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STUDENTS' PERCEPTIONS OF GENDER ROLE IDENTIFICATION IN CHILDREN WITH ASD: EDUCATIONAL IMPLICATIONS

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Abstract. This study examines students' perceptions of gender role identification in children with autism spectrum disorder (ASD) and the socio-demographic factors influencing their views. A structured survey was conducted among university students, and statistical analyses, including Kruskal-Wallis tests, Spearman's Rank Correlation, and logistic regression, were applied to identify significant patterns. The results indicate that age, parental status, and religious beliefs significantly influence perceptions, whereas gender, political ideology, and academic background show weaker predictive power. Dunn's post-hoc test confirmed that students with children hold distinct views, while Spearman's correlation revealed moderate associations between general knowledge of gender identity and ASD-related attitudes. Logistic regression had limited predictive accuracy (46.5%), highlighting the need for additional explanatory variables. The findings suggest that educational curricula should incorporate specialized coursework, experiential learning, and interdisciplinary discussions to improve understanding. Future research should explore the role of direct interactions with neurodiverse individuals in shaping inclusive perspectives.

Key words: autism spectrum disorders; gender; identification; sexual orientation; educational psychology; social psychology.

Introduction. The evolving paradigms of new ethics and destigmatization in modern society create a foundation for the development of unbiased scientific inquiry. Within this framework of «new science» recent studies (Christian et al., 2021; Ristory et al., 2020; Kiyar et al., 2020) have significantly expanded our understanding of gender role identification. A pivotal milestone in this field was the establishment of queer studies in 1970 at the University of California, Berkeley, which introduced an interdisciplinary approach to researching sexual orientation and gender identity (SOGI) along with the associated social and psychological challenges.

In parallel with these advancements, contemporary research has increasingly focused on gender identity development in neurodivergent populations, particularly children with Autism Spectrum Disorders (ASD). ASD is characterized by atypical social communication and behavioral patterns, which may influence the process of gender role identification (Strang et al., 2018). Studies suggest that autistic individuals may exhibit a broader range of gender diversity than their neurotypical peers, raising questions about how societal norms, educational settings, and professional training influence their gender identity development (Davidson & Tamas, 2015).

Despite the growing body of research on gender identity in autistic individuals, there remains a gap in understanding how future professionals – particularly psychology, education, and social work students – perceive gender role identification in children with ASD. Their attitudes and awareness are crucial, as they will shape the inclusivity and responsiveness of future support systems for neurodivergent individuals. A lack of adequate training and awareness may lead to the reinforcement of stereotypes, inadequate support strategies, and missed opportunities for affirming care (Wood-Downie et al., 2021).

This study aims to analyze students' perceptions of gender role identification in children with ASD and to explore its educational implications. By examining the level of awareness, biases, and potential gaps in knowledge among students in relevant fields, this research seeks to inform improvements in

academic curricula and professional training programs. The ultimate goal is to enhance the preparedness of future specialists in psychology, education, and social services to provide informed, inclusive, and effective support for autistic children navigating gender identity development.

The main research methods of the article. The study employed a quantitative research design, utilizing a structured questionnaire to collect data on students' perceptions of gender role identification in children with ASD. The survey method was chosen due to its efficiency in gathering standardized responses from a large sample, allowing for the identification of patterns and trends in students' views. The study was conducted in an anonymous format to ensure participant confidentiality and to minimize potential biases in responses.

The primary data collection tool was a self-administered questionnaire designed to assess students' attitudes, knowledge, and beliefs regarding gender role identification in children with ASD. The questionnaire consisted of following thematic sections: demographic information (table 1), general knowledge and perceptions, attitudes toward gender role identification in children with ASD and educational implications.

The questionnaire was designed to be comprehensive yet concise, ensuring that participants could complete it within a reasonable time frame without fatigue affecting response quality.

Table 1

Socio-Demographic Characteristics of the Study Sample

Sex								
Male			Female			No answer		
52			177			3		
Age								
Under 17		17-19		20-22		23-25		26 or older
1		104		71		20		36
Specialization/Field of Study								
01	02	032	035	053	061	081	227	231
122	3	1	5	41	3	1	47	9
Marital Status								
Single			Married			In a relationship		
137			33			62		
Belief								
Orthodox	Catholic	Protestant	Buddhist	Atheist	Agnostic	Other		
100	61	6	1	34	9	21		
Political Views								
Liberal	Moderate	Socialistic	Conservative	Communist	Indifferent	Ultraconservative		
96	63	47	16	4	4	2		
Sexuality								
Heterosexual	Bisexual	Homosexual	Pansexual	Asexual	Demisexual	None		
172	16	4	2	2	1	35		

The study sample consisted of 232 students, with diverse socio-demographic characteristics that provide insights into their background and potential influence on their perceptions of gender role identification in children with ASD. The majority of participants identified as female (177 individuals, 76,3%), while male respondents constituted 52 individuals (22,4%). A small number (3 individuals, 1,3%) chose not to disclose their gender.

The largest group of respondents fell into the 17-19 years category (104 individuals, 44,8%). The second most common age range was 20-22 years (71 individuals, 30,6%). This age distribution suggests that most participants are in their early academic years, which may influence their familiarity with gender identity and ASD-related concepts.

The sample included students from a variety of academic disciplines, classified by their specialization codes: 01 (Education & Pedagogy) – 122 students (52,6%); 02 (Humanities) – 3 students (1,3%); 032 (History & Archaeology) – 1 student (0,4%); 035 (Philology) – 5 students (2,2%); 053 (Psychology) – 41 students (17,7%); 061 (Journalism) – 3 students (1,3%); 081 (Law) – 1 student (0,4%); 227 (Physical Therapy & Occupational Therapy) – 47 students (20,3%); 231 (Social Work) – 9 students (3,9%).

The predominance of students from Education & Pedagogy, Physical Therapy & Occupational Therapy and Psychology suggests that most respondents have a background in child development, education, and mental health, making their perspectives particularly relevant to the study.

While the majority of respondents identified as heterosexual (74,1%), 6,9% identified as bisexual, and a small proportion (4,3%) identified with other orientations. A notable 15,1% chose not to disclose their orientation, highlighting privacy considerations in studies involving gender and identity.

The statistical analysis of this study incorporates a range of methods to examine relationships between socio-demographic characteristics and students' perceptions of gender role identification in children with ASD. Given the ordinal nature of many survey responses, the Kruskal-Wallis Test (Fan & Zhang, 2012) is applied to compare differences in attitudes across multiple independent groups, such as religious affiliations or age categories, without assuming normal distribution of responses. To explore potential relationships between ordinal variables, such as the level of agreement with statements regarding gender identity development and personal beliefs, Spearman's Rank Correlation (Hazra & Gogtay, 2016) is utilized. This non-parametric test allows for the identification of monotonic relationships between ranked data. Finally, logistic regression (Schober & Vetter, 2021) is conducted to predict the probability of students holding particular views on gender role identification based on predictor variables such as gender, political ideology, or academic background. By employing these statistical methods, the study ensures a rigorous examination of the factors influencing students' perceptions and provides a data-driven foundation for interpreting attitudinal trends within the sample.

This study adhered to ethical research standards, ensuring voluntary participation, informed consent, and confidentiality. No personally identifiable information was collected, and participants had the right to withdraw from the study at any point without consequences.

Discussion. The Kruskal-Wallis Test was conducted to assess whether socio-demographic factors influence students' responses to Question 6.6 («How would you react if a child with ASD in your family or among your friends expressed a non-standard gender-role identity?») (Table 2).

Table 2

Kruskal-Wallis Test Results

Socio-demographic factor	Kruskal-Wallis Statistics	p-value	Significance
Sex	1.9408847836654914	0.37891537195321173	Not Significant
Age	10.211368640479497	0.0370138124259248	Significant
Course	6.662813299232796	0.24694898077432575	Not Significant
Specialization	14.125009239126953	0.6582340825254304	Not Significant
Marital Status	2.2253690665456474	0.3286754355362888	Not Significant
Having Children	6.359733344513885	0.011673908680197184	Significant
Religious Beliefs	18.70732240437162	0.004687561698503128	Significant
Political Views	9.976587844440076	0.12564142487152913	Not Significant
Sexuality	9.999942959001874	0.1885766999991343	Not Significant

The results of the Kruskal-Wallis test reveal varying levels of statistical significance across different socio-demographic variables in relation to students' responses to Question 6.6. While gender,

field of study, marital status, and political views did not show significant differences in responses, age, parental status, and religious beliefs were found to have a statistically significant effect. Specifically, the significant difference observed in age groups suggests that perceptions toward non-standard gender-role identification in children with ASD may evolve with age, potentially reflecting increased exposure to diverse perspectives or shifts in personal beliefs. Similarly, students who have children exhibited significantly different responses compared to those without, indicating that parental experience may influence attitudes toward gender identity development in ASD. The influence of religious beliefs was also statistically significant, suggesting that students from different religious backgrounds may hold distinct views on this topic, potentially shaped by doctrinal teachings and cultural values. The absence of significance in political orientation and sexual orientation suggests that these factors do not play a decisive role in shaping students' attitudes on this specific issue, at least within this sample. Overall, the findings highlight the impact of life experience and belief systems on perceptions of gender-role identity in children with ASD, providing a basis for further qualitative exploration.

The Dunn's test was conducted to identify specific group differences in responses to Question 6.6 based on age, parental status, and religious beliefs.

For age, no statistically significant differences were found between most groups, except for a marginal difference between respondents aged 26 and older and younger groups, but it did not reach statistical significance after Bonferroni correction.

For parental status, a significant difference ($p = 0.031$) was observed between students who have children and those who do not, suggesting that personal parenting experience affects attitudes toward gender role identification in ASD.

For religious beliefs, while the overall Kruskal-Wallis test was significant, post-hoc comparisons did not reveal strong pairwise differences between religious groups after Bonferroni correction. However, there was a marginal difference between atheists and Orthodox Christians ($p = 0.154$), suggesting a potential trend where religious affiliation may influence views on gender identity expression in children with ASD.

These results indicate that parental status is the most influential factor, while age and religious beliefs may play a role but require further investigation.

To explore the relationships between students' knowledge, attitudes, and perceptions regarding gender role identification in children with ASD, Spearman's Rank Correlation was employed (fig. 1). This non-parametric statistical method is particularly useful for assessing the strength and direction of associations between ordinal variables, making it well-suited for analyzing Likert-scale survey responses. Unlike Pearson's correlation, Spearman's method does not assume a linear relationship or normal distribution, allowing for a more flexible examination of potential monotonic trends within the data.

By applying Spearman's correlation to survey responses from Sections 2.1 – 5.9 (knowledge and general attitudes) and Sections 6.1 – 6.6 (perceptions of gender role identification in children with ASD), this analysis seeks to identify underlying patterns in students' perspectives. Specifically, it aims to determine whether higher familiarity with gender identity concepts and ASD-related knowledge corresponds to greater openness toward diverse gender role expressions in children with ASD. The correlation results provide valuable insights into the extent to which prior knowledge and beliefs shape students' views on the topic, offering implications for educational and awareness-raising initiatives.

The Spearman's Rank Correlation Heatmap reveals various degrees of associations between survey responses, with some notable patterns. Stronger positive correlations appear between Q2 – Q3 (0,24) and Q2 – Q4 (0,20), suggesting that respondents who are knowledgeable about gender identity are also more aware of gender expression. Similarly, Q6 – Q7 (0,30) shows that familiarity with neurodevelopmental disorders is linked to understanding gender-related concepts. A moderate negative correlation is observed between Q2 – Q5 (-0,19), indicating that awareness of gender roles

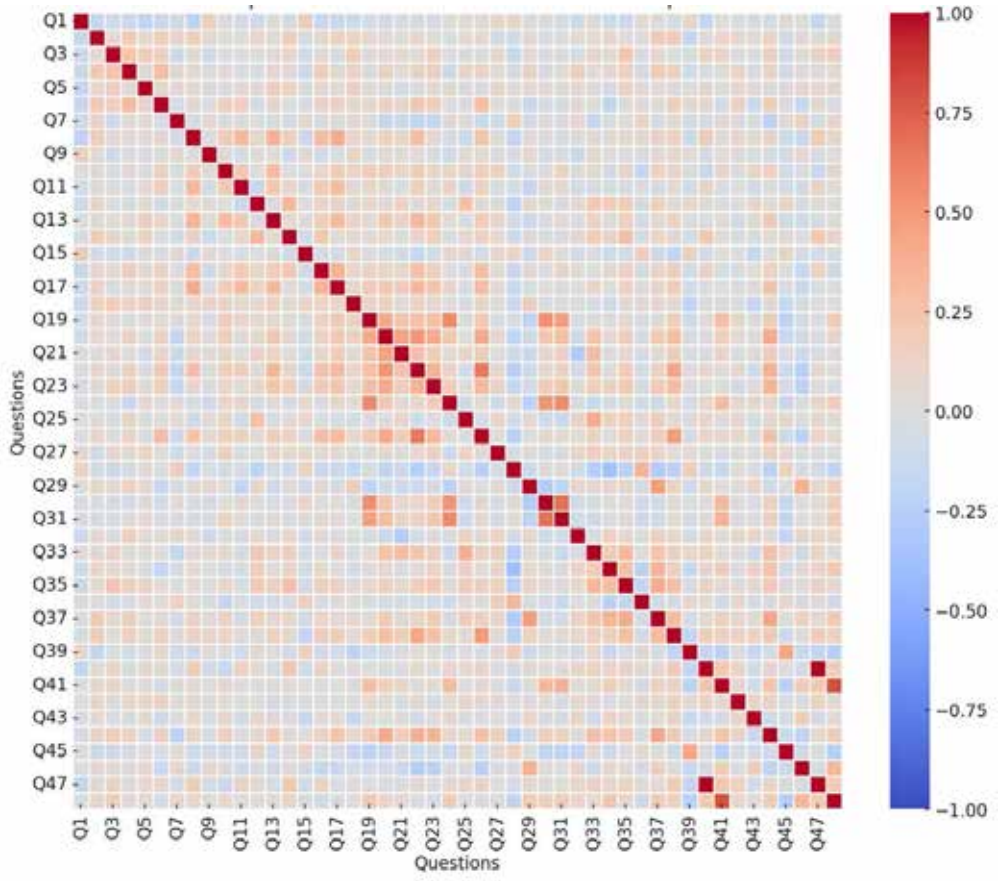

Fig. 1. Spearman's Rank Correlation Heatmap

does not necessarily translate to knowledge about sexual orientation. Interestingly, responses to Q6.1 and Q6.2 – which assess perceptions of gender role identification in children with ASD – are weakly correlated with other variables, with no coefficients exceeding 0,16, suggesting that attitudes on this topic may be influenced by personal beliefs rather than general knowledge. The results highlight that while some constructs are interrelated, others remain independent, warranting further analysis to understand the underlying factors shaping student perceptions.

To assess the extent to which socio-demographic factors predict students' perceptions of gender role identification in children with ASD, a logistic regression model was applied using gender, political ideology, and academic background as predictor variables (table 3).

Table 3

Logistic Regression Classification

Class Label	Precision	Recall	F1-Score	Support
1.0	0.0	0.0	0.0	6
2.0	0.57	0.21	0.31	19
4.0	0.44	0.89	0.59	18
Overall	0.44	0.47	0.38	43

The model achieved an accuracy of 46.5%, indicating that these factors alone provide limited predictive power. The classification report reveals that responses categorized as 4.0 were most accurately predicted, with a recall of 89% and an F1-score of 0.59, meaning that the model correctly identified most instances of this category. However, predictions for categories 1.0 and 2.0 were notably weak,

with precision scores of 0.00 and 0.57, respectively, and a recall of only 21% for category 2.0. The overall F1-score for the model was 0.38, suggesting that additional explanatory variables, such as personal experience with ASD or exposure to gender studies, may be necessary to improve predictive accuracy. These results highlight that while socio-demographic characteristics influence attitudes toward gender identity in ASD, they are not sole determinants, and further research is needed to identify other contributing factors.

Educational Implications. The findings indicate that students' perceptions of gender role identification in children with ASD are influenced by age, parental status, and religious beliefs, while factors such as gender, political ideology, and academic background show weaker predictive power. These insights suggest several key recommendations for the educational system to foster inclusivity and better prepare future professionals for working with children with ASD.

Given that general knowledge about gender identity and ASD does not strongly correlate with perceptions of gender role identification in children with ASD, psychology and education programs should integrate dedicated courses that explore the intersection of neurodiversity and gender identity. Training should focus on both theoretical and applied aspects to ensure future professionals develop an informed, research-based perspective (Dewinter et al., 2024; Cooper, 2024).

The significant influence of age and parental status on perceptions suggests that educational interventions should be tailored to different life stages. Universities should consider offering advanced modules for senior students that incorporate case studies and experiential learning opportunities, particularly for those without direct parenting experience. Simulated or real-world interactions with children with ASD could help bridge the gap in understanding and attitudes.

Since religious background significantly shapes views on gender role identification in ASD, educational programs should foster open, respectful discussions on how cultural and religious perspectives interact with scientific knowledge. Universities and schools should facilitate interdisciplinary courses combining psychology, sociology, and ethics to encourage critical thinking about gender identity and neurodiversity without alienating students from different backgrounds (Huberman, 2023; Kallitsounaki & Williams, 2023).

Teachers and school psychologists should receive continuous professional development on ASD, gender diversity, and inclusive practices. The results indicate that political views and academic specialization alone do not predict students' perspectives, meaning that additional training could help educators approach these topics more objectively and inclusively.

Since students with personal experience (e.g., parents) showed different attitudes, educational institutions should prioritize hands-on engagement with neurodiverse children. Internships, practicums, and collaborations with inclusive schools should be expanded, allowing students to develop practical competencies rather than relying solely on theoretical knowledge (Cooper at al., 2022).

The low predictive power of socio-demographic factors in logistic regression suggests that student perceptions are shaped by complex, multifaceted influences. Universities and educational policymakers should continuously collect and analyze student feedback to refine curriculum content and ensure that inclusivity efforts remain adaptive and evidence-based.

By implementing these strategies, the educational system can move toward a more comprehensive, inclusive, and research-informed approach to teaching about gender identity and neurodiversity, ultimately benefiting both future educators and the children they will support.

Conclusion. The study examined students' perceptions of gender role identification in children with ASD, revealing key socio-demographic influences and limitations in predictive modeling. Statistical analyses, including Kruskal-Wallis tests, Spearman's Rank Correlation, and logistic regression, demonstrated that age, parental status, and religious beliefs significantly impact students' views, while gender, political ideology, and academic background showed weaker predictive power. The Kruskal-Wallis test identified notable differences in perceptions across these significant varia-

bles, particularly in how parental experience and religious affiliation shape attitudes. Post-hoc analysis confirmed that students who are parents differ significantly from non-parents in their responses, emphasizing the role of direct caregiving experience in shaping views on gender identity in ASD.

The Spearman correlation analysis revealed moderate relationships between general knowledge of gender identity and perceptions of ASD-related gender-role identification, suggesting that awareness alone is insufficient to shape inclusive attitudes. Meanwhile, logistic regression analysis yielded a low predictive accuracy (46.5%), reinforcing the complexity of factors influencing student perceptions and the need for additional explanatory variables, such as personal interactions with neurodiverse individuals or exposure to gender studies.

These findings underscore the importance of targeted educational interventions to address gaps in understanding and biases related to gender role identification in ASD. The educational system should integrate specialized coursework, expand experiential learning opportunities, and foster critical discussions on cultural and religious influences. Furthermore, training for educators should focus on practical engagement with neurodiverse populations rather than relying solely on theoretical instruction.

Overall, the study highlights that attitudes toward gender role identification in children with ASD are shaped by a combination of individual experiences and broader socio-cultural influences. To foster inclusivity and prepare future professionals effectively, education systems must adopt evidence-based, interdisciplinary approaches that go beyond traditional academic instruction.

References:

1. Christian, L. M., Cole, S. W., McDade, T., Pachankis, J. E., Morgan, E., Strahm, A. M., & Dush, C. M. K. (2021). A biopsychosocial framework for understanding sexual and gender minority health: A call for action. *Neuroscience & Biobehavioral Reviews*, 129, 107-116.
2. Cooper, J. (2024) Autism, gender, and identity in college students. *Discov Psychol* 4, 26. https://doi.org/10.1007/s44202-024-00116-7
3. Cooper, K., Mandy, W., Butler, C., & Russell, A. (2022). The lived experience of gender dysphoria in autistic adults: An interpretative phenomenological analysis. *Autism: the international journal of research and practice,* 26(4), 963–974. https://doi.org/10.1177/13623613211039113
4. Davidson, J. & Tamas, S. (2015) Autism and the ghost of gender. *Emotion, Space and Society.* 19.10.1016/j.emospa.2015.09.009
5. Dewinter, J., Onaiwu, M. G., Massolo, M. L., Caplan, R., Van Beneden, E., Brörmann, N., Crehan, E. T., Croen, L. A., Faja, S., Gassner, D. L., Graham Holmes, L., Hughes, C., Hunter, M., Huysamen, M., Jelonche, P., Lai, M. C., Noens, I., Pukki, H., Stokes, M. A., Strang, J. F., … van der Miesen, A. I. (2024). Short report: Recommendations for education, clinical practice, research, and policy on promoting well-being in autistic youth and adults through a positive focus on sexuality and gender diversity. Autism: the international journal of research and practice, 28(3), 770–779. https://doi.org/10.1177/13623613231188349
6. Fan, C., & Zhang, D. (2012). A note on power and sample size calculations for the Kruskal-Wallis test for ordered categorical data. *Journal of biopharmaceutical statistics*, 22(6), 1162–1173. https://doi.org/10.1080/10543406.2011.578313
7. Hazra, A., & Gogtay, N. (2016). Biostatistics Series Module 6: Correlation and Linear Regression. *Indian journal of dermatology*, 61(6), 593–601. https://doi.org/10.4103/0019-5154.193662
8. Huberman, P. (2023). The Role of Religion in Shaping Gender Norms and Attitudes: A Case Study of Tanzania. *International Journal of Culture and Religious Studies*, 4(1), 60–72. https://doi.org/10.47941/ijcrs.1344
9. Kallitsounaki, A., & Williams, D. M. (2023). Autism Spectrum Disorder and Gender Dysphoria/Incongruence. A systematic Literature Review and Meta-Analysis. *Journal of autism and developmental disorders*, 53(8), 3103–3117. https://doi.org/10.1007/s10803-022-05517-y

10. Kiyar, M., Collet, S., T'Sjoen, G., & Mueller, S. C. (2020). Neuroscience in transgender people: an update. *Neuroforum*, 26(2), 85-92.
11. Ristori, J., Cocchetti, C., Romani, A., Mazzoli, F., Vignozzi, L., Maggi, M., & Fisher, A. D. (2020). Brain sex differences related to gender identity development: genes or hormones? *International Journal of Molecular Sciences*, 21(6), 2123.
12. Schober, P., & Vetter, T. R. (2021). Logistic Regression in Medical Research. *Anesthesia and analgesia*, 132(2), 365–366. https://doi.org/10.1213/ANE.0000000000005247
13. Strang, J. F., Powers, M. D., Knauss, M., Sibarium, E., Leibowitz, S. F., Kenworthy, L., Sadikova, E., Wyss, S., Willing, L., Caplan, R., Pervez, N., Nowak, J., Gohari, D., Gomez-Lobo, V., Call, D., & Anthony, L. G. (2018). "They Thought It Was an Obsession": Trajectories and Perspectives of Autistic Transgender and Gender-Diverse Adolescents. *Journal of autism and developmental disorders*, 48(12), 4039–4055. https://doi.org/10.1007/s10803-018-3723-6
14. Wood-Downie, H., Wong, B., Kovshoff, H., Mandy, W., Hull, L., & Hadwin, J. A. (2021). Sex/Gender Differences in Camouflaging in Children and Adolescents with Autism. *Journal of autism and developmental disorders*, *51*(4), 1353–1364. https://doi.org/10.1007/s10803-020-04615-z