

# **An Analysis of Gendered versus Sex-Based Language in the Journal of Agricultural Education**

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## **Abstract**

*Because accurate use of language is important to researchers, we examined the usage of sex and gender-based language in Journal of Agricultural Education (JAE) over a 10-year period (2014-2023). Guided by queer theory, the study challenged the status quo of inaccurate pairing of terms and synonymous use of sex and gender terms. By reviewing the past 10 years of JAE literature, the usage of sex and gender-based language was documented and analyzed. From the population of JAE publications (N = 695), a total of 536 articles (77%) used sex or gender terminology. Methods sections (65%) and results/findings (55%) sections demonstrated a higher presence of sex or gender terms. The terms with a higher presence were male/female (83%) followed by gender (57%). Their frequent use within the journal points to a relevance of reviewing JAE accurate usage of sex and gender terminology. Additionally, a hierarchal dendrogram was provided to demonstrate how terms are paired statistically. Practical suggestions and applications were provided to address areas of improvement for researchers and practitioners. The recommendations provided sought to improve accuracy of sex and gender term usage as well as prioritize practices advancing the inclusion of LGBTQIA+ individuals within agricultural education, broadly defined, research.*

## **Introduction**

There is a growing number of articles focusing on queer individuals within agricultural education. For example, researchers found there are barriers to participation and inclusion for LGBTQIA+ individuals within multiple facets of agricultural education (i.e., Murray et al., 2023; Price, 2023). Inclusion of queer youth at the curricular and extracurricular levels has increased publications over the years (Murray et al., 2023; Price, 2023). Research regarding scholarship within agricultural education, broadly defined, has found LGBTQIA+ publications are not prioritized, LGBTQIA+ researchers struggle to get their works published, and existing studies are selectively cited (Murray et al., 2020). Additionally, the lives of queer agricultural educators were documented by Gregg and Bowling (2024), exposing concerns, and highlighting adaptation strategies of participants. The presence of these studies lays the foundation for improved LGBTQIA+ inclusion within the discipline, though the presence of LGBTQIA+ research in agricultural education-related journals does not absolve the field of longstanding issues of inequity. Ultimately, diversity does not equal inclusion (Ahmed, 2012; Baldwin, 2022; Tienda, 2013).

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Furthermore, the sociopolitical, educational, institutional, and legal environment provides an additional impetus for this study. There is increasing pressure upon institutions (e.g., sports teams, schools) to enforce rigid policies regarding sex assigned at birth (i.e., male, female, or intersex, as determined by a medical professional) and individual participation and facility usage. This binary sex segregation can negatively impact transgender students (Stewart & Nicolazzo, 2018; Tobin & Levi, 2013) and may violate student rights protected by Title IX (Buzuvis, 2013; Tobin & Levi, 2013). Additionally, at the federal level, there has been an action by the executive branch of the U.S. government attempting to limit gender expression (meaning identifying as man, woman, non-binary, genderqueer, two-spirit, etc.) by defining gender as sex assigned at birth. This disregards the existence of third-category, intersex (i.e., a person's biological sex characteristics are not strictly male or female) individuals (The White House, 2025). The current environment increases the need to be critical of our own discipline and strive to align with the Civil Rights Act, wherein individuals may not be discriminated against based on any societal characteristics (i.e., age, race, gender identity, sexual identity, etc.). While this law pertains to many aspects of society, especially workplaces and employers, its messaging is important for creating and maintaining diverse, inclusive environments in all fields, including agriculture and related social sciences.

Precedence for research regarding queer individuals within agricultural education has been set by the Research Values of the American Association for Agricultural Education (AAAE). The third research value states, "ensuring diversity, equity, inclusion, and belonging" (AAAE, 2023, p. 10). The researchers of this study sought to examine cultural barriers to inclusivity as it relates to the status quo of research conducted within the discipline of agricultural education. A review of the use of sex and gender-based terms within *JAE* allows trends of sex and gender language to be established; our recommendations for researcher implementation for increased accuracy and inclusion are provided.

### **Review of Literature**

Queer studies, as a discipline, address a breadth of gender, romantic, and sexual orientations and the experiences, challenges, and cultural phenomena of the groups and individuals found within. Within agricultural education, researchers have identified and begun to explore perspectives of LGBTQIA+ students and professionals. Regarding students, challenges emerged in expressing LGBTQ+ identities while in school-based agricultural education (SBAE) programs (Price, 2023). In response to barriers faced by LGBTQIA+ youth in 4-H and other youth development programs, Murray et al. (2023) developed a theoretical model of how LGBTQIA+ involvement is shaped by the unique environments LGBTQIA+ youth encounter. LGBTQIA+ educators in SBAE reported heavy involvement in regional and national levels of SBAE, and "coming out" was an important yet dangerous step for their careers (Gregg & Bowling, 2024). Additionally, LGBTQIA+ participants and researchers have been marginalized due to the research culture and status quo in agricultural education (Murray et al., 2020).

Perspectives of agricultural education teachers and peers regarding LGBTQIA+ students have additionally been studied. Price et al. (2024) determined agricultural education teacher participants fall into varying levels of recognition for the impact of inclusive spaces can have on students. Perspectives of young professionals were revealed to be generally supportive of LGBTQIA+ peers until they were required to challenge heterosexist beliefs (Moser et al., 2024). The acceptance of LGBTQ+ identities is a positive finding, but the inconsistencies in support for LGBTQ+ individuals leaves a concerning gap to be addressed. Given the expansive nature of queer studies, there have been a limited number of studies regarding LGBTQIA+ individuals within the discipline of agricultural education. The researchers of this study sought to fill the gap in knowledge regarding the importance of language within study design and manuscript formation.

Outside the discipline of agricultural education, there is a growing body of knowledge around the differentiation of language around one's sex and gender identity (Webster, 2021). The conflation between

gender and sex within academic research is widespread (Butler, 1990, 1993, 2004), existing independently of agricultural education as a discipline. Conflation of sex and gender is an issue that impacts researchers seeking to collect demographic data to describe samples or populations (Sullivan, 2020). The ambiguous and conflated nature of discussing sex and gender created further issues for those who utilize empirical data for policy or practice (Garvey et al., 2019). Furthermore, conflation of sex and gender, or discussing sex and/or gender inaccurately, may be harmful to members of the LGBTQIA+ community (Carr, 2005; Mizock & Hopwood, 2016); this is especially the case when participants are only given a binary choice (i.e., male or female), potentially encouraging feelings of gender dysphoria (Stewart & Nicolazzo, 2018). Scholars have suggested rethinking the orientation of survey instruments for the inclusion of genders and sexes (Bauer et al., 2017; Kennedy et al., 2022; Westbrook & Saperstein, 2015). Additionally, scholars studying human health have advocated for a comprehensive understanding of accurate terminology to better serve patients and their healthcare needs (Bamberger & Farrow, 2021), with scholars providing helpful tools to accurately define sex, gender, and sex/gender(ed) terms (Bamberger & Farrow, 2021; Rioux et al., 2022). Despite the existence of these frameworks, a critical and comprehensive examination of sex and gender terminology usage remains absent from the agricultural education literature, particularly within the *JAE*.

### Theoretical Perspective

Queer theory guided the researchers of this study by providing a theoretical lens to observe researchers' operationalization of sex and gender terminologies of articles published in the *Journal of Agricultural Education*. In a broad sense, the assumptions of queer theory seek to challenge the traditional definitions and views of gender and sexuality within society (Hesse-Biber, 2011). This traditionalism determines societal norms regarding sex and/or gender, often identifying and describing what is considered 'normal.' Queer theory provides a lens to illuminate what exists outside the boundaries of 'normal' – otherness. Gender and sexuality have been dissected from various perspectives, including but not limited to power (Foucault, 1978), language (Butler, 1990), and race (Lane, 2016). Using queer theory as the perspective for this study allows for the questioning of language usage as it coincides or diverges from dominant norms and expectations.

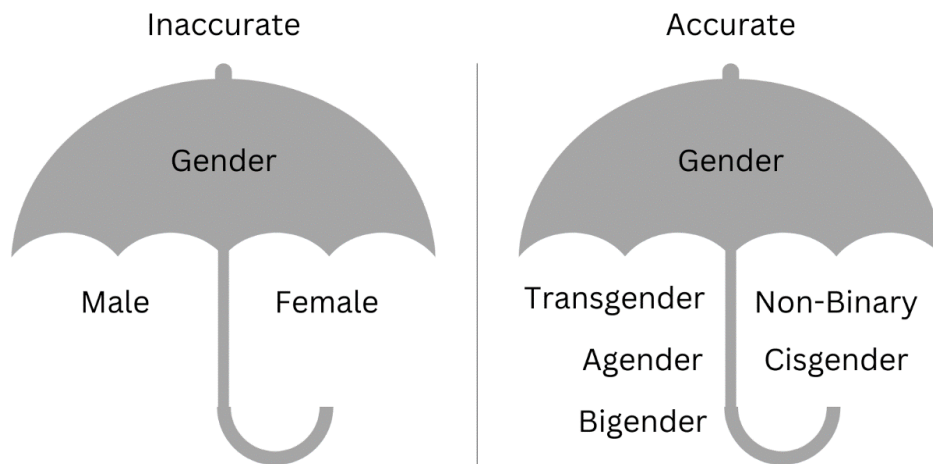
Subversive by nature, the critical lens of queer theory challenges traditional notions of gender and sexuality by positing them as socially constructed and fluid categories (Foucault, 1978; Seidman, 1994; Watson, 2005). Sex is a biological term typically used to categorize humans at birth. Accurate terminology that would coincide with sex is female, male, or intersex. One who is intersex may display outward or internal sex characteristics that cause them to deviate from what is deemed to be a 'normal' male or female. Other sex categories exist depending on the cultural setting and beliefs. Biological sciences such as animal sciences or human medicine traditionally used these terminologies to describe organisms based on sexual organs; the biological makeup does not determine a person's gender because gender is a different construct than sex.

Gender is a socially produced, cultural construct that defines an individual's identity and the way they present to the world around themselves (Butler, 1990, 1993, 2004). The genders of Western society rely on sex/gender binaries presenting a partial perspective regarding global genders (Monro, 2007). Some terms which fall under the umbrella of gender would be man, woman, non-binary, agender, boy, or girl. Words such as transgender or cisgender are often placed before gender terminology to describe an individual's gender in relation to the sex they were assigned at birth. There are a multitude of ways an individual could identify that are not listed above. Much of an individual's gender identity is deeply personal and unique as one's definition of what it is to be a woman will differ based on individual perception and experience. It is essential that genders are not minimized due to a lack of understanding or personal biases. As social scientists, an individual's gender is most often what we are concerned with as it describes one's internal identity as well as physically presented gender.

The analysis and critique of language usage and representation is a core ideal of queer theory as it seeks to dismantle systems of tradition (Dilley, 1999). Queer theory opposes traditional definitions of sex, gender, and their linkage. Informed by queer theory, theorists have long recognized the conflation of sex and gender within society (Butler, 1990, 1993, 2004). Conflation of terminology occurs when terms are placed under the wrong ‘umbrella.’ Figure 1 demonstrates the inaccurate and accurate usage of sex and gender-based terms. This figure, albeit a simplified one, provides a visual representation of which terms do and do not fall under the ‘umbrella’ of gender.

**Figure 1**

*The Umbrellas of Inaccurate and Accurate Use of Gender Terminology*



*Note.* Figure 1 displays an example of inaccurate use and simplification of gender terms as frequently seen in journal publications and media. The example of accurate use of gender terms provides a few potential gender identities with the terms man and woman often accompanying terms like transgender and cisgender.

As terminology to represent one’s sex and gender describes distinct aspects of an individual’s identity, gender and sex should be paired with correct terms and using terms synonymously should be avoided. For example, if a researcher were to ask a participant for their sex (male, female, or intersex), these are the only terminologies that should be used to describe participants. It would be inappropriate to use the term ‘gender’ if sex was being measured as they are not interchangeable or synonymous. This example applies to the use of terminology as it applies to sex as well. The inaccurate pairing of terms and the synonymous use of sex and gender terms was a catalyst for the creation of this study. Within this study, a focus on gender and sex identity was placed at the forefront, challenging the status quo of how participants and researchers were described by researchers within *JAE*.

### Purpose

This study described the usage of sex and gender-based language in the *Journal of Agricultural Education* from 2014-2023 using the following research questions:

1. How were sex and gender-related terms used in articles in *JAE*?
2. What was the frequency of gender and sex terms within studies published in *JAE*?
3. Where were gender and sex terms located within each study in *JAE*?

## Methods & Procedures

Quantitative content analysis (Kleinheksel et al., 2020) was employed to systematically examine an entire year's worth of *JAE* publications for a given year. Content analysis was selected as it allows the research team to make inferences from analyzed texts regarding the context of their use (Krippendorff, 2018). The years 2014-2023 were included within the study for a population of 695 publications reviewed. Retained studies contained sex or gender language, resulting in a census of 536 articles. At the time of data collection, all four editions of 2024 were not available to the research team, resulting in the exclusion of 2024. To consider the way language and its use evolve over time (Beaman, 2024), we evaluated a ten-year span of publications.

To meet the systematic and methodologically based requirements of content analysis (Drisko & Maschi, 2016), the software program, *AntConc* (Anthony, 2024), provided the platform to isolate specified words within selected articles. The 'File View' window was the primary tool used to review each document. The program allowed for evaluation of plural, past tense, and context of terms to ensure a thorough and accurate search was conducted. *AntConc* provided the number of 'file hits' and denoted the number of times in which terms were found within a specific document, allowing the researchers to ensure they counted each occurrence of term use.

We searched publications for single word occurrences of 11 categories of search terms to describe gender or sex identity. These categories were as follows: male/female, man/woman, boy/girl, non-binary, gender(s/ed), sex/biological sex, agender, intersex, cisgender/transgender, prefer not to say, and other. Presence of terms was documented within an Excel file using binary coding (0 = not present, 1 = present). Before this study, coding for the presence of data points within a text document was aligned with content analysis methodology (Kleinheksel et al., 2020; Stiles et al., 2024). The analysis incorporated demographic categories like 'prefer not to say' and 'other' due to their frequent representation of questionnaire options within sex/gender classifications. Studies were excluded if sex or gender terms appeared solely within references. Terminology related to sex or gender, when referencing prior work, was not considered interchangeable use, acknowledging potential adherence to cited researchers' terminology. A hierarchical cluster analysis was conducted to identify connections and patterns between sex and gender terms, and the resulting dendrogram served as a visual representation of the relationships between terms.

Section(s) containing any sex or gender-based term was additionally documented using the same binary coding system. Section categories were created to mirror a typical *JAE* publication format: Title, abstract, introduction, literature review, framework, purpose and research questions, methods, results/findings, discussion, conclusion, implications and/or recommendations. When these sections were combined in a publication, the first section listed was where data was input. For example, if the section header read 'Theoretical Framework and Literature Review', the data was input in association with the theoretical framework. A limitation to this study was that our author team only had access to what researchers provided within their manuscripts. For example, researchers may have utilized a survey with inclusive language and the option for respondents to self-identify their gender. Therefore, we could only analyze what was readily available to us as researchers.

## Results

A total of 10 years of *JAE* articles were reviewed ( $N = 695$ ) and the terms sex or gender was mentioned in a total of 536 articles. Within 10 years, sex or gender was mentioned in 77.1% of *JAE* articles. Results shown in Table 1 display publications over a 10-year period that include gender/sex terminology.

**Table 1***JAE Articles Using Gender/Sex Language (2014-2023)*

Year	Total Articles	Articles Using Gender/Sex Language	
		Count	Percent
2023	57	41	71.9%
2022	62	46	74.2%
2021	72	50	69.4%
2020	83	63	75.9%
2019	69	57	82.6%
2018	80	62	77.5%
2017	81	60	74.1%
2016	60	52	86.7%
2015	60	48	80.0%
2014	71	57	80.3%
<b>Total</b>	<b>695</b>	<b>536</b>	<b>77.1%</b>

Methods sections (65.1%) and results/findings (54.9%) sections displayed the highest frequency of gender or sex terms present, followed by discussion/conclusions (28.7%) and framework sections (18.8%). Higher presence of gender or sex terms in methods and results/findings sections corresponds to these sections often presenting participant demographics. Sex and gendered word presence within the purpose or objectives section and literature review section of studies fell at 10.6%. Table 2 displays the presence of sex and gender terms distributed through sections of reviewed publications.

**Table 2***Location of Sex & Gender Terms by Section in JAE Articles (2014-2023)*

Section	Absent		Present	
	Count	Percent	Count	Percent
Methods	187	34.9%	349	65.1%
Results	242	45.1%	294	54.9%
Discussion	382	71.3%	154	28.7%
Framework	435	81.2%	101	18.8%
Introduction	441	82.3%	95	17.7%
Abstract	472	88.1%	64	11.9%
Purpose & Objectives	479	89.4%	57	10.6%
Literature Review	479	89.4%	57	10.6%

*Note.* Table 2 is organized in descending order according to the present percent columns.

Several words describing or related to sex and gender were identified in the 536 articles. Of these terms, the terms displaying the highest presence frequency were male/female (83.4%) followed by the words gender (56.5%). Additional terms and their presence frequency was: Man/Woman (21.1%), Sex (17.5%), Boy/Girl (13.4%), Gender/Sex Not Disclosed (6.3%), and Other Sex/Gender Not Listed (2.4%). Terms with the lowest presence were cisgender/transgender (1.5%), nonbinary (0.07%), agender (0.02%) and intersex (0.02%). Table 3 displays the presence of sex and gender terms within reviewed publications.

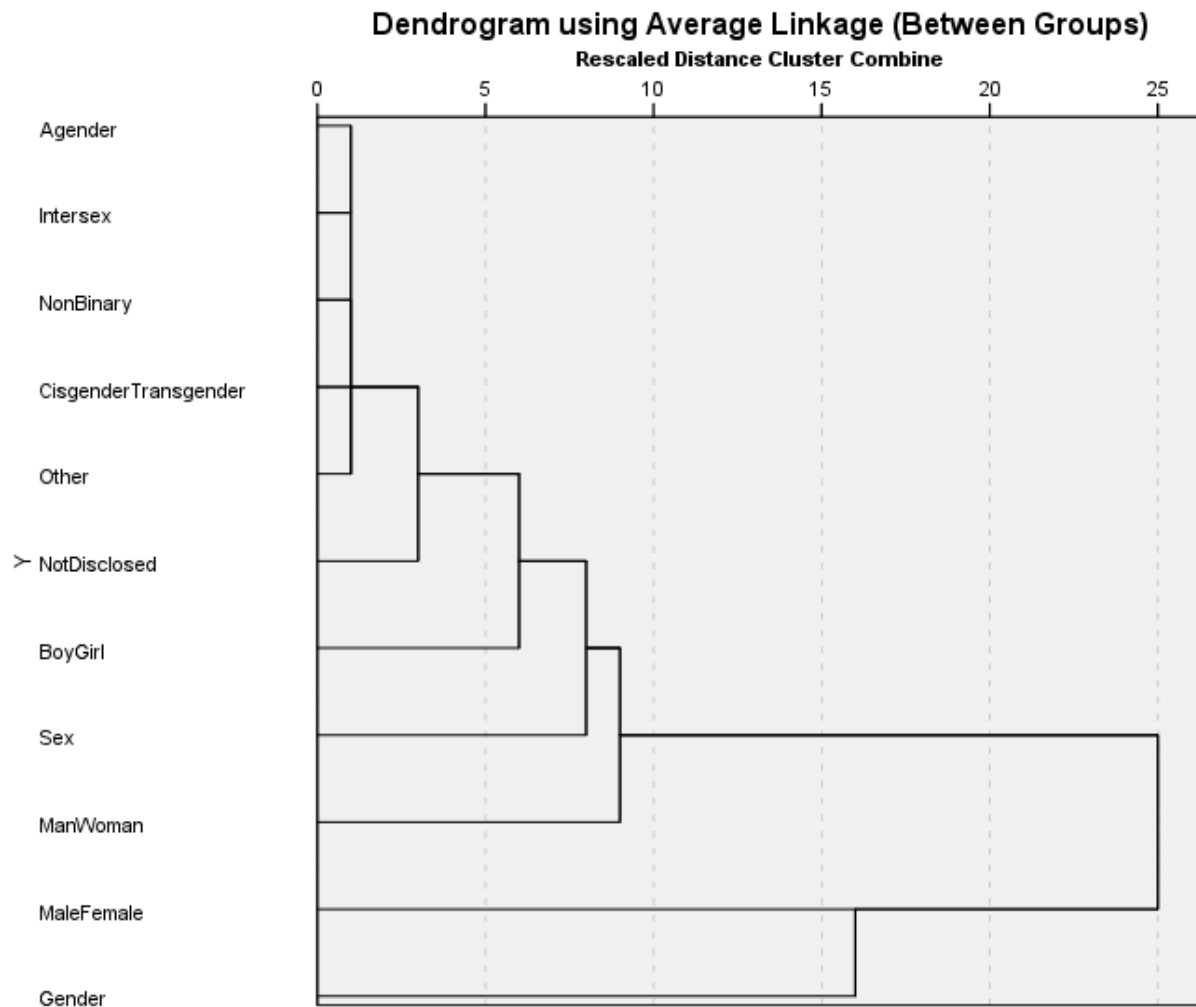
**Table 3***Sex & Gender Term Presence in JAE Articles (2014-2023)*

Term	Absent		Present	
	Count	Percent	Count	Percent
Male/Female	89	16.6%	447	83.4%
Gender	233	43.5%	303	56.5%
Man/Woman	423	78.9%	113	21.1%
Sex	442	82.5%	94	17.5%
Boy/Girl	464	86.6%	72	13.4%
Gender/Sex Not Disclosed	502	93.7%	34	6.3%
Other Sex/Gender Not Listed	522	97.6%	14	2.4%
Cisgender/Transgender	528	98.5%	8	1.5%
Non-Binary	532	99.3%	4	0.07%
Agender	535	99.8%	1	0.02%
Intersex	535	99.8%	1	0.02%

To visually demonstrate the relationship between sex and gender terms, Figure 2 was generated. Figure 2 displays a hierarchical clustering dendrogram, which is a tree-like diagram that visually represents the groupings (or clusters) of analyzed terms. In this diagram, the clades (horizontal lines) and clade heights (vertical lines showing where terms merge) suggest similarities and distance relationships between the terms. Terms that join at a lower clade height are considered highly similar within the data set, meaning they tend to be used together in the same articles. For example, intersex, agender, non-binary, cisgender/transgender, and other category were grouped due to their use within the same articles. Conversely, terms that join at a higher level are more distinct from one another (for example, the highest clades over Male/Female and Gender indicated the greater frequency of those terms found in the same articles).

Figure 2

Dendrogram Linking Sex and Gender Terms Analyzed



The dendrogram visually illustrates the frequency of terms and which terms were used within the same journal article. The terms intersex, agender, non-binary, cisgender/transgender, and other category were arranged together at a low clade height, suggesting these terms are frequently associated with each other when they appeared in a journal article. The vertical scale on the top of the dendrogram indicated the increasing distance between the clusters. With each rise of the clade, the dendrogram suggests an increase in overall use of each term within articles. For instance, male/female and gender joined at the highest levels, indicating their greater overall frequency in articles compared to other terms. Overall, the dendrogram confirmed terminologies are not being used accurately, and inclusive terminologies are rarely implemented in *JAE* articles.

## Conclusions

This study demonstrated the importance of language accuracy and inclusion within agricultural education research. By examining the use of gender and sex terms within *JAE* from 2014-2023, the results underscored the need for the employment of accurate and inclusive terminology by researchers. While these preliminary insights are valuable, additional research is necessary to explore the specific contexts that terms are used.

Findings revealed a substantial majority of publications (77.1%) mentioned sex and/or gender-based terminology in the articles. This demonstrated that a considerable portion of articles within the *JAE* used sex and/or gender-based terminology in some way. While some studies may utilize this terminology to describe their sample sizes, it was unclear how meaningful describing participant sex/gender may be when there was no mention of sex or gender in the framing of the article and little bearing in results, as evidenced by the discrepancy between frequencies of sex/gender terminology usage between sections of manuscripts. Furthermore, researchers should consider their purpose in inquiring about the sex and/or gender of their study's participants. While it is a norm within survey research to inquire and offer a description of the sample surveyed, researchers should consider whether there is merit to asking such a question (Westbrook & Saperstein, 2015). Is there a strong possibility that one's sex impacts results, or is there a case to be made wherein one's gender has more of an impact on how a respondent answers a question? Gendered differences within society certainly exist, so if there is no reason to assume biological sex would impact an individual, asking questions about one's gender identity in an inclusive manner aligns with social science as a socially informed construct. If biological sex may play a role in a respondent's answer, then inquiring about biological sex may be more appropriate. Asking for both sex-assigned-at-birth and gender identity is also an option to fully explore any differences within the sampled group in an inclusive way (Westbrook & Saperstein, 2015), but doing so should be justified by the researchers.

Furthermore, the issue of reviewing queer issues within agricultural education has been all but absent for much of the discipline's history. The absence of queer perspectives in early agricultural education's history could be partially attributed to a society where queerness was seen as taboo. But perspectives such as this, when given too much weight, often result in dismissiveness for the individuals negatively impacted by the marginalization of queerness. As detailed by Rosenberg (2016), 4-H and FFA have roots in cisnormativity and heteronormativity, having once been utilized as a means of keeping rural Americans connected and content with rural life. Given the lack of representation of queer agriculturalists, it is important to work toward a more equitable description of demographics of those represented in studies published in *JAE*. Doing so will help to create a space wherein individuals whose gender identity lies outside the binary choice and feel more comfortable responding to surveys, participating in interviews, producing research, and being engaged in the profession.

While our results demonstrated there was some conflation between sex and gender-based terminology, there were also researchers who included inclusive language and showcased it in their manuscripts through the recognition of cis and transgender identities (Allen et al., 2022; Bullock et al., 2021; Clemons & Lindner, 2019; Clemons et al., 2021; Estep et al., 2022; Mars & Hart, 2017; Murry et al., 2020; Murray et al., 2023); non-binary identities (McBride et al., 2023; McBride & Talbert, 2022; Murray et al., 2023; Rojas & Vincent, 2023); agender identities (Estep et al., 2022); and intersex identities (Murray et al., 2020). Second, the dendrogram (Figure 2) demonstrated two key findings. First it showed that the most inclusive terminology (agender, intersex, non-binary, cisgender/transgender, and the other category) were grounded together. This grouping visually supported the idea that researchers who used one inclusive term were more likely to use others. Second, the dendrogram illustrated the conflation of sex and gender-based terminology by showing that the terms for biological sex (male/female, sex) and social gender (gender, man/woman) were not grouped with their conceptually corresponding terms. For instance, the sex term male/female did not cluster with the biological term sex. This finding supports the widespread

conflation of sex and gender in academic research (Butler, 1990, 1993, 2004). As previously mentioned, the terms male and female should be associated with an individual's sex, not their gender. These findings lay the groundwork for a better understanding of how gender or sex-based language has been used in *JAE*.

### Implications

The findings of this analysis have several important implications for research and practice within agricultural education, impacting methodology, diversity, and legal compliance. The high prevalence of sex/gender terminology in three out of four *JAE* articles suggests these constructs are central to the discipline's research for describing participant demographics. However, the study's results revealed a widespread conflation of sex and gender terms, which presents a significant methodological issue. This conflation impacts the accuracy of data collection and perpetuates a binary perspective by using terms, such as male/female. It is likely that gender identity was the intended construct, and this conflation requires researchers to critically evaluate if sex or gender is truly relevant to their research question and purpose of the study. In direct contrast, the low presence of inclusive terminology such as non-binary, agender, and intersex (all  $\leq 0.07\%$ ) demonstrated that LGBTQIA+ individuals are largely not being included or accurately represented in the research published in *JAE*, which may encourage feelings of gender dysphoria and reinforced cissexist and heteronormative values. This lack of inclusive practices is not aligned and conflicts with AAAE's core research value of "ensuring diversity, equity, inclusion, and belonging." Lack of inclusive practices perpetuates the marginalization of transgender and genderqueer participants, potentially reducing the likelihood of queer individuals responding to questionnaires and not resulting in samples that are representative of the population. Furthermore, the observed non-inclusive language use carries implications for institutional compliance with federal policy and law, as the Supreme Court's landmark 2020 ruling in *Bostock v. Clayton County* interpreted Title VII of the Civil Rights Act of 1964 to protect individuals from discrimination based on sexual orientation and gender identity (*Bostock v. Clayton County*, 2020). To help researchers and their institutions be more compliant and limit legal liability, we recommend the accurate use of sex and gender terms to demonstrate the use of inclusive practices to respect the individual rights of participants regarding their gender identity.

### Recommendations

Recommendations include advocating researcher education on the differences between sex and gender and promotion of researchers in selecting appropriate and inclusive terminology to best fit their study. A larger depth and breadth of future research will allow for increased development of recommendations. Ultimately, adopting a more inclusive and accurate language can contribute positively to a more inclusive agricultural education landscape.

To make gender-inclusive data collection the norm, we recommend researchers report more on their sample characteristics. Including a line about having zero individuals reporting they were non-binary would demonstrate participants were given the option to respond as such, but the sample was solely comprised of individuals identifying as men/women. There has been research conducted which analyzes the best way for gender to be included within surveys, suggesting the following:

1. Consistently distinguish between sex and gender (Westbrook & Saperstein, 2015);
2. Expand options provided beyond male and female (Westbrook & Saperstein, 2015); and
3. "[A]cknowledg[e] diversity in gender expression" (Westbrook & Saperstein, 2015, p. 555).

Hughes et al. (2022) provided a particularly helpful article, which offers improved and updated demographics questions with physical examples and empirical evidence to support their claims. When asking participants for gender identity, providing a simple fill in the blank for participants to describe their gender with an option for "prefer not to answer" is the suggested format for surveys. An opt-out answer

option provides a safe option for participants who have privacy concerns. By using this method in designing questionnaires, researchers suggest an open-ended question can help “avoid bias responding or force set responses and to avoid conveying noninclusivity by listing only a few options” (Hughes et al., 2022, p. 235). Researchers have suggested incorporating a multidimensional sex/gender measure to collect data on sex at birth, current gender identity, and gender lived on a day-to-day basis (Bauer et al., 2017). Gender identity demographics items with layered questions provide detailed data for research teams to better understand their participants while allowing participants an outlet to describe their identities.

Additionally, the American Psychological Association Division 44 Science Committee developed a research guide for those conducting research on sexual orientation and gender diversity (Veldhuis et al., 2024). The guide provides directions for theoretical framing, methodologies, ethical considerations, language, and response to reviewers which includes a checklist for guiding both researchers and reviewers (Veldhuis et al., 2024).

Researchers should consider target populations when evaluating which style of survey questions to incorporate into their study. When gender is a key construct of the anticipated participant group, incorporating options for participants to communicate gender and its fluidity is essential (DuBois et al., 2024; Patterson, 2019). As Ruberg and Ruelos (2020) stated, “[e]specially for LGBTQIA+ people, the realities of gender and sexual identity do not fit within the tidy, immutable categories that are used to produce ‘good, clean’ data” (p. 11). When questionnaires are anticipated to reflect cis/heteronormative values and are absent of diverse and inclusive gender identity choices, transgender or gender nonconforming participants are less likely to respond to questionnaires (Andreassen et al., 2024). Knowing this, we can deduce heteronormative and exclusive survey practices perpetuate the marginalization of transgender and genderqueer participants. With fostering a diverse, equitable, and inclusive environment being a key research value of the AAAE organization, the adoption of inclusive survey methodologies is paramount.

Overall, our research suggests there is room for growth within *JAE* to foster a more inclusive journal environment and research experience for participants. Encouraging this growth and continuing to have dialogue as more is learned about inclusive research methodologies would allow scholars to expand their horizons and conduct research, which is more inclusive and less harmful to readers, participants, and beneficiaries of agricultural education. While staying up to date with ever-evolving best practices may be challenging, it is a challenge worth undertaking to create an agricultural education which welcomes all and supports the research value of “ensuring diversity, equity, inclusion, and belonging” (AAAE, 2023, p. 10).

## References

- Ahmed, S. (2012). *On being included: Racism and diversity in institutional life*. Duke University Press.
- Allen, K. J., Roberts, R., Burnett, M. F., & Blackburn, J. J. (2022). Cultivating Black leaders for rural communities: A case study of a leadership development program at an 1890 land-grant institution. *Journal of Agricultural Education*, 63(4), 78–90. <https://doi.org/10.5032/jae.2022.04078>
- American Association for Agricultural Education (AAAE). (2023). *AAAE Research Values*. <https://aaea.wildapricot.org/National-Research-Values>
- Andreassen, K., Denise Mason, L., & Chen, J. (2024). Engendering ethics: Recognition and inclusion of intersectional identities in queer communities when conducting population survey research. *Continuum*, 38(3), 292–306. <https://doi.org/10.1080/10304312.2024.2338478>

- Anthony, L. (2024). AntConc (Version 4.3.1) [Computer Software]. Tokyo, Japan: Waseda University. Available from <https://www.laurenceanthony.net/software>
- Baldwin, A. (2022). *A decolonial Black feminist theory of reading and shade: Feeling the university*. Routledge.
- Bamberger, E. T., & Farrow, A. (2021). Language for sex and gender inclusiveness in writing. *Journal of Human Lactation*, 37(2), 251–259. <https://doi.org/10.1177/0890334421994541>
- Bauer, G., Braimoh, J., Scheim, A., & Dharma, C. (2017). Transgender-inclusive measures of sex/gender for population surveys: Mixed-methods evaluation and recommendations. *PLoS ONE* 12(5): e0178043. <https://doi.org/10.1371/journal.pone.0178043>
- Beaman, K. V. (2024). *Language change in real-and apparent-time: Coherence in the individual and the community*. Taylor & Francis.
- Bostock v. Clayton County*, 590 U.S. 644 (2020).
- Bullock, J. H., Morgan, J. E., & Warner, W. J. (2021). Motivations and challenges of underrepresented students enrolled in post-secondary agricultural education program: Community through diversity. *Journal of Agricultural Education*, 62(3), 185–201. <https://doi.org/10.5032/jae.2021.03185>
- Butler, J. (1990). *Gender trouble: Feminism and the subversion of identity*. New York, NY: Routledge.
- Butler, J. (1993). *Bodies that matter: On the discursive limits of sex*. New York, NY: Routledge.
- Butler, J. (2004). *Undoing gender*. New York, NY: Routledge.
- Buzuvis, E. (2013). “On the basis of sex”: Using Title IX to protect transgender students from discrimination in education. *Wisconsin Journal of Law, Gender & Society*, 28(3), 219–245.
- Carr, C. L. (2005). Tomboyism or lesbianism? Beyond sex/gender/sexual conflation. *Sex Roles*, 53(1), 119–131. <https://doi.org/10.1007/s11199-005-4286-5>
- Clemons, C. A., & Lindner, J. R. (2019). Teacher longevity and career satisfaction in the secondary agricultural education classroom. *Journal of Agricultural Education*, 60(1), 186–201. <https://doi.org/10.5032/jae.2019.01186>
- Clemons, C. A., McKibben, J., & Lindner, J. (2021). The masks we wear: A quantitative analysis of motivational factors of school-based agricultural education teachers during a pandemic. *Journal of Agricultural Education*, 62(2), 83–96. <https://doi.org/10.5032/jae.2021.02083>
- Dilley, P. (1999). Queer theory: Under construction. *International Journal of Qualitative Studies in Education*, 12(5), 457–472. <https://doi.org/10.1080/095183999235890>
- Drisko, J. W., & Maschi, T. (2016). *Content analysis*. Oxford University Press, USA.
- DuBois, L. Z., Brewis, A., Burson, R. C., Dillon, S. J., Gibb, J. K., Gleason, L., Hussein, S. N., Jolly, D., Montañola, S., Nelson, R.G., Rosas, G.O., Thomas, E.B., Sturtz Sreetharan, C. (2024). From

- gender and sex to gender/sex: Reconceptualizing critical research categories. *Practicing Anthropology*, 46(2), 108–111. <https://doi.org/10.1080/08884552.2024.2346776>
- Estepp, C. M., Cline, L. L., & Rodriguez, M. T. (2022). Members' perceptions regarding diversity and inclusion within the American Association for Agricultural Education. *Journal of Agricultural Education*, 63(2), 186–202. <https://doi.org/10.5032/jae.2022.02186>
- Foucault, M. (1978). *The history of sexuality: An introduction* (trans. Robert Hurley). New York: Vintage Books.
- Garvey, J., Hart, J., Metcalfe, A., & Fellabaum-Toston, J. (2019). Methodological troubles with gender and sex in higher education survey research. *The Review of Higher Education*, 43(1), 1–24. <https://doi.org/10.1353/rhe.2019.0088>
- Gregg, C., & Bowling, A. (2024). Rainbow owls: A phenomenological analysis of LGBTQIA++ agriscience teachers' experiences. *Journal of Agricultural Education*, 65(3). <https://jae-online.org/index.php/jae/article/view/2743>
- Hesse-Biber, S. (Ed.). (2011). *Handbook of Feminist Research: Theory and praxis* (2nd ed.). SAGE.
- Hughes, J. L., Camden, A. A., Yangchen, T., Smith, G. P., Domenech Rodríguez, M. M., Rouse, S. V., McDonald, C. P., & Lopez, S. (2022). Invited editorial: Guidance for researchers when using inclusive demographic questions for surveys: Improved and updated questions. *Psi Chi Journal of Psychological Research*, 27(4), 232–255. <https://doi.org/10.24839/2325-7342.jn27.4.232>
- Kennedy, L., Khanna, K., Simpson, D., Gelman, A., Jia, Y., & Teitler, J. (2022). Using sex and gender in survey adjustment. *arXiv*, 2009.14401(2), <https://doi.org/10.48550/arXiv.2009.14401>
- Kleinheksel, A. J., Rockich-Winston, N., Tawfik, H., & Wyatt, T. R. (2020). Demystifying content analysis. *American Journal of Pharmaceutical Education*, 84(1), 7113. <https://doi.org/10.5688/ajpe7113>
- Krippendorff, K. (2018). *Content analysis: An introduction to its methodology*. Sage.
- Lane, N. (2016). Bringing flesh to theory: Ethnography, Black queer theory, and studying Black sexualities. *Feminist Studies*, 42(3), 632–648. <https://doi.org/10.1353/fem.2016.0032>
- Mars, M. M., & Hart, J. (2017). Graduate STEM-based agriculture education and women agriculturalists: An agency perspective. *Journal of Agricultural Education*, 58(3), 256–274. <https://doi.org/10.5032/jae.2017.03256>
- McBride, S. M., & Talbert, B. A. (2022). Openness and preparedness of senior FFA members toward technology in agriculture. *Journal of Agricultural Education*, 63(1), 98–114. <https://doi.org/10.5032/jae.2022.01098>
- McBride, S., Talbert, A., & Mackey, S. (2023). Involvement of urban agricultural education students in FFA activities and opportunities. *Journal of Agricultural Education*, 64(2), 145–161. <https://doi.org/10.5032/jae.v64i2.57>

- Mizock, L., & Hopwood, R. (2016). Conflation and interdependence in the intersection of gender and sexuality among transgender individuals. *Psychology of Sexual Orientation and Gender Diversity*, 3(1), 93–103. <https://doi.org/10.1037/sgd0000157>
- Monro, S. (2007). Transmuting gender binaries: The theoretical challenge. *Sociological Research Online*, 12(1), 90-104. <https://doi.org/10.5153/sro.1514>
- Moser, E., Vincent, S., Schmidt, K., Headrick, J., Wood, M., & Steede, G. (2024). Evaluating the multidimensional attitudes of post-secondary agricultural education students toward lesbian and gay identities. *Journal of Agricultural Education*, 65(2), 276–289. <https://jae-online.org/index.php/jae/article/view/2596>
- Murray, K., Cannon, C. E., Ching, C. C., & Trexler, C. J. (2023). LGBTQIA+ access to generalized youth development programs. *Journal of Agricultural Education*, 64(4). <https://doi.org/10.5032/jae.v64i4.2464>
- Murray, K. A., Trexler, C. J., & Cannon, C. E. B. (2020). Queering agricultural education research: Challenges and strategies for advancing inclusion. *Journal of Agricultural Education*, 61(4), 296–316. <https://doi.org/10.5032/jae.2020.04296>
- Patterson, G. (2019). Queering and transing quantitative research. In W. P. Banks, M. B. Cox & C. Dadas (Eds.). *Re/orienting writing studies: Queer methods, queer projects*. University Press of Colorado.
- Price, T. J. (2023). *Impact of school-based agricultural education (SBAE) program climate on the participation and continuation of LGBTQIA++ students: A mixed-methods study* (Publication No. 3032992442). [Doctoral Dissertation, Oklahoma State University] <https://www.proquest.com/dissertations-theses/impact-school-based-agricultural-education-sbae/docview/3032992442/se-2>
- Price, T. J., Riggs, A.N., & Montgomery, D. (2024). Attitudes toward inclusion of LGBTQIA++ youth in agricultural education: Q methodology study. *NACTA Journal*, 68, 139-149. <https://eric.ed.gov/?id=EJ1450342>
- Rioux, C., Paré, A., London-Nadeau, K., Juster, R.-P., Weedon, S., Levasseur-Puhach, S., Freeman, M., Roos, L. E., & Tomfohr-Madsen, L. M. (2022). Sex and gender terminology: A glossary for gender-inclusive epidemiology. *Journal of Epidemiology and Community Health*, 76(8), 764–768. <https://doi.org/10.1136/jech-2022-219171>
- Rojas, T., & Vincent, S. (2023). What’s in a book? An exploration of multicultural extractions within secondary agriculture textbooks. *Journal of Agricultural Education*, 64(3), 95–108. <https://doi.org/10.5032/jae.v64i3.114>
- Rosenberg, G. N. (2016). *The 4-H harvest: Sexuality and the state in rural America*. University of Pennsylvania Press.
- Ruberg, B., & Ruelos, S. (2020). Data for queer lives: How LGBTQIA+ gender and sexuality identities challenge norms of demographics. *Big Data & Society*, 7(1), 1-12 <https://doi.org/10.1177/2053951720933286>

- Seidman, S. (1994). Queer-ing sociology, sociologizing queer theory: An introduction. *Sociological Theory*, 12(2), 166–177. <https://doi.org/10.2307/201862>
- Stewart, D.-L., & Nicolazzo, Z. (2018). High impact of [whiteness] on trans\* students in postsecondary education. *Equity & Excellence in Education*, 51(2), 132–145. <https://doi.org/10.1080/10665684.2018.1496046>
- Stiles, L., Frazier, A., & Eddington, K.M. (2024). What were you thinking? A comparison of rater coding and word counts for content analysis of thought samples in depression. *Journal of Rational-Emotive & Cognitive-Behavior Therapy*, 42, 214–225 <https://doi.org/10.1007/s10942-023-00507-0>
- Sullivan, A. (2020). Sex and the census: Why surveys should not conflate sex and gender identity. *International Journal of Social Research Methodology*, 23(5), 517–524. <https://doi.org/10.1080/13645579.2020.1768346>
- Tienda, M. (2013). Diversity ≠ inclusion: Promoting integration in higher education. *Educational Researcher*, 42(9), 467–475. <https://doi.org/10.3102/0013189X13516164>
- Tobin, H. J., & Levi, J. (2013). Securing equal access to sex-segregated facilities for transgender students. *Wisconsin Journal of Law, Gender & Society*, 301–331.
- Veldhuis, C. B., Cascalheira, C. J., Delucio, K., Budge, S. L., Matsuno, E., Huynh, K., Puckett, J. A., Balsam, K. F., Velez, B. L., & Galupo, M. P. (2024). Sexual orientation and gender diversity research manuscript writing guide. *Psychology of Sexual Orientation and Gender Diversity*, 11(3), 365–396. <https://doi.org/10.1037/sgd0000722>
- Watson, K. (2005). Queer theory. *Group Analysis*, 38(1), 67–81. <https://doi.org/10.1177/0533316405049369>
- Webster, L. (2021). “Ties that bind” The continued conflation of sex, sexuality and gender. *Journal of Language and Sexuality*, 10(1), 63–70. <https://doi.org/10.1075/jls.00015.web>
- Westbrook, L., & Saperstein, A. (2015). New categories are not enough: Rethinking the measurement of sex and gender in social surveys. *Gender & Society*, 29(4), 534–560. <https://doi.org/10.1177/0891243215584758>
- The White House. (2025, January 20). Defending women from gender ideology extremism and restoring biological truth to the federal government. The White House. <https://www.whitehouse.gov/presidential-actions/2025/01/defending-women-from-gender-ideology-extremism-and-restoring-biological-truth-to-the-federal-government/>