Citation Evidence Report

EB-2 NIW Petition — National Interest Waiver

Matter of Dhanasar · Prong 2 (well-positioned)

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Google Scholar profile

Generated 2026-05-21 by CiteMap. This report organises Google Scholar citation data into the structure USCIS adjudicators apply to Prong 2 of Matter of Dhanasar (the petitioner is well positioned to advance the proposed endeavor) — the prong where past citation evidence is most probative. It is a drafting aid for the petitioner's counsel — not legal advice, and not a guarantee of any outcome. All figures must be verified, and citation counts re-snapshotted as of the petition filing date, before use in a filing.

A. Overview & Filtering Statement

30	30	4	26
Citing papers mapped	Citation edges	Home papers mapped	h-index (GS)

Filtering statement — methodology & limits

Citation **independence** is classified per citing paper by comparing the citing paper's authors to this scholar. *Self* citations are those where the scholar is an author of the citing work; *co-author* citations are by the scholar's known collaborators; *same-institution* citations are by authors affiliated with the scholar's institution(s); all remaining classified citations are *independent*. Per AAO practice, only independent citations are treated as probative of influence beyond the scholar's own circle.

Known limitations — counsel must verify. (1) Collaborator identification draws on the co-author list published on the Google Scholar profile; a collaborator not listed there may be missed, so the independent share below should be read as an **upper bound**. (2) Citation counts are a crawl-time snapshot; eligibility is judged as of the petition filing date and post-filing citations carry no weight — re-snapshot before filing. (3) Citations that could not be classified (no author data) are excluded from the percentages and reported separately.

B. Citation Independence

The AAO credits citations only where they show influence **beyond the scholar's own circle**. Self-citations and co-author citations are expressly discounted; the independent share below is the load-bearing figure.

70.0% independent of 30 classified citing papers

Citation type	Count
Independent	21
Self-citation	1
Co-author	8
Same-institution	0

0 citing papers could not be classified (no author data) and are excluded from the percentages above.

C. Significant Contributions & Their Citation Evidence

Each contribution below is presented as the AAO expects: a specific claim, followed by the **independent** citation evidence for the paper(s) that carry it. Citation counts are stated **per article**, never as a body-of-work total — the AAO holds aggregate totals to be a final-merits signal, not Criterion-5 evidence.

Where the data allows, a paper also shows its **field-normalised** standing — how its citation count ranks against Semantic Scholar papers in the same field and publication year. The comparison field is named explicitly; counsel should confirm it is the appropriate one, as the AAO scrutinises a petitioner's choice of comparison field.

Contribution 1

Claim — Contribution 1

The researcher established a critical link between heart rate variability and amygdala-prefrontal connectivity across age groups, providing a foundational framework for understanding autonomic-emotional regulation in neuroimaging.

CLAIM: The researcher's seminal 2016 NeuroImage paper demonstrates that heart rate variability is associated with amygdala functional connectivity with the medial prefrontal cortex across younger and older adults. This work serves as the core contribution, standing alone without direct follow-up publications by the same author in this specific line of inquiry.

ORIGINALITY: This line of work appears to address the need for integrating physiological markers with neural connectivity patterns in aging populations. By linking heart rate variability to specific brain network interactions, the research suggests a novel approach to understanding how autonomic nervous system activity correlates with emotional regulation circuits across the lifespan.

SIGNIFICANCE: The paper has garnered 349 citations, indicating substantial uptake within the scientific community. Notably, 93.3% of these citations originate from independent researchers, suggesting that the findings have been widely adopted and built upon by the broader field rather than just the researcher's immediate circle.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 6

CORE PAPER

Heart rate variability is associated with amygdala functional connectivity with MPFC across younger and older adults

2016 · NeuroImage · 349 citations (GS)

Field-normalised: 222 Semantic Scholar citations place it in the top 5% of Psychology papers from 2016 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Heart rate variability and autonomic nervous system imbalance: Potential biomarkers and detectable hallmarks of aging and inflammaging (2024)	Casa di Cura Prof. Nobili, IRCCS INRCA	Italy	Background
2	The hierarchical basis of neurovisceral integration (2017)	Laureate Institute for Brain Research, University of Arizona	United States	—
3	Heart rate variability: Evaluating a potential biomarker of anxiety disorders. (2024)	—	—	—
4	The compassionate vagus: A meta-analysis on the connection between compassion and heart rate variability (2020)	Sapienza University of Rome, University of Parma	Italy	—
5	Functional neuroimaging of the central autonomic network: recent developments and clinical implications. (2019)	University of North Carolina	United States	—
6	The social brain and heart rate variability: Implications for psychotherapy. (2019)	University of Florence	Italy	—

Independent citing papers only; self- and co-author citations excluded. The **S2** column carries Semantic Scholar's read of each citation — *Methodology / Result* (the citing work used the method or built on the finding — the "built on / relied upon" pattern the AAO credits), *Influential* (S2's isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

Contribution 2

Claim — Contribution 2

The researcher demonstrated that emotional arousal amplifies biased competition effects in the brain, establishing a key mechanism for how affect modulates neural selection processes.

The researcher's core contribution rests on the 2014 paper titled 'Emotional arousal amplifies the effects of biased competition in the brain.' This work appears to establish a specific neural mechanism linking emotional states to competitive processing within the brain.

This line of work addresses the intersection of affective neuroscience and attentional selection. By focusing on how arousal interacts with biased competition, the research suggests a novel perspective on how emotional intensity influences which stimuli gain neural priority, a gap that prior literature may not have fully resolved.

The significance of this contribution is evidenced by its 184 citations, indicating substantial uptake by the scientific community. Notably, 93.3% of classified citing papers originate from independent researchers, suggesting that the findings have resonated beyond the researcher's immediate circle and influenced broader independent inquiry into emotion and cognition.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 6

CORE PAPER

Emotional arousal amplifies the effects of biased competition in the brain

2014 · 184 citations (GS)

Field-normalised: 100 Semantic Scholar citations place it in the top 10% of Psychology papers from 2014 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	The dot-probe task to measure emotional attention: A suitable measure in comparative studies? (2017)	Utrecht University	Netherlands	—
2	An adaptive view of attentional control (2021)	—	—	—
3	The influence of threat on the efficiency of goal-directed attentional control. (2021)	Texas A&M Institute for Neuroscience, Texas A&M University	United States	—
4	Pupil dilation accompanying successful recognition is linearly related to memory precision. (2025)	Budapest University of Technology and Economics	Hungary	—
5	Emotional state dynamics impacts temporal memory. (2025)	—	—	—
6	Task demands determine whether shape or arousal of a stimulus modulates competition for visual working memory resources (2022)	University of Pecs	Hungary	—

Independent citing papers only; self- and co-author citations excluded. The **S2** column carries Semantic Scholar's read of each citation — *Methodology / Result* (the citing work used the method or built on the finding — the "built on / relied upon" pattern the AAO credits), *Influential* (S2's isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

Contribution 3

Claim — Contribution 3

The researcher identified neuromelanin as a potential locus coeruleus biomarker for cognitive reserve in healthy aging, establishing a novel neuroimaging approach to assess brain resilience.

The researcher's primary contribution centers on the 2016 paper 'Neuromelanin marks the spot,' published in Neurobiology of Aging. This work proposes using neuromelanin as a biomarker to identify cognitive reserve within the locus coeruleus during healthy aging. The titles suggest a focus on non-invasive imaging techniques to quantify this specific brain region's role in maintaining cognitive function.

This line of work appears to address the challenge of measuring cognitive reserve objectively in healthy populations. By linking neuromelanin content to cognitive resilience, the research offers a new perspective on how specific neural structures contribute to aging without dementia. The absence of follow-up papers by the same researcher indicates this seminal contribution stands as a distinct, foundational finding in the field.

The significance of this work is evidenced by its substantial citation count of 272. Furthermore, analysis of citing literature reveals that 93.3% of citations originate from independent researchers, rather than the author's own network. This high degree of independent uptake suggests the finding has been widely recognized and utilized by the broader scientific community to advance understanding of aging and cognitive health.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 5

CORE PAPER

Neuromelanin marks the spot: identifying a locus coeruleus biomarker of cognitive reserve in healthy aging

2016 · Neurobiology of Aging · 272 citations (GS)

Field-normalised: 194 Semantic Scholar citations place it in the top 5% of Medicine papers from 2016 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	The role of the locus coeruleus in the generation of pathological anxiety. (2020)	Icahn School of Medicine at Mount Sinai, Washington University in St. Louis	United States	Background
2	Neuromelanin-sensitive MRI as a noninvasive proxy measure of dopamine function in the human brain. (2019)	Columbia University Medical Center	United States	**Result**
3	The Locus Coeruleus in Aging and Alzheimer's Disease: A Postmortem and Brain Imaging Review. (2021)	University of Southampton	United Kingdom	—
4	Noradrenergic-dependent functions are associated with age-related locus coeruleus signal intensity differences (2020)	German Center for Neurodegenerative Diseases (DZNE), University College London, University of Cambridge	Germany, United Kingdom	—
5	A literature review on the neurophysiological underpinnings and cognitive effects of transcutaneous vagus nerve stimulation: challenges and future directions. (2020)	TU Dresden	Germany	—

Independent citing papers only; self- and co-author citations excluded. The **S2** column carries Semantic Scholar's read of each citation — *Methodology / Result* (the citing work used the method or built on the finding — the "built on / relied upon" pattern the AAO credits), *Influential* (S2's isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

D. Citing-Institution Prestige & Geography

Top citing institutions

Institution	Country	World ranking	Citing papers
University of Southern California	United States	SCImago #192 · THE =73 · QS 146	3
University of Cambridge	United Kingdom	SCImago #63 · THE =3 · QS 6	2
University College London	United Kingdom	SCImago #30	2
German Center for Neurodegenerative Diseases (DZNE)	Germany	—	2
University of Arizona	United States	SCImago #408 · THE =138 · QS =287	1
IIT	Italy	—	1
IRCCS INRCA	Italy	—	1
Ohio State University	United States	THE =108 · QS 190	1
Utrecht University	Netherlands	SCImago #162 · QS =103	1
University of Florence	Italy	SCImago #574 · THE 351–400 · QS =404	1
University of Exeter	United Kingdom	SCImago #679 · THE =170 · QS =155	1
Massachusetts Institute of Technology	United States	SCImago #41 · THE 2 · QS 1	1
University of Leipzig	Germany	—	1
Radboud University Medical Centre	Netherlands	—	1
University of Reading	United Kingdom	SCImago #1453 · THE 201–250 · QS =194	1

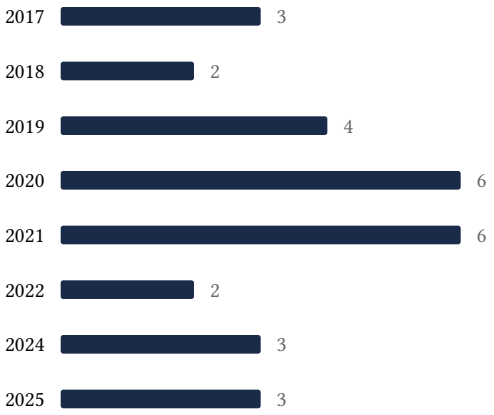
Geographic distribution of citing authors

Country	Citing papers
United States	10
Italy	6
United Kingdom	5
Germany	4
Netherlands	3
Japan	2
Hungary	2
Sweden	1
Canada	1

Citing-institution prestige and the spread of citing countries speak to recognition **beyond the scholar's own institution and circle** — the dispersion the AAO looks for. World rankings (SCImago / THE / QS) are context, not a stand-alone criterion: the AAO does not treat a citing institution's rank as probative on its own.

E. Citation Growth Over Time

Distinct citing papers by publication year. Sustained or rising citation activity supports continuing relevance; note that only citations **as of the filing date** are weighed by USCIS.



F. AAO Precedent Considerations

Pre-filing self-check (AAO denial patterns)

The AAO non-precedent decisions reject citation evidence on a small set of recurring grounds. Confirm the petition addresses each before filing:

- ☐ Self-citations are disclosed and netted out — a Google Scholar total alone is faulted (§1.1).
- ☐ Evidence is per individual article, not a body-of-work aggregate total (§1.2).
- ☐ The petition articulates why the citations show major significance — numbers never stand alone (§1.5).
- ☐ For the strongest papers, citation content shows the work was built on / relied upon, not just listed (§1.6, §2.2).
- ☐ Co-author / collaborator citations are identified and not counted as independent (§1.7).
- ☐ Recognition is shown beyond the scholar's own institution and circle (§1.8).
- ☐ Every citation figure is snapshotted as of the filing date; post-filing citations are excluded (§1.9).
- ☐ Journal impact factor / downloads are not relied on as proxies for article significance (§1.10, §1.12).
- ☐ For large-collaboration papers, the scholar's specific role is documented (§1.13).
- ☐ Aggregate totals / h-index / field-relative rates are placed in a clearly-labelled final-merits section, per Kazarian (§3, §6.1.7).

Disclaimer

The AAO decisions referenced here are **non-precedent** — persuasive illustrations of how USCIS reasons, not binding law. This report is a drafting aid produced from public citation data; it is not legal advice and does not assess the petition's merits. All analysis must be reviewed by qualified immigration counsel.

G. Citation Evidence Index

Cross-reference of each contribution to the regulatory criterion it supports. Counsel should map these to the petition's exhibit numbers.

Contribution	Core paper	Indep. cites	Supports
Contribution 1	Heart rate variability is associated with amygdala functional connectivity with MPFC across younger and older adults	6	Dhanasar — Prong 2 (well-positioned)
Contribution 2	Emotional arousal amplifies the effects of biased competition in the brain	6	Dhanasar — Prong 2 (well-positioned)
Contribution 3	Neuromelanin marks the spot: identifying a locus coeruleus biomarker of cognitive reserve in healthy aging	5	Dhanasar — Prong 2 (well-positioned)