

Students' interpersonal skills and its association with their academic achievement in secondary school of Pakistan

Nisar Abid¹, Aqeela Samuel², Rizwan Ali³, Almas Shoaib⁴, Waqar Younas Warraich⁵

¹Department of Education, Virtual University of Pakistan, Lahore, Pakistan

²Department of Education, Govt. Graduate College for Women Gulberg, Lahore, Pakistan

³Lahore Business School, The University of Lahore, Lahore, Pakistan

⁴School of Social Sciences and Humanities, University of Management and Technology, Lahore, Pakistan

⁵Department of Mass Communication, University of Central Punjab, Lahore, Pakistan

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ABSTRACT

The educational productivity theory directed that students' variables affect their performance. Therefore, this descriptive correlational study was designed to examine students' interpersonal skills and its association with their achievement. There were 3,200 high school students participated in this study, selected from 80 high schools of Punjab through multistage random sampling technique. The Interpersonal Skills Scale (ISS) was adapted from DiPerna and Elliott's Academic Competence Evaluation Scales-Student form (ACES-Student). ISS demonstrated a good internal consistency (coefficient alphas=0.819 and composite reliability=0.845). The results exhibited that students have a competent level of interpersonal skills. Moreover, a statistically significant difference was found in female and male students' perceptions about interpersonal skills, while female have more interpersonal skills than male. Furthermore, ANOVA results concluded that administrative division (location) influences students' perception of interpersonal skills. It is concluded from the correlational analysis that students' interpersonal skills are indirectly associated with their achievement because a negative weak relationship was found in students' interpersonal skills and their achievement as $r=0.031$, $p=0.081$. It is suggested that teachers may promote interpersonal skills by integrating cooperative and collaborative learning strategies into their classrooms.

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Corresponding Author:

Nisar Abid

Department of Education, Virtual University of Pakistan

M.A. Jinnah Campus, Defence Road, Off Raiwind Road, Lahore, Pakistan

Email: nisar_abid_88@hotmail.com; nisar.abid@vu.edu.pk

1. INTRODUCTION

One of the goals of education is to promote students' learning while education at the secondary level is known as the turning phase, in which students often select a career for the future [1]. The secondary level schooling led to navigate students' social, psychological, and academic desires that may not be navigated at the elementary level [2]. During the previous two decades, psychologists and researchers have explored many students' variables (cognitive as well as non-cognitive) that influence their achievement [3]–[5]. Hence, many believed that student non-cognitive variables such as interpersonal skills [6], [7], academic engagement [8], [9], motivation [10]–[12], and study skills [13]–[15] are considered as the predictors of academic achievement at any level [2], [16]. Therefore, investigators are concerned to recognize the associations between students' non-cognitive variables and their academic performance to improve students' achievement as well as to reduce dropout rates [17]–[19].

Although, students' interpersonal skills (cooperative learning behaviors) are crucial for their academic performance that might not be discovered through cognitive tests [20]. While students' cooperative learning behaviors have direct and indirect associations with their current and future academic achievement [21]. The researchers also assumed that students having competent engagement and interpersonal skills secure good grades [22]. Therefore, several researchers have examined the relationship between students' interpersonal skills and their achievement [7], [23]–[27] while numerous shortfalls exist in their studies. Firstly, some researchers measured interpersonal skills by administering teacher or parent reports survey scale [28], [29] whereas few employed students self-report scale [2], [30]. Hence, the association between students' interpersonal skills and their achievement was not clear in the literature. Secondly, methodological distinctions also existed to measure students' interpersonal skills and their association with academic achievement, thus dubious findings were found. Lastly, in the Pakistani context, no study was found in which researcher/s examined the relationship between students' interpersonal skills and their achievement. Therefore, the present study was designed to examine the association between students' interpersonal skills and their academic achievement, with a sample of 10th-grade students enrolled at high schools in Punjab.

2. LITERATURE REVIEW

2.1. Theoretical framework

The study association between students' interpersonal skills and achievement is based on Walberg's [31] educational productivity theory. This theory directed that student's additional variables (cognitive, behavioral, and attitudinal) influence their achievement [16]. Walberg's theory [31] also recognized nine students' variables (previous achievement, motivation, developmental level, the quantity of instruction, quality of instruction, home environment, classroom climate, interpersonal skills/peer group relationship, and experience to mass media) influence on their educational achievement. The first three variables characterize as aspects of student aptitude. The fourth and fifth variables disclose teaching factors, and the rest of the four variables represent aspects of environmental factors. The study variable interpersonal skills (independent variable) consist of how well students get along with others that measured through rating scale, while curriculum-based achievement scores are considered as academic achievement (dependent variable). Abid, Ali, and Akhter also concluded that "proximal" variables (psychological, instructional, and environmental condition) have a more influence on achievement than "distal" variables (demographics, state/district) [16].

2.2. Interpersonal skills

Social behaviors that are required to cooperate with others, defined as interpersonal skills. According to DiPerna and Elliott [32], interpersonal skills are the students' cooperative learning behaviors as well as communicative skills that connect them to express, communicate, help, share, and giving compliments to others effectively in educational settings [17], [30], [33]. Several terms have been used interchangeably within the literature to describe interpersonal skills i.e., interpersonal relationships, prosocial behavior, social skills, and social acceptance. The researchers assumed that interpersonal skills influence student learning when they start formal education [17], [28]–[30]. Moreover, some researchers and psychologists also assumed that students having competent interpersonal skills secure good grades than those who have less competence in cooperative learning behaviors [34], [35].

2.3. Interpersonal skills and academic achievement

Lim and Kim [36] explored the causal relationship between students' social behaviors and their reading performance through a longitudinal study. They found a significant difference between female and male students' interpersonal skills while female have a higher level in interpersonal skills than male. Moreover, they determined that interpersonal skills have a significant role in students' reading performance. However, the magnitude of the relationships was significant between interpersonal skills and reading achievement. Meanwhile, students' social skills have significant correlations with reading abilities and academic success [37]. Moreover, Wentzel [25] found that learners having positive interactions are more academically engaged and secure good grades. On the other hand, Tsai and Liu [38] examined associations between students' time-management skills, interpersonal skills, and their academic achievement and found that interpersonal skills demonstrate an adverse impact on academic achievement. While interpersonal skills were negatively related to students' academic achievement.

DiPrete and Jennings [39] designed a study to examine the students' social and behavioral skills and the gender gap in early educational achievement, they found that social skills are a vital resource for academic achievement. The researchers also determined a significant difference in male and females' students' social skills, although female students have more social skills than male. Moreover, previous studies [24], [26] found similar results that significant difference in female and male students' social

adjustment, whereas female students' has higher social adjustment skills than male. Though, social skills are positively associated with learners' achievement. Moreover, Gresham [7] determined predictive associations in students' social behaviors and long-term achievement. Conversely, Yu, *et al.* [27] found no significant associations in interpersonal skills and academic performance of learners.

Social skills mediated the relationship between self-regulation and achievement [6]. Additionally, the researchers also determined from structural equation modeling, social skills showed a fully mediated relationship in effortful control and academic achievement. However, Montroy, *et al.* [40] found from structural equation modeling, students' social skills are not fully mediated the relationships among their literacy, self-regulation, and achievement. In addition, Caemmerer and Keith [23] evaluated the possible longitudinal and mutual effects of students' social skills on their achievement. Researchers found from structural equation modeling, bi-directional effects of students' social skills on their achievement. Nevertheless, the effects of achievement on students' later social skills are stronger than the effects of social skills on achievement.

3. RESEARCH OBJECTIVES, RESEARCH QUESTION, AND HYPOTHESES

The objectives of this research are: i) Identify the students' perceptions about interpersonal skills at the secondary level in Punjab; ii) Explore the gender-wise and administrative division-wise differences in students' perceptions about interpersonal skills; and iii) Examine the association between students' interpersonal skills and their academic achievement. While the research question is "what is the level of secondary school students' perceptions about their interpersonal skills?" Hence, the hypotheses are: i) The secondary school male and female students' have no significant difference in their interpersonal skills (H_{01}); ii) The administrative divisions (location) do not influence students' interpersonal skills (H_{02}); and iii) There is no significant association between students' interpersonal skills and their academic achievement (H_{03}).

4. RESEARCH METHOD

4.1. Design

A research design encompassed numerous elements of research such as research approach, design, and data collection method that provide plans to conduct study [41]–[43]. This research was designed to examine the association between students' interpersonal skills and their academic achievement at the secondary level. Hence, researchers adopted a quantitative research approach while correlational research design was used whereas a cross-sectional survey method was utilized to accomplish the study because this design was adequate to find out the association between study variables.

4.2. Participants

The population was comprised of all the students enrolled in the high school of Punjab, Pakistan. There were 6,402 public sector high schools in Punjab province of Pakistan while students enrolled in grade 10th are 465,912 [44]. The researchers used a multi-stage random sampling technique that encompassed three stages to select 3,200 participants. In the first stage, four administrative divisions of Punjab were selected by using a simple random sampling technique. The headquarters district of each selected administrative division is considered a sample district. At the second stage, 80 high school students (40 female and 40 male) were selected through a non-proportionate cluster stratified random sampling technique. At the last stage, 40 students were selected from each nominated school through a simple random sampling.

4.3. Measures

DiPerna and Elliott [32] developed Academic Competence Evaluation Scales (ACES) to measure students' academic competence. The ACES is a norm-referenced scale that can use in grades 6-12. It comprised of two subscales (academic skills and academic enablers), while each subscale further encompassed three to four scales. Academic skills subscale comprised of mathematics skills, reading/language arts skills, and critical thinking skills scales whereas the academic enablers subscale encompassed interpersonal skills, engagement, motivation, and study skills scales. Researchers adopted the Interpersonal Skills Scale (ISS) with the permission of authors because ISS is a reliable and valid scale that has already been used in numerous studies [2], [17], [28].

Originally, the ISS student version was comprised of 10 items, made on a five-point Likert-type scale ranging from 1 (never) to 5 (almost always). The ISS was validated by four educationalists and assessment experts to confirm the suitability and usability of scale in the Pakistani context. In the light of valuable comments of experts, add additional items in ISS and translated them into the native language (Urdu). Revised ISS consisted of 18 items that again were validated by two bi-lingual and three assessment experts. To enhance reliability, three statements were removed from ISS because the λ score of these three

statements was less than 0.5. Thus, the final ISS contained 15 items. The improved and translated version of ISS exhibited good internal consistency (composite reliability value was 0.845 while coefficient alphas value was 0.819) when rated by 400 students. Academic achievement was the marks secured by participants in the previous examination (9th-grade) conducted by the Board of Intermediate and Secondary Education (BISE) in the year 2018.

4.4. Procedures of data collection and analysis

The researchers acquired permission from the school authority by consent form then administrated the ISS personally in an actual classroom setting. Approximately participants required 10 minutes to give valuable responses against their interpersonal skills. The researchers checked students' responses to whether they properly filled the scale or not. After that, the collected data were tabulated into data analysis software, and multiple analysis techniques were applied that comprised descriptive and inferential statistics. In descriptive statistics mean, standard deviation, skewness, and kurtosis were calculated whereas in inferential statistics independent samples t-test, ANOVA test, and Pearson r test was applied by using SPSS–23.

5. RESULTS

5.1. What is the level of secondary school students' perception about their interpersonal skills? (Q1)

Table 1 describes the results of students' responses about their interpersonal skills. Before applying parametric tests, the normality of data was examined through skew and kurtosis. The table shows that data met the assumptions of normality with skew values generally (+/-2) and kurtosis values (+/-7) [45], [46]. In addition, the difference in mean values shows that students' have an advanced level in behavior that they pay attention to their teachers' suggestions as $M=4.61$; $SD=0.651$ was highest among other ISS items' mean values. However, the lowest level of interpersonal skill was their attention, they hold on to other work as $mean=3.39$ with $SD=1.713$. DiPerna and Elliott [32] suggested the range of interpersonal skills for 9th to 12th-grade students from developing to advance level skills (mean score range from 1.00 to 3.40 described developing level, 3.41 to 4.70 competent level, and 4.71 to 5.00 advance level). Hence, overall results about interpersonal skills exhibit that students have a competent level in interpersonal skills as $mean=4.06$ with $SD=0.526$.

Table 1. Descriptive statistics of students' interpersonal skills

| Statements | M | SD | Skew | Kurtosis |
|------------|------|-------|--------|----------|
| S1 | 4.50 | .863 | -1.859 | 2.982 |
| S2 | 4.56 | .757 | -.844 | 3.285 |
| S3 | 4.61 | .651 | -1.796 | 2.707 |
| S4 | 3.97 | 1.086 | -.948 | .181 |
| S5 | 4.46 | .825 | -1.754 | 1.163 |
| S6 | 4.51 | .803 | -1.838 | 1.431 |
| S7 | 4.02 | 1.002 | -.843 | .067 |
| S8 | 3.77 | 1.122 | -.681 | -.319 |
| S9 | 3.93 | 1.097 | -.901 | .097 |
| S10 | 3.39 | 1.713 | -.496 | -.825 |
| S11 | 3.53 | 1.214 | -.567 | -.590 |
| S12 | 3.83 | 1.141 | -.759 | -.224 |
| S13 | 4.51 | .801 | -1.873 | 1.649 |
| S14 | 3.57 | 1.261 | -.595 | -.662 |
| S15 | 3.67 | 1.203 | -.688 | -.422 |
| Overall IS | 4.06 | .526 | -.757 | .496 |

N=3,200; IS=Interpersonal skills

H_{01} : The secondary school male and female students have no significant difference in their interpersonal skills.

Table 2 explains the results of gender-based differences in students' responses about their interpersonal skills. The result of the independent sample t-test illustrates a statistically significant difference in female and male students' interpersonal skills as the $t(3088.992)=-8.950$, $p<0.001$, two-tailed, so the null hypothesis rejected. While, female students have more interpersonal skills than male students as the mean score of female students ($M=4.14$, $SD=0.468$) was higher than male students' mean score ($M=3.98$, $SD=0.566$). The amount of means difference is (mean difference=-0.167, 95% CI: -0.200 to -0.128), whereas the values of Cohen's d show small effect size [45], [47] as $d=0.310$. Consequently, results also indicate that variable gender influences students' perception of interpersonal skills.

Table 2. Comparison of student interpersonal skills based on gender

| Interpersonal skills | M | SD | T | Df | P | d | 95% CI |
|----------------------|------|------|--------|----------|-------|-------|----------------|
| Male | 3.98 | .566 | -8.950 | 3088.992 | .000* | 0.310 | [-.200, -.128] |
| Female | 4.14 | .468 | | | | | |

*p<0.05; N=3,200; d=Cohen's d

H₀₂: The administrative divisions (location) do not influence students' interpersonal skills.

Table 3 illustrates the results of administrative division-wise differences in students' responses about their interpersonal skills. The results of one-way ANOVA indicate a statistically significant difference in students' interpersonal skills based on all the four administrative division groups as $F(3, 3196)=14.284$, $p(0.000) < 0.05$ level. Hence, the null hypothesis was rejected. In addition, results also show that administrative division groups have a small effect on students' interpersonal skills as the eta squared value illustrates $\eta^2=0.1$. Thus, it is found that administrative division (location) influences students' interpersonal skills. When ANOVA results demonstrate statistical significance difference then supplementary tests should be applied [45], [48] for group-wise comparison. Hence, Fisher's LSD post hoc test was applied to find out the group-wise difference in students' interpersonal skills based on administrative division groups. Table 4 displays the results of the further group-wise comparison in students' responses about their interpersonal skills. The Fisher's LSD post hoc test analysis demonstrates a noteworthy difference in students' interpersonal skills based on four groups, namely: group 1 and group 2; group 1 and group 3; group 1 and group 4; and group 2 and group 4 as $p=0.000$; 0.000 ; 0.000 ; and 0.009 is less than 0.05 respectively.

Table 3. ANOVA between students' interpersonal skills based on administrative division

| Interpersonal skills | N | M | SD | F (3, 3196) | P | η^2 |
|----------------------|-----|------|------|-------------|-------|----------|
| Lahore | 800 | 3.96 | .565 | 14.284 | .000* | 0.14 |
| Bahawalpur | 800 | 4.06 | .586 | | | |
| Multan | 800 | 4.09 | .469 | | | |
| Sargodha | 800 | 4.13 | .453 | | | |

*p<0.05
N=3,200

Table 4. Fisher' LSD post hoc test on IS based and administrative division

| Dependent variable | (I) Administrative division | Administrative division | Mean difference (I-J) | P |
|----------------------|-----------------------------|-------------------------|-----------------------|------|
| Interpersonal skills | Lahore | Bahawalpur | -.098* | .000 |
| | | Multan | -.134* | .000 |
| | | Sargodha | -.167* | .000 |
| | Bahawalpur | Lahore | .098* | .000 |
| | | Multan | -.036 | .168 |
| | | Sargodha | -.069* | .009 |
| | Multan | Lahore | .134* | .000 |
| | | Bahawalpur | .036 | .168 |
| | | Sargodha | -.033 | .210 |
| | Sargodha | Lahore | .167* | .000 |
| | | Bahawalpur | .069* | .009 |
| | | Multan | .033 | .210 |

*p<0.05
IS=Interpersonal skills

H₀₃: There is no significant association between students' interpersonal skills and their academic achievement.

Table 5 demonstrates the results of correlations between students' interpersonal skills and their academic achievement. Results of the r test indicate that there was an insignificant correlation between interpersonal skills and academic achievement. Moreover, Table 5 shows a negative weak correlation between variables as the $r=-0.031$, $p=0.081$. The value of r (+/-) 0 to 0.3 determines a small and weak association between variables [49], [50]. Hence, it is found that students' interpersonal skills have an indirect association with achievement.

Table 5. Correlation between interpersonal skills and academic achievement

| | Interpersonal skills | Academic achievement |
|----------------------|----------------------|----------------------|
| Interpersonal skills | 1 | 0.081 -0.031 |
| Academic achievement | 0.081 -0.031 | 1 |

6. DISCUSSION

Researchers hypothesized that students' interpersonal skills (cooperative learning behaviors) influence their achievement [32]–[34] while these behaviors are also crucial for future success. Therefore, this study was designed to examine the association between secondary school students' interpersonal skills and their achievement. The findings of descriptive statistics indicate that students have a competent level in interpersonal skills that support the results of previously conducted studies that students have a competent level in social skills [2], [31], [32], [51]. Hence, Lim and Kim [36] explored that those who have a competent level in interpersonal skills are more academically engaged as compared to those who have less interpersonal skills. In addition, the findings of numerous studies support this study's findings that variable gender influences students' perception of interpersonal skills [16], [52]. Lim and Kim [36] strengthen the results of this study that there is a difference in female and male students' interpersonal skills.

The previous investigators also found a significant difference in female and male students' interpersonal, while female students have more interpersonal than male [26], [28], [36]. These determinations also support the present study's results. Moreover, DiPrete and Jennings [39] found the difference in male and female students' social skills, while these social skills have a vital role in male and female students' academic achievement.

Wentzel [25] found that learners having positive interactions are more academically engaged and secure good grades. Conversely, Tsai and Liu [38] examined those interpersonal skills demonstrate an adverse impact on academic achievement as interpersonal skills were negatively related to students' academic achievement. The study findings also revealed that students' interpersonal skills have a negative weak association with their achievement as these findings were also supported by the previous researchers [29], [30]. However, some investigators found divergent findings that students' interpersonal skills have moderate to moderately positive relationships with achievement [26], [28]. In addition, Lim and Kim [36] concluded that the magnitude of the relationships was significant between interpersonal skills and reading achievement. While, Cooper *et al.* [37] found that students' social skills have significant correlations with reading abilities and academic success. These divergent findings were due to contextual differences as well as the use of different instruments to measure interpersonal skills.

7. CONCLUSION

The researchers found that the modern world focused on students' autonomy in the classroom setting while in developing countries many of the teachers used traditional teaching methodology to deliver the lesson and ignoring the students' interpersonal skills. Hence, this research was designed to examine the students' interpersonal skills in the traditional learning environment and to explore their association with academic achievement. It is revealed from descriptive findings students have a competent level of interpersonal skills. According to the results, there is a significant difference in female and male students' interpersonal skills. Hence, it is determined that variable gender influences students' interpersonal skills. Furthermore, there is a significant difference in students' interpersonal skills on the basis of administrative division (location). Thus, it is also found that students' perceptions regarding interpersonal skills varied as their residential location vary. Results of correlation show a negative weak correlation in students' interpersonal skills and their academic achievement. Hence, it is found that students' interpersonal skills have indirect associations with their achievement.

Interpersonal skills are crucial for academic success so, students, school administration, and other stakeholders may understand the importance of cooperative learning behaviors (interpersonal skills) in academic as well as future performance. Moreover, instructors may promote learning by integrating interpersonal skills into their daily classroom to make the learning environment more interactive (collaborative learning). In addition, teachers should arrange group activities for students who are facing problems to express themselves. Teacher education institutions may add pedagogical knowledge regarding interpersonal skills into the curriculum because these skills influence students' achievement.

Additional methods of measure (teacher-parent reports and student interviews) are essential in supplementary studies to understand the role of interpersonal skills in students' educational development.

Moreover, investigators can modify the students' behaviors. Therefore, the enlargement in these interpersonal skills may be investigated through intervention. Future researchers may design studies to explore change over time in students' interpersonal skills through longitudinal investigations. The researchers used students' obtained scores in the previous grade as an achievement. Henceforth, future investigators may consider further achievements (specific subject achievement, scores obtained in daily tests) that affect interpersonal skills.





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BIOGRAPHIES OF AUTHORS






Nisar Abid     received the Ph.D. degree in education from the Institute of Education and Research (IER), University of the Punjab, Pakistan. He has over four years of experience as a visiting lecturer at IER, while he is currently appointed as an Instructor Education at Department of Education, Virtual University of Pakistan (VU). Dr. Nisar Abid's research interests lie in curriculum studies, technology education, teacher education, and academic enabling behaviors. His publication topics including students' academic enablers, teachers' competencies, attitudes towards technology, e-learning, and research, and use of ICT in education. He can be contacted at email: nisar_abid_88@hotmail.com, nisar.abid@vu.edu.pk, nisarabid44444@gmail.com, or nisar.ier@pu.edu.pk.






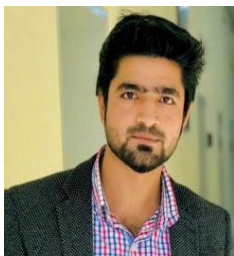
Aqeela Samuel    received the Ph.D. degree in Education from Institute of Education and Research (IER), University of the Punjab Lahore, Pakistan. She has 17 years of teaching experience at both college and university level. She is currently working as an assistant professor (Education Department) at Govt. Graduate College for Women Gulberg, Lahore. She has published research articles in national and international journals and has presented research papers in international as well as national conferences. She has conducted different workshops as a master trainer for in service teachers related to her subject areas. She has also worked as material developer and reviewer of teacher training modules. Dr Aqeela's research interests lie in teacher and teacher education, classroom research, school-based assessment, students' learning and higher education. She can be contacted at email: aqeela_phd@yahoo.com






Rizwan Ali    received the Ph.D. degree Management Sciences from China. Dr. Rizwan Ali is serving as Assistant Professor in Marketing at Lahore Business School, The University of Lahore, Lahore, Pakistan. His research interests are in consumer behaviour, marketing communications, pricing and consumer psychology. He has published his work in well reputed journals such as Psychology in the Schools, International Journal of Business Environment amongst others. He can be contacted at email: rizwan.ali1@lbs.uol.edu.pk; rizwan.ali_m@yahoo.com.



Almas Shoab    received the Ph.D. degree in education from the University of the Punjab, Pakistan. She has more than 6 years of experience as an Academician. Currently, she is working as a HEC Approved PhD Supervisor and Assistant Professor in Department of Education, School of Social Sciences and Humanities, University of Management and Technology, Lahore (UMT). Her current research interest includes students' learning and development at various levels and areas of education. Her publication topics including metacognition, Epistemological beliefs, misconceptions reading Mathematics Curriculum and Prospective Teachers' Professional Dispositions. She can be contacted at email: almas.shoab@umt.edu.pk.



Waqar Younas Warraich    is doing M.Phil in Mass Communication from University of Central Punjab (UCP). He is a research scholar and certified applied behavior analysis therapist. His publication themes are autism, developmental delay, special education, and mass communication. He can be contacted at email: waqaryounaswarraich@gmail.com.