



THE MEDIATING EFFECT OF PEER PRESSURE ON THE RELATIONSHIP BETWEEN ATTITUDES TOWARD SCIENCE AND BASIC SCIENCE PROCESS SKILLS

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ABSTRACT

This quantitative study investigates the mediating effect of peer pressure on the relationship between attitudes toward science and basic science process skills among Grade 9 students in Tagum City, Davao del Norte. It examines attitudes in terms of enjoyment, confidence, usefulness, and interest; peer pressure regarding yielding, resistance, and encouragement; and basic science process skills such as observing, classifying, inferring, measuring, and predicting. This study is anchored in Bandura's Social Cognitive Theory (1986), which suggests that positive attitudes toward science influence students' science process skills. Questionnaires adapted from Palani and Mani (2016), Ozcan and Koca (2020), and Maranan (2017) were used to gather data, which were analyzed using Mean, Pearson r Correlation, and Sobel z Test. The results showed high levels of attitudes toward science, peer pressure, and science process skills, with significant relationships observed between attitudes and peer pressure. However, peer pressure did not mediate the relationship between attitudes toward science and basic science process skills. Based on the findings, the study recommends promoting positive peer support systems, such as group projects and peer-led study sessions, to enhance science learning and development

KEYWORDS: *Science education, peer pressure, attitudes toward science, basic science process skills, quantitative research, mediating effect, Tagum City, Davao del Norte, Philippines*

THE PROBLEM AND ITS SETTING

Background of the Study

Students' lack of basic science process skills, such as observing, classifying, and predicting, hinders understanding of scientific concepts, affecting academic and real-world application (Mulyeni, 2019). These skills are often introduced haphazardly, causing confusion (Padilla, 2019). Global studies reveal

Statement of the Problem

This study aims to examine the mediating influence of peer pressure on the correlation between attitudes toward science and the basic science process skills among grade 9 students. Specifically, this study seeks to address the following questions:

1. What is the extent of attitudes toward science in terms of:
 - 1.1. enjoyment factor;
 - 1.2. confidence factor;
 - 1.3. usefulness factor; and
 - 1.4. interest factor?
2. What is the extent of peer pressure on students in terms of:
 - 2.1 yielding to peer pressure;
 - 2.2 resistance to peer pressure;
 - 2.3 peer encouragement?

METHOD

This chapter presents the method of the study, including research design, research respondents, research instruments,

deficiencies, with low competency levels in Turkey, Palestine, and Africa (Chakraborty & Kidman, 2021; Al-Rabbani, 2019). In the Philippines, the average competency score is 42% (Olivares & Espinosa, 2021). Despite studies, limited research explores the influence of attitudes toward science and peer pressure on skill development. This study investigates these factors to improve teaching strategies and science education in Davao del Norte

3. What is the level of basic science process skills of grade 9 students in terms of:
 - 3.1 observing;
 - 3.2 classifying;
 - 3.3 communicating;
 - 3.4 inferring;
 - 3.5 measuring; and
 - 3.6 predicting?
4. Is there a significant relationship between:
 - 4.1 attitudes toward science and basic science process skills;
 - 4.2 peer pressure and basic science process skills; and
 - 4.3 attitudes toward science and peer pressure?
5. Does peer pressure significantly mediate the relationship between attitudes toward science and basic science process skills?

data collection procedures, statistical tools, and ethical considerations.

Research Design

This study used a quantitative descriptive-correlational approach to examine peer pressure's mediation between attitudes toward science and science skills. It analyzed attitudes (e.g., enjoyment, confidence) and peer pressure (e.g., resistance, encouragement), offering insights into peer influence on science learning.

Research Respondents

The respondents were 204 Grade 9 students from five private junior high schools in Tagum City, selected using random and stratified sampling for proportional representation. The sample was determined with a 5% margin of error and 95% confidence level, ensuring reliable and representative data for the 2024–2025 academic year.

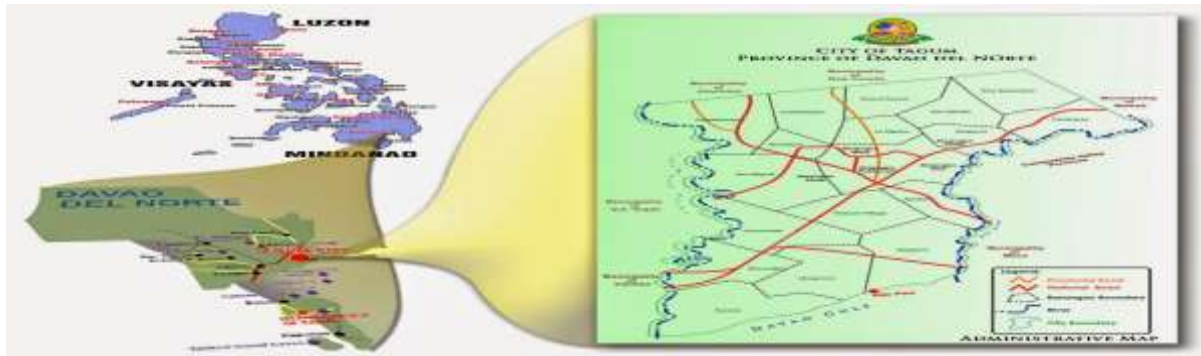


Figure 1. The map of Tagum City, Davao del Norte

STATISTICAL TREATMENT OF THE DATA

The study utilized Mean to assess attitudes toward science, peer pressure, and science process skills (questions 1–3), Pearson r Correlation to examine relationships among variables (question 4), and Sobel z Test to evaluate peer pressure's mediating effect between attitudes and science process skills (question 5).

RESULTS AND DISCUSSION

Extent of Attitude Toward Science in Terms of Enjoyment

Table 1 shows moderately positive attitudes toward science enjoyment (mean = 3.38, SD = 1.10). "Attending school on science days" scored highest (4.13), while "Feeling good in science class" scored lowest (2.57), indicating variability in engagement.

Extent of Attitudes Toward Science in Terms of Confidence

Table 2 shows moderate confidence in science (mean = 3.31). "Discussing science with friends" scored highest (3.43), while "Science questions do not scare me" scored lowest (2.66), indicating challenges in problem-solving for some students.

Extent of Attitude Toward Science in Terms of Usefulness

Table 3 shows students moderately value science's usefulness (mean = 3.35). "Research is important" (3.93) and "Learning science is necessary" (3.90) scored highest, while "Science solves daily problems" (2.82) scored lowest, reflecting challenges in real-life application.

Extent of Attitude Toward Science in Terms of Interest

Table 4 shows high student interest in science (mean = 4.14, SD = 1.15). Top items were "Learning science is not a waste" (4.41) and "Field trips interest me" (4.29), while "Experiments attract attention" scored 3.95.

Summary of the Extent of Attitude Toward Science

Table 5 shows students' attitudes toward science: Interest (4.14, High) ranked highest, while Confidence (3.00, Moderate) was lowest. Standard deviations (1.10–1.20) indicate variability,

highlighting diverse perceptions and areas for improving confidence and enjoyment.

Extent of Peer Pressure in Terms of Yielding to Peer Pressure

Table 6 shows students' low susceptibility to peer pressure, with a categorical mean of 2.31 (Low). The highest mean (3.93) was for defending friends, while the lowest (1.60) was for skipping classes. The standard deviation of 1.21 indicates varied responses, suggesting students generally exhibit strong independence.

Extent of Peer Pressure in Terms of Resistance to Peer Pressure

Table 7 shows students' low resistance to peer pressure, with a category mean of 2.48 (Low). The highest mean (3.37) was for resisting Facebook pressure, while the lowest (2.11) was for being honest with parents. A standard deviation of 1.25 indicates varied responses, suggesting struggles with independence.

Extent of Peer Pressure in Terms of Peer Encouragement

Table 8 shows peer encouragement with a high mean of 3.73 (SD = 1.26). The highest-rated item, "Friends motivate interest in studies" (4.08), highlights positive peer influence, with variability reflecting its significant impact on academic and personal decisions.

Summary on the Extent of Peer Pressure

Table 9 shows peer pressure across three categories: Peer Encouragement (3.73, High), Yielding (2.31, Low), and Resistance (2.48, Low). The overall mean of 2.84 (Moderate) suggests constructive peer influence, with varying impact (SD = 1.21–1.26).

The Level of Basic Science Process Skills

Table 10 shows Basic Science Process Skills, with Communicating scoring highest (86.95, Very High) and predicting lowest (50.00, Moderate). The overall mean of 68.71

(High) indicates proficiency, with variability (SD = 16.61–19.71), suggesting a need for targeted support.

Significance of the Relationship Among Variables

Table 11 shows weak, non-significant correlations between attitude and science process skills ($r = -0.101, p = 0.151$), and between peer pressure and science process skills ($r = 0.106, p = 0.130$). A weak negative significant correlation exists between attitude and peer pressure ($r = -0.171, p = 0.14$).

Mediation Analysis

Table 12 shows no significant mediation of Peer Pressure between Attitude Toward Science and Science Process Skills. Path C and Path B indicate no significant direct effects ($\beta = -2.188, p = 0.232; \beta = 2.465, p = 0.198$). However, Path A shows that Attitude significantly predicts Peer Pressure ($\beta = -0.164, p = 0.014$).

FIGURES AND TABLES

Figure 1. The map of Tagum City, Davao del Norte

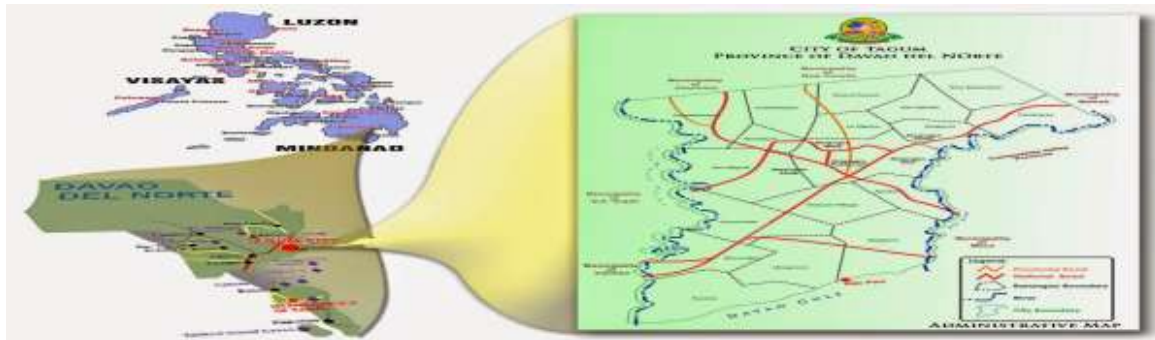


Table 1. Extent of Attitude Toward Science in terms of Enjoyment

Items		SD	Mean	Descriptive Equivalent
1.	I find the science class more enjoyable than other classes.	.94	2.92	Moderate
2.	I feel bad in science class.	*.92	*3.65	High
3.	I enjoy studying science.	.97	2.93	Moderate
4.	Science class is among the classes I dislike.	*1.06	*3.79	High
5.	I look forward to the science class.	.97	3.17	Moderate
6.	I get bored while listening to science teacher during our science class.	*1.10	*3.18	Moderate
7.	I feel entertained in science class.	1.02	3.33	Moderate
8.	Studying science makes me unhappy.	*1.24	*3.61	High
9.	I feel good about myself in science class.	1.04	2.57	Low
10.	School becomes unbearable on days when there is science class.	*.95	*3.74	High
11.	Doing research on science subjects is perfect for me.	1.14	3.27	Moderate
12.	I enjoy learning new information about science.	1.12	3.72	High
13.	I don't want to go to school on days when there is a science class.	*1.10	*4.13	High
Category Mean		1.10	3.38	Moderate

RECOMMENDATIONS

Students should engage in science activities, build resilience against peer pressure, and improve skills with peer and teacher support. Teachers should use interactive strategies, address peer pressure, and provide feedback. Administrators should allocate resources, and DepEd should update curricula.

CONCLUSION

Students should engage in science activities, develop resilience against peer pressure, and enhance skills with peer and teacher support. Teachers should employ interactive strategies, address peer pressure, and provide feedback. Administrators should allocate resources, while DepEd should update curricula and fund teacher training.

**Table 2. Extent of Attitude Toward Science in Terms of Confidence**

Items	SD	Mean	Descriptive Equivalent
1. Science questions do not scare me.	1.18	2.66	Moderate
2. I find it difficult to learn science topics.	*1.14	*3.07	Moderate
3. I do not worry about creating projects related to science class.	1.28	3.12	Moderate
4. I am not anxious while working on science.	1.27	2.90	Moderate
5. I have trouble relating science class with other classes.	*.99	*3.05	Moderate
6. I don't feel confident doing science homework.	*1.22	*3.09	Moderate
7. I struggle to answer questions about science.	*1.20	*2.94	Moderate
8. I am confident in preparing science projects.	1.12	2.72	Moderate
9. I get stressed in science class.	*1.21	*3.03	Moderate
10. I feel anxious in science class.	*.96	*3.31	Moderate
11. I am good at solving science problems.	1.02	2.69	Moderate
12. I do not hesitate to chat with my friends about science topics.	1.26	3.43	High
Category Mean	1.14	3.00	Moderate

Table 3. Extent of Attitude Toward Science in terms of Usefulness

Items	SD	Mean	Descriptive Equivalent
1. I find learning science necessary.	1.13	3.90	High
2. I feel comfortable while studying science.	1.09	3.15	Moderate
3. Research related to science is important.	1.14	3.93	High
4. I will choose a profession related to science.	1.33	2.92	Moderate
5. Science makes my daily life easier.	1.15	2.85	Moderate
6. Science class contributes to solving problems I encounter in daily life.	1.16	2.82	Moderate
7. Science is useless in solving the problems of the world.	*1.35	*3.88	High
Category Mean	1.20	3.35	Moderate

Table 4. Extent of Attitude Toward Science in terms of Interest

Items	SD	Mean	Descriptive Equivalent
1. The experiments we do in science classes don't attract my attention.	*1.35	*3.95	High
2. I am not interested in field trips organized within the scope of science class.	*1.22	*4.29	Very High
3. Learning science is a waste of time.	*1.02	*4.41	Very High
4. I am not interested in science subjects.	*1.05	*4.06	High
5. I do not want to participate in the discussion during science class.	*1.08	*3.97	High
Category Mean	1.15	4.14	High

**Table 5. Summary on the Extent of Attitude Toward Science**

Indicators	SD	Mean	Descriptive Equivalent
Enjoyment	1.10	3.38	Moderate
Confidence	1.14	3.00	Moderate
Usefulness	1.20	3.35	Moderate
Interest	*1.15	*4.14	High
Overall Mean	1.15	3.47	High

Table 6. Extent of Peer Pressure in terms of Yielding to Peer Pressure

Items	SD	Mean	Descriptive Equivalent
1. I have lied many times at the instigation of my friends.	1.12	2.70	Moderate
2. When others make fun of my friends, I ought to defend my friends.	1.14	3.93	High
3. I am coerced by my friends to go out with them during weekends.	1.33	2.46	Moderate
4. I often skip my classes as my friends force me to do so.	1.16	1.60	Very Low
5. I have to accept new friends at the urge of my other friends.	1.11	2.19	Low
6. I have to read some unwanted books due to the compulsion of my friends.	1.01	1.89	Low
7. I indulge in undesirable activities to satisfy my friends.	1.28	2.07	Low
8. I would like to have an iPod and any devices because my friends expect me to have one.	1.27	2.04	Low
9. My hairstyle and clothing are according to the wishes of my friends.	1.03	1.65	Very Low
10. I am afraid that I will be left alone if I am not a part of whatever my friends do.	1.55	2.71	Moderate
11. I have to get along with my friends' decisions, whatever they may be.	1.18	2.15	Low
Category Mean	1.21	2.31	Low

Table 7. The Extent of Peer Pressure in terms of Resistance to Peer Pressure

Items	SD	Mean	Descriptive Equivalent
1. I stay away when my friends destroy others' properties.	1.42	2.54	Low
2. I will not do things against my conscious despite my friends' compulsion.	1.35	2.50	Low
3. I am honest with my parents about my whereabouts despite my friends' objections.	1.14	1.85	Low
4. I do not allow my friends to copy from my home assignments and test-related activities.	1.28	3.00	Moderate
5. I will not feel bad if my friends have something that I do not have.	1.36	2.38	Low
6. I will not fight for unjust causes like my friends.	1.20	2.71	Moderate
7. I do not want to have a Facebook account despite my friends' compulsion.	1.36	3.37	High
8. I like to spend my weekends usefully with my parents and relatives, despite my friends' weekend programs	1.11	2.59	Low
9. I will not go to movies that I do not like even if my friends compel me.	1.28	3.02	Moderate
10. I like to choose a career of my own, irrespective of my friend's advice.	1.23	2.10	Low



11	I make important decisions without being influenced by my friends' suggestions.	1.05	1.93	Low
12	I am not crazy about my friend's choices	1.18	2.18	Low
13	I will enroll myself in sports and other social service activities even if my friends don't enroll themselves.	1.19	2.06	Low

Category Mean	1.25	2.48	Low
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Table 8. Extent of Peer Pressure in terms of Peer Encouragement

Indicators	SD	Mean	Descriptive Equivalent
1. I get more interest in my studies when my friends motivate me.	1.24	4.08	High
2. I listen to good music as my friends recommend them.	1.26	3.97	High
3. I joined swimming and other life-saving training programs, because of my friends' encouragement.	1.36	3.02	Moderate
4. Like my friends, I would like to go abroad for higher studies and a job.	1.30	3.74	High
5. I complete my assignments on time at the instance of my friends.	1.30	3.55	High
6. I get so much encouragement from my friends to solve difficult issues.	1.20	4.04	High
Category Mean	1.26	3.73	High

Table 9. Summary on the Extent of Peer Pressure

Indicators	SD	Mean	Descriptive Equivalent
Yielding to Peer Pressure	1.21	2.31	Low
Resistance to Peer Pressure	*1.25	*2.48	Low
Peer Encouragement	1.26	3.73	High
Overall Mean	1.24	2.84	Moderate

Table 10. Level of Basic Science Process Skills

Indicators	SD	Mean	Descriptive Equivalent
Observing	15.63	54.80	Moderate
Communicating	19.71	86.95	Very High
Classifying	16.08	85.00	Very High
Measuring	15.86	85.49	Very High
Inferring	16.50	50.15	Moderate
Predicting	16.61	50.00	Moderate
Overall Mean	16.79	68.71	High

Table 11. Significance of the Relationship Among Variables

Variables Correlated	r-values	p-values	Remarks
Attitude Toward Science and Basic Science Process Skills	-.101	.151	Not Significant
Attitude Toward Science and Peer Pressure	-.171	.014	Significant
Peer Pressure and Basic Science Process Skills	.106	.130	Not Significant

**Table 12. Steps in Mediation Analysis**

Independent Variable	Attitude Toward Science
Dependent Variable	Basic Science Process Skills
Mediating Variable	Peer Pressure
Step 1. Path C (IV and DV)	
Unstandardized Beta (B)	-2.188
Standard Error (e)	1.823
p-value	.232
Step 2. Path B (MV and DV)	
Unstandardized Beta (B)	2.465
Standard Error (e)	1.907
p-value	.198
Step 3. Path A (IV and MV)	
Unstandardized Beta (B)	-.164
Standard Error (e)	.066
p-value	.014

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