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Students Profile of Adversity Quotient in Mathematics Learning: Control, Origin and Ownership, Reach, and Endurance

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ABSTRACT

This study aims to map high school students' Adversity Quotient (AQ) profile in mathematics learning from the perspective of Control, Origin and Ownership, Reach, and Endurance (CO2RE) dimensions. Data were collected from 168 tenth-grade students in mathematics classes from six senior high schools in Aceh Tengah, Indonesia. The students' AQ was measured using the Adversity Response Profile in Mathematics Learning (ARP-ML). The ARP-ML consisted of 20 items with an equal distribution for each CO2RE subconstruct and used a 5-point Likert scale for each item. The study results showed that AQ significantly and positively correlates with mathematics achievement. Students with higher AQ tend to have higher mathematics achievement, and vice versa. The Adversity Quotient profile of students is dominated by moderate and low AQ (50% and 45%, respectively), with only 5% of the students having higher AQ. Higher AQ students have higher Control (C), Origin and Ownership (O2), Reach (R), and Endurance (E) than the Moderate and Low AQ students. These findings imply that students with higher AQ tend to have high mathematics achievement. Therefore, educators, parents, and other stakeholders need to develop students' AQ to facilitate their achievement of improved outcomes in mathematics learning.

Keywords: adversity quotient, CO2RE dimensions, mathematics achievement, adversity response profile in mathematics learning, high school students

INTRODUCTION

The Adversity Quotient (AQ) is defined as the psychological capacity of individuals to overcome challenges and influences their approach to achieving success (Stoltz, 1997). AQ predicts an individual's success in facing adversity, how they respond and adapt to challenging circumstances, and how they manage the situation (Mudkanna Gavhane & Pagare, 2024; Phoolka & Kaur, 2012; Stoltz, 2004; Suryaningrum et al., 2020; Tian & Fan, 2014; Zhao & Sang, 2023; Zulmi & Tentama, 2024). Furthermore, in confronting problems, an individual's AQ can be inferred from their ability to identify the problem's trustworthy source, limit the difficulty's effects, and remain optimistic to overcome the challenges (Johnson, 2005). Stoltz illustrated this concept by analogizing it to the types of mountaineers: Quitters, Campers, and Climbers - as the types of AQ of individuals (Stoltz, 1997). These three types exhibit distinct responses when climbing a mountain and consequently, experience differing levels of achievement in their lives.

Quitters, according to Stoltz, lead compromised lives. This group chooses to abandon the ascent in mountain climbing and opt for less challenging alternatives (Stoltz, 1997). Quitter-type students tend to avoid and surrender when facing learning difficulties in the educational setting. A study suggested that Quitter students are prone to easily surrendering and exiting problems (Damayanti et al., 2020; Juwita & Usodo, 2020). They often believe that if the difficulty cannot be overcome, they rather avoid confronting the difficulty. Several studies have shown that in mathematics learning, Quitter-type students are reluctant to solve mathematical problems (Dina et al., 2018) and perceive themselves as incapable (Wardani & Mahmudi, 2019).

The second type of individual is the Campers. Stoltz's mountain climbing analogy, defined them as individuals who only go a certain distance before pausing and declaring, 'I cannot proceed any further.' When they are tired of climbing, they end the climb and find a comfortable plateau to avoid further challenges and choose to spend their time (Stoltz, 1997). For Campers-type individuals, life seems easy, except for the constant change that threatens their "campground." Campers-type students are typically individuals exhibiting a low-risk tolerance and demonstrating satisfaction with their performance, even if it falls short of their potential. In mathematics learning, Campers-type students have a semi-conceptual thinking process in solving mathematical problems (Riswang et al., 2021; Yustiana et al., 2021), do not try their best (Darmawan et al., 2019), and are easily satisfied with their achievements (Kartikaningtyas et al., 2018).

The third type of individual is the Climbers. In contrast to Quitters and Campers, Climbers-type students are identified by their persistent efforts to solve problems fully (Fauziah et al., 2020), possess the belief that obstacles will not deter their pursuit of success (Kartikaningtyas et al., 2018), and have well-defined goals and objectives when learning (Darmawan et al., 2019).

Serving as an indicator of individuals' resilience, these three AQ types are classified as high (Climbers), moderate (Campers), and low (Quitters) (Stoltz,

1997). They are then defined into four dimensions of AQ, known as CO2RE: Control (C), Origin and Ownership (O2), Reach (R), and Endurance (E). CO2RE is described by Stoltz as follows: (1) Control: an individual's capacity to exert control over the situation and themselves when facing a problem; (2) Origin: an individual's ability to identify the problem's origin; (3) Ownership: an individual's acceptance of responsibility for the consequences arising from the problem; (4) Reach: an individual's perception of the problem's impact on various aspects of their life; and (5) Endurance: an individual's perception of the problem's duration.

Numerous studies have explored the influence of students' AQ on their academic performance in mathematics, including academic capability (Amir et al., 2021; Dewanto & Pratiwi, 2019; Hastuti, 2018), learning achievement (Hastuti, 2018), learning motivation (Anggraini & Mahmudi, 2021; Hasanusi et al., 2024; Rustan et al., 2022), interpersonal skills (Vila & Sanz, 2013); and leadership (Hulaikah et al., 2020; Juwita & Usodo, 2020). A previous study found that AQ positively influences students' mathematical understanding, with a coefficient of determination of 51.4% (Hidayat et al., 2019). Another study found that AQ exerts a positive influence on the development of students' mathematical argumentation skills, with an influence of 60.2% (Hidayat & Sariningsih, 2018). Thus, AQ plays a crucial role in learning mathematics.

Several recent studies also investigate the AQ profiles of students learning mathematics at schools. A study reported that in implementing the Indonesia Realistic Mathematics Education (Indonesia-RME) approach, students are primarily categorized as Climbers. Furthermore, in problem-solving, Climber students were found to use a broader range of problem-solving strategies than Camper students (Dina et al., 2018). However, limited study examines the AQ profiles of students in learning mathematics based on the CO2RE dimension. This article aims to map the profiles of students' AQ in mathematics learning from the CO2RE dimension. The targeted profiles are mapped across four AQ dimensions: Control, Origin and Ownership, Reach, and Endurance (CO2RE), and three AQ levels (Quitter, Camper, and Climber). Teachers and practitioners in mathematics education can use an understanding of students' AQ profiles within the context of mathematics learning to determine the appropriate approaches for teaching and motivating students.

METHODOLOGY

This qualitative study explored the AQ profiles of students in solving mathematical problems. Primary data were collected from 168 Year 10 students from six schools (three senior high schools and three Islamic senior high schools). The schools were chosen to represent high, moderate, and low academic performance levels, as detailed in Table 1.

Table 1.
Research Respondents

School	School Academic Performance	Number of Students	Percentage
Senior High School 1	High	30	17.86%
Senior High School 2	Moderate	28	16.67%
Senior High School 3	Low	28	16.67%
Islamic Senior High School 1	High	27	16.07%
Islamic Senior High School 2	Moderate	26	15.48%
Islamic Senior High School 3	Low	29	17.26%

The AQ was measured using the Adversity Response Profile (Stoltz, 1997, 2010), adopted by Santos (2012) and Venkatesh & Shivaranjani (2016). Within Stoltz's framework, the Adversity Response Profile (ARP) questionnaire consists of five main sub-dimensions of CO2RE, representing Control (C), Origin and Ownership (O2), Reach (R), and Endurance (E). We modified the ARP to measure students' AQ in learning mathematics, known as ARP-Mathematics Learning (ARP-ML). ARP-ML consists of 20 items with an equal distribution across the CO2RE sub-dimension and utilizes a five-point Likert scale. The Likert scale is measures students' preferences for a variable (Kelly & Tincani, 2013), such as the CO2RE sub-dimensions. The five options vary depending on the CO2RE sub-dimension being assessed. The items in the ARP-ML questionnaire are presented in the Appendix.

The ARP-ML underwent rigorous validity and reliability testing. Content validity was tested using the Lawshe Content Validity Ratio (CVR), quantifying the level of agreement among content experts regarding the relevance and importance of an item (Hendryadi, 2017; Lawshe, 1975). CVR was calculated based on the responses of nine experts (raters) to each statement using a three-point Likert scale with the response options: 'essential,' 'useful but not essential,' and 'not necessary' using the following formula (Lawshe, 1975).

$$\text{CVR} = \frac{2ne}{n} - 1 \qquad (1)$$

Where:

1. *ne*: the number of items rated as ‘essential’ by Subject Matters Expert (SME)
2. *n*: the number of SME who conducted the assessment

The criteria for validity with nine raters are 0.78 (p=0.05) (Lawshe, 1975). Items judged to be essential by at least eight raters were retained. Otherwise, items

deemed non-essential by most of raters were revised or replaced. The CVR calculation results reported p=0.05 for one tailed test and CVR=0.73 (Not Valid).

Table 2.
Content Validation Results

Item	CVR_1		Result	CVR_2		Result
C1	0.78	Valid	Retained			
C2	0.56	Not Valid	Revised	0,90	Valid	Retained
C3	0.56	Not Valid	Revised	0,78	Valid	Retained
C4	1.00	Valid	Retained			
C5	1.00	Valid	Retained			
O_21	0.33	Not Valid	Replaced	0,78	Valid	Retained
O_22	1.00	Valid	Retained			
O_23	0.56	Not Valid	Revised	0,78	Valid	Retained
O_24	1.00	Valid	Retained			
O_25	1.00	Valid	Retained			
R1	1.00	Valid	Retained			
R2	0.56	Not Valid	Revised	0,78	Valid	Retained
R3	1.00	Valid	Retained			
R4	1.00	Valid	Retained			
R5	0.11	Not Valid	Replaced	0,78	Valid	Retained
E1	0.56	Not Valid	Revised	0,78	Valid	Retained
E2	0.33	Not Valid	Replaced	0,78	Valid	Retained
E3	0.33	Not Valid	Revised	0.78	Valid	Retained
E4	1.00	Valid	Retained			
E5	1.00	Valid	Retained			

The validity test results also showed that 11 items on the ARP-ML were retained, six items were revised, and three items were replaced. After the revision of the six items and replacement of the three items, they were re-validated to examine the validity of the ARP-ML. The validation results showed reported p=0.05 for one-tailed test and CVR=0.90. Therefore, all items within each sub-dimension of the ARP-ML instrument were deemed valid and retained. The first and second validation results are presented in the Table 2.

The Cronbach's Alpha coefficient for each ARP-ML sub-dimension demonstrated acceptable reliability for the total sample size of 71 participants. It was 0.73 for Control; 0.69 for Origin and Ownership; 0.80 for Reach; and 0.83 for Endurance. Two commonly referenced benchmarks exist for interpreting Cronbach's alpha reliability, namely a minimum acceptable threshold of 0.70

(Eisingerich & Rubera, 2010) and 0.60-0.70 for an "acceptable level of reliability" (Hair et al., 2017; Ursachi et al., 2015). Thus, while the reliability coefficient for the Origin and Ownership sub-dimension is relatively lower, it remains within the acceptable range.

The data analysis was performed in four steps: (1) The ARP-ML questionnaire was analyzed to determine the categorization of the students in each AQ level; (2) The ARP-ML questionnaire was analyzed to determine the categorization of CO2RE dimensions; (3) Student's written responses was analyzed to determine their verbal and non-verbal responses during problem-solving tasks; and (4) Student's interview transcripts was analyzed to determine the students' strategies and emotional reactions.

The ARP-ML questionnaire was administered to 168 students to determine the AQ characteristics of each student in mathematics learning. Data analysis was conducted by calculating each statement item's total score and average for each CO2RE sub-dimension. Following this, the data obtained were grouped into each AQ level and CO2RE sub-dimension to be illustrated and interpreted according to their profile by referring to the following CO2RE subdimension score (Table 3).

Table 3.
Categorization of Adversity Quotient Levels and Groups (Wardani & Mahmudi, 2019)

Score	AQ Level	Group	Profile
0 ± 119	Low	Quitters-type	Students who may find it difficult to cope with challenges and adversity, and may be more likely to experience negative consequences as a result.
160 ± 199	Medium	Campers-type	Students who are able to cope with challenges and adversity, but may sometimes experience setbacks or difficulties.
240 ± 300	High	Climber-type	Students who are able to effectively cope with challenges and adversity, and who often use these experiences as opportunities for growth.

In this research, Control (C) signifies the self-regulatory strategies employed by students in response to situations encountered during mathematics learning. Origin and Ownership (O2) pertains to the student's understanding of the sources and responsibilities associated with the challenges or difficulties encountered during their mathematics learning. Reach (R) can be interpreted as the student's ability to transcend the boundaries or constraints in comprehending and applying mathematical concepts. Endurance (E) refers to the student's capacity to persevere and maintain commitment amidst challenges or difficulties encountered over the long term in their mathematics learning endeavors.

RESULTS

Analysis of the ARP-ML questionnaire that was distributed to 168 students revealed that the following composition of students Adversity Quotient (AQ) profile.

Table 4.
Categorization of Students' Adversity Quotient Levels and Groups

Score	AQ Level	Group	Profile	Number of Students	Percentage
0 ± 119	Low	Quitters-type	Students who may find it difficult to cope with challenges and adversity, and may be more likely to experience negative consequences as a result.	75	44.64%
160 ± 199	Medium	Campers-type	Students who are able to cope with challenges and adversity, but may sometimes experience setbacks or difficulties.	84	50.00%
240 ± 300	High	Climber-type	Students who are able to effectively cope with challenges and adversity, and who often use these experiences as opportunities for growth.	9	5.36%

Table 4 shows half of the students were in the Campers group, around 45 % were the Quitters group and remaining were the Climbers. This indicates that the proportional distribution of student AQ profiles is dominated by Campers and Quitters, who together comprise 95% of the student population. These results corroborate previous studies (Bakare, 2015a; Phoolka & Kaur, 2012; Viyani et al., 2022; Wicaksana et al., 2016; Yusuf & Adigun, 2010), reporting a higher prevalence of Campers and Quitters compared to Climber students in mathematics learning. Bakare, for instance, reported a distribution pattern of 17% Climbers, 62% Campers, and 21% Quitters (Bakare, 2015a).

Table 5.
Distribution of AQ groups and levels based on school groups

AQ Level	AQ Group	School Level		
		High	Medium	Low
High	Climbers	66.67%	22.22%	11.11%
Medium	Campers	32.14%	38.10%	29.76%
Low	Quitters	25.33%	33.33%	41.33%

Despite the lack of existing literature demonstrating the relationship between AQ and school level, this study revealed a potential linear relationship between them. The findings suggest that there may be a relationship between AQ level and school level. Students from high-level schools may have more opportunities to develop their AQ, leading to better mathematics learning outcomes. However, it is important to note that the disparity between Campers and Quitters students from high-level schools is not large, suggesting that other factors, such as individual characteristics, may also play a role in mathematics learning outcomes. This study found a linear pattern between AQ level and mathematics learning achievement, as detailed on Tables 6 and 7.

Table 6.
Pearson Correlation of AQ and mathematics learning outcome

Correlations			
		Adversity Quotient	Learning Outcome
Adversity Quotient	Pearson Correlation	1	.588**
	Sig. (2-tailed)		.000
	N	168	168
Learning Outcome	Pearson Correlation	.588**	1
	Sig. (2-tailed)	.000	
	N	168	168
**. Correlation is significant at the 0.01 level (2-tailed).			

Table 7.
Distribution of AQ levels based on mathematics learning achievement

AQ Level	AQ Group	Mathematics Learning Achievement		
		High	Moderate	Low
High	Climbers	77.78%	22.22%	0.00%
Medium	Campers	25.00%	58.33%	16.67%
Low	Quitters	0.00%	41.33%	58.67%

Table 6 showed that the correlation coefficient is 0.588 (p=0.00), indicating a strong and positive relationship between AQ and learning outcomes.

In other words, students with higher AQ tend to have better learning outcome. Students with higher AQ are more likely more resilient and persistent, which helps them to succeed in mathematics learning. They are also better at coping with stress. This finding is in line with previous studies reporting a strong and significant relationship between AQ and mathematical performance (Bakare, 2015b; Hidayat & Husnussalam, 2019; Mohd Adnan & Mohd Matore, 2022).

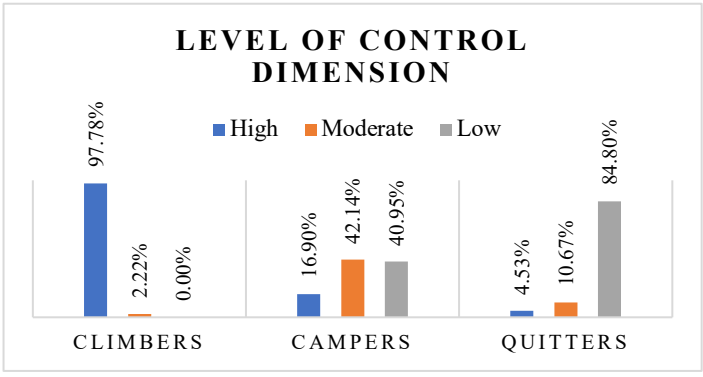
Furthermore, Table 7 showed that Climbers are dominated by high-achieving students, Campers are dominated by moderate-achieving students, and Quitters are dominated by low-achieving students. This study suggests that AQ significantly predicts mathematics learning achievement. This is supported by studies showing that students with high AQ have greater motivation, self-confidence, and expectations, which drive them to persist in learning mathematics despite difficulties (Dewanto & Pratiwi, 2019; Phoolka & Kaur, 2012; Safi'i et al., 2021).

DISCUSSION

The results of the ARP-ML questionnaire analysis revealed significant differences in the CO2RE dimensions between Climber, Camper, and Quitter students. Climbers exhibit significantly higher score on Control (C), Origin and Ownership (O2), Reach (R), and Endurance (E) compared to Campers and Quitters. Additionally, Campers also have higher Control (C), Origin and Ownership (O2), Reach (R), and Endurance (E) than Quitters. The following is the AQ profile of students based on the CO2RE dimensions. The results are presented in Figures 1 to 4.

The dimension of Control (C) asesses the degree of self-regulation students exhibits in response to situation encountered during mathematics learning. Our findings reveal that, compared to Quitters, Climbers and Campers demonstrate significantly greater self-control on the control dimension.

Figure 1.



Distribution of Control Dimension

This study revealed that students categorized within the Quitter group exhibited low control in mathematics learning, evidenced by a significant influence level reaching 84.80%. This indicates that the presented situations significantly impacted their responses and decision-making. In mathematics learning, students in this group are demonstrated a greater overwhelmed by challenges and setbacks. They may experience feelings of helplessness and hopelessness, further hindering their progress in mathematics learning.

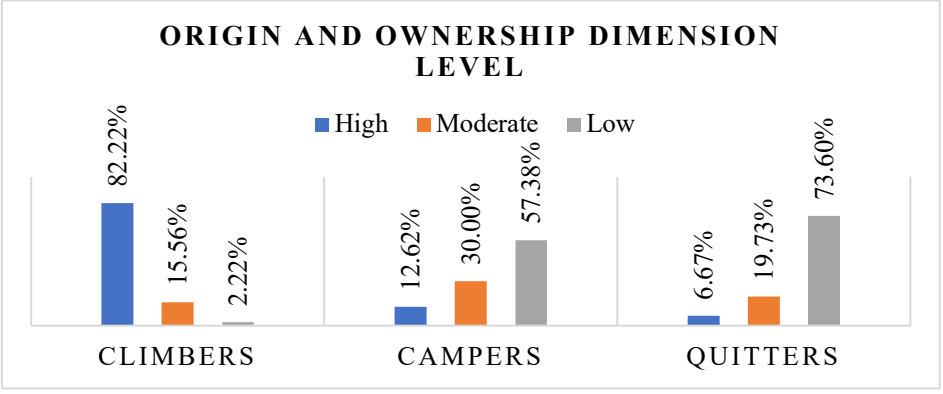
In contrast, the Campers displayed a more moderate influence level of 42.14%, indicating better self-control under presented situations. However, the disparity between moderate and low control is not significant. Conversely, the Climbers demonstrated the highest level of self-control, with an influence level 97.78%. This finding suggest that the presented situations minimally impacted their responses, showcasing their ability to maintain self-regulation and control.

These findings highlight the crucial role of the Control (C) dimension in mathematics learning and its association with student self-efficacy. Promoting self-directed learning strategies can empower students to take charge of their learning processes, foster greater control, and ultimately enhance their self-efficacy and academic performance (Cleary & Zimmerman, 2004; Zimmerman, 2002).

The concept of Origin and Ownership (O2) focuses on student's awareness of the source and claim of ownership over the challenges or difficulties they encounter. This necessitates the ability to discern whether the challenge originates from within themselves or from external forces, while simultaneously recognizing their personal responsibility for overcoming the obstacle. This study revealed that Climbers demonstrate a significantly higher level of origin and ownership for the challenges they encounter compared to Campers and Quitters. However, the origin and ownership level of Campers and Quitters are relatively similar.

Figure 2.

Distribution of Origin and Ownership Dimension Level



The disparity is further highlighted by the observed similarity in Origin and Ownership (O2) level between Campers and Quitters. Empirical findings provide further support for this notion, revealing a consistent linear pattern in the low O2 levels of both Campers and Quitters. Notably, achievement rates for Campers and Quitters with low O2 levels were recorded at 57.38% and 73.60%, respectively. The findings underscore the pivotal role of Origin and Ownership (O2) dimension in mathematics learning. Students possessing a robust understanding of the origins of their difficulties and actively take ownership of their learning journey, demonstrably exhibit greater success in mathematics achievement.

In mathematics learning, cultivating awareness of the genesis of their struggles is paramount for students. Mapping the origin of these difficulties, whether rooted in a lack of foundational grasp or variations in learning pace, proves instrumental in designing effective learning strategies by both students and educators. Embracing the concept of Ownership empowers students to assume full responsibility for their mathematical learning journey. Recognizing the direct link between their dedication and effort to learning and their subsequent success or challenges fosters intrinsic motivation to persist and overcome obstacles. A study suggested that engaging in self-reflection holds significant potential in helping students gain deeper insights into their learning processes (García et al., 2007; Nelissen & Tomic, 1995).

Reach in mathematics learning can be interpreted as the ability of students to go beyond the boundaries or constraints in understanding and applying mathematical concepts. This study found that Climbers have a higher level of reach dimension than Campers and Quitters. The study found that climber students tend to develop critical and analytical thinking skills in mathematics learning. They can engage in more complex problem-solving and strive to find deeper solutions. This finding is supported by several studies that reporting that the Reach dimension can be used to understand how students develop the ability to go beyond the boundaries or constraints in understanding and applying mathematical concepts (Cobb et al., 1993; Yackel et al., 1993), and develop critical and analytical thinking skills (Ginsburg et al., 1998; Goos & Kaya, 2020).

This study revealed that Campers and Quitters groups exhibited a similar linear pattern in their low Reach levels, 63.10% and 76.26% respectively. This suggests that both groups have a similar tendency to not able to develop the ability to go beyond the boundaries or constraints in understanding and applying mathematical concepts. However, camper students exhibit a moderate level of Reach, with only 12.62% achieving a high Reach level. This finding suggests the potential need for additional support to equip camper students with the necessary skills to effectively transcend limitations and explore deeper understanding in mathematics learning. Meanwhile, quitter students demonstrate the lowest level of Reach, with a mere 8.00% reaching the high category. This observation implies that they may face significant challenges in developing the critical thinking and problem-solving abilities crucial for success in mathematics.

Endurance refers to the ability of an individual to persevere and remain committed when facing challenges over the long term. In mathematics learning, endurance or resilience can greatly influence how a student overcomes difficulties, errors, or obstacles that may arise during the learning process.

Figure 3. Distribution of Reach Dimension Level

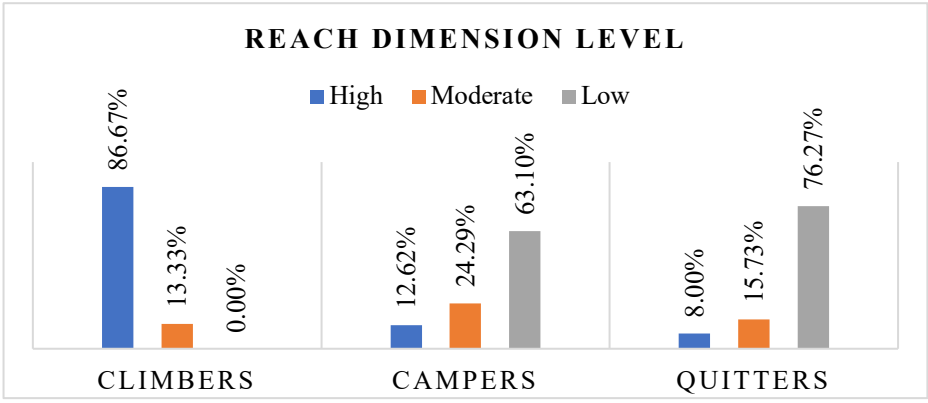
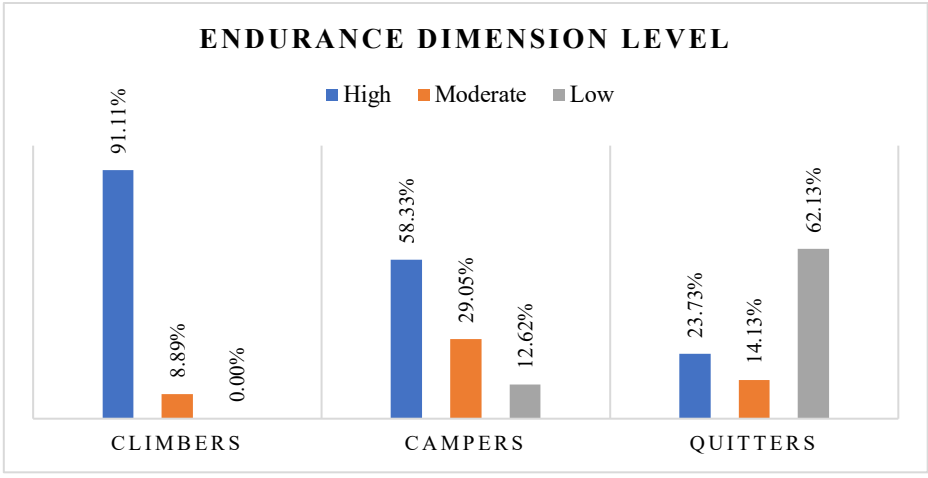


Figure 4.

Distribution of Endurance Dimension Level



This study demonstrated that Climbers have a higher endurance level compared to Campers and Quitters. Climber students have the highest Endurance level (91.11% reaching a high Endurance level). This suggests that climber students are more likely to persevere and remain committed to their mathematics learning, even when facing challenges. However, Campers students have a

moderate Endurance level (58.33% reaching a high Endurance level). The finding suggests that Campers may need more support in developing the perseverance and resilience necessary to succeed in mathematics learning. Meanwhile, Quitters have the lowest Endurance level, with only 12.38% of reaching a high Endurance level. This suggests that Quitters may be struggling to develop the perseverance and resilience necessary to succeed in mathematics learning.

Endurance includes the ability to stay calm and focused even when facing frustration. This study found that in mathematics learning, students experience frustration when encountering difficult concepts or problems. However, climber students are less likely to quit or lose their motivation when facing mathematical difficulties compared to Campers and Quitters. Students with high endurance are more likely to be able to overcome difficulties and obstacles in mathematics learning. They are also more likely to be able to stay focused and motivated, even when they are struggling. High endurance drives students to persevere in their efforts to understand complex mathematical concepts. Climber students are willing to repeat exercises, solve problems, and take extra time to understand better, even when they are struggling. These findings are supported by several studies that revealing that students with high endurance and motivation tend to have better mathematics problem-solving skills (Astiantari et al., 2022), positively impacting on their mathematics achievement (Rahayu & Istiani, 2019).

CONCLUSIONS

Analysis of the Adversity Response Profile – Mathematics Learning (ARP-ML) questionnaire revealed that climber students exhibited significantly higher level of Control (C), Origin and Ownership (O2), Reach (R), and Endurance (E) compared to Campers-type and Quitters-type students. This finding confirms a positive relationship between Adversity quotient (AQ) and mathematics learning achievement. Students with high AQ (Climbers) tend to demonstrate higher mathematics learning achievement, while students with low AQ (Quitters) tend to exhibit lower achievement. The AQ profile of students in mathematics learning is dominated by Campers and Quitters (50.00% and 44.64%, respectively). Climber students only account for 5.36% of the total students.

On the Control (C) dimension, Climbers displayed significantly stronger self-control compared to the Campers and Quitters. This indicates superior resilience and decreased susceptibility to situational influences in the Climber group. Furthermore, on the Origin and Ownership (O2) dimension, Climber students demonstrated a significantly higher level of understanding and responsibility for the challenges encountered during mathematics learning compared to Campers and Quitters. This indicates a positive and proactive approach towards challenges. Climber students also exhibited a significantly higher Reach level than Campers and Quitters, suggesting a greater capacity for developing critical and analytical thinking skills. Finally, the level of endurance of climber students significantly surpassed that of Campers and Quitters, highlighting their superior ability to persevere when facing

learning difficulties.

These finding emphasize the crucial role of AQ in mathematics learning. Students with high AQ tend to demonstrate superior academic perfomance in mathematics. Consequently, educators and parents should prioritize fostering AQ development in students to facilitate their mathematics achievement.

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Appendix

Appendix 1.
Adversity Response Profile Questionnaire – Mathematics Learning

Dimension: Control

To what extent do the following situations/things influence you?

1. Has Very Little Effect (VLtE)
2. Has No Effect (NE)
3. Has a Small Effect (SE)
4. Has a Large Effect (LE)
5. Has a Very Large Effect (VLaE)

	Situation	1	2	3	4	5
1.	C Your friends cannot comprehend your responses during discussions.	[	☐	[	☐	[

C2.	You have difficulties in learning Mathematics.	☐	☐	☐	☐	☐
C3.	You lack sufficient basic knowledge of Mathematics.	☐	☐	☐	☐	☐
C4.	You have significant conflicts with friends/family.	☐	☐	☐	☐	☐
C5.	The cellphone you use for online learning is damaged, despite repeated attempts at repair.	☐	☐	☐	☐	☐

Dimension: Origin & Ownership

To what extent do you feel responsible for improving the following situation?

1. Very irresponsible (VI)
2. Irresponsible (I)
3. Partially responsible (PR)
4. Mostly responsible (MR)
5. Very responsible (VR)

	Situation	1	2	3	4	5
O_21.	Your Mathematics grade did not meet the minimum competency criteria, so you do not pass the test.	☐	☐	☐	☐	☐
O_22.	You are not recommended to participate in the Mathematics Olympiad even though your grades are good.	☐	☐	☐	☐	☐
O_23.	There is a group member who does not want to be in the same group with you again.	☐	☐	☐	☐	☐
O_24.	You failed to complete the mathematics assignment given by the teacher.	☐	☐	☐	☐	☐
O_25.	The mathematics teacher ignores you in the learning.	☐	☐	☐	☐	☐

Dimension: Reach

To what extent will the consequences of the following situations affect every aspect of your life?

1. Has Very Little Effect (VLtE)
2. Has No Effect (NE)
3. Has a Small Effect (SE)
4. Has a Large Effect (LE)
5. Has a Very Large Effect (VLaE)

		Situation	1	2	3	4	5
1	R	Being praised by a mathematics teacher	☐	☐	☐	☐	☐
2	R	Having all of one's group members present for a mathematics group project	☐	☐	☐	☐	☐
3	R	Going through a number of major problems at school in one day	☐	☐	☐	☐	☐
4	R	Being motivated to complete a mathematics problem	☐	☐	☐	☐	☐
5	R	Feeling confident in facing mathematics problems that are different from the examples the teacher provides	☐	☐	☐	☐	☐

Dimension: Endurance

What is your opinion on the following situation?

1. Strongly disagree (SD)
2. Disagree (D)
3. Partially agree (PA)
4. Mostly agree (MA)
5. Strongly agree (SA)

		Situation	1	2	3	4	5
1	E	You are able to overcome problems in learning mathematics so that they do not affect other aspects of your life	☐	☐	☐	☐	☐
2	E	You are confident that you can complete mathematics assignments on time	☐	☐	☐	☐	☐
3	E	You are brave to express different opinions when learning mathematics,	☐	☐	☐	☐	☐

		because you believe that differences of opinion are not something wrong				
4	E	You always try to prevent personal problems from affecting your learning/completing mathematics assignments.	☐	☐	☐	☐	☐
5	E	You continue to strive to solve mathematics problems, because you believe that you can successfully solve them.	☐	☐	☐	☐	☐