

Assessing and Characterizing Perspective-Taking Abilities in Undergraduate Students: A Case Study Approach

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Abstract

This Empirical Research Paper (Full Paper, 10 pages) investigates the development of perspective-taking abilities in undergraduate students utilizing a case study approach.

Background: The increasing emphasis on preparing graduates for a globalized workforce necessitates the development of intercultural communication skills. Perspective-taking is key to this skill as it allows individuals to consider different people's viewpoints. While perspective-taking is recognized as crucial for effective human interaction and conflict resolution, there remains a gap in understanding how to effectively teach and assess these skills in higher education settings. The goal of the study is to understand the perspective-taking abilities of undergraduate students and inform curriculum enhancements to help students develop such abilities.

Methods: The study employed a case study approach to analyze reflections from 15 undergraduate students enrolled in an honors course at a large midwestern university. Following the completion of a communication module, students wrote 200-word reflections on their key learnings. A four-point rubric was used to assess these reflections based on three criteria: critical reflection, perspective shift, and application of new perspectives. The rubric scores were then used to divide the students into three groups: *emerging*, *proficient*, and *competent* perspective-takers, and thematic analysis was conducted to identify patterns within each group's reflections.

Results: Analysis revealed distinct characteristics among the three groups of perspective-takers. Competent perspective-takers demonstrated a sophisticated understanding of contextual factors and provided specific strategies for communication improvement. Proficient perspective-takers showed awareness of intent versus impact but struggled with practical application. Emerging perspective-takers recognized basic communication strategies but had difficulty challenging their assumptions and implementing perspective-taking concepts effectively.

Implications: The findings emphasize that critical self-reflection is fundamental to developing perspective-taking abilities in undergraduate education. The study reveals that even students with strong theoretical understanding often struggle to identify specific applications, suggesting curriculum design should focus on bridging this theory-practice gap through concrete implementation strategies. These insights point to the need for restructuring perspective-taking education to emphasize practical application alongside conceptual learning.

Keywords: *Perspective-taking, Intercultural competence, Undergraduate, Critical reflection, Communication*

1. Background

Perspective-taking, referred to as the cognitive ability to consider and interpret situations from another's point of view [1], is a critical skill for fostering collaboration and communication in

academic, professional, and social settings [2]. It enables individuals to interpret the actions and intentions of others, thereby enhancing communication across cultural and interpersonal differences [3]. Hess et al. [4] emphasize that perspective-taking is a foundational component of empathy, crucial for ethical reasoning, effective conflict resolution, and intercultural communication. As higher education increasingly prepares students for a globalized workforce [5], [6], the cultivation of perspective-taking has become a critical priority [7]. Universities have recognized the need to equip students with the ability to understand and engage with diverse viewpoints to navigate complex, multidisciplinary challenges effectively [8]. To this end, many institutions have integrated general education requirements that include coursework on the impact of science and technology on society, as well as courses focused on social and cultural diversity, multicultural understanding, and global issues in science [9], [10]. These programs are designed to foster students' capacity to consider diverse perspectives, thereby enhancing their ability to address real-world problems while promoting ethical decision-making and socially responsible behavior [3], [11]. By embedding these elements into the curriculum, higher education institutions aim to prepare students not only to excel in their careers but also to contribute meaningfully to an interconnected and culturally diverse world. The focus on perspective-taking supports the development of transferable skills, such as intercultural communication and ethical reasoning, which are essential for addressing global challenges [12].

Despite these initiatives, the effective teaching of perspective-taking skills remains a challenge . Research demonstrates that perspective-taking significantly influences ethical reasoning and decision-making, yet how to teach and retain this ability effectively is less understood [4]. While theoretical frameworks and conceptual analyses highlight the importance of perspective-taking, empirical studies examining instructional strategies and measurable outcomes are limited. This gap in literature restricts educators' ability to design evidence-based interventions that foster the long-term development of perspective-taking skills. The distinction between different forms of perspective-taking further complicates teaching and assessment. Batson et al. [2] identify two primary types: imagining how another person feels (imagine-other) and imagining how one would feel in another's situation (imagine-self). Each type has unique emotional and motivational outcomes, with the former promoting altruistic behavior and the latter eliciting a mix of empathetic and self-focused responses. Understanding these distinctions is critical for designing interventions that encourage constructive perspective-taking aligned with ethical and intercultural goals [13]. In addition to individual perspective-taking, recent research underscores its role in promoting socio-scientific reasoning [11], [14]. Effective perspective-taking facilitates engagement with multiple viewpoints, ethical considerations, and informed decision-making in scientific and societal contexts [15]. However, the ability to take perspectives constructively depends on the integration of empathy, ethical reasoning, and cultural awareness [16]. Without these complementary skills, perspective-taking may be ineffective or even counterproductive. For instance, as Kahn and Zeidler [11] note, individuals with strong perspective-taking skills but limited ethical grounding may misuse these abilities.

Given these complexities, there is an urgent need for research that evaluates the efficacy of teaching methods aimed at developing perspective-taking skills. This study seeks to address this need by focusing on a communication dynamics module at a large Midwestern University. Specifically, the study aims to address the research question: *How do students demonstrate understanding and application of perspective-taking in their communication after completing a*

module on communication dynamics? By examining how students demonstrate understanding and application of perspective-taking after completing the module, this research aims to generate insights that inform curriculum design and pedagogy. The study emphasizes practical, evidence-based strategies for fostering perspective-taking in higher education.

2. Conceptual Framework

Social Perspective Taking (SPT) refers to the capacity to understand how others think and feel in a given situation. Drawing from social-cognitive and developmental psychology [17], SPT has been linked to key educational outcomes such as conflict resolution and historical empathy [18],[19]. However, research has often treated SPT either as a cognitive skill or as a dispositional trait, limiting a more comprehensive understanding of its role in learning. Informed by Snow's [20] conception of aptitudes as multidimensional constructs that integrate cognitive abilities, affective responses, and motivational orientations, we apply a similar framework to define SPT. The *cognitive domain* reflects the ability to accurately infer others' thoughts and intentions; the *affective domain* involves empathic engagement with others' emotional states; and the *motivational domain* refers to the willingness to engage in perspective taking, shaped by individual goals and contextual influences [21]. This integrated conceptual framework emphasizes that SPT is not only a skill but also a mindset.

3. Methods

3.1 Context & Participants

The study focuses on fifteen undergraduate students enrolled in an honors course on storytelling with data. This course provided a unique interdisciplinary approach, combining technical and social aspects of data communication. A key component of the course involved conducting interviews, which required students to gather data effectively and engage deeply with communication dynamics and interpersonal skills. To prepare students for these interactions, a dedicated online learning module on communication was integrated into the curriculum.

Online Module on Communication

This communication module was designed to build foundational skills essential for effective, ethical, and empathetic communication. Topics included *perspective-taking*, which encouraged students to consider and understand the viewpoints of others to enhance collaboration and minimize miscommunication. The module also addressed *implicit bias*, helping students recognize and mitigate unconscious prejudices that can shape their interactions. Another key topic, *intent vs. impact*, highlighted the importance of understanding how one's words or actions might be perceived differently from their intended meaning, fostering greater self-awareness and sensitivity in communication. The module further emphasized the *golden rule of communication*, which encourages treating others with respect and consideration, and adapting messages to ensure clarity and mutual understanding. *Meta-communication*, or the practice of discussing the communication process itself, was introduced to help students navigate and clarify misunderstandings during interactions. Students also explored the concept

of *microaggressions*, gaining insight into how subtle, often unintentional, comments or actions could perpetuate stereotypes or cause harm, particularly in intercultural or diverse settings. To enhance their communication skill set, students were trained in recognizing and balancing *verbal and non-verbal communication*. This included understanding the intricacies of body language, facial expressions, and tone of voice, which often convey as much if not more meaning than spoken words. Finally, the module addressed *pacing styles*, teaching students to adapt the speed and rhythm of their communication to suit different conversational partners and contexts, promoting smoother and more effective exchanges. By integrating these topics into the course, students were equipped with both theoretical knowledge and practical tools to navigate complex communication scenarios. This approach aimed to prepare them for the interview component of the course and also for broader interpersonal challenges they might encounter in their academic, professional, and personal lives. The study examines how this communication module influenced students' understanding and application of perspective-taking, assessing its role in fostering more thoughtful, empathetic, and effective communication.

3.2 Data Collection

Upon completion of the learning module, students were required to engage in a structured reflection exercise designed to reinforce their learning and connect theoretical concepts to practical applications. The reflection task consisted of three key questions aimed at eliciting thoughtful responses about their understanding, intended application, and future utility of the communication strategies taught in the module. Students answered the following reflection questions: 1) What did you learn from the module? 2) How will you apply what you learned while writing survey questions and conducting interviews? 3) How can strategies for communication that you learned in this module serve you in a) this course? b) your major? and c) your future personal and professional life?

3.3 Data Analysis

Developing Rubric

The categories of critical reflection, perspective shift, and application of new perspectives were selected for the rubric because they aligned with the components of Social Perspective Taking (SPT) the cognitive, affective, and motivational dimensions. *Critical reflection* corresponds to the *cognitive dimension* of SPT, focusing on students' ability to analyze their thoughts, biases, and assumptions. This category evaluates how deeply students intellectually engage with the module's concepts, such as implicit bias, intent vs. impact, and meta-communication, and their ability to critically assess how these ideas influence their communication. *Perspective shift* aligns with the *affective dimension* of SPT, emphasizing the emotional engagement and empathy required to adopt or understand others' viewpoints. By evaluating how well students move beyond their frame of reference to connect with others' perspectives, this category captures the emotional resonance necessary for perspective-taking. Finally, the *application of new perspectives* corresponds to the *motivational dimension* of SPT, focusing on students' willingness and ability to act on their understanding of others' viewpoints. This category assesses how effectively students translate their learning into practical actions, such as designing culturally sensitive survey questions, conducting interviews with empathy, or navigating interpersonal interactions in professional and personal contexts.

Table 1. Rubric for Scoring Student Reflections

Criteria	Exemplary (4)	Proficient (3)	Developing (2)	Beginning (1)
Critical Reflection	Provides a thorough critique of personal communication perspectives, identifying and challenging underlying assumptions.	Critiques personal communication perspectives with some identification and challenge of assumptions.	Provides basic critique of personal communication perspectives with limited challenge of assumptions.	Provides minimal to no critique of personal communication perspectives or challenge of assumptions.
Perspective Shift	Demonstrates a clear and substantial shift in perspective on communication dynamics and practices.	Shows some shift in perspective on communication dynamics and practices.	Shows minimal shift in perspective on communication dynamics and practices.	Shows little to no shift in perspective on communication dynamics and practices.
Application of New Perspectives	Applies new perspectives to communication practices with detailed and specific strategies for improvement.	Applies new perspectives to communication practices with some strategies for improvement.	Applies basic new perspectives with limited strategies for communication improvement.	Applies few or no new perspectives to communication practices with minimal strategies for improvement.

Analyzing Reflections

Analysis of these reflections was performed using a case study approach, which allowed for an in-depth examination of individual student experiences and the contextual factors influencing their learning. This qualitative methodology was chosen to capture the richness and complexity of students' reflections, providing detailed insights into their engagement with the communication module. Each reflection was then scored using a rubric (Table 1) with three categories: critical reflection, perspective shift, and application of new perspectives. Each category was scored on a 4-point scale, with scores ranging from 1 (beginning) to 4 (exemplary). The combined scores yielded a total score of up to 12 points per reflection, which were then used to compute percentiles.

Students were categorized into three groups based on their total scores: those falling within or below the 25th percentile were labeled as *emerging perspective takers*, those between the 25th and 50th percentiles as *proficient perspective takers*, and those above the 50th percentile as *competent perspective takers*. This stratification facilitated a nuanced understanding of students' development in perspective-taking. To further differentiate these groups, a thematic analysis was conducted, identifying common themes and patterns within each group. The case study approach, combined with thematic analysis, provided a strong framework for understanding how students at varying levels of perspective-taking engage with and apply the skills learned in the module.

3.4 Ethical and Trustworthiness Considerations

The study upheld ethical standards by ensuring all data was anonymized using numerical identifiers and stored securely in encrypted files. The trustworthiness of the findings was established through multiple strategies, including investigator triangulation where three researchers independently coded the reflections using the rubric to ensure consistent interpretation, member checking where participants reviewed their categorization and emerging themes, and maintenance of a detailed audit trail documenting all analytical decisions, coding processes, and thematic interpretations throughout the study.

4. Results

4.1 Rubric Results and Creation of the Three Groups

The rubric provided a framework for assessing the students' perspective-taking abilities. The scores ranged from 4 to 12 points, highlighting differences in how students processed and utilized perspective-taking concepts, see Figure 1. Based on the quantitative rubric scores, students were divided into three groups: emerging perspective-takers, proficient perspective-takers, and competent perspective-takers. Each group displayed unique traits across the three rubric categories and detailed for each case has been provided in the subsequent paragraphs.

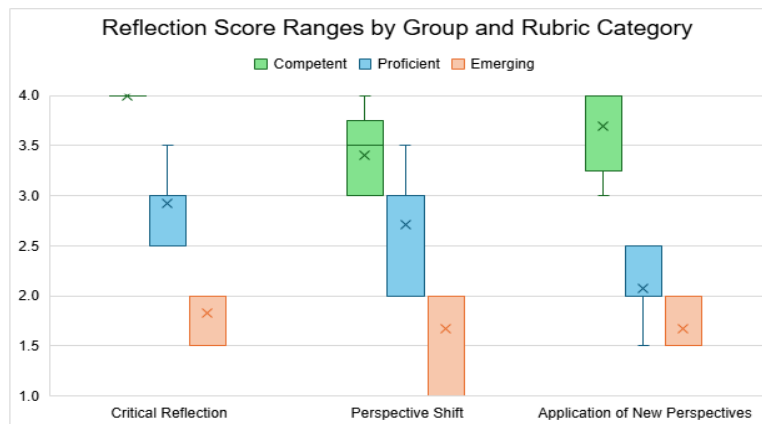


Figure 1. Reflection Score Ranges Shown by Group and Rubric Category

4.2 Understanding the Three Groups

Case 1: Emerging Perspective-Takers

This group included three students whose combined scores fell below the 25th percentile. These students demonstrated minimal engagement with critical reflection (Mean: 1.83, SD: 0.29) and struggled to apply perspective-taking concepts in their reflections. Their scores in perspective shift (Mean: 1.67, SD: 0.58) and application of new perspectives (Mean: 1.67, SD: 0.29) were equally low. These results suggest difficulty in deeply analyzing or acting on the ideas presented in the module.

Further, the qualitative analysis of their reflections revealed two main themes. The first theme (T1), ***consideration of others' comfort***, highlighted their emphasis on creating a safe and welcoming environment for interviewees. This was evident in statements such as, *"I will continue to make sure that the interviewee is comfortable and feels as though they are in a safe place to voice their opinions"* and *"I could also ask the interviewee what they would find most appropriate and accommodate their wishes into the interview."* The second theme (T2), ***correcting miscommunications***, reflected an awareness of the importance of recognizing and resolving communication errors. For example, one student noted, *"I learned ways in which to correct myself should I ever misstep in a communication situation,"* while another stated, *"Being perceptive of how your messages are received."* These themes indicate that while the emerging perspective-takers recognized basic strategies for communication, their limited critical reflection hindered their ability to fully understand or effectively apply perspective-taking concepts.

Case 2: Proficient Perspective-Takers

This group consisted of seven students who fell between the 25th and 50th percentiles, demonstrating a stronger ability to reflect critically (Mean: 2.93, SD: 0.35) and engage with perspective shifts (Mean: 2.71, SD: 0.57). However, their ability to apply new perspectives lagged (Mean: 2.07, SD: 0.35), indicating a gap between understanding and action. Moreover, the qualitative analysis of their reflections revealed three key themes. The first theme (T1), ***intent vs. impact***, showed students' awareness of the distinction between their intentions and the actual outcomes of their communication. For example, one student noted, *"While our questions may have good intent, if the participant is negatively impacted, it could affect their response,"* and another stated, *"Understanding the differences between intent and impact helped me to revisit my communication habits."* The second theme (T2), ***consideration of backgrounds and perspectives***, emphasized the importance of understanding others' diverse experiences, as reflected in quotes such as, *"It is important to maintain unbiased, especially when talking to individuals from a variety of backgrounds,"* and *"Everyone has different backgrounds, perceptions, and events going on in their lives that may affect how they perceive different forms of communication."* The third theme (T3), ***nonverbal communication***, highlighted their recognition of the importance of gestures and cultural interpretations in effective communication. One student remarked, *"Communication isn't just about talking,"* while another observed, *"Gestures that may be interpreted differently based on culture."* This group displayed a growing awareness of critical communication concepts, particularly the distinctions between intent versus impact and the role of nonverbal cues but continued to struggle with translating this understanding into practical application.

Case 3: Competent Perspective-Takers

This group consisted of five students who scored above the 50th percentile, showcasing exceptional ability in all categories. They achieved the maximum score of 4 in critical reflection (Mean: 4, SD: 0) and high scores in perspective shift (Mean: 3.4, SD: 0.42) and application of new perspectives (Mean: 3.7, SD: 0.45). These students demonstrated a comprehensive understanding of perspective-taking and a strong capacity to apply these skills effectively.

Qualitative analysis of their reflections revealed two key themes. The first theme, ***consideration based on culture, feelings, and environment***, showcased the students' advanced awareness of

contextual factors in communication. For example, one student noted, *“Adapting communication styles to match the cultural and personal contexts of the interviewees,”* while another emphasized, *“Context, cultural sensitivity, and clarity in communication are essential.”* The second theme, ***subconscious effects of communication***, reflected their nuanced understanding of biases and assumptions, as seen in statements like, *“How assumptions and biases, often subconscious, can influence [their] communication and lead to unintended, negative consequences,”* and *“The significance of nonverbal cues in listening and conveying messages.”* These reflections demonstrate a sophisticated grasp of perspective-taking and the ability to integrate these skills seamlessly into their communication, indicating advanced competence in understanding and navigating complex communication dynamics.

5. Discussion and Implications

The findings of this study highlight the developmental trajectory of perspective-taking skills among undergraduate students, showcasing varying levels of competency across three groups: emerging, proficient, and competent perspective-takers. These results offer insights into the relationship between critical reflection, perspective shift, and the application of new perspectives, as well as the challenges and opportunities in fostering these skills in educational settings.

The results reveal that critical reflection is a foundational skill that underpins students’ ability to engage with and act on perspective-taking concepts. Students in the competent group consistently scored the highest in critical reflection, demonstrating their ability to deeply analyze their assumptions and biases. This ability appeared to facilitate their success in the other rubric categories, suggesting that the depth of reflection enables students to better adopt and apply new perspectives. Conversely, students in the emerging group, with the lowest scores in critical reflection, struggled across all categories. This finding underscores the importance of fostering reflective practices in educational settings, as it forms the basis for perspective-taking development. The distinction between the proficient and competent groups highlights the critical gap between understanding perspective-taking concepts and applying them in practice. While proficient perspective-takers demonstrated a growing awareness of intent versus impact, the importance of nonverbal communication, and the need to consider diverse backgrounds, their lower scores in the application of new perspectives indicate challenges in translating these insights into actionable strategies. In contrast, competent perspective-takers not only understood these concepts but were able to integrate them effectively into their communication practices, as evidenced by their reflections on adapting communication styles and recognizing subconscious biases. This progression emphasizes the need for instructional strategies that bridge the gap between theoretical understanding and practical application, such as experiential learning or role-playing activities.

The reflections of competent perspective-takers shed light on the advanced dimensions of perspective-taking, particularly the role of contextual and subconscious factors in communication. These students demonstrated a good understanding of how cultural and personal contexts influence communication dynamics, as well as the impact of subconscious biases and nonverbal cues. These findings highlight the importance of incorporating discussions of context, cultural sensitivity, and implicit biases into educational interventions.

By addressing these advanced aspects of perspective-taking, educators can help students move beyond surface-level understanding to develop a deeper, more integrated skill set. The reflections of emerging perspective-takers highlight the challenges faced by students at the initial stages of perspective-taking development. While these students recognized basic strategies, such as ensuring comfort in communication and correcting miscommunications, their limited ability to critically reflect appeared to hinder their ability to fully understand or apply perspective-taking concepts. These findings suggest that interventions aimed at fostering perspective-taking should prioritize foundational skills, such as critical self-reflection and awareness of biases, before progressing to more complex applications.

Implications for Teaching and Learning

These results have several important implications for curriculum design in higher education. First, structured opportunities for critical reflection should be integrated into coursework to build the foundational skills necessary for perspective-taking. This integration could be achieved through regular reflection journals tied to practical communication experiences and team projects. Second, instructional strategies should focus on bridging the gap between understanding and application through experiential learning methods like case studies and role-playing. These methods should be designed to gradually increase in complexity, allowing students to build confidence in applying perspective-taking skills in increasingly challenging scenarios. Third, the curriculum should explicitly address the contextual and subconscious dimensions of communication to help students develop practical perspective-taking skill set that will serve them in both academic and professional environments. The emphasis on these dimensions is particularly crucial for STEM students who may be more focused on technical skills but need strong perspective-taking abilities to succeed in diverse, global workplaces.

6. Conclusion, Limitations, and Future Work

The study highlights the importance of critical reflection, the progression from understanding to application, and the consideration of contextual and subconscious influences in developing perspective-taking skills. By addressing these dimensions in curriculum design, educators can better prepare students for effective and empathetic communication in diverse personal, academic, and professional contexts.

While this study provides valuable insights, it is not without limitations. The small sample size limits the generalizability of the findings, and the use of self-reported reflections may introduce bias. Future research could expand the sample size and explore longitudinal studies to examine how perspective-taking skills develop over time. Additionally, exploring the effectiveness of specific instructional strategies in fostering perspective-taking would provide actionable insights for educators.

References

- [1] A. D. Galinsky, W. W. Maddux, D. Gilin, and J. B. White, "Why It Pays to Get Inside the Head of Your Opponent: The Differential Effects of Perspective Taking and Empathy in Negotiations," *Psychol. Sci.*, vol. 19, no. 4, pp. 378–384, Apr. 2008, doi: 10.1111/j.1467-9280.2008.02096.x.
- [2] C. D. Batson, S. Early, and G. Salvarani, "Perspective Taking: Imagining How Another

- Feels Versus Imaging How You Would Feel,” *Pers. Soc. Psychol. Bull.*, vol. 23, no. 7, pp. 751–758, Jul. 1997, doi: 10.1177/0146167297237008.
- [3] S. Wu and B. Keysar, “The Effect of Culture on Perspective Taking,” *Psychol. Sci.*, vol. 18, no. 7, pp. 600–606, Jul. 2007, doi: 10.1111/j.1467-9280.2007.01946.x.
 - [4] J. L. Hess, J. Strobel, and A. O. Brightman, “The Development of Empathic Perspective-Taking in an Engineering Ethics Course,” *J. Eng. Educ.*, vol. 106, no. 4, pp. 534–563, 2017, doi: 10.1002/jee.20175.
 - [5] O. Kuffuor, S. Aggrawal, A. Jaiswal, R. J. Smith, and P. V. Morris, “Transformative Pathways: Implementing Intercultural Competence Development in Higher Education Using Kotter’s Change Model,” *Educ. Sci.*, vol. 14, no. 7, Art. no. 7, Jul. 2024, doi: 10.3390/educsci14070686.
 - [6] S. Aggrawal and A. J. Magana, “Teamwork Conflict Management Training and Conflict Resolution Practice via Large Language Models,” *Future Internet*, vol. 16, no. 5, Art. no. 5, May 2024, doi: 10.3390/fi16050177.
 - [7] P. M. King and M. B. Baxter Magolda, “A Developmental Perspective on Learning,” *J. Coll. Stud. Dev.*, vol. 40, no. 5, pp. 599–609, 1999.
 - [8] P. Bahrami, Y. Kim, A. Jaiswal, D. Patel, S. Aggrawal, and A. J. Magana, “Information Technology Undergraduate Students’ Intercultural Value Orientations and Their Beliefs about the Influence of Such Orientations on Teamwork Interactions,” *Trends High. Educ.*, vol. 2, no. 2, Art. no. 2, Jun. 2023, doi: 10.3390/higheredu2020014.
 - [9] R. D. Reason, “Encouraging perspective-taking among college students,” *Divers. Democr.*, vol. 14, no. 1, pp. 8–10, 2011.
 - [10] M. A. Fuentes, D. G. Zelaya, and J. W. Madsen, “Rethinking the Course Syllabus: Considerations for Promoting Equity, Diversity, and Inclusion,” *Teach. Psychol.*, vol. 48, no. 1, pp. 69–79, Jan. 2021, doi: 10.1177/0098628320959979.
 - [11] S. Kahn and D. L. Zeidler, “A Conceptual Analysis of Perspective Taking in Support of Socioscientific Reasoning,” *Sci. Educ.*, vol. 28, no. 6, pp. 605–638, Sep. 2019, doi: 10.1007/s11191-019-00044-2.
 - [12] D. B. Rosenthal, L. A. Wadsworth, C. Paullin, A. C. Hooper, J. Mathew, and D. P. Bhawuk, “Navigating the human terrain: Development of cross-cultural perspective taking skills,” Technical Report 1239). Arlington, VA: US Army Research Institute for the ..., 2009.
 - [13] A. D. Galinsky, G. Ku, and C. S. Wang, “Perspective-Taking and Self-Other Overlap: Fostering Social Bonds and Facilitating Social Coordination,” *Group Process. Intergroup Relat.*, vol. 8, no. 2, pp. 109–124, Apr. 2005, doi: 10.1177/1368430205051060.
 - [14] M. H. Newton and D. L. Zeidler, “Developing socioscientific perspective taking,” *Int. J. Sci. Educ.*, vol. 42, no. 8, pp. 1302–1319, May 2020, doi: 10.1080/09500693.2020.1756515.
 - [15] S. Kahn and D. L. Zeidler, “Using our Heads and HARTSS*: Developing Perspective-Taking Skills for Socioscientific Reasoning (*Humanities, ARTs, and Social Sciences),” *J. Sci. Teach. Educ.*, vol. 27, no. 3, pp. 261–281, Apr. 2016, doi: 10.1007/s10972-016-9458-3.
 - [16] D. K. Deardorff, *The SAGE handbook of intercultural competence*. Sage Publications, 2009.
 - [17] D. W. Johnson, “Cooperativeness and social perspective taking,” *Journal of Personality and Social Psychology*, vol. 31, pp. 241–244, 1975.
 - [18] M. Deutsch, “Educating for a peaceful world,” *American Psychologist*, vol. 48, no. 5, pp. 510–517, 1993.

- [19] O. L. Davis, E. A. Yeager, and S. J. Foster, *Historical Empathy and Perspective Taking in the Social Studies*. Lanham, MD: Rowman & Littlefield, 2001.
- [20] R. E. Snow, "Abilities in academic tasks," in *Mind in Context: Interactionist Perspectives on Human Intelligence*, R. J. Sternberg and R. K. Wagner, Eds. New York, NY: Cambridge Univ. Press, 1994, pp. 3–37.
- [21] K. O. Corcoran and B. Mallinckrodt, "Adult attachment, self-efficacy, perspective taking, and conflict resolution," *Journal of Counseling & Development*, vol. 78, no. 4, pp. 473–483, 2000.