BALKAN ORL-HNS

The Relationship Between Interdisciplinary Education Perceptions and Communication Skills in Speech and Language Therapy Students

ORIGINAL ARTICLE
BALKAN ORL-HNS 2026; 3: 1-6

ABSTRACT

Background: This study aimed to examine the relationship between speech and language therapy (SLT) students' perceptions of interdisciplinary education and their communication skills, as well as to determine whether these variables vary by year of study.

Methods: This cross-sectional study involved 211 third- and fourth-year SLT students from several universities in Türkiye. Data were collected using the Interdisciplinary Education Perception Scale and the Communication Skills Scale.

Results: Spearman correlation analysis revealed a moderate, positive, and statistically significant relationship between interdisciplinary education perceptions and communication skills ($r_s = 0.404$, $P < .001$). No significant differences were observed in interdisciplinary education perception scores across different years of study; however, fourth-year students demonstrated significantly higher communication skills than third-year students ($P < .05$).

Conclusion: The findings indicate that communication abilities may be associated with higher clinical experience, especially in the advanced phases of undergraduate education when students engage more intensively in clinical practice. The similarity in interdisciplinary education perception scores may be associated with early and consistent exposure to interdisciplinary topics within the course of study. In conclusion, the study highlights the importance of integrating communication skills training into clinical education processes rather than limiting it to theoretical courses.

Keywords : Communication skills, interdisciplinary education, speech and language therapy students

Introduction

The World Health Organization emphasizes interdisciplinary teamwork as a basic necessity for improving patient safety in healthcare services, guaranteeing continuity of care, and addressing complex health needs.[1,2] The positive effects of interdisciplinary teams for patient safety, quality of care, and clinical outcomes are also widely reported in the literature.[3] For interdisciplinary teams to work effectively, communication skills play a central role.[4] Strong communication systems are essential for accurately communicate clinical information, clarifying roles and responsibilities, developing collaborative care plans, and reflecting patient values in clinical decision-making.[5] In this regard, communication is considered not a secondary "skill" in healthcare teams, but an important professional competency area directly related to patient safety and quality of care.[6-8]

Speech-language therapy (SLT) services encompass multi-faceted clinical decision-making processes such as stroke and aphasia, pediatric developmental language disorders, autism spectrum disorders, swallowing disorders, voice disorders, and alternative and augmentative

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Received: March 31, 2026
Revision Requested: July 22, 2026
Last Revision Received: July 31, 2025
Accepted: September 26, 2026
Publication Date: October 27, 2026

Cite this article as: Atalik G, Mutlu AI. The relationship between interdisciplinary education perceptions and communication skills in speech and language therapy students. *Balkan ORL-HNS* 2026, 3 0146. doi: 10.5152/bohns.2026.26146.

DOI: 10.5152/bohns.2026.26146

communication.[9-11] Because of the nature of these diagnoses, assessment and intervention procedures require collaboration with various disciplines, including doctors, nurses, physical therapists, occupational therapists, dietitians, audiologists, and psychologists.[12-15] Speech-language therapists (SLT's) are considered an essential part of interdisciplinary clinical decision-making processes. They are responsible for establishing therapy needs, contributing to differential diagnosis based on assessment results, and actively participating in the team's organization of clinical goals.[15]

Interdisciplinary teamwork involving SLT's becomes evident in clinical scenarios such as coordinating safe feeding decisions in dysphagia management through physicians, dietitians, nurses, and SLT's[12,14] or integrating functional communication goals in aphasia with psychologists, occupational therapists, and physical therapists. As a result, communication competency is seen as one of the essential elements of professional performance rather than just a general ability for SLT's.[13] Preparing SLT students for interdisciplinary teamwork at the undergraduate level is a vital step in bridging the gap between education and clinical practice. In fact, the growth of interdisciplinary collaboration is included under the name of "professional education content" in the part outlining the primary components of the National Core Education Program for SLT (DKT-ÇEP, *Dil ve Konuşma Terapisi Alanı Ulusal Çekirdek Eğitim Programı*) which was developed to guide undergraduate education for SLT's in Türkiye.[16]

The literature reports that interdisciplinary/interprofessional education programs implemented in undergraduate education significantly improve students' attitudes toward teamwork and communication skills.[17] According to Corbacho et al[18] and Zaher et al,[19] interdisciplinary relationships formed early on help to reduce biases and increase role awareness, and such educational procedures enhance students' professional identity development. Students in interdisciplinary education have been shown to prioritize the perspectives of patients and their families more in clinical practice and to make collaborative decisions in care planning.[20]

Clinical practice courses included in health education programs, case discussions requiring interprofessional interaction, and team-based clinical decision-making processes contribute to students' understanding of the roles and responsibilities of different health disciplines.[21,22] Additionally, interdisciplinary education programs at the undergraduate level have been shown to improve health professionals' attitudes about teamwork, and these improvements may have long-lasting impacts in clinical practice even after graduation.[23] Nevertheless, few studies have examined interdisciplinary education in Turkish SLT undergraduate programs and students experience within these educational processes. To the best of available knowledge, no study has examined both communication skills and perceptions of interdisciplinary education among SLT students. It is considered important to examine the relationship between interdisciplinary education perception and communication skills among third- and fourth-year students studying in the SLT Department, particularly during ongoing clinical practice and internship process is ongoing. It is anticipated that the evaluations to be conducted in this context will provide valuable information on the education process and professional preparation. The primary objective of this study is to examine the relationship between third- and fourth-year students in the SLT Department's perceptions of interdisciplinary education and their communication skills. As a secondary objective, this study aims to examine whether these variables differ by students' year of study. It is expected that the findings obtained from this study will provide evidence-based contributions to the structuring of interdisciplinary education, communication skills, and teamwork competencies in the training programs of healthcare professionals.

It was hypothesized that fourth-year SLT students would demonstrate more positive perceptions of interdisciplinary education and higher communication skills than third-year students based on previous evidence highlighting the importance of interdisciplinary education and clinical training in healthcare education. It was also hypothesized that students with more positive perceptions of interdisciplinary education would exhibit higher communication skills.

MAIN POINTS

- *Speech and language therapy students' perceptions of interdisciplinary education are moderately and positively associated with their communication skills.*
- *Communication skills are significantly higher in fourth-year students, suggesting that clinical experience contributes to their development.*
- *Interdisciplinary education perceptions do not differ by year of study, indicating consistent exposure throughout undergraduate training and highlighting the need to integrate communication training into clinical practice.*

Material and Methods

This cross-sectional, descriptive study was conducted in accordance with the principles of the Helsinki Declaration. The data were collected from January 2026 to mid-February 2026. Ethical committee approval was received from the Scientific Research Ethics Committee of Gazi University (Approval No.: 2025-2203; Date: December 23, 2025). The statistical power of the study was calculated using G*Power 3.1 software. Assuming a medium effect size ($r = 0.30$ for correlations; $d = 0.50$ for class comparisons), $\alpha = 0.05$, and power ($1 - \beta$) = 0.90, it was calculated that at least 140 participants were needed for the independent samples *t*-test specifically designed to examine the difference between third- and fourth-year students.

Participants

A total of 211 third- and fourth-year students were recruited from six speech and language therapy programs at three public and three private universities located in different geographical regions of Türkiye. A social media post announcing the study was used to reach participants. The inclusion criteria for the study were as follows: being enrolled in a SLT undergraduate program at a university in Türkiye; being a third- or fourth-year student; speaking Turkish as their native language; having no comorbid psychiatric disorders; being 18 years of age or older; voluntarily agreeing to participate in the study; and successfully completing the online data collection tools.

Participants who met the inclusion criteria completed forms created using Google Forms, which were accessible via an automatically generated URL for the design and distribution of the online surveys. An informed consent form and an information sheet describing the aim and contents of the study were provided to participants at the start of the online survey. Electronic informed consent was obtained from all participants prior to participation by asking them to indicate their

agreement by selecting the "I agree" option on the online informed consent form before accessing the questionnaire.

Procedures and Data Collection Tools

As part of the study, a personal information form was used to collect data on age, gender, and year of study (third or fourth year). In addition, all participants completed the Turkish version of Interdisciplinary Education Perception Scale (IEPS-TR) and the Communication Skills Scale (CSS). It took approximately 8-10 minutes to complete all questions. All data were collected via Google Forms.

Interdisciplinary Education Perception Scale

The IEPS was developed by Luecht et al[24] to assess the perceptions of students and healthcare professionals in the field of interdisciplinary education. Terzioğlu et al[25] conducted the validity and reliability of the scale's Turkish translation. The IEPS is a self-reported scale that assesses individuals' perceptions regarding interdisciplinary collaboration and professional competence. The Turkish version of the scale consists of 17 items and 3 subscales: (1) competence and autonomy (items 1, 3, 5); (2) perceived need for collaboration (items 2, 6, 8); and (3) perceived current collaboration (items 4, 9, 10, 11, 12, 13, 14, 15, 16, and 17). Participants are asked to indicate their level of agreement with each item on the scale using a 6-point Likert-type rating. The total score range is 17-102, with higher scores indicating better perception of interdisciplinary education.

It has been observed that the IEPS-TR has strong psychometric qualities. The results of exploratory factor analysis revealed a 3-factor structure that explained 53.6% of the total variance. Test–retest reliability was evaluated using the intraclass correlation coefficient = 0.920, and the scale's internal consistency was determined to be high (Cronbach's $\alpha = 0.926$). These findings indicate that the IEPS-TR is a valid and reliable measurement tool for assessing perceptions of interdisciplinary education.

Communication Skills Scale

The CSS was developed by Korkut Owen and Bugay[26] to assess the communication skills of university students. The scale is a self-reported tool aimed to assess some of communication-related aspects, such as fundamental principles of interpersonal communication, self-expression, active listening, and willingness to communicate. The final version of the scale consists of a total of 25 items and 4 subscales: (1) communication principles and basic skills (items 1, 3, 6, 13, 15, 16, 21, 23, 24, 25); (2) self-expression (items 2, 5, 17, 20); (3) active listening and nonverbal communication (items 10, 11, 12, 18, 19, 22); and (4) willingness to communicate (items 4, 7, 8, 9, 14). Participants are asked to indicate their level of agreement with each item on the scale using a 5-point Likert-type rating. The total score range is 25-125. Higher scores indicate better communication skills.

During the scale development process, a pool of 40 items was first developed after a pilot study and expert reviews; the draft version was reduced to 30 items. As a result of exploratory factor analysis, 5 items with low item-total correlations were removed, and the scale reached its final form consisting of 25 items. Exploratory factor analysis indicated a 4-factor structure explaining 45.95% of the total variance. Confirmatory factor analysis demonstrated an acceptable model fit ($\chi^2/df = 1.40$, Comparative Fit Index (CFI) = 0.91, Tucker-Lewis Index (TLI) = 0.90, Root Mean Square Error of Approximation (RMSEA) = 0.046), and the internal consistency of the scale was high (Cronbach's $\alpha = 0.88$).

Data Analysis

All statistical analyses were performed using the Statistical Package for the Social Sciences for Windows, version 25.0 (IBM SPSS Corp.; Armonk, NY, USA). Continuous variables were first examined for normality using the Shapiro–Wilk test, skewness and kurtosis values, visual inspection of histograms, and Q–Q plots. Nonparametric statistical tests were chosen for the analysis because the assumption of normality was not met. For continuous variables, the median and interquartile range are reported; for categorical variables, percentage values were calculated. The relationship between perceptions of interdisciplinary education and communication skills was examined using Spearman's rho (r_s). Differences in the total scores of IEPS-TR and CSS between third- and fourth-year students were analyzed using the Mann–Whitney *U*-test. Effect sizes in group comparisons were calculated using the rank-biserial correlation coefficient (r). The statistical significance level for all analyses was set at $P < .05$, and the correlation analyses were presented with 95% CIs.

Results

Descriptive Statistics

This study included 211 third- and fourth-year students enrolled in the Department of SLT at different Turkish universities. There were 188 (89.1%) female participants, 23 (10.9%) male participants, 97 (46.0%) third-year students, and 114 (54.0%) fourth-year students. The median age of the participants was 21 (20-22) for third-year students, 22 (21-22) for fourth-year students, and 22 (21-22) for the total sample. The median total score on the IEPS-TR was 86 (77.5-93) for third-year students, 84 (69-92) for fourth-year students, and 85 (72-93) for the total group. The median total score on the CSS was 102 (97-113) for third-year students, 108 (99-117) for fourth-year students, and 105 (98-116) for the total sample (Table 1).

The Relationship Between Perceptions of Interdisciplinary Education and Communication Skills

The relationship between perceptions of interdisciplinary education and communication skills was examined using Spearman's correlation analysis. The magnitude of the Spearman correlation coefficients was interpreted according to Cohen's [27] guidelines for correlation effect sizes. A moderate, positive, and statistically significant relationship was found between SLT students' perceptions of interdisciplinary education and their communication skills ($r_s = 0.404$; $P < .001$). These findings indicate a moderate positive association between communication skills and perceptions of interdisciplinary education. The results of the correlation analysis are presented in Table 2.

Table 1. Descriptive Characteristics of Participants and Scale Scores

	Third-Year Students Median (IQR) (n = 97)	Fourth-Year Students Median (IQR) (n = 114)	Total Median (IQR) (n = 211)
Age (years)	21 (20-22)	22 (21-22)	22 (21-22)
IEPS-TR total score	86 (77.5-93)	84 (69-92)	85 (72-93)
CSS total score	102 (97-113)	108 (99-117)	105 (98-116)

IEPS-TR, Turkish version of interdisciplinary education perception scale; CSS, communication skills scale; IQR, interquartile range.

Table 2. Results of the Spearman Correlation Analysis Between IEPS-TR and CSS Scores

	r_s	*P*	n
CSS–IEPS-TR	0.404	<.001	211

IEPS-TR, Turkish version of interdisciplinary education perception scale; CSS, communication skills scale; r_sSpearman's rho.
*$P < .05$.

Comparison of Interdisciplinary Education Perception Scale and Communication Skills Scale Scores by Year of Study

The total scores on the IEPS-TR and the CSS were compared between third- and fourth-year students in the SLT department using the Mann–Whitney *U*-test. The study findings showed that there was no statistically significant difference in the total IEPS-TR scores ($U = 4914.50$; $Z = -1.391$; $P = .164$).

On the other hand, a statistically significant difference was observed between the total CSS scores of third- and fourth-year students ($U = 4652.50$; $Z = -1.985$; $P = .047$). The communication skills scores of fourth-year students are higher than those of third-year students, according to an analysis of the median values. Examination of the calculated effect sizes indicated that year of study had a small effect on CSS scores. The analysis results are presented in Table 3. Additionally, fourth-year students had significantly more clinical internship days than third-year students (median [IQR]: 50 [30–79] vs 20 [20–30] days, U = 1524.50, Z = −9.260, p < .001, r = 0.64).

Discussion

This study examined the relationship between third- and fourth-year students' perceptions of interdisciplinary education and their communication skills in SLT undergraduate programs. The findings showed a moderate, positive, and statistically significant relationship between students' perceptions of interdisciplinary education and their communication skills. Accordingly, the hypothesis regarding the positive association between interdisciplinary education perceptions and communication skills was supported. Furthermore, a comparison by year of study showed that fourth-year students had significantly higher communication skill scores than third-year students, although the effect size was small. In contrast, perceptions of interdisciplinary education did not differ significantly between the groups. Therefore, the hypothesis that fourth-year students would demonstrate both more positive interdisciplinary education perceptions and higher communication skills than third-year students was only partially supported.

First, the study's main finding—that perceptions of interdisciplinary education and communication skills are moderately positively correlated—is consistent with the significance of communication in healthcare teams. Effective interdisciplinary teamwork in healthcare settings is significantly affected by professionals' communication abilities.[28,29] Similarly, Strasser et al[30] reported that team processes play a significant role in clinical outcomes and that interdisciplinary healthcare teams enhance the effectiveness of patient care by coordinating the services provided by different professionals. Open, structured, and reciprocal communication within such teams also contributes substantially to improving patient safety and the quality of care.[31] SLT services inherently involve multidisciplinary clinical decision-making, requiring collaboration with other healthcare professionals across a wide range of clinical settings. [12-15] In this context, the findings of the present study are consistent with previous research demonstrating association between communication skills and quality of interdisciplinary collaboration. However, the moderate magnitude of the observed correlation suggests that communication skills represent only one of several factors associated with students' perceptions of interdisciplinary education. Other educational and individual factors are also likely to contribute to these perceptions.

The second important finding of the study is that there was no statistically significant difference between the perception scores of third- and fourth-year students regarding multidisciplinary education. National Core Education Program for SLT framework reflects the interdisciplinary nature of SLT education through both dedicated coursework on interdisciplinary collaboration and course content that integrates knowledge from multiple healthcare disciplines.[16] Indeed, Xiao et al[32] highlight that SLT education inherently requires the integration of knowledge from multiple disciplines. Considering fields such as medicine, psychology, audiology, and education sciences together enables students to approach clinical problems from a more holistic perspective. In summary, SLT students are exposed to the consept of interdisciplinary teamwork from the beginning of their undergraduate education. In addition, students' exposure to an interdisciplinary perspective through various course content throughout their undergraduate education may help explain why third- and fourth-year students show similar levels of perception regarding interdisciplinary education.

Another important finding of the study was that fourth-year students demonstrated significantly higher communication skill scores than third-year students, although the effect size was small. The DKT-UÇEP framework repeatedly emphasizes that speech and language therapists should be effective communicators.[16] However, communication skills are addressed in a limited number of dedicated courses within the curriculum, suggesting that classroom instruction alone may not fully explain the higher communication skills observed among fourth-year students. Previous research has shown that clinical experience plays a significant role in the development of students' communication skills.[33,34] In a study conducted by Quail et al,[33] 69 speech pathology students were divided into 3 different groups based on their clinical communication experiences. One group of students engaged in a real clinical interaction with a patient living in a nursing home, the second group conducted an interview in a simulation environment with an actor playing

Table 3. Comparison of IEPS-TR and CSS Scores by Year of Study

Total Score	Third-Year Students Median (IQR) (n = 97)	Fourth-Year Students Median (IQR) (n = 114)	*U*	*Z*	*P*	*r*
IEPS-TR	86 (77.5-93)	84 (69-92)	4914.50	−1.391	.164	0.10
CSS	102 (97-113)	108 (99-117)	4652.50	−1.985	.047*	0.14

IEPS-TR, Turkish version of interdisciplinary education perception scale; CSS, communication skills scale; IQR, interquartile range.
*$P < .05$.

a standardized patient role, and the third group interacted with a virtual patient. In the study, students' communication skills, knowledge level, and self-confidence in communication were assessed before and after the clinical interaction, and a significant increase in communication skills and communication self-efficacy scores was reported across all groups following the clinical experience.[33] An examination of the educational processes of SLT students shows that clinical work up to the third year is largely limited to observation. However, it is observed that in the fourth year, students begin active clinical practice throughout the year under supervision in complex clinical situations.[16]

Consistent with this educational structure, fourth-year students in the present study reported significantly more clinical internship days than third-year students. Taken together, these findings suggest that higher clinical internship experience may be one of several factors associated with higher communication skills. However, clinical experience alone is unlikely to fully explain communication skill development, which is influenced by multiple educational and individual factors, including formal communication training, opportunities for interdisciplinary interaction, reflective learning experiences, and personal characteristics. These findings suggest that continued opportunities to develop communication skills throughout undergraduate education may be beneficial. Nevertheless, because of the cross-sectional design of the present study, these findings should be interpreted as associations rather than evidence of causal relationships. Accordingly, it seems important that training aimed at developing communication skills is not confined to specific courses, but should be systematically integrated into different stages of clinical education. In addition, students' awareness and application of these skills should be supported throughout clinical observation and internship experiences.

This study has some limitations. First, the data were collected using self-report scales and reflected participants' own perceptions. Furthermore, participants were recruited through voluntary responses to online social media announcements using a convenience sampling approach. This recruitment method may have introduced selection bias and may limit the generalizability of the findings to the broader population of speech and language therapy students. Additionally, the fact that the majority of the sample consisted of female students may limit the generalizability of the findings in terms of gender. However, it has been reported that the proportion of female students is higher in SLT education programs[35] and the current sample is consistent with this demographic distribution. Although clinical internship days were recorded, other qualitative and quantitative aspects of clinical experience were not assessed**.** Therefore, the potential contribution of these factors to communication skill development could not be evaluated. Future research should investigate interdisciplinary educational practices using experimental designs, include more representative and diverse samples, and assess communication skills with clinical performance measures, and directly examine different dimensions of clinical experience, including clinical practice hours, case diversity, and supervision type. In addition, future studies may benefit from examining subscale scores instead of only total scale scores to provide a more detailed view of the specific dimensions underlying these constructs. Also, Drossman et al.[7] said that effective communication skills strengthen the patient–health professional relationship and improve patient experience, satisfaction, and clinical outcomes. Based on this, it is recommended that future studies investigate the impact of communication skills on the patient–SLTs relationship.

In conclusion, this study shows a significant relationship between SLT students' perceptions of interdisciplinary education and their communication skills. These findings highlight the importance of fostering communication skills alongside interdisciplinary learning throughout undergraduate education. Integrating communication skills training with clinical education and providing learning environments that support interdisciplinary teamwork may better prepare future speech and language therapists for collaborative clinical practice.

Data Availability Statement: *The data that support the findings of this study are available on request from the corresponding author.*

Artificial Intelligence Usage Statement: *This study used QuillBot to improve language and edit grammar during the preparation of the manuscript. The authors reviewed and edited the content as needed and take full responsibility for the content of the publication.*

Ethics Committee Approval: *Ethical committee approval was received from the Scientific Research Ethics Committee of Gazi University (Research code: 2025-2203; Date: December 23, 2025).*

Informed Consent: *Electronic informed consent was obtained from all participants who agreed to take part in the study.*

Peer-review: *Externally peer-reviewed.*

Author Contributions: *Concept – G.A.; Design – G.A.; Supervision – G.A.; Resources – G.A.; Materials – G.A., A.İ.M.; Data Collection and/or Processing – G.A.; Analysis and/or Interpretation – G.A., A.İ.M.; Literature Search – G.A., A.İ.M.; Writing – G.A., A.İ.M.; Critical Review – A.İ.M.*

Acknowledgments: *The authors would like to thank Gazi University Academic Writing Application andResearch Center for their assistance in proofreading the article.*

Declaration of Interests: *The authors have no conflict of interest to declare.*

Funding: *The authors declared that this study has received no financial support.*

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