A systematic review of authorial voice construction in scientific discourse

Zebuniso Abdug'aniyeva
PhD Student of Uzbekistan State World Languages University
za.abduganiyeva@uzswlu.uz

Annotation: *This critical review article examines authorial voice in scientific discourse, employing Hyland's interaction model as an analytical framework. The study identifies linguistic units that constitute authorial voice in scholarly texts and analyzes contextual variables influencing its manifestation. Within scientific discourse, authorial voice is constructed through stance and engagement markers, with disciplinary domains, genres, and cultural contexts potentially having significant influence on it. While the interaction model provides valuable insights into sentence-level authorial voice features, it does not comprehensively address the broader textual dimensions of authorial voice. This article proposes an integrated methodological approach for such analysis and offers pedagogical implications. This approach may have particular relevance for non-native English writers navigating scientific discourse conventions. The review contributes to our understanding of how scholars bring forth their discursive presence despite the epistemological and rhetorical constraints of scientific communication.*

Keywords: *scientific discourse, authorial voice, interaction model, stance, engagement*

Систематический обзор конструирования авторского голоса в научном дискурсе

Зебунисо Абдуганиева
базовый докторант
Узбекского государственного университета мировых языков
za.abduganiyeva@uzswlu.uz

Аннотация: *Данная критическая обзорная статья исследует авторский голос в научном дискурсе, используя интеракционную модель Хайленда в качестве аналитической основы. Исследование выявляет лингвистические единицы, формирующие авторский голос в научных текстах, и анализирует контекстуальные переменные, влияющие на его проявление. В рамках научного дискурса авторский голос конструируется через маркеры позиционирования (stance) и вовлечения (engagement), при этом научные области, жанры и культурные контексты могут оказывать на него значительное влияние. Хотя интеракционная модель предоставляет ценные сведения о характеристиках авторского голоса на уровне предложения, она не полностью охватывает более широкие текстуальные измерения авторского голоса. В данной статье предлагается интегрированный методологический подход для такого анализа и представляются педагогические выводы. Этот подход может иметь особую значимость для авторов, использующих английский язык как второй и осваивающих закономерности научного дискурса. Данный обзор способствует пониманию того, как ученые проявляют свое дискурсивное присутствие, несмотря на эпистемологические и риторические ограничения научной коммуникации.*

Ключевые слова: *научный дискурс, авторский голос, модель взаимодействия, авторская позиция, вовлечение*

Ilmiy diskursda muallif ovozi konstruksiyasining tizimli sharhi

Zebuniso Abdug'aniyeva
O'zbekiston davlat jahon tillari universiteti
tayanch doktoranti

za.abduganiyeva@uzswlu.uz

Annotatsiya: *Ushbu tanqidiy sharh maqolasi ilmiy diskursdagi muallif ovozini o‘rganib, tilshunos olim Ken Haylandning interaktsiya modelini tahliliy asos sifatida qo‘llaydi. Tadqiqot ilmiy matnlarda muallif ovozini tashkil etuvchi lingvistik birliklarni aniqlaydi va uning namoyon bo‘lishiga ta’sir qiluvchi kontekstual o‘zgaruvchilarni tahlil qiladi. Ilmiy diskurs doirasida muallif ovozi pozitsiya (stance) va jalb qilish (engagement) belgilari orqali shakllantiriladi, fan sohalari, janrlar va madaniy kontekstlar ham unga sezilarli ta’sir ko‘rsatishi mumkin. Interaktsiya modeli jumla darajasidagi muallif ovozi xususiyatlari haqida qimmatli ma’lumotlar bersa-da, u muallif ovozining keng matnli o‘lchamlarini to‘liq qamrab olmaydi. Mazkur maqolada bunday tahlil uchun integratsiyalashgan metodologik yondashuvni taklif etiladi va pedagogik ahamiyatga ega xulosalar beriladi. Ushbu yondashuv, ayniqsa, ilmiy diskurs qonuniyatlarini o‘zlashtirayotgan ingliz tilini ikkinchi til sifatida qo‘llovchi mualliflar uchun alohida ahamiyatga ega bo‘lishi mumkin. Ushbu sharh ilmiy muloqotning epistemologik va ritorik cheklovlariga qaramasdan, olimlarning o‘z diskursiv mavjudliklarini qanday yuzaga chiqarishlarini tushunishga xizmat qiladi.*

Kalit so‘zlar: *ilmiy diskurs, muallif ovozi, interaktsiya modeli, pozitsiya, jalb qilish*

Introduction

Scientific knowledge emerges from rhetorical argumentation within discourse communities. Despite conventional characterization of scientific discourse as impersonal, effective scientific communication requires strategic authorial positioning (Hyland, 2002). L2 writers frequently minimize their authorial presence in scientific texts, producing discourse characterized by impersonality and excessive reliance on external sources (Le Ha, 2009; Jiang, 2015; Hyland, 2002). This practice misrepresents scientific communication, which requires writers to articulate their epistemological stance and justify knowledge claims. Effective authorial positioning enhances perceived credibility and rhetorical effectiveness of scientific publications (Hyland, 2008; Zhao, 2017).

Over recent years, the number of Uzbek students who want to pursue a degree in English-speaking countries has significantly grown (Times of Central Asia, 2024). The increasing number of these students face challenges in constructing effective authorial voice in scientific writing, often resulting in lower academic performance (Ruziev & Burkhanov, 2018). While these L2 students may struggle with linguistic fluency, this does not indicate an absence of voice; rather, as Matsuda (2001) argues, different languages manifest distinct voice features. Given the substantial differences between Uzbek and English syntactical and lexical systems, Uzbek L2 students require specific awareness of the linguistic resources that contribute to effective authorial presence in academic writing which is a highly valued aspect of scientific discourse. This review examines linguistic resources constructing effective authorial voice in scientific discourse through analysis of studies employing Hyland’s interaction model and alternative frameworks.

The concept of authorial voice remains characterized by definitional ambiguity despite extensive scholarly attention. Multiple conceptualizations exist: voice as textual manifestation of authorial opinion (Bakhtin 1986; Javdan, 2014; Hyland & Guinda, 2012); voice as identity construction through writer-reader interaction (Jwa, 2018; Matsuda, 2001; Peng, 2019); voice as authorial visibility (John, 2012); and voice as authentic perspective (Helms-Park & Stapleton, 2003; Ramanathan & Atkinson, 1999).

Contemporary voice research recognizes three fundamental dimensions: individual, social, and dialogic (Javdan, 2014; Canagarajah, 2015; Stock & Eik-Nes, 2016). The individual dimension positions voice as self-manifestation within text (Ramanathan & Atkinson, 1999; Elbow, 1994), primarily signaled through first-person pronoun usage (Tardy, 2012a). The social dimension conceptualizes voice as disciplinarily situated (Hyland, 2002; 2008), with writers deploying self-representation resources aligning with disciplinary community expectations. Voice constitutes

authorial positioning operationalized through stance and engagement markers. The dialogic dimension frames voice as interactively constructed between writer and reader (Jwa, 2018; Matsuda & Tardy, 2012a; Zhao, 2017), highlighting potential divergence between projected and received authorial identity.

Hyland's Interaction Model

Hyland's (2008) interaction model conceptualizes voice as a representation of disciplinary community membership, constructed through writer-reader interaction via stance and engagement markers. Hyland argues that authors achieve voice through the ways they position themselves within their discourse community. According to this model, voice is constructed through interaction between writers and readers, making this relationship significant for effective voice construction. Interaction is achieved by employing stance and engagement features in academic writing; both are determining factors of voice in academic discourse (Hyland, 2008). Stance indicates the writer's opinions and judgments, whereas engagement refers to the writer's interaction with readers (Hyland, 2008). The former is writer-oriented, whereas the latter is reader-oriented (Hyland, 2008). Stance demonstrates writer positioning through evaluations, revealing authorial beliefs, values, and confidence levels regarding knowledge claims (Lancaster, 2016; Hyland, 2008; Jiang, 2015).

Stance manifests through four key features:

- Hedges: Frame propositions as opinions rather than facts
- Boosters: Demonstrate authorial confidence and authority
- Attitude markers: Signal emotional orientation toward information
- Self-mention: First-person pronominal usage for information presentation

Engagement positions readers as disciplinary community participants through reader pronouns, directives, questions, and personal asides.

Research reveals contradictory perspectives on first-person pronoun usage. Some studies claim pronouns develop a "credible image" (Lores-Sanz, 2011) and indicate strong voice (Stotesbury, 2006). Others argue pronouns construct less authoritative voice by inviting reader disagreement (Hewings & Coffin, 2007). Tang & John (1999) identified five voice types through pronoun usage (representative, guide, architect, recounter, originator), finding students employed pronouns primarily for reader guidance while avoiding knowledge-claiming positions. Ramoroka (2017) confirmed this pattern in student scientific writing.

First-person pronouns constitute the most visible markers of authorial presence (Hyland, 2002). However, defining scientific voice exclusively through pronouns risks conceptual oversimplification and creates confusion regarding appropriate disciplinary conventions. Research shows conflicting interpretations of hedging's influence on voice construction. Some studies suggest hedges weaken authorial voice by projecting reduced confidence (Pho, 2008). Others interpret hedge scarcity as indicating excessive assertiveness and insufficient adherence to scientific norms valuing qualified claims (Jwa, 2018). Thompson (2012) provides nuanced analysis, demonstrating hedging serves multiple rhetorical functions: when presenting field contributions, hedge abundance signals reduced confidence; when discussing previous research, hedging demonstrates appropriate scientific deference.

Limitations of Hyland's Model

While Hyland's model effectively identifies sentence-level linguistic features contributing to authorial voice, it may inadequately address broader textual voice manifestations in scientific discourse (Zhao, 2012). Matsuda and Tardy (2007) posit that voice transcends sentence-level features, potentially necessitating more holistic textual analysis to capture the complex rhetorical dimensions of scientific argumentation.

This potential limitation has prompted several researchers to examine voice through more comprehensive textual structure analysis (Dressen-Hammouda, 2014; Fogal, 2019; Jwa, 2018; Matsuda & Tardy, 2007, 2009; Morton & Storch, 2018; Tardy, 2012b). These investigations suggest that scientific voice may manifest through complex interactions between textual features at multiple levels, ranging from lexico-grammatical choices to macro-structural organization. The model's focus on discrete linguistic markers might not fully account for how voice emerges from the interplay of multiple textual elements across different structural levels.

Furthermore, the interaction model appears to operate under the assumption that stance and engagement markers function similarly across all scientific disciplines, potentially overlooking discipline-specific rhetorical conventions that might influence voice construction. Recent research indicates that disciplinary contexts may significantly shape how voice is constructed and perceived (Dressen-Hammouda, 2014; Morton & Storch, 2018), suggesting that a more nuanced, discipline-sensitive approach might be warranted. Additionally, the model's binary categorization of features as either stance or engagement markers might oversimplify the multifunctional nature of certain linguistic resources that simultaneously perform multiple rhetorical functions in scientific discourse. This categorical approach may not fully capture the dynamic and context-dependent nature of voice construction in scientific writing.

Reader role in voice construction

From dialogic perspectives, voice is co-constructed between readers and writers (Jwa, 2018; Matsuda & Tardy, 2012a; Zhao, 2017). Matsuda and Tardy (2007) found readers respond to knowledge breadth, syntactic complexity, rhetorical moves, field representation, and citation practices when constructing author voice. Their study concluded both content knowledge and linguistic presentation facilitate voice negotiation in scientific texts.

Matsuda and Tardy's (2009) survey of 70 journal editors revealed self-citation patterns, reference selection, and authorial stance facilitate writer identity construction. Reviewers evaluated writers' disciplinary convention adherence as a marker of scientific authority. Morton and Storch (2018) found reader linguistic background significantly influenced voice perception in scientific texts.

These investigations demonstrate contextual and disciplinary factors significantly influence voice construction and reception in scientific writing (Hyland, 2002; 2008; Pho, 2008; Morton & Storch, 2018). Effective voice construction requires understanding disciplinary conventions and reader expectations.

Contextual factors influencing voice

Discipline serves as a primary determinant of authorial voice in scientific discourse. As writers develop disciplinary expertise, they adopt more effective voice forms aligned with community expectations (Matsuda & Tardy, 2007).

Hyland (2005) analyzed 240 research articles across eight disciplines, finding systematic variation in voice feature usage. Interactional markers, particularly hedging, appeared more frequently in soft sciences than hard sciences, reflecting different epistemological foundations and audience expectations. Economics articles minimized hedging to establish strong knowledge claims, while natural science articles employed extensive hedging to demonstrate appropriate epistemic caution (Hyland, 2005).

Ramoroka (2017) found Media Studies students incorporated more interactional features in essays than Primary Education students. Interviews revealed these variations stemmed from different disciplinary conventions: Media Studies encouraged personal pronoun usage to articulate critical perspectives, while Primary Education characterized pronoun usage as unprofessional (Ramoroka, 2017).

Stotesbury (2006) found substantially more voice features in humanities abstracts compared to natural science texts. These findings establish discipline as critically influencing voice presentation in scientific discourse through explicit and implicit socialization practices.

Genre represents another key determinant of voice manifestation (Stock & Eik-Nes, 2016). Bondi (2012) compared voice across scientific textbooks and research articles, finding textbook authors projected recounter and interpreter voices, while research article authors manifested arguer voice. These differences reflect divergent rhetorical purposes: textbooks guide student learning, while research articles communicate new knowledge claims to disciplinary experts.

The interaction between genre and disciplinary conventions creates complex voice expectations in scientific discourse. These intersecting influences create challenges for writers navigating unfamiliar generic contexts within disciplines.

Cross-cultural dimensions of voice in scientific discourse

Even within identical disciplinary contexts and genres, authorial voice varies significantly due to writers' linguistic and cultural backgrounds. Cultural values manifest in linguistic practices; Western scientific traditions often privilege individualistic expression, while many Asian scientific writing traditions emphasize collective knowledge construction.

Research demonstrates whether a language functions as the writer's native or non-native medium significantly impacts authorial voice strength. Lores-Sanz (2011) found authorial presence more pronounced in articles written by native language users in both English and Spanish contexts. Matsuda (2001) argues voice projection difficulties faced by L2 writers stem from cross-linguistic differences in voice realization rather than inherent voice deficiencies.

Shen (1998) identified fundamental cross-cultural differences in voice expectations within scientific communities. English scientific discourse demands greater authorial directness and explicit positioning, whereas Chinese scientific writing values more indirect, nuanced authorial positioning. Mur-Duenas (2007) found English-language scientific articles contained substantially more self-citations and personal pronouns than Spanish counterparts. Anglo-American scientific discourse interpreted these features as establishing authorial authority, whereas Spanish academic traditions viewed such explicit self-reference as violating politeness norms. Çandarlı et al. (2015) found Turkish-language essays contained significantly higher frequencies of authorial presence markers than comparable English-language texts. These studies demonstrate that sociocultural context significantly influences authorial voice realization in scientific communication.

Voice and scientific writing quality

Research examining relationships between authorial voice and scientific writing quality has yielded inconsistent findings. Helms-Park and Stapleton (2003) observed limited correlation between authorial voice characteristics and overall scientific writing quality in their investigation of 65 undergraduate L2 writers. Similarly, Yoon (2017) reached comparable conclusions when analyzing textual voice elements and scientific writing quality. Both studies suggested that L2 scientific writers might benefit from prioritizing the development of linguistic fluency and accuracy before addressing more complex discursive features such as voice.

In contrast, Zhao (2017) determined that voice features functioned as significant predictors of high assessment scores in scientific writing tasks. Tardy and Matsuda (2007) demonstrated that authorial voice substantially influenced reviewers' overall quality assessments of scientific texts. These contradictory findings may indicate that voice-quality relationships potentially vary according to assessment context, genre expectations, and evaluator priorities.

The methodological approaches employed in these studies may partially account for the discrepancies in findings. Studies reporting minimal correlation between voice and quality often employed quantitative analyses of discrete textual features, which might not fully capture the complex, multidimensional nature of authorial voice. Conversely, research demonstrating stronger relationships frequently utilized more holistic assessment methods, potentially better suited to capturing the integrated nature of voice construction across multiple textual levels.

Additionally, the divergent findings might reflect differences in how voice is conceptualized and operationalized across studies. The absence of standardized criteria for evaluating authorial voice in scientific writing complicates cross-study comparisons and may contribute to the apparent

contradictions in the literature. Furthermore, disciplinary variations in voice conventions and expectations may influence how voice features correlate with quality assessments in different scientific domains. These inconsistencies suggest that the relationship between authorial voice and scientific writing quality may be more nuanced and context-dependent than previously acknowledged, highlighting the need for more sophisticated analytical frameworks that account for disciplinary, contextual, and methodological variables.

Voice in L2 scientific writing

L2 writers face particular challenges in negotiating voice in scientific discourse. Canagarajah (2015) and Le Ha (2009) documented Master's students' difficulties balancing disciplinary voice expectations with personal and cultural identity. Le Ha (2009) found an L2 student (Arianto) conceptualized scientific writing as requiring impersonal knowledge presentation, consequently suppressing his opinions despite desiring idea ownership.

Canagarajah (2015) observed voice development in a Japanese student (Kyoto) through genre awareness development, collaborative peer writing, and targeted instructor feedback. Escobar and Fernández (2017) found explicit voice instruction improved L2 writers' academic performance, though students continued demonstrating limited conceptual understanding of voice features' rhetorical functions.

Pedagogical approaches to voice in L2 scientific writing remain contentious. One position maintains voice requires explicit pedagogical attention (Escobar & Fernández, 2017; Hyland, 2002; Matsuda, 2001). Another argues voice instruction represents premature focus for L2 writers who should first master fundamental linguistic competencies (Helms-Park & Stapleton, 2003; Stapleton, 2002; Yoon, 2019). A third perspective acknowledges voice's importance while questioning its direct teachability, suggesting voice acquisition occurs primarily through disciplinary socialization (Morton & Storch, 2018; Sperling & Appleman, 2014).

Pedagogical implications

Despite its complexity, voice represents a critical dimension of scientific writing warranting focused pedagogical attention, particularly for L2 writers. Instructors should develop sophisticated conceptual understanding of voice in scientific discourse, as surveys reveal substantial variation in faculty conceptualizations of voice (Jeffery, 2010; Mur-Duenas, 2007).

Scientific writing instructors should implement strategies raising learners' awareness of voice modulation through comparative textual analysis examining authorial impressions across scientific texts. Casanave's (2002) writing games framework offers promising approaches for teaching scientific voice, including scientific letter writing addressed to different audiences followed by discussion of how audience shapes voice presentation. Students might produce scientific essays on identical topics and subsequently exchange texts for peer evaluation, developing understanding of voice's dialogic nature and impact on scientific communication effectiveness (Tardy, 2012b).

Instructors should encourage L2 scientific writers to maintain reflective journals documenting writing challenges and developmental trajectories (Canagarajah, 2015) and create online platforms for peer feedback on scientific texts. Given research findings that discipline, genre, and discourse community conventions significantly influence voice manifestation, instructors should raise students' awareness of disciplinary expectations in prospective international academic contexts.

Conclusion

Scientific writing involves complex social interactions between writers and readers within disciplinary communities. Despite persistent misconceptions characterizing scientific discourse as inherently impersonal, effective scientific communication requires appropriate authorial voice establishing writer credibility and authority. This review has synthesized current research on authorial voice in scientific discourse, revealing significant conceptual and methodological diversity.

Studies employing Hyland's interaction model have facilitated valuable corpus-based comparative analysis of voice across scientific texts but simultaneously constrained understanding by limiting investigation to predetermined sentence-level linguistic features. Research frequently

focuses exclusively on limited features like personal pronouns and hedges, providing incomplete understanding of voice's multidimensional nature.

Future research should address critical gaps in current understanding of scientific voice. Few studies have systematically examined how genre influences scientific voice manifestation, leaving important questions about how different scientific communication contexts shape voice expectations. Additionally, researchers should investigate the extent to which scientific writers maintain epistemic ownership over their claims through voice features. Longitudinal studies documenting voice development processes would provide valuable insights into how novice writers acquire appropriate voice and how instructors might effectively facilitate this development through targeted pedagogical interventions.

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