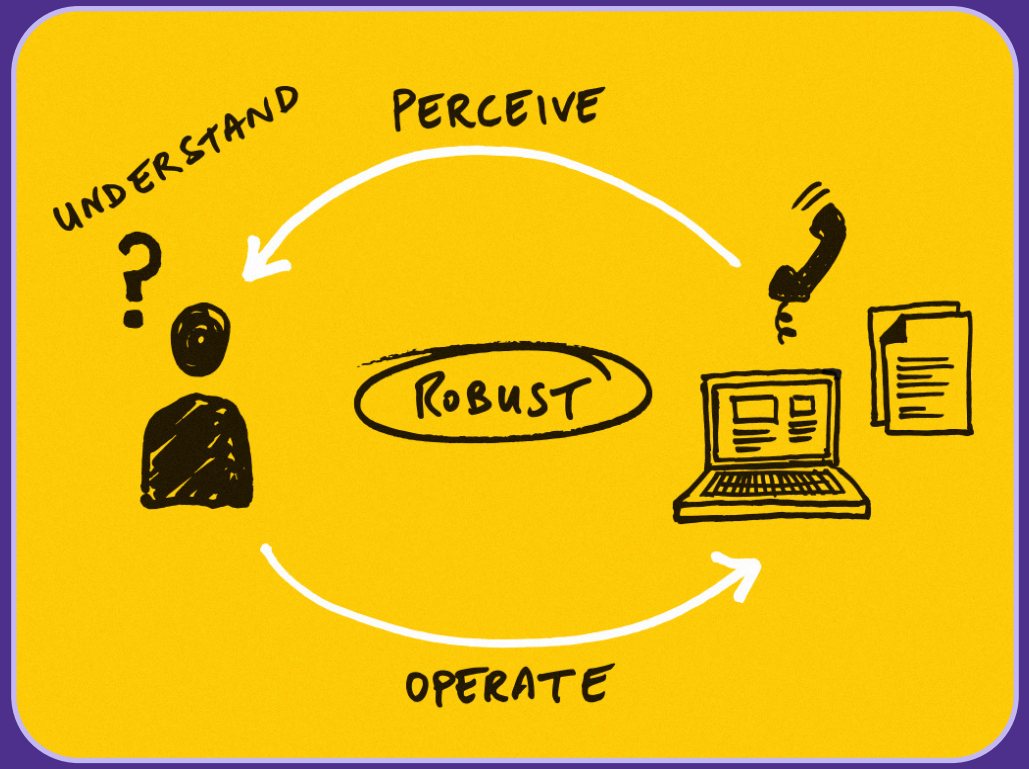
AI for research accessibility

AI for the Research Ecosystem Workshop, 22 March 2024

4 Principles of Accessibility

- Perceivable
- Understandable
- Operable
- Robust



Source: https://accessibility.blog.gov.uk/2016/05/16/what-we-mean-when-we-talk-about-accessibility-2/

Access is not accessibility

A total of 191 university students were enrolled in the study. The median age was 20 years. They were mostly male (66.5%) and aged 20-25. Students living with the family (67.5%) or living outside (72.8%) the campus were the most represented (Table 1).

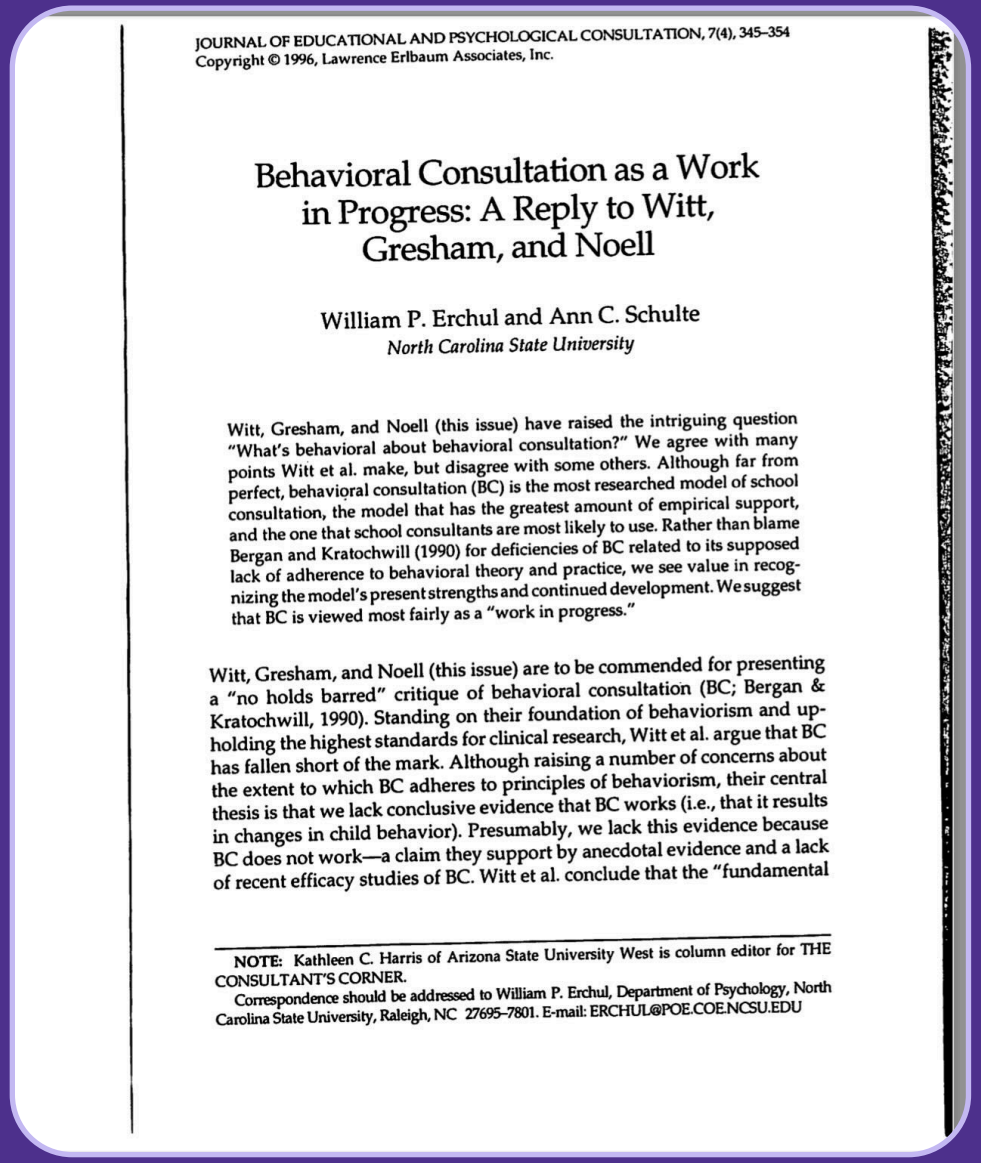
Collapse inline | View popup

Predictor	Alcohol Use n (%)		COR	p-value	AOR	95% CI		p-value
	Yes n=126	No n=65				Lower	Upper	
Sex								
Female	42 (65.6)	22 (34.4)	1					
Male	84 (66.1)	43 (33.9)	1.02	0.943				
Age group								
<20	36 (50.7)	35 (49.3)	1		1	—	—	
20-25	65 (74.7)	22 (25.3)	2.87	**0.002**	2.89	1.45	5.91	**0.003**
25-30	17 (73.9)	6 (26.1)	2.75	0.056	2.37	0.85	7.37	0.112
30-43	8 (80.0)	2 (20.0)	3.89	0.099	4.72	1.06	33.3	0.063
Living situation								
Family	83 (64.3)	46 (35.7)	1					
Alone	31 (64.6)	17 (35.4)	1.01	0.976				
Collocation	12 (85.7)	2 (14.3)	3.33	0.126				
Study level								
Bachelor	98 (63.2)	57 (36.8)	1					
Master	24 (82.8)	5 (17.2)	2.79	**0.048**				
Doctorate	4 (57.1)	3 (42.9)	0.78	0.745				
Faculty & school								
Literature	18 (72.0)	7 (28.0)	1					
Sciences	82 (64.6)	45 (35.4)	0.71	0.475				
Medicine	16 (64.0)	9 (36.0)	0.69	0.545				
Polytechnic	6 (66.7)	3 (33.3)	0.78	0.764				
Others	4 (80.0)	1 (20.0)	1.56	0.713				
Living in the campus								
Yes	30 (57.7)	22 (42.3)	1		1	—	—	
No	96 (69.1)	43 (30.9)	1.64	0.141	1.72	0.84	3.50	0.134
District of residence								
Nkolndongo	4 (57.1)	3 (42.9)	1					
Biyem-Assi	23 (59.0)	16 (41.0)	1.08	0.928				
Djoungolo	7 (87.5)	1 (12.5)	5.25	0.207				
Efoulan	66 (66.0)	34 (34.0)	1.46	0.635				
Mvog-Ada	4 (66.7)	2 (33.3)	1.50	0.725				
Nkolbisson	8 (80.0)	2 (20.0)	3.00	0.318				
Odza	6 (75.0)	2 (25.0)	2.25	0.468				
Others	8 (61.5)	5 (38.5)	1.20	0.848				
Residential area								
Urban	113 (65.7)	59 (34.3)	1					
Rural	13 (68.4)	6 (31.6)	1.13	0.812				
Social charge								
Yes	19 (70.4)	8 (29.6)						
No	107 (65.2)	57 (34.8)	0.79	0.603				
Smoking								
No	75 (59.1)	52 (40.9)	1		1	—	—	
Yes	51 (79.7)	13 (20.3)	2.72	**0.005**	2.68	1.31	5.72	**0.008**
Drug use								
No	87 (62.1)	53 (37.9)	1					
Yes	39 (76.5)	12 (23.5)	1.98	0.067				

COR: Crude Odds Ratio; AOR: Adjusted Odds Ratio; CI: Confidence Interval

Blurry tables ☹

Discoverable is not accessible



JOURNAL OF EDUCATIONAL AND PSYCHOLOGICAL CONSULTATION, 7(4), 345–354

Behavioral Consultation as a Work in Progress: A Reply to Witt, Gresham, and Noell

William P. Erchul and Ann C. Schulte
North Carolina State University

Witt, Gresham, and Noell (this issue) have raised the intriguing question "What's behavioral about behavioral consultation?" We agree with many points Witt et al. make, but disagree with some others. Although far from perfect, behavioral consultation (BC) is the most researched model of school consultation, the model that has the greatest amount of empirical support, and the one that school consultants are most likely to use. Rather than blame Bergan and Kratochwill (1990) for deficiencies of BC related to its supposed lack of adherence to behavioral theory and practice, we see value in recognizing the model's present strengths and continued development. We suggest that BC is viewed most fairly as a "work in progress."

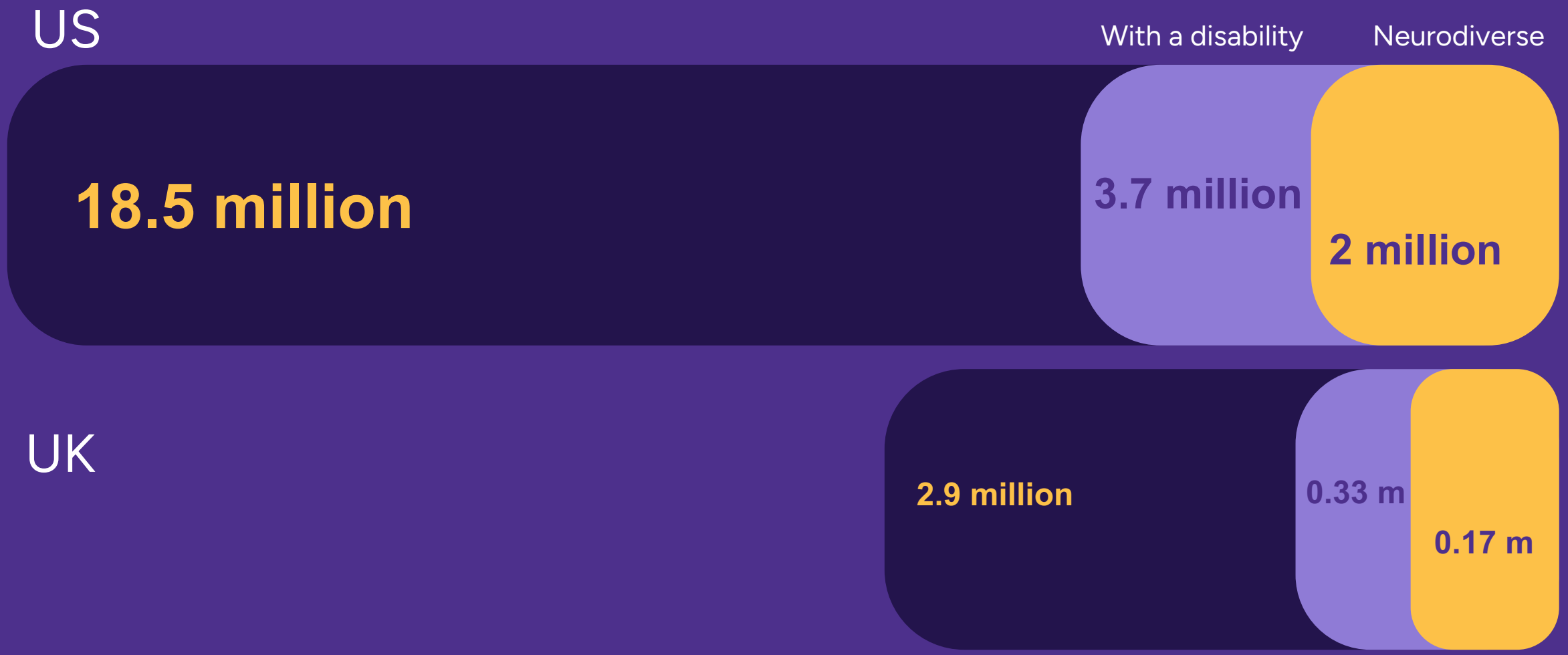
Witt, Gresham, and Noell (this issue) are to be commended for presenting a "no holds barred" critique of behavioral consultation (BC; Bergan & Kratochwill, 1990). Standing on their foundation of behaviorism and upholding the highest standards for clinical research, Witt et al. argue that BC has fallen short of the mark. Although raising a number of concerns about the extent to which BC adheres to principles of behaviorism, their central thesis is that we lack conclusive evidence that BC works (i.e., that it results in changes in child behavior). Presumably, we lack this evidence because BC does not work—a claim they support by anecdotal evidence and a lack of recent efficacy studies of BC. Witt et al. conclude that the "fundamental

NOTE: Kathleen C. Harris of Arizona State University West is column editor for THE CONSULTANT'S CORNER.

Correspondence should be addressed to William P. Erchul, Department of Psychology, North Carolina State University, Raleigh, NC 27695-7801. E-mail: ERCHUL@POE.COE.NCSU.EDU

Low-res scan ☹

US vs UK students in higher education



Neurodiversity needs

- Difficulty focusing – identifying what is important
- Feelings of overwhelm – not knowing where to start
- Sensory overload – too much information at once

Common challenges

A route into the literature

Reduction of cognitive load

‘Chat to your documents’ gives answers …

… but not understanding or learning

Verify and compare

Analyse and synthesise

What works

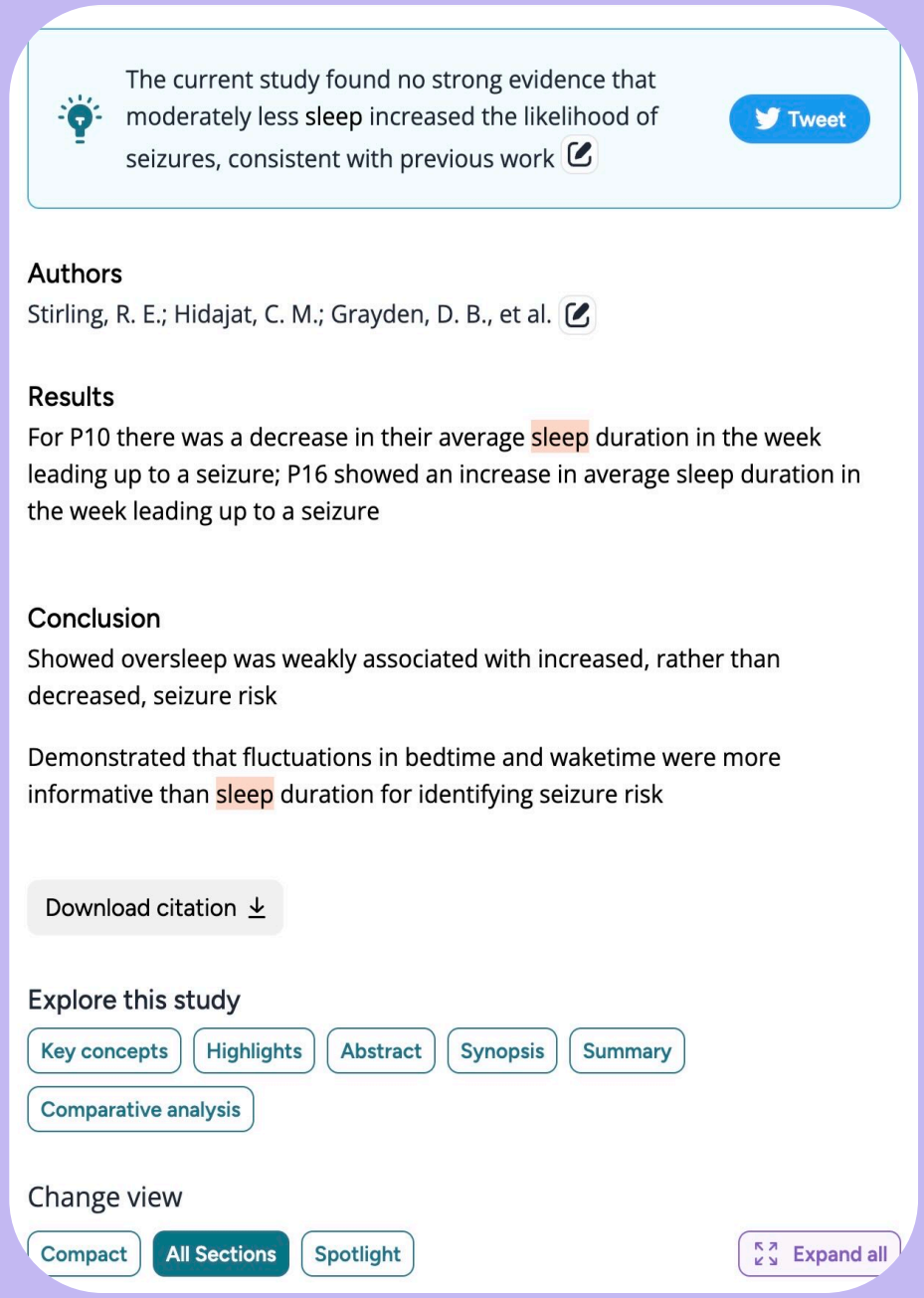
- Self-testing (retrieval practice)
- Spaced repetition (flashcards)
- Interleaving (non-linear exploration)

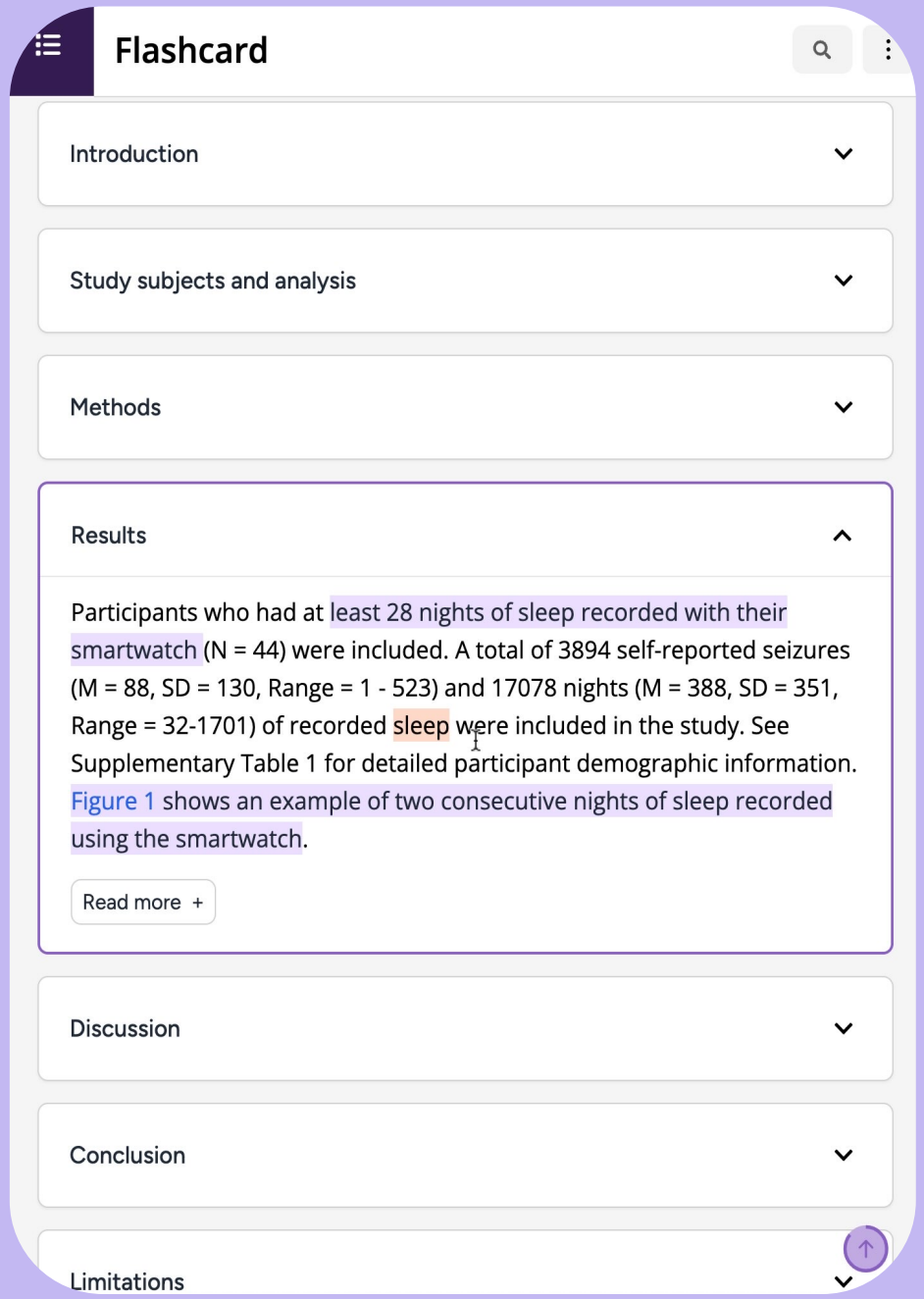
AI beyond discovery and chat

Technical approach

- Combine generative AI with traditional machine learning and symbolic AI
- Classifiers preselect content to feed to LLMs
- Exclude generated entities not in the original text

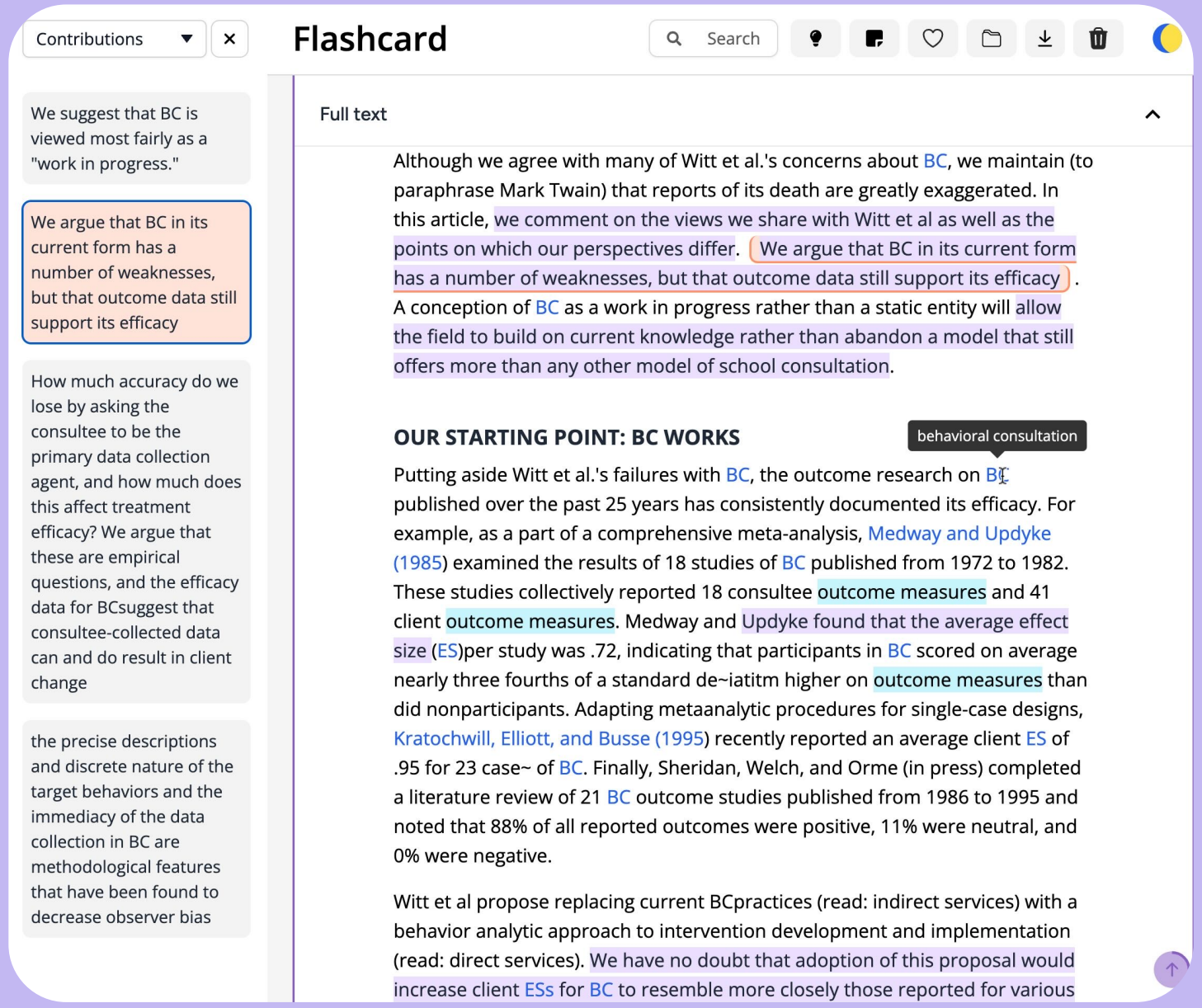
Inverted pyramid





Distillation

Interactivity

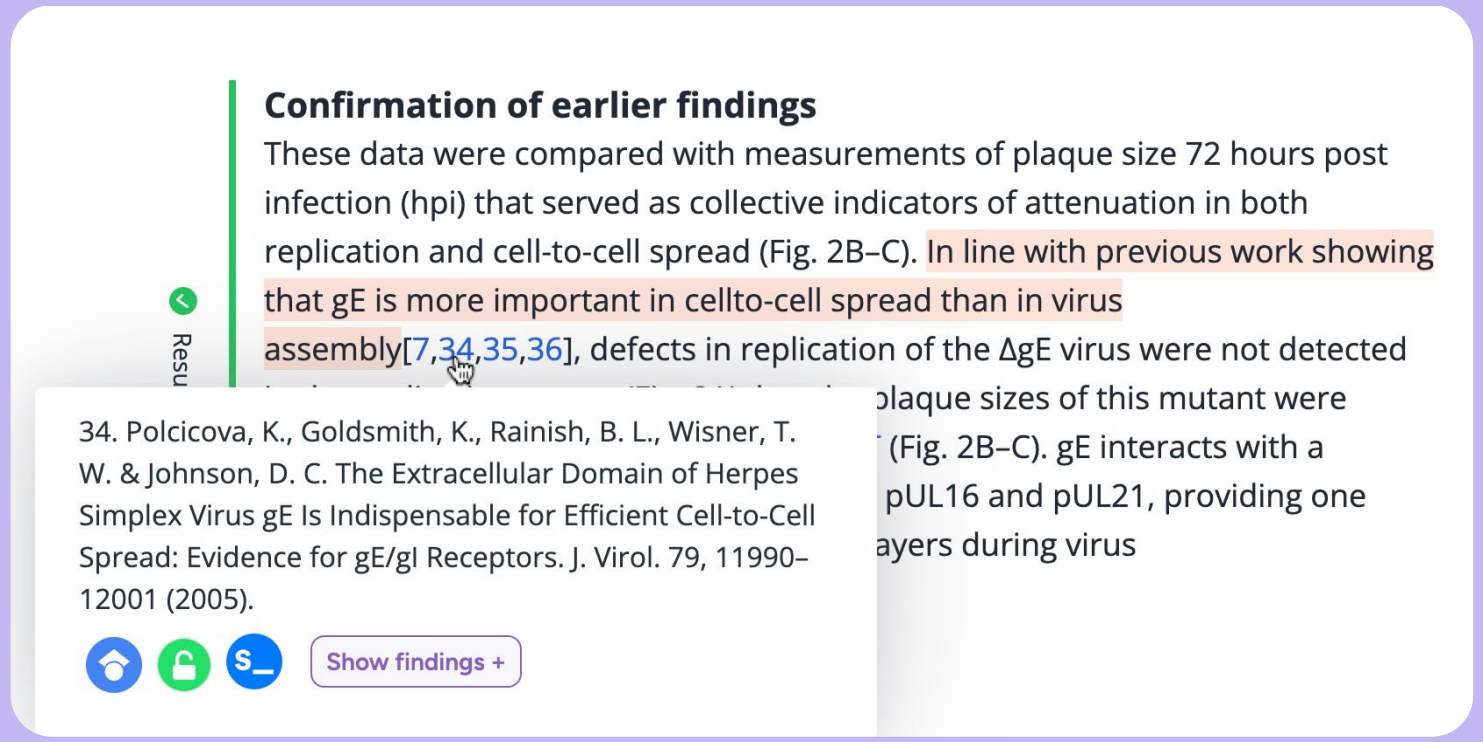


Legible tables

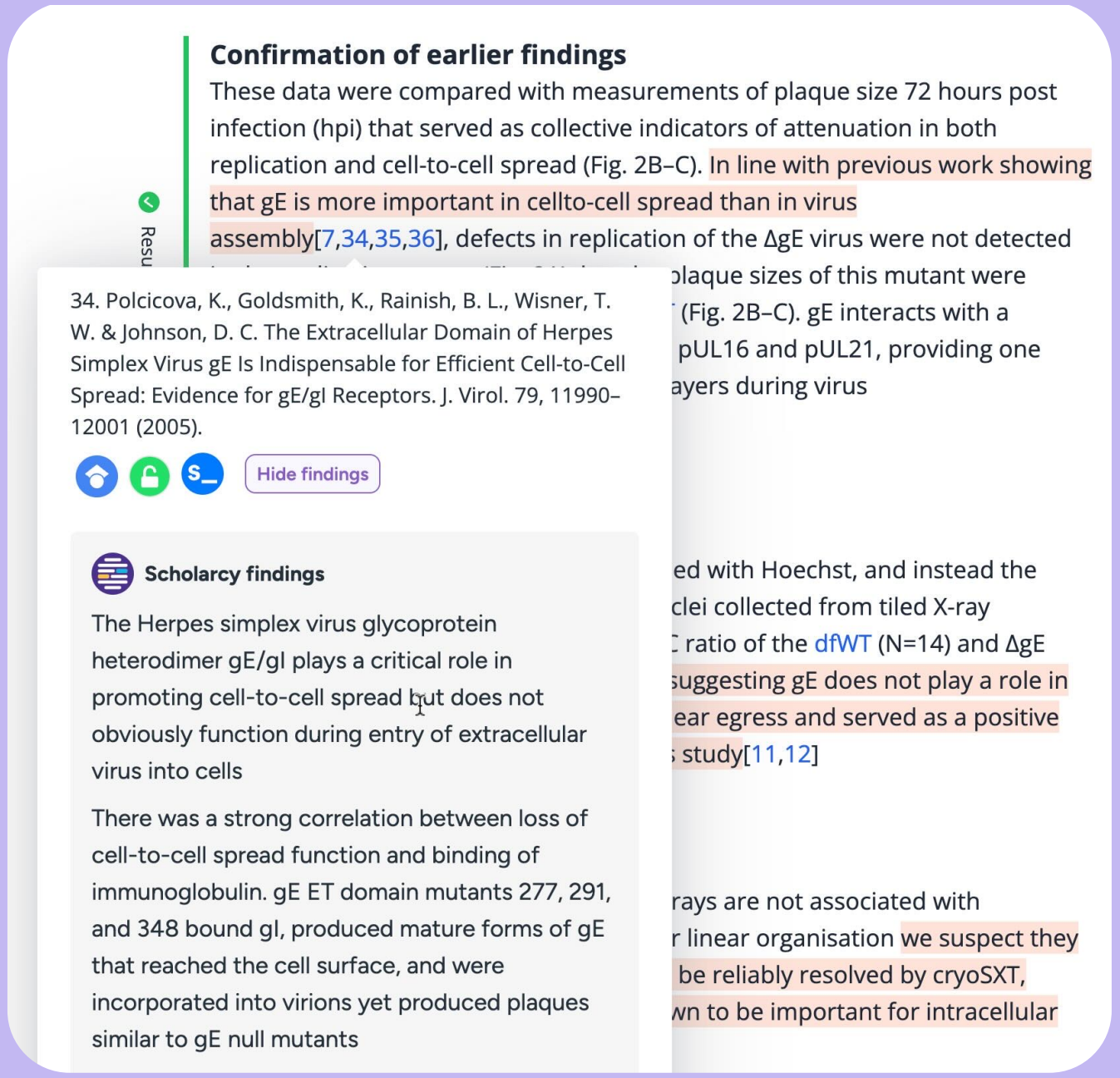
Download image

Predictor	Alcohol Use *n* (%)		COR	*p*-value	AOR	95% CI		*p*-value
	Yes *n*=126	No *n*=65				Lower	Upper	
Sex								
Female	42 (65.6)	22 (34.4)	1					
Male	84 (66.1)	43 (33.9)	1.02	0.943				
Age group								
<20	36 (50.7)	35 (49.3)	1		1	—	—	
20-25	65 (74.7)	22 (25.3)	2.87	**0.002**	2.89	1.45	5.91	**0.003**
25-30	17 (73.9)	6 (26.1)	2.75	0.056	2.37	0.85	7.37	0.112
30-43	8 (80.0)	2 (20.0)	3.89	0.099	4.72	1.06	33.3	0.063
Living situation								
Family	83 (64.3)	46 (35.7)	1					
Alone	31 (64.6)	17 (35.4)	1.01	0.976				
Collocation	12 (85.7)	2 (14.3)	3.33	0.126				
Study level								
Bachelor	98 (63.2)	57 (36.8)	1					
Master	24 (82.8)	5 (17.2)	2.79	**0.048**				
Doctorate	4 (57.1)	3 (42.9)	0.78	0.745				
Faculty & school								
Literature	18 (72.0)	7 (28.0)	1					
Sciences	82 (64.6)	45 (35.4)	0.71	0.475				
Medicine	16 (64.0)	9 (36.0)	0.69	0.545				
Polytechnic	6 (66.7)	3 (33.3)	0.78	0.764				
Others	4 (80.0)	1 (20.0)	1.56	0.713				

Comparative analysis



Verification



Confirmation of earlier findings

These data were compared with measurements of plaque size 72 hours post infection (hpi) that served as collective indicators of attenuation in both replication and cell-to-cell spread (Fig. 2B–C). In line with previous work showing that gE is more important in cellto-cell spread than in virus assembly[7,34,35,36], defects in replication of the ΔgE virus were not detected

Resu

laque sizes of this mutant were

(Fig. 2B–C). gE interacts with a

pUL16 and pUL21, providing one

ayers during virus

ed with Hoechst, and instead the

clei collected from tiled X-ray

ratio of the dfWT (N=14) and ΔgE

suggesting gE does not play a role in

ear egress and served as a positive

study[11,12]

rays are not associated with

r linear organisation we suspect they

be reliably resolved by cryoSXT,

wn to be important for intracellular

34. Polcicova, K., Goldsmith, K., Rainish, B. L., Wisner, T. W. & Johnson, D. C. The Extracellular Domain of Herpes Simplex Virus gE Is Indispensable for Efficient Cell-to-Cell Spread: Evidence for gE/gI Receptors. J. Virol. 79, 11990–12001 (2005).

Hide findings

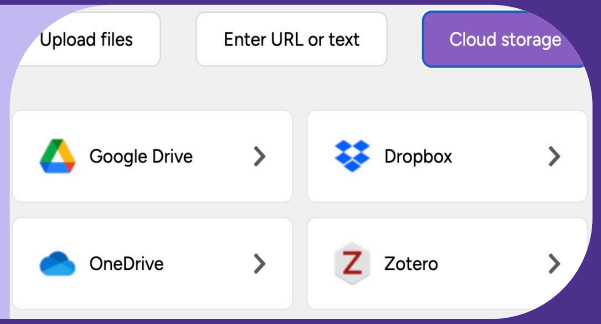
Scholarcy findings

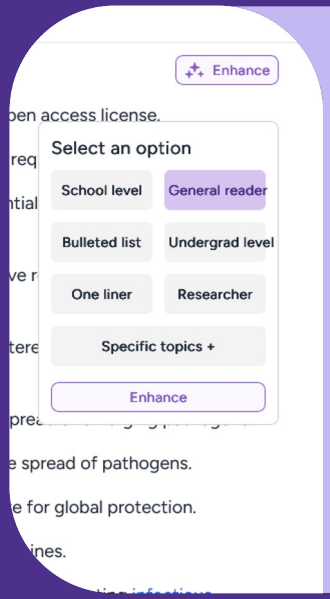
The Herpes simplex virus glycoprotein heterodimer gE/gI plays a critical role in promoting cell-to-cell spread but does not obviously function during entry of extracellular virus into cells

There was a strong correlation between loss of cell-to-cell spread function and binding of immunoglobulin. gE ET domain mutants 277, 291, and 348 bound gI, produced mature forms of gE that reached the cell surface, and were incorporated into virions yet produced plaques similar to gE null mutants

Possible research workflow

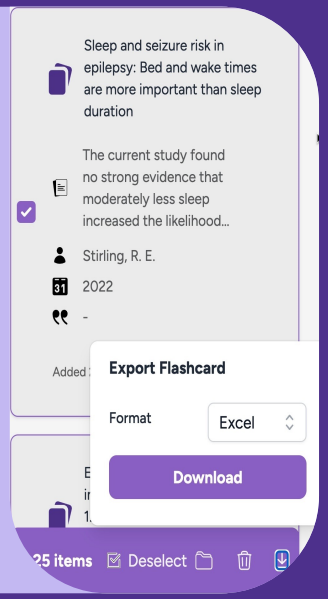
Import from anywhere

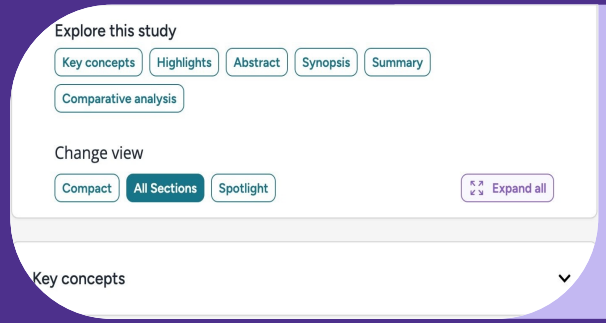




Explain for different audiences

Export to anywhere





Explore and analyse interactively

Bibliography

- https://register.gotowebinar.com/register/4341129161972491 20
- https://www.keg.com/news/how-universities-can-better-welcome-neurodiverse-students
- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10024274/
- https://www.theguardian.com/society/2022/mar/10/just-29-of-students-in-england-with-disabilities-receiving-dsa-allowance-analysis
- https://nces.ed.gov/fastfacts/display.asp?id=60
- https://blog.innerdrive.co.uk/retrieval-practice-vs-other-strategies
- https://www.innerdrive.co.uk/guides/the-best-ways-to-revise/

scholarcy

Thanks for listening!
Questions?

Phil Gooch
Founder, Scholarcy
phil@scholarcy.com