

Pathologist Cognitive Factors May Impact Telepathology Acceptance and Practice Integration

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- The sociotechnical model for health information technology implementation emphasizes the effects of user psychosocial factors, along with other environmental factors, for the successful integration of health informatics applications.
- No information is available regarding the potential impact of social and cognitive factors on the acceptance and successful use of telepathology.

- One of the goals of our collaborative telepathology research, development, and evaluation studies with our Air Force partners is to generate and test whole slide imaging (WSI) applications to improve the quality and efficiency of anatomic pathology practice in both academic and military settings.

- To quantitatively assess pathologist diagnostic comfort level while interpreting whole slide images of surgical pathology cases, via:
 - Diagnostic confidence
 - Diagnostic complexity
 - Inter-observer diagnostic agreement

- Five pathologists reviewed 150 cases in four phases
- Questionnaire with semi-quantitative 3-point scale (3 = high, 2 = medium, 1 = low) for each subject to indicate his/her perception of:
 - Case complexity
 - Diagnostic confidence

- Responses were entered into a project database and the data were used to determine associations between these variables and education/experience, via:
 - Spearman's rank sum correlation coefficients
 - Inter-observer kappa agreement statistics
 - Statistical significance assumed at a p value of ≤ 0.05

Subject Profiles

Rank	Years in Practice	GU pathology specialty	Approx. sign-outs per year	Routine GU Sign-out
1	12	×	3,000	✓
2	2	✓	3,000	✓
3	6	✓	6,000	×
4	0 (fellow)	×	usual for fellowship	✓
5	0 (fellow)	×	usual for fellowship	✓

	WSI + DIHC	Glass + DIHC
PATH 1	-0.713**	-0.760**
PATH 2	-0.572**	-0.263**
PATH 3	-0.274**	0.021
PATH 4	-0.883**	-0.906**
PATH 5	-0.077	-0.450**

** = Significant at the 0.01 level (2-tailed)

Results

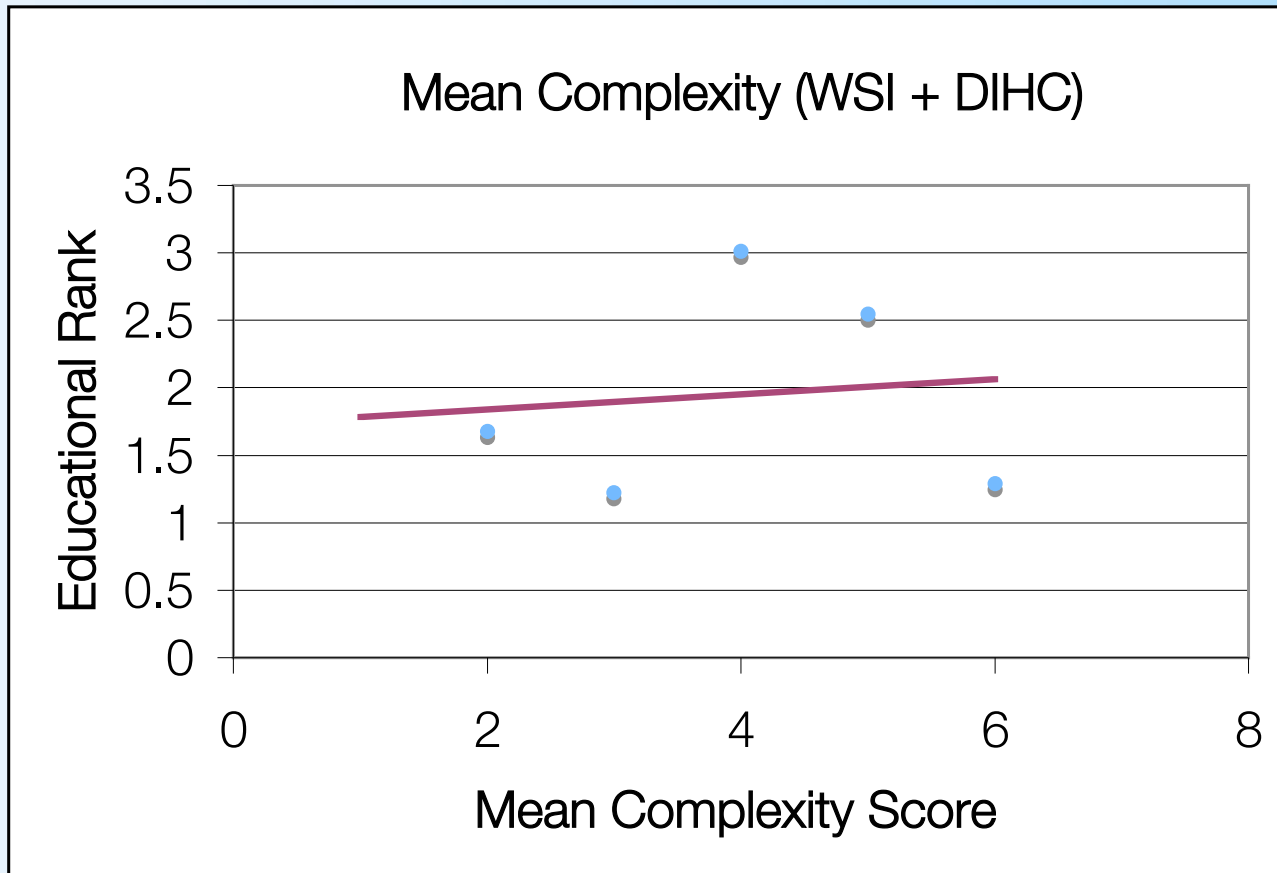
Mean Complexity



	WSI + DIHC	Glass + DIHC
PATH 1	1.6774	2.1034
PATH 2	3.0128	2.6552
PATH 3	2.5484	2.0400
PATH 4	1.2922	1.6207
PATH 5	1.2230	1.2667

ATA 2007

FY 05 IMITS Telepathology Project

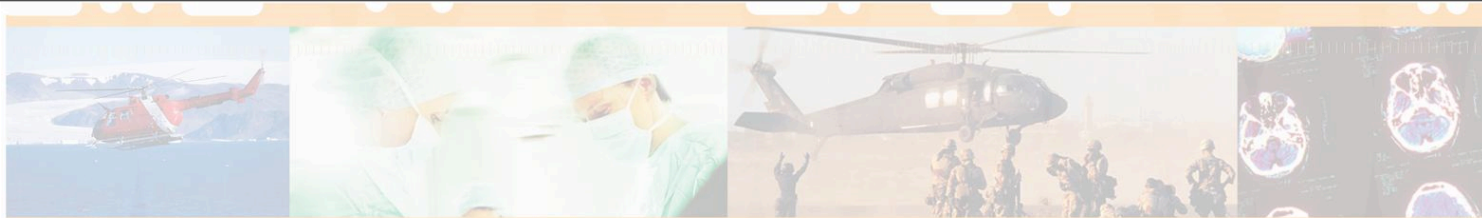


Results

Diagnostic Kappa Statistics

	PATH 1	PATH 2	PATH 3	PATH 4	PATH 5
PATH 1		0.454	0.550	0.601	0.647
		0.532	0.588	0.516	0.607
PATH 2			0.355	0.534	0.537
			0.473	0.577	0.491
PATH 3				0.588	0.513
				0.651	0.593
PATH 4					0.599
					0.661
PATH 5					

- Findings from this pilot study suggest that pathologist perceptions of case diagnostic complexity and their subsequent diagnostic confidence vary when examining whole slide images versus conventional glass slides. Additionally, these perceptions appear to be impacted by pathologist education and practice experience.
- These preliminary findings imply that there is a possible association between pathologist education/experience and practice patterns involving innovative technologies.



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