

Relationship between resilience, cognitive style and problem-solving ability among college students

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Abstract

The objective of the present study was to study the relationship between resilience, cognitive styles, and problem-solving ability among college students. The study was conducted on 100 participants (Male=25, Female=75), from the different academic streams of St. Johns College, Agra. Bharathiar University Scale Form A by Annalaxmi (2009) ^[1], Cognitive Style Inventory by Jha (2001) ^[9], and Problem-Solving Ability Scale by Sharmila and Subramani (2011). For the data analysis Pearson Product Moment Coefficient of Correlation was used. The result of the study indicated that there is a significant positive relationship between resilience and cognitive styles ($r=.347$ for systematic and $r=.229$ for intuitive). There is a significant positive relationship between Resilience and problem solving ability ($r=.223$). Result also indicates that there is a significant positive relationship between problem-solving ability and cognitive style (with systematic $r=.523$, with intuitive $r=.455$).

Keywords: Resilience, systematic cognitive style, intuitive cognitive style, problemsolving ability

Introduction

To assist college students, thrive academically, and grow personally, it's important to understand how their thinking patterns, capacity to deal with problems, and problem-solving abilities are connected. A resilient person is someone who knows how to bounce back from difficult times by maintaining psychological equilibrium. Such individuals are often calm, positive, and possess a high emotional quotient. They are ready to self-improve and know how to overcome challenges such as trauma, tragedy, personal crises, and other difficulties with a positive mindset. Cognitive style refers to an individual's unique way of thinking, processing, and perceiving information, and cognition is the attainment of knowledge that involves a series of mental skills. People with a systematic cognitive style think more deeply by analysing information logically and using reasoning methods. In contrast, those with an intrusive cognitive style rely more on their instincts and a deeper personal understanding.

Whereas problem-solving ability is an individual's capacity to resolve problems based on their understanding. This is another important skill for students to take a decision in tackling the personal and professional challenges of life. Ponce-Garcia (2012) ^[11] investigated the relationship between resilience and cognitive style, which shows that there are three thinking styles: executive, external, and hierarchic, which are linked to resilience in young adults. There is a strong relationship between problem-solving skills and resilience; students who are more resilient tend to have better problem-solving abilities because they can stay calm and concentrated under pressure (Coskun, Garipagaoglu, and Tosun, 2014) ^[6]. Students who are able to modify their thought processes are more adept at controlling their emotions and actions, which in turn strengthens their resilience. Cognitive flexibility, a subset of cognitive style, is the mediator in this link between self-regulation and resilience. Resilience also acts as a mediator in the connection between academic achievement and cognitive styles. Students who are resilient use cognitive processes to solve problems more skilfully and overcome academic

obstacles. The relationship between cognitive style, resilience, and problem-solving among college students is complex and interrelated. Cognitive flexibility boosts resilience, which promotes successful problem resolution. Understanding this relationship can help create interventions and support systems to improve student outcomes in higher education.

Review of literature

Bashir *et al.*, (2013) ^[2] investigated the relationship of cognitive style and decision-making style with resilience on 152 students from Gujarat, Pakistan was randomly selected between the age 20-25 years. Data was analysed by correlation and regression analysis. Results of the study indicated that there was a positive relationship of resilience with cognitive style but decision-making style found non-related with resilience.

Coskun, Garipagaoglu, and Tosun (2014) ^[6] investigated the resilience level of university students and its relationship with their problem-solving abilities using a survey method. The data was collected on 325 students at Yeditepe University in Istanbul, Pearson correlation coefficient of -0.672 ($p<0.05$). This indicates a positive and moderately strong relationship between students' resiliency levels and their problem-solving skills.

Zamani, Nasir, Sulaiman, Khairudin and Halim (2014) ^[19] examined the differences in resilience and cognitive styles between generations born before and after Malaysia's independence in 1957. A total of 552 respondents were surveyed using the Resilience Scale and Group Embedded Figures Test (GEFT). The results indicated that there were significant positive correlations between resilience and cognitive styles for pre-independence generations.

Yaghoobi, Mokhtaran and Mohammadzadah (2019) ^[18] investigated cognitive style, psychological resilience as predictors of academic burnout. There were 9,900 girls' students out of them 368 were selected through multistage cluster-sampling. A significant difference was found between students' educational fatigue based on cognitive style and psychological resilience. Study also found a

significant effect of cognitive style and psychological resilience on educational fatigue in students.

Rahayu, Kartono, Dwijanto, and Agoestanto (2022) examined the problem-solving process of mathematics students with a reflective cognitive style. Based on the results students with a reflective cognitive style solve probability problems in five stages: reading and understanding the problem, presenting the problem, developing problem-solving strategies, solving the problem, and confirming the answer. A key finding is that the student's cognitive style significantly influences the problem representation step in the problem-solving process.

Surekha and Kalpana (2022) [17] examined academic resilience and problem-solving ability among 300 higher secondary students, selected using stratified random sampling. Results indicated a strong positive correlation between academic resilience and problem-solving ability, with significant differences observed based on gender.

Chakraborty (2024) [4] explored the relationship between cognitive styles and problem-solving styles in 190 young adults studying social sciences and technical subjects. Results showed a significant positive correlation between systematic cognitive style and both sensing and feeling problem-solving styles, and a negative correlation with thinking problem-solving style.

Rational of the study

While there is substantial research on each of these variables independently, there are relatively few studies that explored their interrelationships in a comprehensive manner among college students. This study aims to fill this gap by simultaneously examining resilience, problem-solving behavior, and cognitive style. Resilience, problem-solving behavior, and cognitive style are critical factors that influence academic success and overall well-being among college students. Resilient students with effective problem-solving skills and adaptive cognitive styles are likely to perform better academically. By studying these relationships, educators and policymakers can develop interventions to enhance these traits, thereby improving academic outcomes. Resilience is closely linked to mental health. Students who can effectively cope with stress and solve problems are less likely to experience anxiety and depression. Exploring how cognitive styles influence resilience and problem-solving behaviors can inform mental health support services in educational institutions. College years are formative, and students develop life skills that extend beyond academics. By fostering resilience and problem-solving skills, colleges can help students become well-rounded individuals capable of navigating various life challenges. Therefore, the researchers are inquisitive to investigate the relationship between resilience, cognitive style and problemsolving ability among college students.

Aim

To study the relationship between resilience, cognitive style, and problem-solving ability among college students.

Objectives

- To study the relationship between resilience and cognitive style (systematic and intuitive) among college students.
- To study the relationship between cognitive style (systematic and intuitive) and problem-solving ability among college students.

- To study the relationship between resilience and problem-solving ability among college students.

Hypotheses

- There will be a positive relationship between resilience and cognitive style (systematic and intuitive) among college students.
- There will be a positive relationship between cognitive style (systematic and intuitive) and problem-solving ability among college students.
- There will be a positive relationship between resilience and problem-solving ability among college students.

Variables

- Resilience
- Cognitive style
- Systematic
- Intuitive
- Problem-solving ability

Sample

The sample was consisted 100 under graduate students (25 male and 75 female) age ranged from 18 to 25 years, from different academic streams of St. John's College, Agra. Random sampling was used.

Tools

Bharathiar University Resilience Scale (Form A) by Annalakshmi (2009): Bharathiar University Resilience Scale use to measure Resilience. The scale consisted of 30 items. All the items in the scale are based on personal statements, scored on a Likert scale with 5 degrees, from one to five points, the scores ranged from 30 to 150. The test-retest reliability of the scale is $r = 0.72$ and Cronbach Alpha for the scale was found to be $r = 0.82$. The concurrent validity of the scale is 0.65.

Cognitive Style Inventory by Jha (2001) [9]: The CSI is bi-dimensional inventory to measure both systematic and intuitive cognitive style. The inventory contains 20 items each. It is a five-point rating scale ranges from totally disagree (1), Disagree (2), Undecided (3), Agree (4) and Strongly Agree (5). The test-retest reliability for the whole test found 0.69 and full test split half reliability found 0.65.

Problem-Solving Ability Scale by Sharmila and Subramani (2011):

The scale has 40 items; it is a five-point rating scale Always (4), Often (3), Sometimes (2), Rarely (1), and Never (0). The scores range from 0 to 160. The reliability of problem solving ability scale is 0.71 and validity is 0.67.

Research Design

Correlational research design was used to study the relationship between resilience, cognitive style, and problem-solving ability among college students.

Statistical Analysis

Pearson Product Moment coefficient of correlation was used to study the relationship between resilience, cognitive style, and problem-solving ability among college students.

Data Analysis

Table 1: Correlation Matrix

	MEAN	SD	Resilience	Cognitive style 'S' category	Cognitive style 'I' category	Problem solving ability
Resilience	93.05	12.44	1	.347**	.229*	.223*
Cognitive style 'S' category	74.52	9.50	.347**	1	.769**	.523**
Cognitive style 'I' category	70.55	9.04	.229*	.769**	1	.455**
Problem solving ability	105.68	22.43	.223*	.523**	.455**	1

** p< 0.01, *p<0.05

Relationship between resilience and cognitive style

The correlation matrix (table 1) shows the positive correlation between resilience and cognitive styles (systematic and intuitive). Resilience found to be significant positively correlated with systematic style (r=.347, p< 0.01) and intuitive style (r=.229, p< 0.05). Thus, an increase in resilience would tend to increase in cognitive styles (systematic and intuitive). So, the first hypothesis which stated that ‘there will be a positive relationship between resilience and cognitive style (systematic and intuitive) among college students’ is accepted.

Relationship between cognitive styles and problem-solving ability

The correlation matrix (table 1) also shows that there is significant positive correlation between cognitive styles and problem-solving ability. Systematic cognitive style found significant positive correlated with problem solving ability (r=.523, < 0.01), and intuitive cognitive style also found to be significant positively correlated with problem solving ability (r=.445, < 0.01), thus an increment in cognitive style would also increases the problemsolving ability. So, the third hypothesis which states that ‘‘there will be a positive relationship between cognitive style (systematic and intuitive) and problem-solving ability among college students is accepted.

Relationship between resilience and problem-solving ability

The correlation matrix (table 1) also shows the positive correlation between resilience and problem-solving ability. Resilience found significant positively correlated with problemsolving ability (r=.223, < 0.05), indicates that increment in resilience would also tend to increase in problem solving ability. Thus, the second hypothesis which states that ‘there will be a positive relationship between resilience and problem-solving ability among college students’ is accepted.

Findings and Discussion

With the reference of the present study it is found that resilience has significant positive correlation with systematic cognitive style (r=.347, p< 0.01) with intuitive cognitive style (r=.229, p< 0.05) among college students. The reason behind is that the positive correlation with systematic cognitive style indicated that resilient individuals are more likely to engage in structured, organized thinking, while the relationship with intuitive style suggests that they may also trust their instincts and creativity when solving problems. The results aligned with Zamani *et al.* (2014), who also found correlation between resilience and cognitive styles among two different generations is considered vital because it can help people develop the right beliefs and

strategies to build resilience. In the same way Sikand *et al.* (2019) [16] found a significant correlation between systematic-cognitive style and resilience. Thus, the first hypothesis is accepted.

Further, the present study it is found that problem solving ability has significant positive correlation with systematic cognitive style (r=.523, < 0.01) and with intuitive cognitive styles (r=.445, < 0.01) among college students. In the same reference a study was conducted by Chakraborty and Kumar (2024) [4] suggested that there is a significant positive correlation between few cognitive style and problem-solving styles. The significant correlation suggested that both types of cognitive styles contribute positively to how students approach and resolve challenges. Systematic thinkers may benefit from their ability to methodically analyze problems, while intuitive thinkers might excel in generating creative solutions and thinking outside the box. According to a researcher Rahimi (2023) [13] cognitive styles significantly directly affect students’ problem-solving ability. This relationship between cognitive styles and problem-solving ability highlights the diverse ways in which different thinking approaches can enhance students' ability to tackle academic and real-world problems. Thus, second hypothesis is also accepted.

It is also found that resilience has significant positive correlation with problem solving ability (r=.223, < 0.05) among college students. The finding of Sharma (2015) [14] also revealed that there is a significant correlation between Resilience and Social problem solving skills in urban Indian adolescents. As psychological resilience and self-confidence increases problem-solving skills also improve. Additionally, when self-confidence increases, psychological resilience gets stronger too (Pinar, Yildirim, & Sayin, 2018) [8]. This finding also confirmed in the study conducted by Chen, Hui and Min (2020) [5] in which they stated that happiness and problem-solving skills positively affect an individual's resilience. Enhancing the happiness and problem-solving skills of undergraduate students can increase their resilience level. This indicates that an increase in resilience is also associated with an enhancement in problem-solving ability, suggesting that more resilient students are better equipped to handle and resolve challenges effectively. This indicates that an increase in resilience is associated with an enhancement in problem-solving ability, suggesting that more resilient students are better equipped to handle and resolve challenges effectively. Thus, hypothesis third is accepted.

Limitations

The present inquiry has certain limitations; therefore few suggestive measures are given for further researches, which are as follows:

- The study was conducted on limited sample of 100 students from St. John's College, Agra only. It is suggested that further research can be conducted on a larger sample.
- The study has not been done on below eighteen and above twenty five years of age group. So results cannot be generalized on other age group. It is suggested that the further research can be administered on other age groups also.
- The sample of the study do not included the rural area. Therefore the scope of the study is limited. It is suggested that further research can be conducted in rural areas well.

Conclusion

With reference to the present result it can be concluded that there is a significant positive relationship between resilience, cognitive styles and problem-solving ability among college students.

Implication of the Study

The study on "Measuring the Relationship between Resilience, Cognitive Style, and Problem Solving Ability among College Students" likely has several important implications. The study helps educators and curriculum developers about the importance of resilience and helps in adaptive cognitive styles; focus on building these traits may improve students' problemsolving abilities, which are crucial for academic and life success among students. For counselors and student support services this study helps in understanding the relationship between resilience, cognitive style, and problem-solving ability can help in developing targeted interventions for students who may be struggling. This support could be provided to enhance resilience, which in turn might improve academic performance and personal wellbeing. The study showed a strong correlation between resilience and cognitive style and may serve as predictors of academic success. This might lead to the development of assessments to identify at-risk students early and provide them with resources to boost their problemsolving skills. With the help of this study on a personal level, students could benefit from understanding their own cognitive styles and levels of resilience. The findings could influence policy makers at institutional levels, encouraging the inclusion of psychological resilience training and cognitive development exercises within the college curriculum, promoting a more holistic approach to student development and academic growth. The study could pave the way for further research across different demographic groups or educational settings.

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