

## Problem Solving Skills and Its Relation to Parental Authority Among Technical Secondary Schools Students

Wafaa Ahmed Abu hashem<sup>1</sup>, Enas Mahrous Abdelaziz<sup>2</sup>,  
Sayeda Mohammed<sup>3</sup>, Nadia Bassuniy Elsharkawy<sup>4</sup>,  
Omnia Mohamed Abd El-Monem<sup>5</sup>

<sup>1,5</sup> Lecturer of Psychiatric Nursing, Faculty of Nursing, Cairo University, Egypt.

<sup>2</sup>Assistant Professor of Psychiatric Nursing, College of Nursing-Jouf University, Saudia Arabia.

Assistant Professor of Psychiatric Nursing, Faculty of Nursing, Cairo University, Egypt.

<sup>3</sup> Professor of Psychiatric Nursing, Faculty of Nursing, Cairo University, Egypt.

<sup>4</sup>Associate Professor of Maternal and Child Health Nursing, College of Nursing-Jouf University, Saudia Arabia.

Professor of Maternal and Newborn Health Nursing, Faculty of Nursing, Cairo University, Egypt.

**Abstract: Background:** Technical schools students are in the critical period in terms of developmental stages where they are expected to gain more skills. One of the most basic social life skills is problem solving which supports technical students' course completion, participation in further education and improves their labor market outcomes. Parental attitudes in nurturing their adolescents have a great influence on their behavior including their problem solving abilities. **Purpose:** The purpose of the present study was to investigate problem solving skills and its relation to parental authority among technical secondary schools students. **Design:** A cross sectional research design was used in the current study. **Sample:** A stratified random sample of 200 technical school students was selected. **Instruments:** The study variables were assessed by self-administered questionnaires which are Personal Data Sheet, parenting styles questionnaire, and problem solving questionnaire. **Results:** Results of the current study revealed that 62.5% of the students agree that authoritative style is the style parents commonly use. There were a highly statistically significant negative relation between problem concept, defining problem, generating alternatives, making decisions, and evaluation abilities of technical school of maintenance technology students and their authoritarian parenting style. **Conclusion:** A positive correlation was found between problem solving skills among technical school students and the authoritative parenting style while there was a negative correlation with the authoritarian parenting style. **Recommendations:** Psycho- educational programs are required for parents to mitigate disparities in treating their children and promote a transition from an authoritarian parenting approach to an authoritative one.

**Key words:** Problem Solving Skills, parental authority, Technical School Students.

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**Introduction**

Technical school students are those who are enrolled in technical and vocational education programs that emphasize the acquisition of practical skills and knowledge. About half of the high school students in Egypt attend a technical school known as *thanwaiya faniyah*, which provides specific foundational education for careers in industries like manufacturing, agriculture, commerce, and hospitality. These industries are commonly categorized as blue-collar jobs (The Vocational Potential, 2021 & UNESCO, 2019).

The educational programs are usually designed for students who have finished their primary education and are aged between 15 and 19 years, which is the typical age for secondary education in several countries. Secondary education marks the beginning of the teenage years, a period of significant changes and challenges. It is a period of transition from childhood to adolescence, both physically and emotionally. It is an essential stage for the development of one's ego. According to Erikson, this stage is marked by the emergence of a perception of identity and finding one's place in society, as well as acquiring important skills such as communication, coping and problem-solving skills (WHO, 2022 & Kramp, 2020).

The family is responsible for developing a person's problem-solving abilities and skills. This is because the family plays a crucial role in shaping an individual's behavior and choices. These behaviors can be either positive

or negative and can greatly impact how a person deals with the problems they encounter in their everyday life (Konya Valiliği, 2018). The acquisition of problem-solving skills is considered a fundamental skill that is supposed to be acquired during upbringing. The way parents behave can impact the development and continuation of problem-solving abilities in teenagers. The manner in which parents raise their children is believed to have an effect on the development of their skills and behaviors (Mohamed & Abo Elkiat, 2020)

In this concern, problem solving skill is an important ability for early adolescents as it allows them to critically think and find solutions to real-life problems that are related to upcoming work situations. They follow five main steps to resolve their routine problems, such as identifying the problem, exploring it, generating solutions and alternatives, implementing them, and evaluating the outcomes. They do this without seeking assistance from parents or other community members. Therefore, problem solving skill becomes even more important for early adolescents as it requires them to have advanced proficiency levels (Sumitha, & Rexlin, 2016).

The parents' styles can be categorized into three main types: authoritarian, authoritative, and permissive. They are determined by two factors: the level of control or demandingness, and the level of warmth or responsiveness displayed by the parents. In this respect, the authoritarian parenting

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style exhibits notable attributes of having high expectations but minimal responsiveness. These parents value obedience and control, but they discourage independence and communication. In contrast, the authoritative parenting style strikes a balance between the two, making it seen as ideal for all families. Authoritative parents understand their adolescent's point of view, involve them in decision-making, and consider their opinions in family matters. They offer support and set expectations that align with their children's abilities (Bano, et al., 2019 and Mohamed, & Abo Elkiat, 2020).

On the other hand, permissive parenting is described as having low expectations but high responsiveness. Permissive parents demonstrate warmth and acceptance towards their children, employing minimal punishment. These parents possess negligible to no expectations regarding self-regulation and behavior, and they prioritize patience and acceptance (Bano, et al., 2019 and Saltal, 2018).

Previous research has revealed that teenagers who are raised by parents who use an authoritarian parenting style might struggle with problem-solving abilities. This could be because they have not had much practice in making their own decisions and solving problems independently. Similarly, teenagers who have permissive parents may also face challenges with problem-solving skills due to not having much experience in setting and achieving goals and making decisions on their own. On the other hand, adolescents who have

authoritative parents may possess stronger problem-solving skills. This is because they are encouraged to think critically and make independent decisions, which ultimately helps them to develop effective problem-solving abilities (Salavera, Usán & Quilez-Robres, 2022).

Unluckily, the end result to following a wrong parental upbringing style is the adolescents' emotional and behavioral problems, both internalizing and externalizing (Liu, Zhao&Su, 2022). Adolescents' problem behaviors can be described as difficulties in adjusting to changing environments, encompassing both internalizing issues ( including depression, anxiety, social withdrawal, and somatic complaints) and externalizing issues (including attacking, fighting, temper outbursts, threatening, truancy, stealing, lying, and other negative interactions with the environment) (Zhang & Wang, 2022).

In terms of nursing responsibilities, nurses have the role to encourage problem-solving abilities in teenagers by offering education and tools on effective problem-solving techniques. This includes teaching them how to identify problems, generate solutions through brainstorming, and evaluate the advantages and disadvantages of each option, while emphasizing the value of working together to solve problems. Additionally, it is important for nurses to acknowledge and address social and emotional factors that may impact an adolescent's ability to solve problems. They can also assist teenagers in developing skills to regulate their emotions, such as mindfulness and relaxation techniques,

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which can enhance their problem-solving capabilities (Hooda, 2018 and Abazov, 2016).

Another significant responsibility of nurses is to raise awareness of parents, teachers, and society on how to effectively interact with adolescents. In line with the recommendations of Mohamed & Abo Elkiat (2020) who revealed that it is necessary to develop training programs aimed at equipping parents with the necessary skills to encourage academic success, accept their children, and enforce consistent discipline.

### **Significance of the study**

Problem-solving skills are essential for secondary school technical students and considered as one of the most important social life skills that support their course completion, participation in further education, improving their labour market outcomes and reducing unemployment. While we deal with such an interesting educational and developmental stage, it is necessary to focus on the parenting styles utilized with adolescents various life situations, to determine its effects on their problem solving abilities, skills employed, as parenting styles adopted in nurturing help adolescents to improve their problem-solving capacities, and have positive benefits in the face of a changing, endless world challenges (Mohamed& Abo Elkiat, 2020).

Especially, the Economic research forum reported in relation to technical and vocational education, it is frequently related with scholarly failure instead of being an elective way

to profitable and valuable work. It is seen as a last option for scholarly low performing students who lost the chance of higher secondary schools that are the agreed path to university education (El-Hamidi, 2018). Moreover, the Annual Bulletin of Education & Training Statistics in Governmental and Private Sectors Training Institutions (2017/2018) revealed that, there are (1,864,842 students) in Technical Secondary Schools, who are divided into four specializations, catering to specific economic sectors; commercial, industrial, hospitality and agricultural (Torino Process, 2018–2020, National Report).

Consequently, our study aimed to bridge the existing knowledge gap by examining the relationship between parenting styles and problem-solving skills among secondary school technical students, and as there is a dearth of eastern studies that study this direction. Consequently, there is a need to adequately train academic personnel who work with secondary school technical students and family counseling become paramount in delivering care for secondary school technical students.

Also, the results of the present research may contribute to motivate researchers for preparing counseling and training programs directed at parents to adopt a more appropriate and flexible parenting styles, to develop their adolescents' problem-solving skills which in turns may reflected positively on technical secondary school education.

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**Purpose**

The purpose of the present study was to investigate problem solving skills and its relation to parental authority among technical secondary schools students.

**Research questions**

- 1) What are the levels of problem solving skills among technical secondary schools students?
- 2) What are the types of parental authority among technical secondary schools students?
- 3) Is there a correlation among technical secondary schools students' problem solving skills and parental authority?

**Methods**

**Research design**

This study employed a cross-sectional research design.

**Setting**

The current study was conducted at Technical school for maintenance technology that was located at Taka Street, behind El- Ahly club- Nasr city; this school is an internal school for male students only.

**Sample**

Stratified random sample was recruited and utilized for the current study. The sample consists of 200 technical school students involved in this study in the academic year 2022–2023. The sample size was computed utilizing:

$$n = z^2 * p * (1-p) / e^2 + z^2 * p * (1-p) / e^2 * N$$

$$n = 200$$

**z** standard normal value with confidence of level 95%=1.96

**p** percent in population 0.5

**e** margin of error 0.05

**N** population size=400

**Sampling technique:**

Following the acquisition of a complete list of students enrolled in the technical school for maintenance technology, investigators started to select the participants. In total, 466 students were subjected to stratified randomization based on their educational level. The sample was selected by stratified random according to educational level. The statistical analyzer identified determined number of students in each level: first level (24) from(60), second level (31) from(79), third level (38) from(97), fourth level (48) from(120) ,and the fifth level( 59) from(110). Random samples are subsequently chosen from each stratum (educational level).

- A list of all the students in each grade was made.
- A sequential number to each student (1, 2, and 3 ...n) was assigned. This served as sampling frame, which was the list used to draw a simple random sample.
- To select the sample, a random table was employed. The researchers began by randomly selecting the name of the first individual from the list of eligible students, and then proceeded by using chance methods like tossing a coin, and so forth, to determine the required number of participants for the study.

**Inclusion criteria:**

- Students aged from 15 to more than 19 years old.

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**Exclusion criteria:**

- Presence of any mental disorders or history of substance abuse as these disorders may affect mental capacities of students including their problem solving abilities.

**Instruments**

Three instruments were utilized to gather data.

**Instrument one: Personal Data**

**Sheet:**

It was developed by researchers for data collection. It includes personal data such as: age, educational grade, type of residence, parents' educational level, and family structure.

**Instrument two: A Parental Style**

**Questionnaire.**

It was adopted from Buri (1991). The Arabic version was developed by AL-Baddareen & Ghaith (2013). It was used to assess three parenting practices style (comprising authoritative, permissive, and authoritarian from the viewpoint of the child of any age). It consists of 30 items. The questionnaire contained 3 domains (permissive, authoritative, and authoritarian). First domain includes 10 items to measure permissive style: 1, 6, 10, 13, 14, 17, 19, 21, 24 and 28. Second domain contains 10 items: 2, 3, 7, 9, 12, 16, 18, 25, 26 and 29 to measure authoritarian. Third domain includes 10 items to assess authoritative styles (4, 5, 8, 11, 15, 20, 22, 23, 27, and 30). All items were answered by using a 5- point Likert scale format ranging from, (1) strongly disagree, (2) disagree, (3) Neither agree nor disagree, (4) agree,

(5) strongly agree. Total scores of questionnaire ranged from 30- 150 to determine the type of parenting style.

The content validity of the questionnaire was done by three experts in the field of psychiatric mental health nursing. A reliability assessment was accomplished utilizing a test-retest method with a one-week interval. The obtained reliability coefficients for the permissive style, authoritarian style, and authoritative style were 0.69, 0.77, and 0.73, respectively.

**Instrument three: Problem Solving Questionnaire (PSSQ)**

It was adopted from Mekdady, & Abu Ziton, (2010). It was utilized to quantify five practices of problem-solving skills including general orientation, problem detection, making alternatives, decision making, and evaluation from the viewpoint of students. It consists of 40 items, the questionnaire contains 5 domains, First domain includes 8 items to measure general orientation, second domain includes 8 items to measure problem detection, third domain includes 8 items to measure alternative making, fourth domain includes 8 items to measure decision making, and finally fifth domain includes 8 items to measure evaluation. All items were answered by using a 3-point likert scale format ranging from (1) usually, (2) sometimes, (3) rarely ,the negative items on the scale are: 1- General guidance: (4-5-6-7-8) 2- Defining the problem: (14-15-16) 3- Generating alternatives: (18-11-20-24) 4- Decision making (26-27 -21) 5- Assessment (36-

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37-38-31-40). The total score on the scale ranged between (40-120). The interpretations of the marks on the scale is as follows: From 40 to less than 80 is an indication of a lack of problem-solving skill. (From 80 - 120) indicate efficiency in problem solving. To ensure content validity, three experts evaluated the questionnaires within the domains of mental health nursing. For reliability, alpha coefficient for the total scale was accepted at (0.86).

**Procedure**

After obtaining the ethical approval from the faculty of nursing, Cairo University, Permission from the school administration was taken before data collection. Subsequently, the researchers interviewed all students who met inclusion criteria and expressed their willingness for participation in the study. Participants were guaranteed anonymity and given the right to retract any shared information during any stage of the interview process. The interviews took place in group settings within the participants' classrooms. Prior to commencing the interviews, the researcher established rapport with the participants and provided an explanation of the study's purpose.

To initiate the collection of data, the researchers introduced themselves to the participants and provided a detailed explanation of the study instruments. This was done to establish an initial rapport and foster cooperation between the researchers and the students. Participants received comprehensive explanations and were provided data

collection instruments. Parenting styles and problem solving among technical secondary school students were assessed. Total time needed to fulfill the three questionnaires ranged from 30-40 minutes.

**Ethical considerations**

Official approval was obtained the ethical committee at the faculty of nursing, Cairo University. Following the identification the eligible participants, they were informed about their unconditional right to withdraw from the research at any time without being obliged to provide a reason. Prior to participation, informed consent was obtained from all eligible participants who willingly agreed to take part in the study. Students' privacy and data confidentiality were prioritized through assigning and preserving code numbers to ensure participant anonymity. Participants were assured that these data would not be reused in another research without their permission. The application of the research posed no risks for the study sample.

**Statistical design**

Statistics was done by using SPSS statistical package for social science version 21. Frequency and percentage was used for numerical data as well as mean and standard deviation. Correlation coefficient was used to describe the association between variables, Correlation coefficient (r) of 0.5 was considered for correlation. Good correlation ranged between 0.5 to 0.75, very good correlation was more than 0.75. For parametric analysis t test and ANOVA (Analysis

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of Variance) were used. A statistical significant difference was considered if  $P < .05$ , a highly statistical significant difference was considered if  $P < .01$ .

**Results**

**Table 1** reveals that 50% of the technical school students were more than 19 years old. While 46.5% were in the age group 16 to 18 years old, 88% of the technical school students lived with both parents and 1% of them lived alone. Also, 74.5% of them lived in urban area. Regarding family type, 73% of the technical school students lived with nuclear family.

**Figure 1** shows that 12.5% of students were in the first grade, 20.5% of them were in the second grade of education, 18.5% were in the third grade of education, 19% in fourth grade of education and 29.5% of them were in fifth grade of education.

**Figure 2** shows that 11% of technical school students had illiterate mother, 43.5% of them had mother with elementary education level and 45.5% of them had mother with university education level.

**Figure 3** shows that 6% of technical school students had illiterate fathers, 39.5% of them had fathers with elementary education level and 54.5% of them had fathers with university education level.

**Table 2** indicates that 62.5% of students agree that authoritative style is the style their parents use. Meanwhile, 34.5% of them agree that permissive style is the style their parents use and 31.5% of them agree that authoritarian style is the style their parents use.

**Table 3** indicates that 45.5% of students define the problem while 44% of them make a decision, 42% generate alternatives for solutions to solve the problem, 35% apply the evaluation and 31% had the problem solving concept.

**Table (4):** demonstrates no statistically significant differences between total parenting style among technical school of maintenance technology students and total Problem solving.

**Table 5** demonstrates that there were very highly statistically positive significant correlations between problem concept, defining problem, generating alternatives, make a decision, evaluation of technical school of maintenance technology students and their authoritative parenting style at  $P = (0.0001, 0.0001, 0.0001, 0.0001, 0.0001)$  respectively). Also, there were very highly statistically significant negative correlations between problem concept, defining problem, generating alternatives, make a decision, evaluation and authoritarian style at  $p (0.0001, 0.0001, 0.0001, 0.0001, 0.0001)$  respectively). On the other hand, no statistical significant differences were found between problem concept, defining problem, and generating alternatives, make a decision, evaluation and permissive style.

**Table 6** clarifies that there is no statistical significant correlations between parenting style or problem solving skills and age, education, residence type, father education, and type of family.

**Table 7** clarifies that there is a statistical significant relation between



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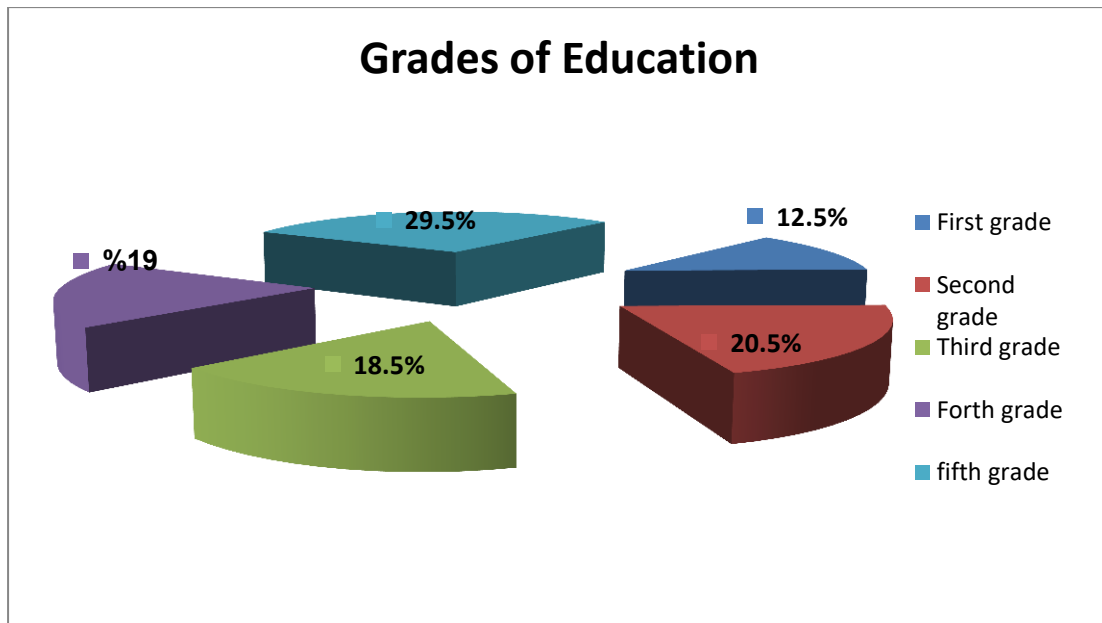
problem solving skills among technical school students and the level of their mothers' education at  $p = (0.01)$ . Also, there are highly statistical significant relations between problem solving

skills of students and their relations with parents and communication among family members at  $P = (0.0001)$  for both.

**Table (1): Frequency Distribution of Technical School Students according to Their Personal Data (n=200)**

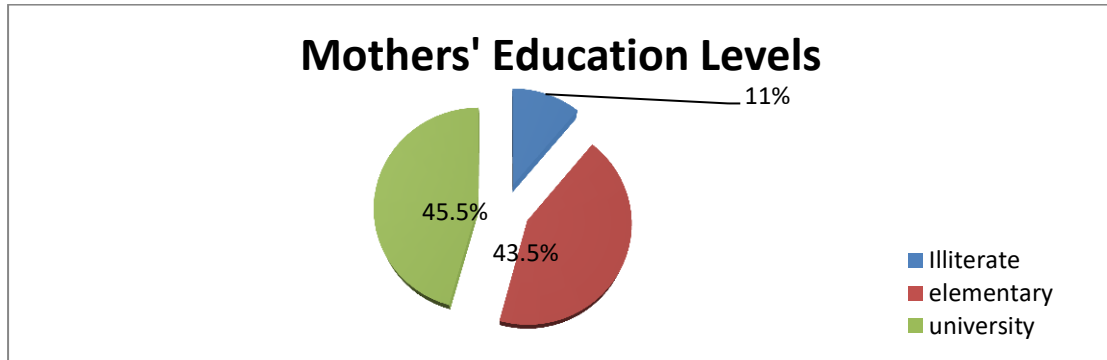
Items	n=200	
	No.	%
<b>Age groups:</b>		
1- 15 years	7	3.5%
2- 16-18 years	93	46.5%
3- 19+	100	50%
<b>Residence type</b>		
with parents	176	88.0%
with one parent	17	8.5%
with relatives/friends	5	2.5%
Alone	2	1.0%
<b>Residence place</b>		
Rural	51	25.5%
Urban	149	74.5%
<b>Type of family</b>		
Nuclear	146	73.0%
Extended	54	27.0%

**Figure 1: Frequency Distribution of Technical School Students according to Their Educational Grade (n=200).**

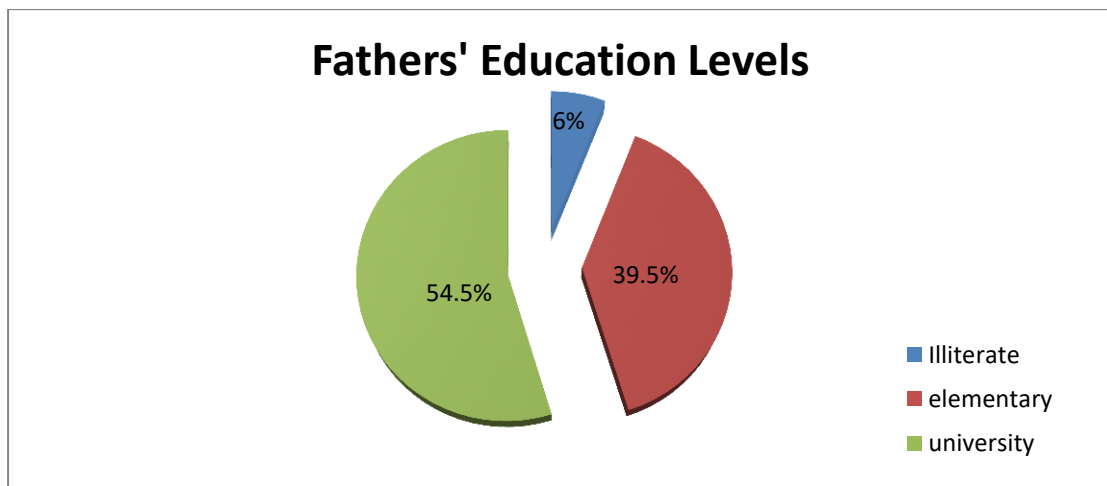


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**Figure 2: Frequency Distribution of Technical School Students according to Mothers' levels of Education (n=200).**



**Figure 3: Frequency Distribution of Technical School Students according to Fathers' levels of Education**



**Table (2): Parenting Styles for Parents of Secondary Technical School Students (n=200)**

Domains	Disagree		Neutral		Agree	
	No.	%	No.	%	No.	%
authoritative style	27	13.5	48	24	125	62.5
authoritarian style	88	44	49	24.5	63	31.5
permissive style	71	35.5	60	30	69	34.5

**Table (3): Problem Solving Skills among Technical Secondary Schools Students (n=200).**

Domains	Rarely		Sometimes		Usually	
	No.	%	No.	%	No.	%
Problem solving concept	51	25.5	87	43.5	62	31
Defining the problem	28	14	81	40.5	91	45.5
Generating alternatives	27	13.5	89	44.5	84	42
Make a decision	30	15	82	41	88	44
Evaluation	47	23.5	83	41.5	70	35
Total	36	18	84	42	80	40

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**Table (4): Correlation between Total Parenting Style and Total Problem Solving among Technical School Students (n=200)**

Variables	Parenting style	
	R	P
Problem solving	0.02	0.74

\* P <0.05 is significant

\*\*P<0.01 is highly significant

**Table (5): Correlation Matrix between Parenting Styles and Problem Solving domains among Secondary Technical School Students (n=200)**

Variables domains	authoritative style		authoritarian style		permissive style	
	R	P	R	P	r	p
problem concept	0.28	0.0001*	-0.36	0.0001*	0.01	0.83
defining problem	0.28	0.0001*	-0.28	0.0001*	0.06	0.39
Generating alternatives	0.37	0.0001*	-0.7	0.0001*	0.03	0.63
Make a decision	0.35	0.0001*	-0.31	0.0001*	-0.04	0.51
Evaluation	0.27	0.0001*	-0.31	0.0001*	0.07	0.29

\* P <0.05 is significant

\*\*P<0.01 is highly significant

**Table (6.): Relation between Personal Data of Studied Sample (Age, education, residence type, father education, and type of family), Parenting Style and Problem Solving among Technical School Students. (n=200)**

Personal Data	Parenting Style		Problem Solving	
	ANOVA	P	ANOVA	P
Age	1.429	0.242	0.144	0.866
Education	0.385	0.819	0.898	0.466
Residence Type	2.029	0.156	0.269	0.604
Place of Residence	2.029	0.156	0.269	0.604
Father Education	1.966	0.143	0.619	0.539
Type of Family	1.075	0.343	1.933	0.147

\* P <0.05 is significant

\*\*P<0.01 is highly significant

**Table (7): Relation between Personal Data of Studied Sample (Mother education, relation with parents, and communication among family members), Parenting Style and Problem Solving among Technical School of Maintenance Technology Students. (n=200)**

	Parenting Style			Problem Solving		
	Mean±SD	ANOVA	P	Mean±SD	ANOVA	P
<b>Mother Education</b>						
- Illiterate	89.27±15.12	1.620	0.200	85.77±11.31	4.292	0.015*
- Elementary	94.79±14.23			91.11±12.07		
- University	94.80±12.52			93.2±9.15		
<b>Relation with Parents</b>						
- Week	94.14±16.41	0.244	0.784	85.57±10.03	12.078	0.0001**
- Moderate	92.71±16.80			84.09±9.97		
- Good	94.51±12.81			93.29±10.53		
<b>Communication among family members</b>						
- Weak	86.90±22.16	2.093	0.126	84.50±8.4	8.747	0.0001**
- Moderate	92.72±13.39			86.93±11.7		
- Good	95.17±12.87			93.38±10.3		

\* P <0.05 is significant

\*\*P<0.01 is highly significant

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**Discussion**

Problem solving ability is a very important part of education. A good problem solver can achieve success in life. Parenting styles have been widely studied and found to be associated with children's various developmental outcomes including their problem solving abilities (Lin, Yang, Xie, & Li, 2023).

In relation to parents' styles, the present study revealed that about two thirds of studied sample had authoritative parent style. About one third of them agreed with the permissive parent style. These findings could be interpreted as technical school students having authoritative parents had better psychological health and were able to learn more problem solving skills. This is because parents try to direct their siblings, encourage discussion and allow their siblings to freely discuss their social, personal and educational concerns as well as their share plans and take decisions. These results were consistent with Metwally, (2018) who found that, school students identified that authoritative parent style was the most utilized parent style by their parents.

Concerning problem solving skills, the current study revealed that forty – two percent sometimes used problem solving skills, less than half of technical school students defined the problem, made decisions, generated and evaluation. These findings indicated that technical school students had medium level of problem solving skills. These findings were in agreement with Tösten et al. (2017) who found that problem solving skills

of high school students in the study were moderate (M=3.17). The dimensions of the problem solving skills of students are also moderate.

In relation to the statistical significant correlation between parent styles and problem solving skills, this finding could be attributed to authoritarian parents tend to exhibit high levels of demands with minimal responsiveness. This dynamic often creates conflict with adolescents who tend to be stubborn and resistant to control. These parents employ severity, punishment, and force to assert their authority, which can potentially result in behavioral problems among their children. This result is consistent with Mohammed et al., (2016), which demonstrated a significant association between behavioral issues and parenting styles among examined sample with higher prevalence of abnormal behaviors among adolescents having authoritarian parents.

Problem solving skills of students in the current study were positively correlated to their mothers' level of education as university levels of mothers' education were associated with higher problem solving skills between their children. This result comes in contradiction with Mohammed & Abo elkiat (2020) who found that mothers with preparatory level of education had higher overprotection and were encouraging achievement in their children. This contradiction appeared to be at the superficial level of discussion as the current study studied problem solving of students in terms of its relation to

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sub-constructs such as defining the problem, setting alternatives, implementing, and evaluation which reflect the students' ability to think in a systematic and perhaps a scientific way. This way of thinking is mostly affected by the way of parents' thinking and treatment especially mothers who have the first line of contact with their children. So, mothers with higher education had higher cognitive skills which were transferred to their children. While Mohammed & Abo elkiat (2020) studied the effect of mothers' education in terms of their innate behaviors such as protection, acceptance, and encouraging achievement which all don't ensure developing problem solving abilities in their children.

Results of present study also clarified that there were highly significant correlation between problem solving abilities of technical school students and their relationships with parents and communication among family members. These findings are compatible with Newhart (2019) who found that family functioning is a positive predictor of social competence. Deepshikha & Bhanot (2011) also confirmed that family with higher characteristics in cohesiveness, open and positive ability to express emotions among family members in addition to lower characteristics in control and disagreement had significant role in determining social and emotional ability for adjustment among adolescents. In the same line, it had been reported that family communication, cohesiveness, regulations and rules positively

correlated to social competence of children which may be accompanied by emotional and behavioral outcomes (Smith et al., 2001). The explanation of these results emphasized the role of family relations and communication in terms of openness and cohesiveness in formulating the social competencies of their children including their problem solving skills.

### **Conclusion**

According to the study findings, parenting styles played a significant role as predictor of problem-solving skills among technical school of maintenance technology students. A positive correlation was found between problem solving skills among technical school students and the authoritative parenting style while there was a negative correlation with the authoritarian parenting style.

### **Recommendations**

The following recommendations are proposed:

- Psycho- educational programs are required for parents to mitigate disparities in treating their children and promote a transition from an authoritarian parenting approach to an authoritative one.
- Replication of this research study is required to examine the relation between problem-solving skills and parenting style utilizing a larger sample size and other age groups.

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