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Adversity Quotient as a Predictor of Creative Thinking Skills in Solving Algebraic Problems among Junior High School Students

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Abstract: This study emphasizes the importance of creative thinking skills as a key 21st-century student competency. Observations at a junior high school in Malang City revealed that 68% of 31 students could not solve simple algebra problems. This inability could be caused by several factors, one of which is low creative thinking skills. There is still limited research on creative thinking skills. Therefore, this study aimed to assess pupils' original ideas and abilities in algebra questions based on AQ (Adversity Quotient) categories. In this qualitative descriptive research, 33 students were selected based on various AQ categories. The AQ data were collected through a questionnaire and categorized as follows: 11 students in the Climbers category, 17 in the Campers category, and five in the Quitters category. Three subjects were selected based on the highest scores in each category: AQ, representative, and communicative. The subjects were further analyzed using a creativity component test (fluency, flexibility, and originality). The data collection methods in this investigation were the AQ questionnaire, a creative thinking ability test, and semi-structured interviews. The interviews aimed to gather more in-depth information about students' thought processes while solving algebra problems. The study's results indicate that the majority of students are in the Campers category (51.51%), followed by Climbers (33.33%) and Quitters (15.15%). Students with AQ Climbers profiles meet the fluency, flexibility, and originality criteria. Students with AQ Campers appear confident, but their solutions did not meet the fluency component (fulfilling the components of flexibility and originality). Meanwhile, pupils who are AQ Quitters cannot meet the requirements for creative thinking. The conclusion of this study is that the higher the level of resilience (AQ) of students, the higher their ability to think creatively and solve mathematical problems fluently, flexibly, and originally. This research can inspire teachers to use the open-ended problem-solving method by considering students' AQ levels, helping students enhance their creative thinking skills.

Keywords: adversity quotient, creative thinking skills, algebra.

▪ INTRODUCTION

In this era of globalization and technological disruption, the challenges faced by students are increasingly complex and dynamic. The ability to adapt, solve problems innovatively, and generate fresh ideas has become crucial in everyday life, both in academic and professional contexts (Alfonso-Benlliure et al., 2025). Therefore, creative thinking skills have become one of the main competencies students must possess in the 21st century (Li & Yu, 2025; Lin & Shih, 2022; Paz-Baruch et al., 2025; Smare & Elfatihi, 2025).

Creative thinking is not just about generating new and original ideas (Rastelli et al., 2022) but also about an individual's ability to face problems flexibly (DiStefano et al., 2025; Glicksohn, 2026; Kabysheva, 2024). Creative thinking is also defined as the ability to see opportunities in difficulties and identify unusual yet effective solutions (Suastika et al., 2024; Zhang et al., 2025). According to Torrance (1972), creative thinking's main

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components include fluency, flexibility, originality, elaboration, resistance to premature closure, abstractness of titles, and synthesis. However, not all students can maintain their creativity when faced with pressure, failure, or challenging situations. The problem is evident in students' mathematical creative thinking skills, which tend to be low (Du et al., 2025; Shin et al., 2025; Xu et al., 2025). Few students prefer to choose the best options (Moreno-Rodriguez et al., 2025). At this stage, the concept of AQ becomes relevant for further research.

AQ is a student's ability to persevere and bounce back from difficulties (Juwita & Usodo, 2020; Saxena & Rathore, 2025). The AQ evaluates a person's resilience to obstacles, how much control they feel in challenging situations, and how they view the impact of challenges on their life. Students with high AQ tend to have strong mental endurance, are not discouraged, and can turn challenges into opportunities for growth and development. AQ encompasses five components: perseverance, resilience, gratitude, sincerity, and optimism (Jamoo & Wongpinpech, 2025; Pestaño & Pestaño, 2025; Pong & Lam, 2023; Zhao & Sang, 2023). AQ can alter work-related stress levels, have a positive effect on entrepreneurial satisfaction and independence (Adha et al., 2025; Anantanyu et al., 2025; Luo et al., 2025), and can even be one of the factors that help someone persist and remain determined at work (Jiao et al., 2025; Menzies et al., 2024).

AQ and creative thinking are closely related in theory. AQ, which measures a person's ability to face and overcome difficulties, is closely related to aspects of creative thinking. Individuals with AQ tend to have better mental resilience to remain focused and productive in the face of challenges (Peng et al., 2025), which is very important in creative thinking. The main components of AQ (Zhang et al., 2025), such as control, ownership, range, and endurance, directly influence the creative thinking process. Control over the situation allows individuals to remain calm and think clearly when facing problems, while a sense of ownership encourages personal responsibility in finding creative solutions. Scope and endurance help individuals see problems from various perspectives and persevere in the creative process, often requiring time and sustained effort. Conversely, components of creative thinking, such as flexibility, originality, and elaboration, also support the development of AQ (Kayyali, 2024). The ability to think flexibly helps individuals adapt to various difficult situations, while originality encourages new approaches to overcoming challenges. Elaboration enables individuals to develop more detailed and effective strategies for dealing with adversity. Thus, the relationship between AQ and creative thinking is symbiotic, where improvement in one aspect tends to support the development of the other. This creates a positive cycle that enhances a person's ability to face challenges and generate innovative ideas.

Previous research has shown a connection between resilience and intelligence in facing difficulties (Kwansumran et al., 2025). AQ increases motivation, perseverance, success, and creativity at various educational levels (Menzies et al., 2024; Mudkanna Gavhane & Pagare, 2024; Wang et al., 2025). Individuals with elevated AQ typically demonstrate enhanced resilience and persistence when faced with difficult computational problems, facilitating the disaggregation of intricate problems into manageable elements and formulating efficient resolutions (Murray et al., 2020; Singh et al., 2023). Students who can remain calm and think clearly under pressure tend to be more open to various alternative solutions and more willing to take risks. Therefore, AQ is expected to

influence creative thinking skills, especially in the educational context, where students often face academic, social, and personal challenges.

However, although AQ and creative thinking are two important aspects in developing students' potential, limited research examines the relationship between the two, especially among Indonesian students. Previous studies have focused on the influence of AQ as a reinforcer in helping students improve their intelligence, the influence of AQ on computational thinking to solve problems systematically, and AQ as a non-cognitive factor that impacts students' academic achievement. However, few have linked it to creative thinking abilities. This creates opportunities for researchers to examine how AQ influences creative thinking skills and how enhancing AQ can serve as a strategy to boost students' creativity.

This study is expected to contribute to exploring problem-solving skills that connect AQ and creativity. It will also contribute to the literature by highlighting that knowledge is not merely the result of information transfer but the result of interaction between resilience and creativity. Therefore, this study aims to assess the creative thinking capabilities of junior high school students in Malang City regarding algebra questions determined by their Adversity Quotient (AQ).

▪ METHOD

Participants

Based on the theoretical foundations of AQ, this study used a qualitative descriptive approach to empirically investigate the correlation between AQ and creative thinking abilities in algebra problem-solving. This study was conducted at a junior high school in Malang with 33 students. This study employed data collection approaches including questionnaires, tests, and semi-structured interviews. The questionnaire aimed to gather data on AQ levels. There are three AQ categories: quitters, campers, and climbers. The questionnaire was adapted from the Adversity Response Profile (ARP) developed by Stoltz (Lee, 2023). The questionnaire contained 30 questions using a 5-point Likert scale. AQ consists of four constructs based on the CORE model: Control, Ownership, Reach, and Endurance (Matore et al., 2020). The AQ questionnaire was completed by 33 participants. The data from the AQ questionnaire responses were calculated using formula (1), with the AQ categories shown in Table 1. The questionnaires completed by the students were grouped into three AQ categories. Table 2 shows the distribution of students by AQ category.

$$AQ = C + O + R + E \quad \ldots\ldots\ldots (1)$$

Description:
C: Control
O: Ownership
R: Reach
E: Endurance

Table 1. AQ category

Score	AQ Category
$134 < AQ \leq 200$	Climbers
$59 < AQ \leq 134$	Campers
$0 \leq AQ \leq 59$	Quitters

Table 2. Data distribution of AQ questionnaire results

AQ Category	Total Students	Percentage (%)
Climbers	11	33.33
Campers	17	51.51
Quitters	5	15.15

Research Design and Procedures

The design of this qualitative research is a case study. The choice of case study allows for in-depth analysis in a real context and comparison of variations between cases. The research was conducted in three stages: preparation, planning, and implementation. During the preparation stage, researchers finalized the objectives, research questions, and methodological design. Researchers also conducted additional literature reviews to strengthen the theoretical basis of AQ, creative thinking, and related learning theories. During the planning stage, the researchers developed research instruments, such as the AQ questionnaire, algebra test questions, and interview guidelines. The researchers also prepared a validation sheet for the algebra test instruments. During the implementation stage, the researcher coordinated the research design with the selected schools. The researcher applied purposive sampling to determine the students who would serve as informants. The research data obtained were then managed and transcribed. The duration of the research is one semester.

Instrument

Based on the questionnaire results, each AQ category was tested. This test aimed to determine the extent of students' creative thinking skills. The test material included the concept of integers and operations with integers. The evaluation of creative thinking abilities uses the three dimensions of creativity from the Torrance Tests of Creative Thinking: fluency, flexibility, and originality (Chang & Li, 2025). The test assessment was based on a scoring rubric for creative thinking skills. Each dimension of creativity contains four criteria. These criteria are: no answer given (score 0), one incorrect answer given (score 1), one correct answer given (score 2), and more than one correct answer given (score 3). The final score is the total percentage of all components of creative thinking skills. Table 3 shows the components of creative thinking.

Table 3. Components of creative thinking ability

Components of Creative Thinking Ability	Description
Fluency	Students can accurately resolve the problem.
Flexibility	Students can generate more than one solution.
Originality	Students show a way of solving that is not commonly used by other students

Before the test was administered to the students, the test was validated by learning experts competent in the field of algebra. The validation covered the item's alignment with the desired basic competencies, the appropriateness of the questions with the elements of creative cognition, the allocation of test completion time, and the use of language in accordance with proper writing conventions. The validated items were scored on a 5-point scale (not appropriate, less appropriate, fairly appropriate, appropriate, and

highly appropriate). Some revisions were provided by the validators, namely: the use of standard grammar in the questions so that they are easy for students to understand, and the instructions for the questions must be clear. The exam results validation demonstrated a total score of 23 (average score of 3.83), with the criterion of "valid." This indicates that the test is suitable for use as an instrument for assessing creative thinking skills. The test results were analyzed using percentage calculation techniques (Mutiara et al., 2023). The students' percentage score attainment was then analyzed by categorizing their creative thinking abilities, as shown in Table 4. Each criterion of creative thinking ability is described in Table 5.

Table 4. Creative thinking ability criteria

Scoring Range (%)	Creative Thinking Ability Criteria
81 – 100	Very Creative
61 – 80	Creative
41 – 60	Fairly Creative
21 – 40	Less Creative
0 – 20	Not Creative

Table 5. Description creative thinking ability criteria

Creative Thinking Ability Criteria	Description
Very Creative	• Students can exhibit fluency, flexibility, and originality in solving or proposing problems OR • Students possess the ability to demonstrate novelty and flexibility in solving or proposing problems
Creative	Students possess the ability to demonstrate flexibility and originality.
Fairly Creative	Students demonstrate adaptability in problem-solving and proposing problems.
Less Creative	Students possess the ability to demonstrate fluency in solving and proposing problems.
Not Creative	Students are incapable of demonstrating all three indicators of creative thinking.

Data Analysis

Data analysis in this qualitative study was conducted through data reduction, data display, and conclusion drawing. Data obtained from interviews were transcribed verbatim, then read repeatedly to gain a comprehensive understanding. Next, open coding was conducted by labelling meaningful data segments according to AQ components, then similar codes were grouped into categories. Main themes were constructed from these categories that represented the relationship between AQ and students' creative thinking abilities. Each theme was verified through method triangulation and member checking with participants to ensure the validity of the meaning. The analysis results were presented in rich descriptive narratives (thick descriptions) accompanied by direct participant quotations to reinforce the researcher's interpretation.

Subject selection in this study was conducted using purposive sampling, which is the deliberate selection of subjects based on certain considerations relevant to the research

objectives. Subjects were not only selected based on their highest scores, but also because they were considered representative of the characteristics of each AQ. In addition, the subjects selected were students who were communicative and able to express their thought processes openly, making it easier for researchers to explore their problem-solving strategies and creative thinking patterns. This consideration was taken so that the data obtained would be more in-depth and could describe the distinctive creative thinking characteristics of each AQ type, as shown in Table 6. To acquire a more comprehensive understanding of students' creative thinking abilities, semi-structured interviews were conducted. During the interviews, the subjects were asked to explain the thought process behind their test answers.

Table 6. Results of the creative thinking ability test of research subjects

No	Code	AQ Category	Score	(%)	Creative Thinking Ability Level Categories
1	MER	Climbers	26	96.30	Very Creative
2	KLZ	Campers	19	70.37	Creative
3	MZF	Quitters	9	33.33	Less Creative

▪ RESULT AND DISSCUSSION

The final results of the data grouping for the 33 students showed a diverse distribution of AQ levels. The majority of students (51.51%) fell into the Campers category. This indicates that most students had a moderate AQ. Students with the Campers AQ tend to have fairly good abilities in facing challenges, but they may still need encouragement to reach their full potential. The proportion of students classified as Climbers (33.33%) was significant, with a high AQ. Students with Climbers AQ individuals have greater resilience and persistence when confronted with challenges and difficulties, and are highly motivated to succeed. Climbers with AQ are better than Campers and Quitters in facing difficulties (Anwar et al., 2024; Fauziah et al., 2020). The smallest percentage (15.15%) was in the Quitters group, which indicated a low AQ. Although the number of students with a quitter-level AQ is small, the presence of this group needs special attention to improve their ability to face academic challenges. Figure 1 the distribution of AQ scores and the percentage of students' creative thinking abilities.

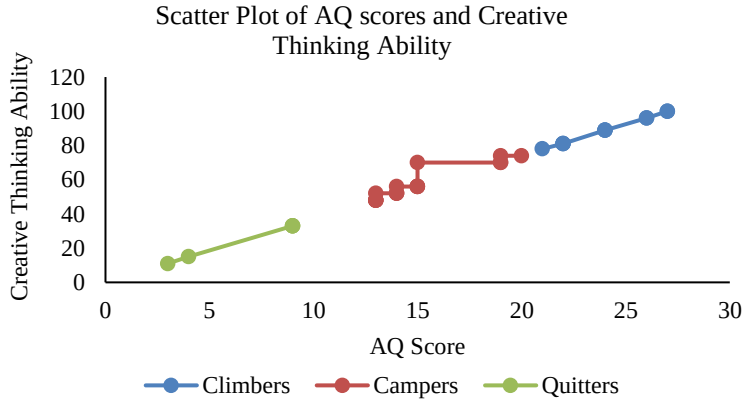


Figure 1. The distribution of AQ scores and the percentage of students' creative thinking abilities

Scatter plot graph showing the relationship between total Adversity Quotient (AQ) scores and creative thinking ability percentages. Blue dots represent Climbers, orange dots represent Campers, and grey dots represent Quitters. A positive trend can be seen: the higher the AQ score, the higher the students' creative thinking ability.

A quantitative analysis determined the monotonic relationship between AQ scores and students' creative thinking abilities. Next, a normality test was conducted between the AQ scores and the percentage of creative thinking ability, as shown in Table 7.

Table 7. Tests of normality

	Kolmogorov-Smirnov[a]			**Shapiro-Wilk**		
	Statistic	**df**	**Sig.**	**Statistic**	**df**	**Sig.**
AQ Score	.165	33	.023	.953	33	.158
Creative Thinking Ability	.157	33	.037	.955	33	.185
a. Lilliefors Significance Correction						

Before conducting the correlation analysis, a normality test was performed using Shapiro–Wilk because the sample size was less than 50 students. The test results showed that the AQ Score data had a significance value of 0.158, and the Creative Thinking Ability percentage was 0.185. Both significance values were greater than 0.05, so it can be concluded that the data for both variables were normally distributed. Considering the small sample size, the relationship between Adversity Quotient and creative thinking ability was analyzed using Spearman's Rank correlation test. The results of the Spearman's Rank correlation test are shown in Table 8.

Table 8. Correlations between AQ and creative thinking ability

			AQ Score	**Creative Thinking Ability**
Spearman's rho	AQ Score	Correlation Coefficient	1.000	1.000**
		Sig. (2-tailed)	.	.
		N	33	33
	Creative Thinking Ability	Correlation Coefficient	1.000**	1.000
		Sig. (2-tailed)	.	.
		N	33	33
**. Correlation is significant at the 0.01 level (2-tailed).				

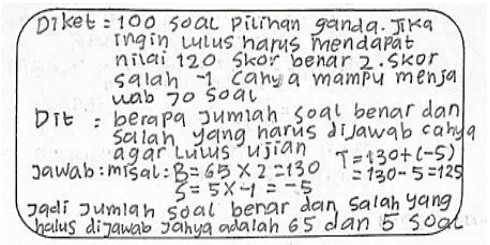
Based on the results of Spearman's rho correlation test on 33 respondents, a correlation coefficient (ρ) of 1.000 was obtained with a significance level of $p < 0.01$ (2-tailed). A correlation value of 1.000 indicates that the relationship between AQ and creative thinking ability is positive. This means that an increased creative thinking ability score always follows every increase in a student's AQ score in a completely consistent order.

The significance value of $p < 0.01$ indicates that the relationship is statistically significant at a 99% confidence level. Thus, the null hypothesis (H_0), which states no relationship between AQ and creative thinking ability, is rejected, and the alternative hypothesis (H_1), which states a significant positive relationship, is accepted.

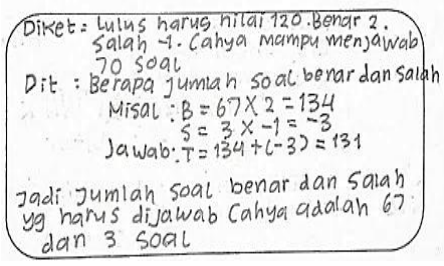
The study results show that students in the Climbers category (high AQ) demonstrate remarkable fluency, flexibility, and originality in their thinking. They are

able to view problems from various perspectives and find innovative solutions. Students with moderate AQ (Campers) show fairly good creativity, especially in flexibility and originality, but have not yet achieved the accuracy and fluency of ideas like the Climbers group. This shows that even though students can think creatively, their suboptimal resilience and tenacity can limit their ability to produce correct and efficient solutions. Students with low AQ (Quitters) have low creative thinking abilities. They do not meet the components of fluency, flexibility, or originality. This condition illustrates that the students' low resilience in facing difficulties makes them prone to giving up, lacking initiative, and less capable of generating new ideas in solving problems. These findings are consistent with research (Setyosari et al., 2021) showing that students' AQ impacts the development of resilience, the strengthening of mental and character aspects, and the ability to produce correct and efficient solutions creatively.

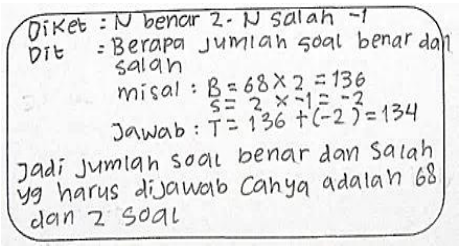
Quantitative analysis only shows statistical relationships between variables, but cannot explain how or why these relationships occur. Through qualitative analysis, researchers can explore students' thought processes when solving problems, how they understand questions, choose strategies, change approaches, or react to difficulties. Figure 2 displays the analysis of subject test results for the AQ Climbers category.



Translation in English:
Known: 100 multiple choice questions. If you want to pass, you must get a score of 120 Correct score 2, wrong score -1. Cahya was able to answer 70 questions
Asked: what is the number of correct and incorrect questions that Cahya must answer?
Answer: eg: B = 65 x 2 = 130 T = 130 + (-5)
S = 5 x -1 = -5 = 130 - 5 = 125
So the number of correct and incorrect questions that Cahya must answer is 65 and 5 questions.



Translation in English:
Known: pass must score 120. Correct 2 wrong -1. Cahya was able to answer 70 questions
Asked: what is the number of correct and incorrect questions?
For example: B = 67 x 2 = 134
S = 3 x -1 = -3
Answer: T = 134 + (-3) = 131
So the number of correct and incorrect questions Cahya must answer is 67 and 3 questions.



Translation in English:
Known: N correct 2 N incorrect -1.
Asked: what is the number of correct and incorrect questions?
Eg: B = 68 x 2 = 136
S = 2 x -1 = -2
Answer: T = 136 + (-2) = 134
So the number of correct and incorrect questions that Cahya must answer is 68 and 2 questions.

Figure 2. Test completion by MER (AQ climbers category)

Subject MER produced three correct answers. The MER demonstrated a solid understanding of the questions. In the first answer, MER understood that there were 100 multiple-choice questions with a passing score of 120, 2 points for correct answers, and -1 for incorrect answers. The problem-solving strategy used a trial-and-error method to determine the number of correct and incorrect answers that would result in a score of 120. The calculations indicated that 65 correct answers yielded a score of 130, while five incorrect answers yielded -5, resulting in a total score of 125. The conclusion was that there were 65 correct answers and five incorrect answers. In the second answer, MER also used a trial-and-error strategy to reach a score of 131, which exceeded the passing score of 120. The calculations showed 67 correct answers (134 points) and three incorrect answers (-3 points), for 131. Verification was performed by ensuring that the number of questions answered matched the problem (70) and that the final score exceeded the passing score. The conclusion drawn was 67 correct answers and three incorrect answers. In the third answer, the MER correctly understood the problem. The MER used a scoring system (2 points for correct answers, -1 for incorrect answers) to determine the number of correct and incorrect responses. The calculation showed 68 correct answers ($68 \times 2 = 136$ points) and two incorrect answers ($2 \times -1 = -2$ points). The total score was $136 + (-2) = 134$. The answer concluded that Cahya answered 68 questions correctly and two questions incorrectly, which is accurate based on the information provided. The MER solution was justified through an interview conducted by the researcher (R) and the research subject.

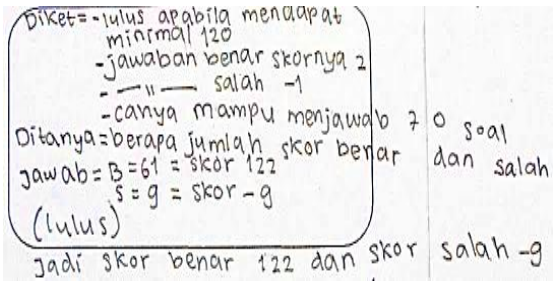
R : Do you understand the purpose of this problem?
MER : I understand, Mum, to determine the number of correct and incorrect questions to pass the exam.
R : What steps did you take to complete the task?
MER : First, I find the known information, Mum. It is known that Cahya answered 70 questions; I then suppose how many questions were correct and incorrect. Then, I multiplied the correct and incorrect scores to calculate a total score above 120.
R : Can you solve the problem with more than one answer?
MER : Yes, ma'am.
R : Did you have any difficulties in answering the questions?
MER : I only had difficulty when calculating the total, ma'am.

According to the interview findings, Subject MER understood the intent of the questions well. The MER can document what is known and what is unknown, being asked. MER can systematically provide correct answers. MER fulfills this fluency component. The subject, MER, is also able to provide three alternative answers. The steps for solving all MER answers are ordered and detailed. This means that MER fulfills the flexibility component. While other students were confused about interpreting the wording of the questions, MER could write out the steps for solving all three given problems. This evidence shows that MER fulfills the originality requirement.

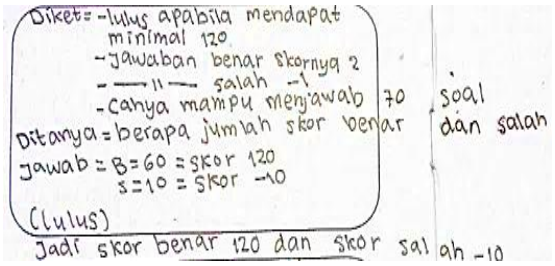
Students with AQ Climbers status demonstrated correct answers systematically, reflecting a high level of fluency. AQ climbers generally have the ability to acquire ideas and solutions efficiently. They can generate productive thinking. Students with AQ Climber profiles can provide more than one solution, indicating flexibility in their thinking. AQ Climbers can view problems from various perspectives. Students with AQ

Climber profiles can write down problem-solving steps that differ from those of other students (originality). This study's results align with research (Nahrowi et al., 2020), AQ Climbers show better fluency and flexibility than Campers and Quitters. AQ influences how students produce creative or original solutions (Azmi et al., 2025). AQ Climbers frequently lead the way in problem-solving, generating inventive solutions when others struggle. AQ Climbers cannot only face challenges effectively but can also turn obstacles into opportunities. Students with AQ Climbers have a broad understanding and gain a complete picture of an issue (Fauziah et al., 2020).

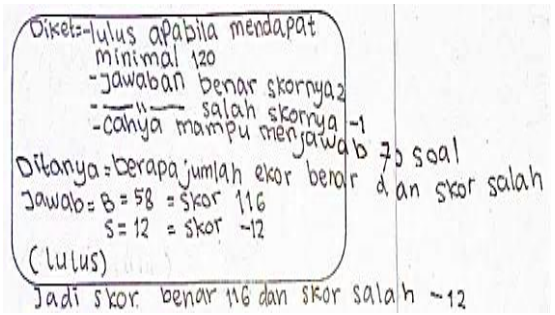
This finding confirms that the AQ Climbers' ability to solve all questions in detail shows high perseverance and strong intrinsic motivation. Motivation significantly affects AQ by improving self-reliance (Suminah et al., 2025). AQ Climbers can also manage pressure and control their emotions in challenging situations. Students with high AQ tend to have superior cognitive abilities, thinking flexibility, problem-solving creativity, high perseverance, and strong skills in managing pressure (Mencarini et al., 2019). Figure 3 displays the analysis of the subject test results for the AQ Campers category.



Translation in English:
Known: -pass if you get at least 120
-correct answer scores 2
-wrong answer scores -1
-Cahya was able to answer 70 questions
Asked: what is the sum of the correct score and incorrect score?
Answer: B = 61 = score 122
S = 9 = score -9
(passed) So correct score 122 and incorrect score -9



Translation in English:
Known: -pass if you get at least 120
-correct answer scores 2
-wrong answer scores -1
-Cahya was able to answer 70 questions
Asked: what is the sum of the correct score and incorrect score?
Answer: B = 60 = score 120
S = 10 = score -10
(passed) So correct score 120 and incorrect score -10



Translation in English:
Known: -pass if you get at least 120
-correct answer scores 2
-wrong answer scores -1
-Cahya was able to answer 70 questions
Asked: what is the sum of the correct score and incorrect score?
Answer: B = 58 = score 116
S = 12 = score -12
(passed) So correct score 116 and incorrect score -12

Figure 3. Test completion by KLZ (AQ campers category)

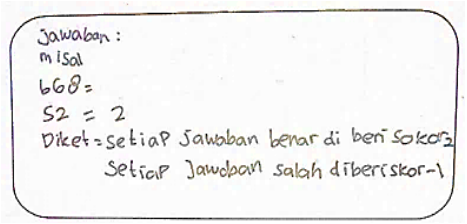
Subject KLZ appeared to be unable to understand the question correctly, producing incorrect answers. Nevertheless, KLZ attempted to answer this question thoroughly. KLZ provided a detailed explanation of the answer, taking into account the available information and the specific questions posed. KLZ also provides three alternative answers, all of which are incorrect. To validate KLZ's solution to the question, the researcher conducted an interview with KLZ.

R : Do you understand the purpose of this question?
KLZ : I understand somewhat, Mum.
R : What are the steps in the solution you provided?
KLZ : I try to visualize how many correct and incorrect questions Cahya answered and then multiply them by the correct and incorrect scores.
R : Can you solve the problem with more than one alternative solution?
KLZ : I can do it, but I am not sure.
R : Did you have any difficulties in solving the problem?
KLZ : No, Mum.
R : After finding the answer, did you re-examine your steps?
KLZ : Yes, Mum.

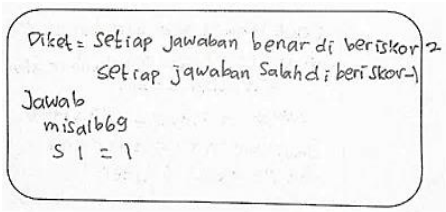
The interview results revealed a significant gap between the participants' self-perception and the quality of their work. KLZ exhibited high self-confidence, as evidenced by their strong belief in their abilities and confident demeanor when answering questions. However, KLZ's work does not reflect this confidence. KLZ did not meet the fluency component because, although he was able to understand the problem, he was unable to produce correct and systematic steps to reach the correct final result. The low level of fluency is evident in the student's limited ability to develop ideas smoothly and in a manner relevant to the algebraic concepts used. However, the student still demonstrates flexibility through the use of several different strategies, as well as originality through unique and unconventional thinking. Thus, although the student has not yet achieved accuracy in their answers, their thought process still shows potential for creativity through diversity and originality of ideas.

Students with AQ Campers displayed high self-confidence during the interview, even if the answer did not meet the fluency aspect. The findings of this study are consistent with research (Yuliastini & Bungo, 2023), showing that two students may both receive a score of 'creative', but their thinking patterns may differ; one may be systematic and persistent (Climber), while the other may be spontaneous but easily discouraged (Camper). Students' confidence with AQ Campers was demonstrated in their ability to understand problems, plan solutions, and implement solution plans, but they failed to find the correct final results (Yustiana et al., 2021). Students with AQ Campers do not conduct evaluations, so they do not realise that the solutions provided solve the problems (Damayanti et al., 2020). The analysis of the subject test results in the AQ Quitters category is shown in Figure 4.

The subject, MZF, was unable to answer the question correctly and appeared to be unable to understand it well. The researcher probed MZF's answers through an interview with the teacher.



Translation in English:
Answer:
e.g.:
b68 =
S2 = 2
Known: each correct answer is given a score of 2,
each wrong answer is given a score of -1



Translation in English:
Known: each correct answer is given a score of 2,
each wrong answer is given a score of -1
Answer: e.g. b69
S1 = 1

Figure 4. Test completion by MZF (AQ quitters category)

R : Do you understand the purpose of this question?
MZF : Somewhat understand, Mum.
R : What are the steps of completion that you did?
MZF : I do not know, Mum.
R : Can you solve the problem with more than one alternative solution?
MZF : I provide two solutions.
R : Did you have any difficulties in working on the problem?
MZF : Yes, Mum

The interview results reflect MZF's situation while working on the problem. MZF had difficulty understanding the question and determining a solution. MZF provided two answers, but neither led to the final result, which means MZF did not meet the components of fluency, flexibility, and originality.

The analysis results indicate that students with a Quitter AQ have difficulty understanding and solving given problems. Through interviews, it was revealed that the AQ students only had a partial understanding of the intent of the questions and could not explain the steps taken to solve them. Although the AQ students who quit stated they had provided two alternative solutions, they admitted to facing difficulties during the process. The inability of AQ students to provide correct answers indicates that they do not meet the components of fluency, flexibility, and originality in problem-solving. This study's results align with Putri et al.'s research (2019), which shows that students who demonstrate low AQ performance also have low creative thinking skills. This phenomenon is because students with low AQ tend to give up when facing challenges, lack the motivation to persevere, and are not sufficiently resilient in their thinking (Nur et al., 2022). Students with AQ Quitters have a low argumentation structure in problem solving (Aaidati et al., 2022).

Limitation

This study is limited to algebra issues and cannot be generalized to other areas of mathematics. The analysis focuses solely on students' steps in solving algebra problems, without considering external factors such as motivation that may influence students' performance. The limitation of this study lies in the very limited number of subjects,

namely, only one student for each category of Climbers, Campers, and Quitters. This condition makes the research results prone to individual bias that does not fully represent the AQ typology. This is because individual characteristics can vary greatly even among individuals of the same AQ type. Furthermore, the study only explores fluency, flexibility, and originality as components of creative thinking, leaving out the aspect of elaboration. These shortcomings may limit a comprehensive understanding of students' creative thinking abilities. This study also does not explore learning strategies or interventions that could enhance students' creative thinking skills in the setting of mathematics.

Implication

This study can guide teachers in using the open-ended problem-solving method, which allows students to explore various solutions and encourages flexible thinking. Considering the findings of this investigation, teachers need to provide non-routine questions for students with AQ Climbers, so that their creative thinking skills can develop. Teachers also need to provide gradual scaffolding for students with AQ Campers, so that students are encouraged to improve their learning outcomes. For students with AQ Quitters, teachers need to use a joyful learning approach to build students' confidence. Teachers can also design cooperative learning, where students with high AQ can assist their peers. Through this approach, teachers can play a role in helping students develop resilience and creativity, thereby improving their understanding of algebr

▪ CONCLUSION

The results of this study indicate a significant positive correlation between Adversity Quotient (AQ) scores and the percentage of students' creative thinking abilities. This means that the higher the students' resilience in facing difficulties (AQ), the higher their ability to think creatively. Students with the Climbers AQ type demonstrate high creative thinking abilities. They are able to see problems from various perspectives and use a variety of strategies to find solutions. Their persistence in facing difficulties is driven by strong intrinsic motivation and good emotional management skills, so they do not give up easily and are able to produce original and appropriate ideas. Meanwhile, students with the Camper AQ type demonstrate moderate levels of creativity. They are confident and try to solve problems using specific strategies, but tend to act spontaneously without deep reflection. Their tendency to be easily satisfied or discouraged prevents them from evaluating their performance, resulting in less than ideal solutions despite demonstrating flexibility and originality in thinking. Students with the Quitters AQ type demonstrate low creative thinking abilities. They give up easily when faced with challenges, lack motivation to learn, and do not show resilience in their thinking. Their inability to overcome obstacles results in limited ideas and a low ability to develop alternative problem-solving strategies.

It is recommended that further research should be expanded to other mathematical topics to examine the consistency of AQ's influence on creative thinking abilities across various mathematical domains. Subsequent research must integrate other variables, such as learning motivation, interest, or environmental support, to provide a more comprehensive understanding of the factors influencing mathematical creativity. In addition, future research should involve more subjects in each Climbers, Campers, and

Quitters category. That way, the findings will be more representative and reduce the potential for individual bias. It is important for subsequent studies to explore elaboration as an important component of creative thinking, so that understanding student creativity becomes more complete. Thus, further research is expected to not only be descriptive-exploratory, but also develop towards experimental or quasi-experimental studies, so that it can provide stronger practical recommendations for the world of education.

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