romantic relationships play a significant role in the psychosocial landscape of adolescence, introducing elements of insecurity, jealousy, and the challenges of separation. Moreover, as adolescents approach the culmination of their educational journeys, some are confronted with critical decisions regarding education and career paths, while others contemplate embarking on the journey of starting their own families. These multifaceted factors collectively render adolescence a demanding period, not only for the adolescents themselves but also for the adults in their lives.

Coping strategies, often defined as the holistic cognitive and behavioral efforts undertaken by individuals to manage external and internal demands perceived as threatening or exceeding their available resources (Boima et al., 2023), play a pivotal role in navigating the challenges of adolescence. These strategies can be broadly categorized into problem-centered coping and emotion-centered coping. Problem-centered coping seeks to directly address or modify the underlying issue causing distress, aiming to change the situation for the better (Attia et al., 2022). Conversely, emotion-centered coping focuses on regulating the emotional response to a given situation, particularly when individuals perceive limited opportunities to alter the distressing conditions. The choice between these coping mechanisms often hinges on the individual's assessment of the situation's changeability.

Cognitive and emotional coping strategies delve into the cognitive processes that enable individuals to regulate their emotions or feelings arising from negative or traumatic experiences (Thomas et al., 2017). By doing so, these strategies prevent individuals from being overwhelmed by the intensity of their emotional responses. It is crucial to understand that while these coping mechanisms provide emotional relief and contribute to an improved sense of well-being, they may not necessarily address the root causes of stress (Predescu & Şipoş, 2013; Verdeş & Rotaru-sîrbu, 2019). Instead, they serve as tools for individuals to manage and navigate their emotional responses, allowing them to better focus on addressing the underlying stressors and negative situations in their lives.

Furthermore, coping strategies are not static; they evolve across different stages of life, reflecting the varying levels of human development in terms of cognition, emotional intelligence, neurological
development, and social interaction (de la Villa Moral-Jiménez & González-Sáez, 2020). As children progress through their developmental stages, they acquire new and increasingly sophisticated coping mechanisms. During early childhood, children often rely on external sources of support, frequently seeking comfort and guidance from their parents to regulate their emotions (Zarbo et al., 2018). However, as they mature and their cognitive abilities expand, they gradually transition towards self-regulation. In the unique context of adolescence, the process of emotion regulation undergoes a transformation, becoming more internalized and cognitively oriented. Advanced cognitive skills such as self-reflection and abstract reasoning come to the forefront during this phase, empowering adolescents to navigate their emotional responses with greater complexity and introspection (Çar et al., 2022, 2023).

The evolution of coping strategies is not confined to adolescence alone but continues to adapt and mature throughout one's lifespan (Happé et al., 2016). These adaptations are closely intertwined with the distinctive psychological tasks, conflicts, and life events that individuals encounter at different stages of life. In early childhood, the coping landscape is marked by the gradual development of emotional regulation and social skills (De Rosbo-Davies et al., 2022; Poon & Knight, 2012). Children, at this stage, are more reliant on external sources of support, including parents and caregivers, to help them manage their emotions and navigate life's challenges.

As individuals progress into adulthood, coping strategies become more nuanced and sophisticated. Adults tend to exhibit enhanced emotional regulation, particularly in interpersonal contexts, as they have accumulated years of experience in navigating complex social interactions (Amirkhan & Auyeung, 2007; Ingram et al., 2008). However, coping strategies also undergo a shift towards more passive approaches in certain cases, as people may increasingly turn to faith or acceptance, as suggested by Lazarus (Dearing et al., 2021; E. Skinner, 1998). This transition highlights the dynamic nature of coping mechanisms, where adaptability and context play significant roles in determining their efficacy.

The way we perceive and employ coping strategies is profoundly influenced by the societal constructs of gender roles that shape our lives. These constructs are often more the result of socialization than biological determinants. Our understanding of gender roles and expectations begins to take root in the early stages of life, significantly impacting our development. From a young age, we learn what it means to act "properly" as a girl or a boy, what is considered appropriate or inappropriate behavior for each gender, and implicitly, how these concepts are intertwined with the sociocultural context in which we exist. This early socialization sets the stage for how we approach and respond to various life challenges (Berg et al., 1998; Tesoriero, 2005).

As children progress through their formative years until adolescence, they are already being socialized differently based on gender. Boys are often encouraged to emphasize skill development, autonomy, independence, and ambition (Aragonès et al., 2023; Cabras et al., 2023). These qualities are deemed desirable and are cultivated in their upbringing. In contrast, girls are often encouraged to focus on social connections, seeking and offering support to others. These distinctions reflect the gender-specific roles and expectations deeply ingrained in society (E. A. Skinner & Zimmer-Gembeck, 2015; Wilson & Gentzler, 2021).

This early gender-based socialization profoundly influences how boys and girls understand and evaluate stressful events. Research reveals that female adolescents tend to perceive the same events as significantly more stressful compared to their male counterparts (Ashley & Kleinpeter, 2002). Notably, when it comes to issues related to school, family conflicts, or interpersonal misunderstandings, girls experience stress levels up to four times higher than boys (Acquati & Kayser, 2002).
These disparities in stress appraisal can be a driving force behind the varying coping strategies preferred by boys and girls.

Studies have highlighted that boys often gravitate towards emotional release through outlets like sports and recreational activities. In some cases, they may resort to substances such as drugs and alcohol. Conversely, girls tend to lean more towards seeking social support as a coping mechanism. Another perspective on this is that boys are more inclined to employ problem-centered coping strategies, which focus on directly addressing the issue causing distress, while girls are more likely to opt for emotion-centered coping strategies, concentrating on regulating their emotional responses to the challenges they encounter.

METHOD

The present study aims to delve into the specific emotional-cognitive coping strategies employed by adolescents. To address this goal, the research seeks answers to the following key questions; first, which emotional-cognitive coping strategies are predominantly utilized by adolescents? second, do emotional-cognitive coping strategies with maladaptive characteristics carry more weight among adolescents compared to those characterized as adaptive? and lastly, do the proportions of adolescents employing adaptive and maladaptive emotional-cognitive coping strategies differ based on their gender?

The study involved a sample of 130 students, aged between 16 and 18, who were enrolled in high school programs within the technological branches in Jakarta. The survey aimed to ensure a relatively balanced distribution of genders within the sample, with 51% being girls and 49% boys.

To identify the cognitive-emotional coping strategies employed by the study participants, the Cognitive Emotion Regulation Questionnaire (CERQ) was administered. The CERQ was developed by Nadia Garnefski, Vivian Kraaij, and Philip Spinhoven. This multidimensional questionnaire consists of 36 items, all of which pertain to an individual's thought processes when dealing with life-threatening situations or stressful events. The questionnaire items are distributed evenly across nine evaluation scales, each focusing on a distinct cognitive-emotional coping strategy: self-blame, acceptance, rumination, positive refocusing, planning, positive reappraisal, putting into perspective, catastrophizing, and Blaming others.

Participants completed the questionnaire during regular school hours, within their classrooms, under the supervision of a school counselor. Standard instructions, as recommended in the questionnaire's application and user manual, were followed to complete the CERQ. In terms of rating, participants assessed the extent to which they employed each cognitive-emotional coping strategy on a five-point scale, ranging from 1 (almost never) to 5 (almost always). Subscale scores for everyone were computed by summing the scores corresponding to the items within the respective subscale, with scores ranging from 4 (indicating the strategy is rarely used) to 20 (indicating the strategy is frequently used).

RESULT

The analysis of the data obtained from the Cognitive-Emotion Regulation Questionnaire (CERQ) revealed intriguing patterns of cognitive-emotional coping strategies used by adolescent girls and boys within the study sample. To provide a comprehensive overview, we have included tables to illustrate the distribution of these strategies.
Table 1 shows the percentage distribution of cognitive-emotional coping strategies employed by adolescent girls. These strategies were divided into different usage levels, ranging from "very high" to "below average."

**Table 1. Girls' distribution of cognitive-emotional coping strategies (%)**

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Very High</th>
<th>High</th>
<th>Above Average</th>
<th>Average</th>
<th>Below Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catastrophizing</td>
<td>0.35</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Rumination</td>
<td>0.29</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Self-blame</td>
<td>-</td>
<td>0.26</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Acceptance</td>
<td>-</td>
<td>-</td>
<td>0.33</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Positive refocusing</td>
<td>-</td>
<td>-</td>
<td>0.34</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Other-blame</td>
<td>-</td>
<td>-</td>
<td>0.27</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Planning</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.3</td>
</tr>
<tr>
<td>Positive reappraisal</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.29</td>
</tr>
<tr>
<td>Putting into perspective</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.36</td>
</tr>
</tbody>
</table>

From Table 1, it becomes evident that girls predominantly employ Catastrophizing and Rumination at a very high level, indicating that a significant proportion of them tend to engage in negative thought patterns when dealing with stressful situations. Self-blame is another strategy used at a high level. While acceptance, positive refocusing, and other blame are employed at above-average levels, there is no strategy used at an average level. However, planning, positive reappraisal, and putting into perspective are found at below-average levels, with relatively higher proportions.

Table 2 reveals a more balanced distribution of cognitive-emotional coping strategies among boys. Unlike girls, boys do not employ any strategies at a "very high" level. However, they utilize strategies such as Self-blame, Blaming others, Catastrophizing, and Rumination at "high" or "above average" levels. Additionally, boys show greater diversity in their use of strategies, with some adaptive strategies like positive refocusing, putting into perspective, and acceptance also being employed at "above average" levels.

**Table 2.** Presents the distribution of cognitive-emotional coping strategies among adolescent boys, categorized by usage levels.

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Very High</th>
<th>High</th>
<th>Above Average</th>
<th>Average</th>
<th>Below Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catastrophizing</td>
<td>-</td>
<td>-</td>
<td>0.31</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Rumination</td>
<td>-</td>
<td>-</td>
<td>0.22</td>
<td>0.26</td>
<td>0.14</td>
</tr>
<tr>
<td>Self-blame</td>
<td>-</td>
<td>0.26</td>
<td>0.2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Acceptance</td>
<td>-</td>
<td>-</td>
<td>0.32</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Positive refocusing</td>
<td>-</td>
<td>-</td>
<td>0.34</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Other-blame</td>
<td>-</td>
<td>0.31</td>
<td>0.2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Planning</td>
<td>-</td>
<td>-</td>
<td>0.13</td>
<td>0.35</td>
<td>0.2</td>
</tr>
<tr>
<td>Positive reappraisal</td>
<td>-</td>
<td>-</td>
<td>0.19</td>
<td>0.37</td>
<td>0.25</td>
</tr>
<tr>
<td>Putting into perspective</td>
<td>-</td>
<td>-</td>
<td>0.28</td>
<td>0.22</td>
<td>0.2</td>
</tr>
</tbody>
</table>

To gain a comprehensive understanding of the prevalence of adaptive and maladaptive strategies among girls and boys, Figures 1 and 2 graphically represent the levels of use.
In Figure 1, it is evident that all maladaptive strategies are used more frequently by girls compared to adaptive strategies. Specifically, Rumination and Catastrophizing are used at a "very high" level. Self-blame is employed at a "high" level and Blaming others is used at an "above average" level. Contrarywise, adaptive strategies like positive reappraisal, putting into perspective, and planning are used at lower levels, with the majority being at "below average."

Referring to Figure 2, the illustration revealed that among boys, there is a more balanced distribution of cognitive-emotional coping strategies, with no strategies reaching “very high” usage levels. Maladaptive strategies such as self-blame, catastrophizing, blaming others, and rumination are employed.
DISCUSSION

The findings of this study yield valuable insights into the cognitive-emotional coping strategies adopted by adolescent girls and boys, providing a deeper understanding of how gender influences their approach to managing stressors. This discussion aims to comprehensively explore the gender disparities in coping strategies, their prevalence, implications for adolescent mental well-being, and the ongoing debates in the field, drawing from prior research.

Our study aligns with existing research, affirming the existence of substantial gender disparities in the coping strategies employed by adolescents. Notably, adolescent girls exhibit a pronounced inclination towards employing maladaptive coping mechanisms, with Catastrophizing and Rumination standing out as predominant strategies. These maladaptive approaches involve the amplification of negative outcomes and the persistent dwelling on distressing thoughts, indicative of a propensity towards negative cognitive patterns during times of stress. Additionally, the prevalence of Self-blame among girls suggests a proclivity for self-criticism in their coping strategies (Ashley & Kleinpeter, 2002; Senad, 2022).

In stark contrast, boys demonstrate a more balanced distribution of coping strategies, encompassing both maladaptive options such as Self-blame and Catastrophizing, as well as adaptive strategies like Positive refocusing, Putting into perspective, and Acceptance (Eschenbeck et al., 2007). This multifaceted approach suggests that boys possess a greater degree of coping versatility when confronted with various stressors.

A central debate in the realm of adolescent coping strategies revolves around the delicate balance between coping versatility and the prevalence of maladaptive strategies. Some researchers contend that the diversified coping repertoire displayed by boys, as evident in our study, may contribute to heightened resilience and adaptability in the face of stress (De Rosbo-Davies et al., 2022; Happé et al., 2016; Poon & Knight, 2012). The willingness of boys to engage with a wide range of coping mechanisms implies that they may have a more extensive toolkit for effectively managing diverse stressors.

However, it is crucial to acknowledge the concerns raised by the substantial utilization of maladaptive coping strategies observed among both girls and boys. While boys exhibit coping versatility, the prevalence of maladaptive strategies across the gender spectrum warrants serious consideration. Research in this domain posits that an overreliance on maladaptive coping mechanisms may lead to adverse emotional consequences, potentially exacerbating stress and anxiety levels among adolescents.

The findings of this study have profound implications for adolescent mental well-being. Understanding gender-specific coping patterns can inform targeted interventions aimed at promoting healthier coping strategies, particularly among adolescent girls who appear to be at a higher risk of employing maladaptive approaches. These interventions hold the potential to enhance emotional resilience and mitigate the adverse effects of stress during this critical developmental phase.

Future research endeavors should delve deeper into the factors influencing the selection of coping strategies among adolescents. Consideration of the intricate interplay between sociocultural, familial, and individual variables is essential for a more comprehensive understanding of adolescent coping. Furthermore, investigating the effectiveness of interventions designed to foster adaptive coping
strategies should be a priority, with a focus on their impact on adolescent mental health and emotional well-being.

Despite the valuable insights gained from this research, several limitations should be acknowledged. Firstly, the study focused on a specific demographic of adolescents from a single geographical region, which may limit the generalizability of the findings to a broader population. Additionally, the data relied on self-reported responses, which could be subject to bias or social desirability effects. Future research should aim to include a more diverse and representative sample to enhance the external validity of the findings. Moreover, incorporating qualitative methods to gain a deeper understanding of the underlying motivations behind coping strategy selection could further enrich our knowledge in this area.

CONCLUSION

This study has unveiled valuable insights into the cognitive-emotional coping strategies employed by adolescent girls and boys, illuminating gender disparities and highlighting pivotal aspects of adolescent mental well-being. The disparities in coping strategies between genders underscore the intricate nature of adolescent development and emphasize the necessity for tailored interventions to promote their emotional resilience. The gender disparities observed in this study have critical implications for mental health professionals, educators, and parents. It is evident that adolescent girls, with their inclination toward maladaptive coping strategies, may benefit significantly from targeted interventions aimed at enhancing their emotional coping skills. These interventions can help mitigate the potential negative emotional consequences associated with their coping strategies. The ongoing debate regarding the balance between coping versatility and the prevalence of maladaptive strategies underscores the need for further research and intervention efforts. While a diverse coping repertoire, as exhibited by boys, may contribute to resilience, the widespread use of maladaptive strategies among adolescents is concerning. Addressing this issue through evidence-based interventions is imperative to alleviate stress and anxiety in adolescents.

DECLARATION

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Author contribution statement

Chali Sitinjak contributed to conducting the research design, data collection, distributing the scales, analyzing the research results, and writing the manuscript. Ellya Rakhmawati assisted with the research design development, oversaw the data collection process, and reviewed the results and manuscript. Ummy Hanny assisted in preparing the research design and controlled the data collection process. Anna Febrianty distributed the research scale, provided input related to the theoretical discussion, reviewed the results, and wrote the manuscript.

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The data described in this article can be accessed by contacting the first author.

Declaration of Interest’s statement
The authors declare no conflict of interest.

Additional information
No additional information is available for this article.

REFERENCES


