

# The Adaptation of Card Games for Use as Supplemental Learning Activities in Movement Disorders Education

Sara M. Schaefer MD<sup>1</sup>, Ana Vives Rodriguez MD<sup>1</sup>, IPMDS Young Members Group<sup>2</sup>, Jeremy J. Moeller MD, MSc<sup>1</sup>

<sup>1</sup>Department of Neurology, Yale University School of Medicine, New Haven CT

<sup>2</sup>International Parkinson and Movement Disorders Society



## OBJECTIVE

To study the feasibility of adapted card games to increase

1. learner engagement during noon conference times; and
2. knowledge in movement disorders (MD).

## BACKGROUND

There is a shift in medical education from traditional lectures to more interactive formats[1]. Interactive learning improves student satisfaction and performance[2]. Competitive gaming has been shown to improve learners' retention of material[3]. Taboo™ and Hedbanz™ are popular party games.

### Taboo rules:

- Cards have a correct answer and 5 “taboo” words
- A designated clue “giver” gives verbal clues to have their teams guess as many answers as they can in an allotted time period
- “Givers” cannot use “taboo” words

### Hedbanz rules:

- A player puts the answer card on her head without looking at it.
- She asks the other players questions to try to guess the answer (plays like the game “20 questions”).

## METHODS

### Study Population:

- 9 Neurology residents and clerkship medical students at Yale-New Haven Hospital and Yale School of Medicine.

### Materials Design:

- Original cards were designed by the authors (SMS and AVR) based on the card games *Taboo* (Game 1, 100 cards) and *Hedbanz* (Game 2, 20 cards).

### Game 1 Card Examples (answer in bold and five prohibited words):

Progressive supranuclear palsy	Bradykinesia	Stiff person syndrome
Hummingbird	Parkinsonism	Autoimmune
Eye	Small	GAD
Gaze	Rigidity	Diabetes
Falls	Slow	IVIG
Parkinsonism	Masked	Limbic encephalitis

### Game 2 Card examples:

Restless Legs Syndrome	Hemifacial spasm	Essential Tremor
------------------------	------------------	------------------

- Game 1 card themes included phenomenology, diagnosis, treatment, genetic mutations, signs and symptoms, workup, anatomy, and physiology. Game 2 cards were limited to diagnosis.
- Rules were adapted from parent games.
- 20 questions were developed by the authors (SMS and AVR), divided by topic, and split into 2 10-question tests (pre-test, post-test) with equal topic division.
- A survey was adapted from Moeller et al.[4]

### Study Implementation:

- Games were piloted with 3 movement disorders attendings and 2 movement disorders fellows (SMS and AVR), and adjustments made based on feedback.
- Games were implemented during a one-hour noon conference at the end of a separate 4-lecture MD block. The block was unaffiliated with the games.
- Pre- and post-tests and surveys were distributed via Qualtrics to participants.

Figure 1: Survey Question Responses

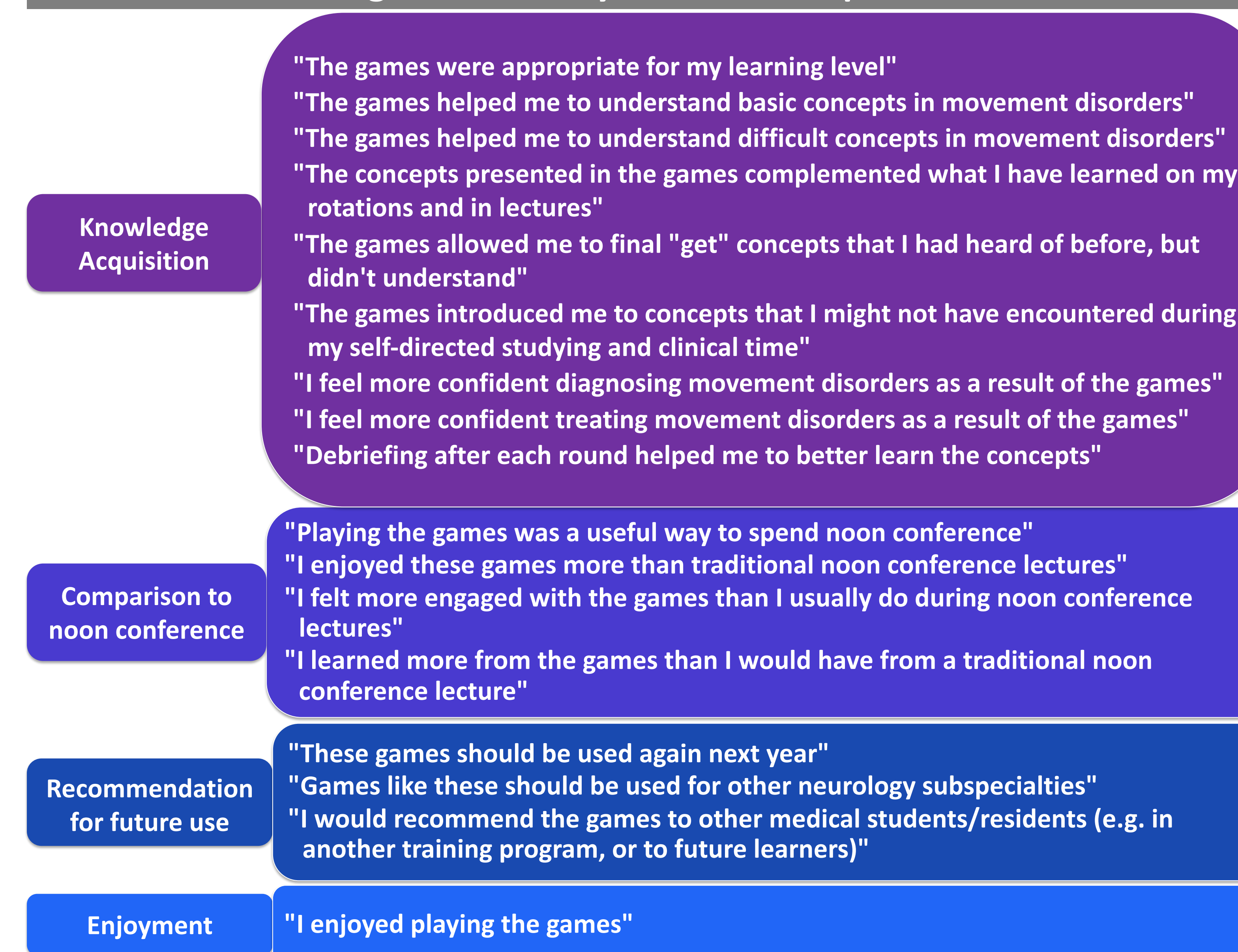


Figure 2: Quantitative Survey Answers

Mean Likert Scores within Survey Category Clusters (strongly disagree=1, neutral = 3, and strongly agree=5)

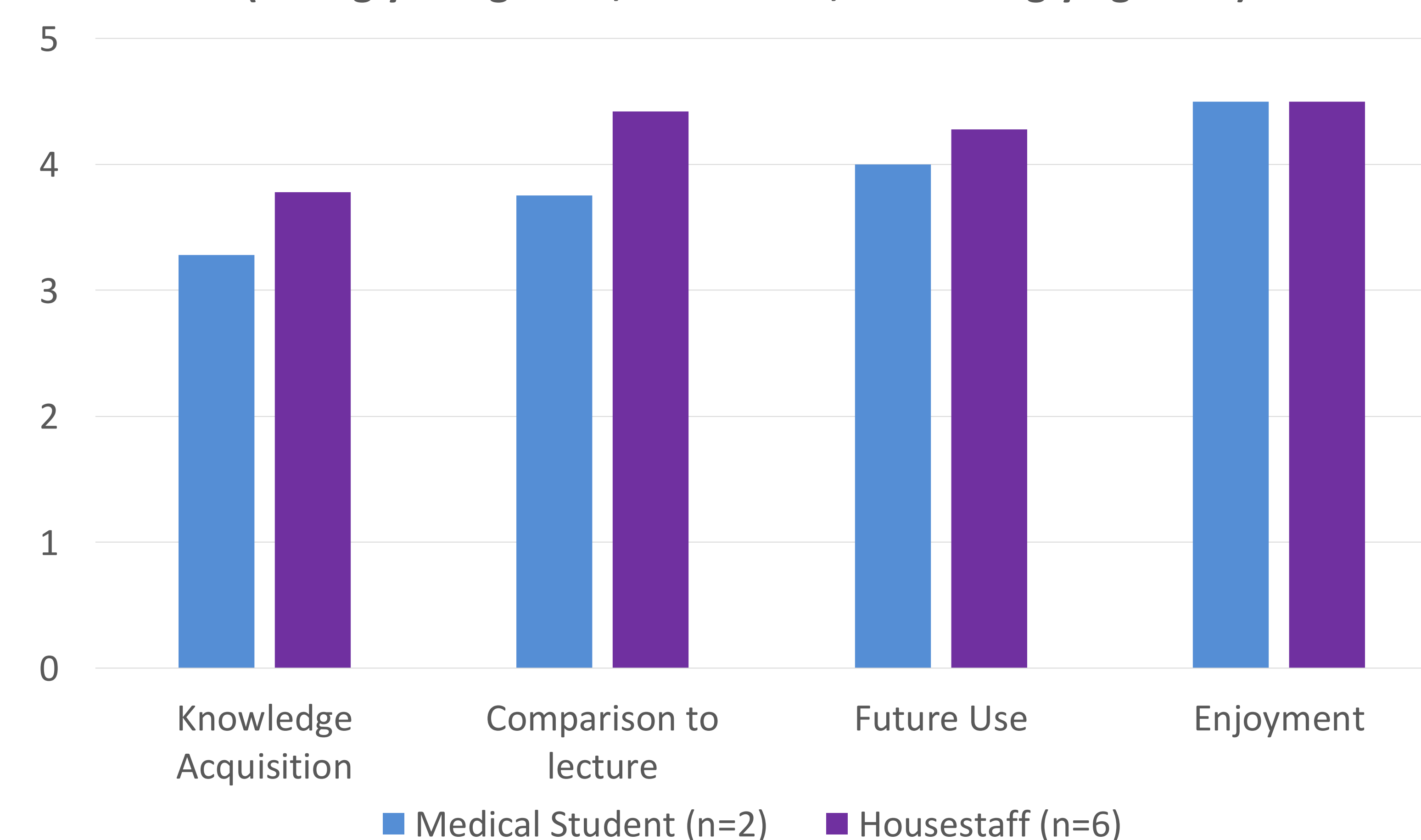
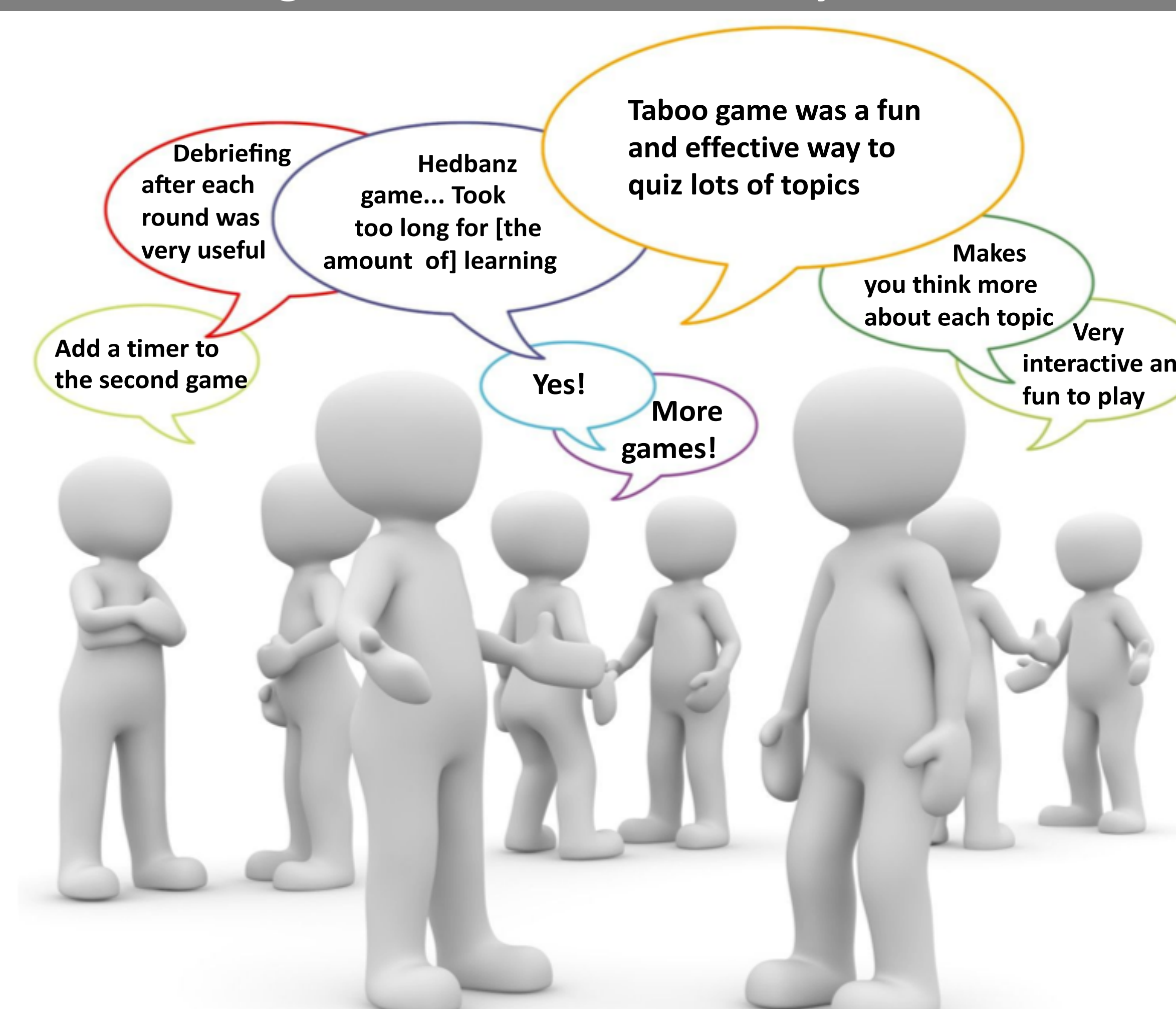


Figure 3: Qualitative Survey Answers



## RESULTS

- Nine participants completed the pre- and post-tests. Delayed post-test not yet completed. Differences between mean scores were not statistically significant using a paired t-test (0.64 (SD 0.20) vs. 0.54 (SD 0.30), p=0.2268).
- Eight participants completed the survey (6 residents and 2 medical students)
- Preceding MD block lecture attendance was 1.38/4 lectures (SD 0.74).
- Likert scale questions were divided into four clusters (Figure 1), and means (where strongly disagree=1 and strongly agree=5) are shown in Figure 2.
- Free text responses were coded by author SMS and organized into themes. The most common themes (Figure 3):
  1. the games were fun and engaging
  2. game 1 had more learning points per unit time than game 2
  3. debriefing with formal teaching points after each round elevated learning.
- Both medical students felt that the material was too advanced, while one PGY-4 resident felt it was too basic.
- One participant did not enjoy card games in general and did not respond favorably to the intervention.

## CONCLUSIONS

- Learners find games fun and engaging.
- Taboo adapted readily to use as an educational tool.
- Game 2 was less conducive to learning due to significant time used per card.
- Games were challenging for learners without much baseline knowledge.
- New knowledge acquisition was limited.

## FUTURE DIRECTIONS

- Game 2 would benefit from adjustments to maximize learning points per unit time (ex. time limit).
- Games could be adapted for different learner levels to maximize educational value.
- Games could be readily adapted to other medical topics.
- Games will be used again next year after residents have completed mandatory educational modules in movement disorders (currently being created and piloted). The aim is that the educational value of the games will be maximized with increased baseline knowledge.

## REFERENCES

1. Prober, C.G.; Heath, C. Lecture halls without lectures- a proposal for medical education. *NEJM* 2012, 366, 1657-1659.
2. Ryall, T.; Judd, B.K.; Gordon, C.J. Simulation-based assessments in health professional education: A systematic review. *J Multidiscip Healthc* 2016, 9, 69-82.
3. Khan, M.N.; Telmesani, A.; Alkhotani, A.; Elzouki, A.; Edrees, B.; Alsulimani, M.H. Comparison of jeopardy game format versus traditional lecture format as a teaching methodology in medical education. *Saudi Med J* 2011, 32, 1172-1176.
4. Moeller JJ, Farooque P, Leydon G, Dominguez M, Schwartz ML, Sadler RM. A video-based introductory EEG curriculum for neurology residents and other EEG learners. *MedEdPORTAL Publications*. 2017;13:10570. [https://doi.org/10.15766/mep\\_2374-8265.10570](https://doi.org/10.15766/mep_2374-8265.10570)

## ACKNOWLEDGEMENTS

- Elan Louis, Sule Tinaz, and Amar Patel for piloting the games.
- Diana Richardson for proctoring the games at the VA.
- Inspired by Zachary London and Matt Ebright.
- The Teaching and Learning Center, Yale School of Medicine