



KEY WORDS

- ✓ Frozen section
- ✓ Generalizability theory
- ✓ Glial tumors
- ✓ Reliability
- ✓ Intraoperative consultation

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RETROSPECTIVE ANALYSIS OF THE CONSISTENCY BETWEEN INTRAOPERATIVE AND PERMANENT EVALUATIONS IN GLIAL TUMORS USING GENERALIZABILITY THEORY Mine ÖZŞEN

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THESIS ABSTRACT

Generalizability Theory (G-theory) is a statistical approach that allows simultaneous analysis of multiple sources of measurement error. In this study, the consistency between intraoperative and permanent histopathological evaluations of glial tumors was analyzed using G-theory. The study included 319 glial tumor cases diagnosed and evaluated by intraoperative frozen section between 2010 and 2024 in the Department of Pathology, Faculty of Medicine, Bursa Uludağ University. Evaluations were performed in two stages by three expert pathologists. The reliability coefficient was calculated as 0.9234 without radiological information and 0.9243 after including radiological information. In cases under 18 years of age, the addition of radiological information slightly increased reliability. The highest variance component was attributed to the evaluator. The findings indicate that intraoperative consultation is highly reliable and demonstrate that G-theory provides a powerful framework for analyzing complex sources of error in diagnostic processes.

APPLICATION AREAS OF THE THESIS RESULTS

This study provides a methodological model for assessing the statistical reliability of intraoperative diagnostic processes in pathology practice. The G-theory approach separates the effects of different raters and technical factors on diagnostic accuracy, thereby contributing to the development of diagnostic standardization and training processes. The findings offer an applicable framework for quality control and performance evaluation of intraoperative frozen diagnoses, particularly in neuropathology.

ACADEMIC ACTIVITIES

Ozsen, M., Ercan, İ., Kabul, S., & Dolek, R. (2025). Investigation of intraoperative and permanent diagnostic consistency in glial tumors considering rater and technical variability. *Medicina (Kaunas)*, 61(9), 1592. <https://doi.org/10.3390/medicina61091592>

