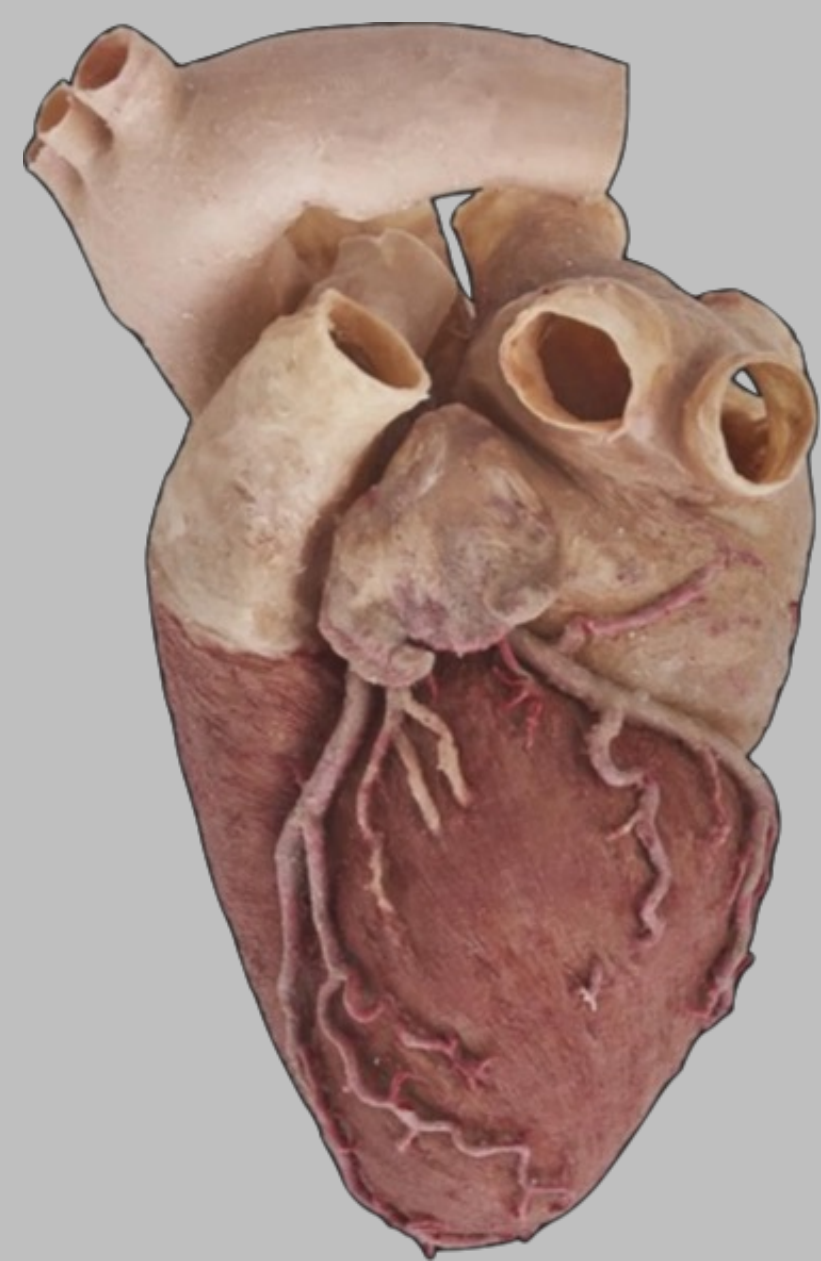


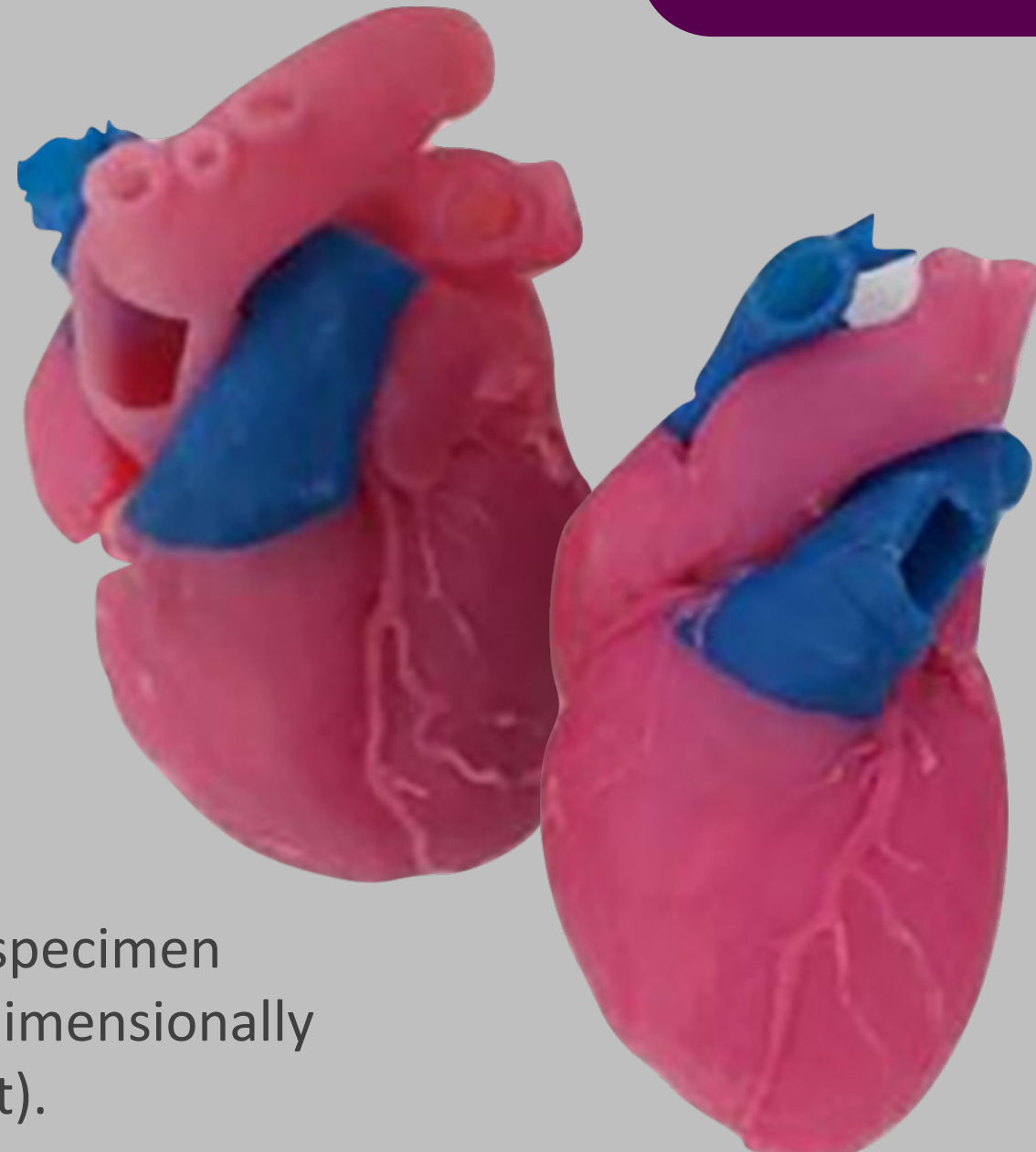
A validated instrument measuring students' perceptions on plastinated and three-dimensional printed anatomy tools

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Introduction



Plastinated cardiac specimen (left) and its three-dimensionally printed replica (right).



Traditional cadaveric dissection and prosected specimens are established tools in anatomy education. While there is growing interest in modern methods such as 3D Printed Models (3DP), there are still limited reliable surveys to evaluate student's perception of these new tools.

Objectives

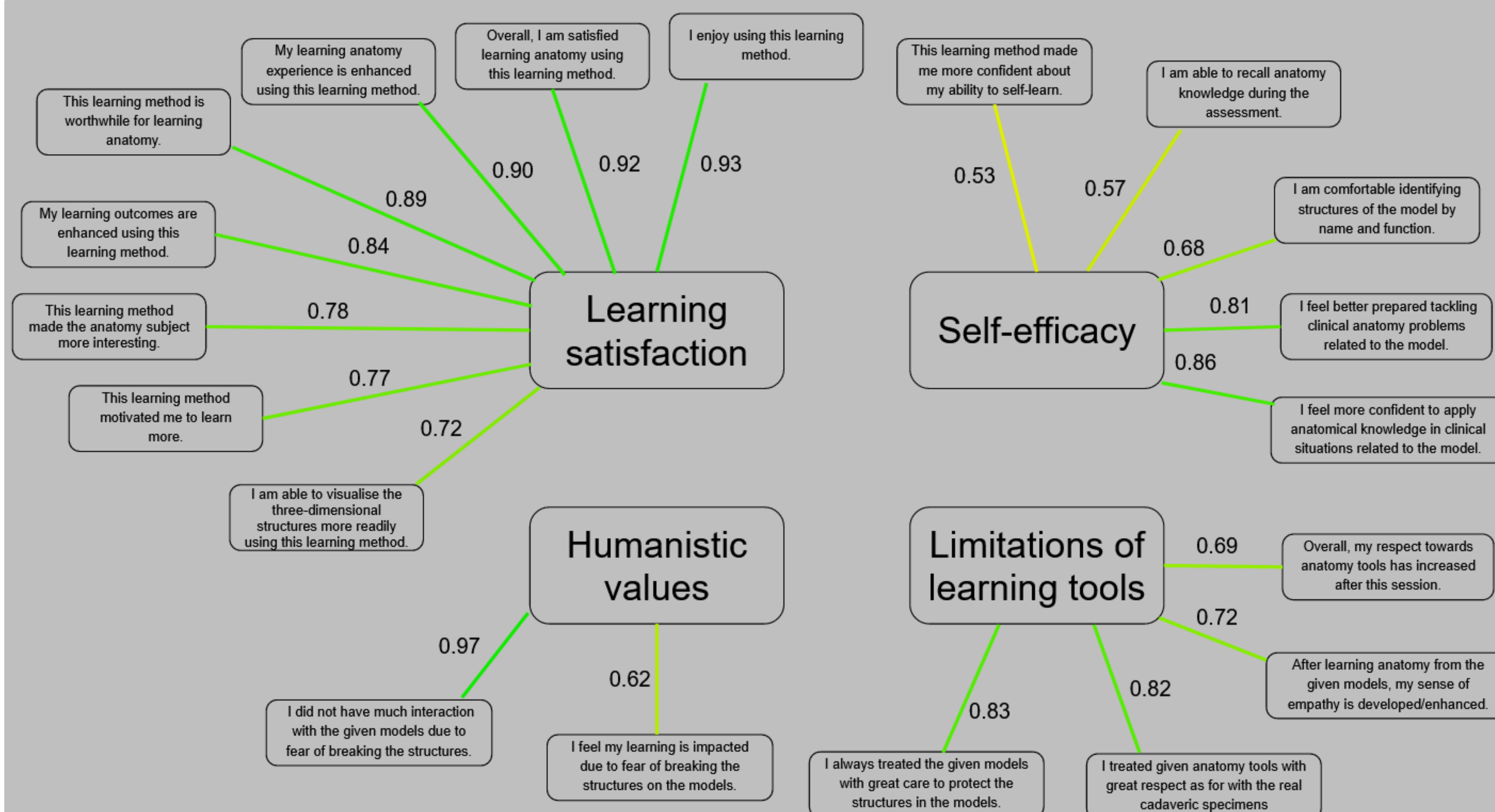
This study aims to develop a validated instrument able to measure student's perception of anatomy learning through learning satisfaction, self efficacy and humanistic values towards modern tools.

Methodology

A 41-item survey was administered to Year 1 undergraduate medical students to evaluate their perception of plastinated and 3D printed cardiac and neck models, of which 96 responses were received in total. To ensure that the data was suited for factor analysis, the Kaiser–Meyer–Olkin test was used, which yielded a value of 0.878, indicating that sampling size was adequate.

Results

The 41-item survey was reduced to a 4-factor, 19-item model through confirmatory factor analysis, the standardised factor loading for each item is represented below:



The new 19-item model demonstrated to have a good fit from the analysis:

4-factor, 19 items model	
▪ Latent construct	211.568, $P < 0.001$
▪ Root mean square error of approximation	0.068
▪ Root mean square residual	0.064
▪ Comparative fit index	0.946
Tucker Lewis index	0.937
Cronbach's alpha	0.74 - 0.95

Limitations

- Study was conducted before the formal anatomy course, leading to enhanced learning satisfaction.
- This analysis was limited to the context of a single medical school in Singapore.



Plastinated specimen of head and neck (left) and its three-dimensionally printed replica (right).

Future studies

- Determine students' perceptions across different time points along the anatomy course.
- Assess perceptions across different cultural environments and institutions.

Conclusion

The instrument demonstrates good internal structure, discriminant validity and internal consistency. It is a psychometrically valid and reliable instrument to measure students' perceptions toward plastinated and 3D printed models.

In conclusion, this instrument can be applied to the evaluation of other contemporary tools for anatomy teaching and learning, such as Augmented and Virtual Reality.

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