

**Can you prove  
it?**

**An introduction to plural science for  
interested systems**



# Content Warning

- **Bad science**
  - Medicalism
  - Fake Claiming
  - Abuse

# About us

- Traumagenic system of many
- No professional scientist
- **Self-Plug**
  - Podcast
  - Little research project
  - Github

[github.com/plural-activism/presentation\\_introduction-to-plural-science](https://github.com/plural-activism/presentation_introduction-to-plural-science)

[papers.plural.ziegel.me](http://papers.plural.ziegel.me)

# **Step 0: Preparations**

**50% of the time,  
statistics is  
important all of  
the time**



# Theory of Science

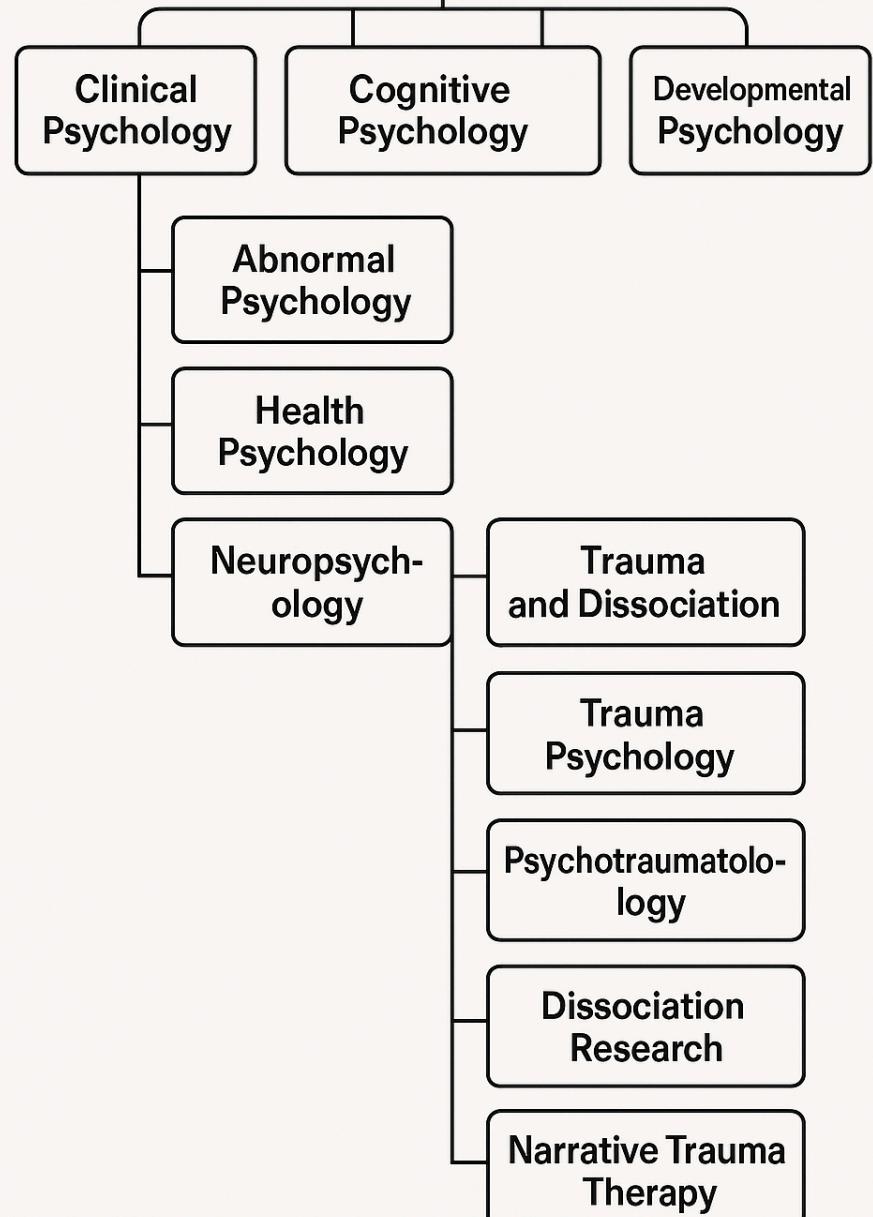
- Find
- Read
- Contextualize

# Psychology

Overrated af, ngl

*zeta, 2025*

## Psychology





# **Step 1: Reading research**

# **What to read?**

## Where to find papers?



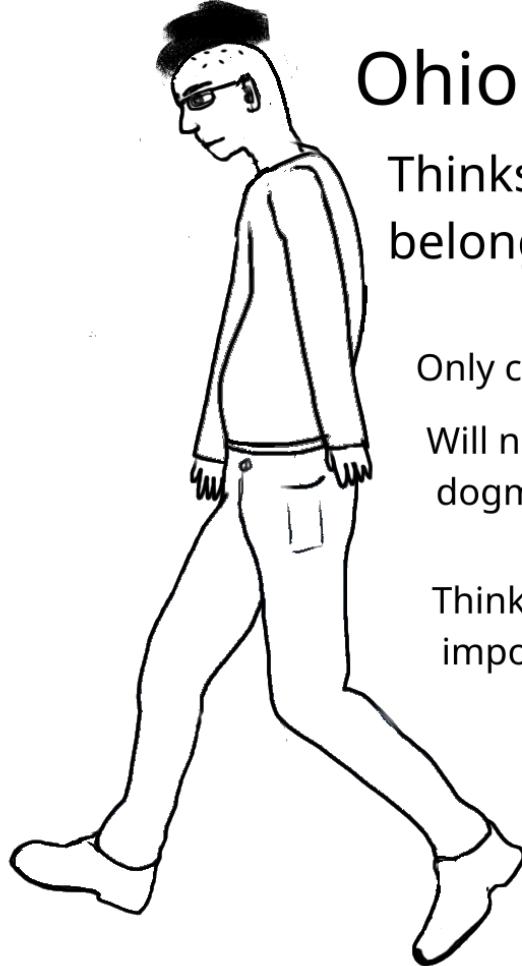
Google  
Scholar



and many more!



Friends &  
Researcher



## Ohio Academic

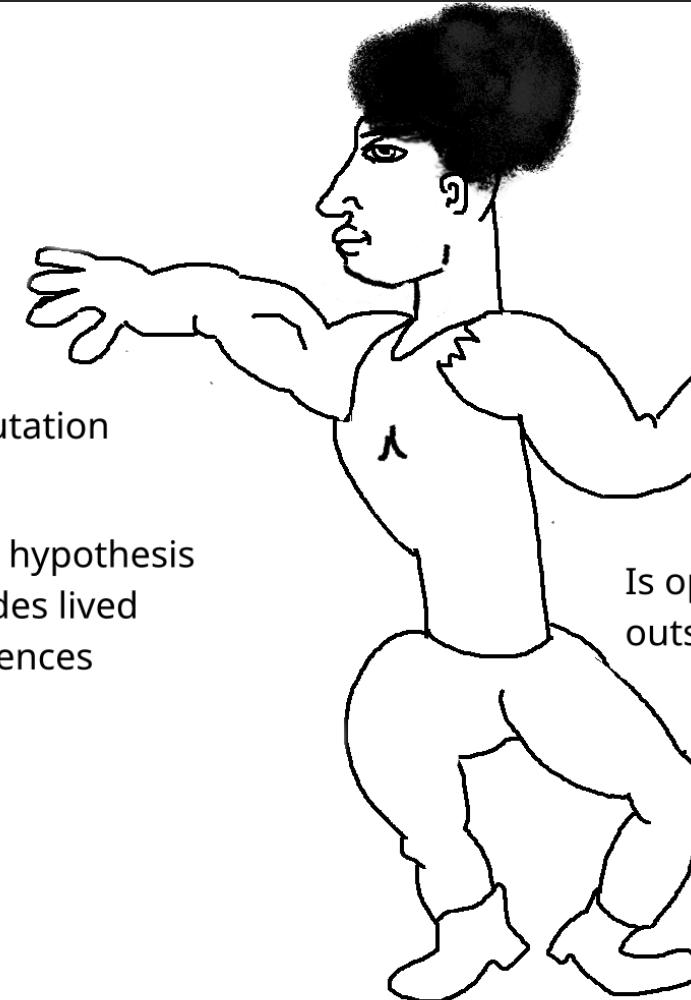
Thinks their results belongs behind a paywall

Only cares about the H-Index / Reputation

Will not challenge the dogma of their field

Thinks authority is more important than evidence

"I don't believe that"



## Top Aura Researcher

Shares their results freely

Openly pursue knowledge without fear

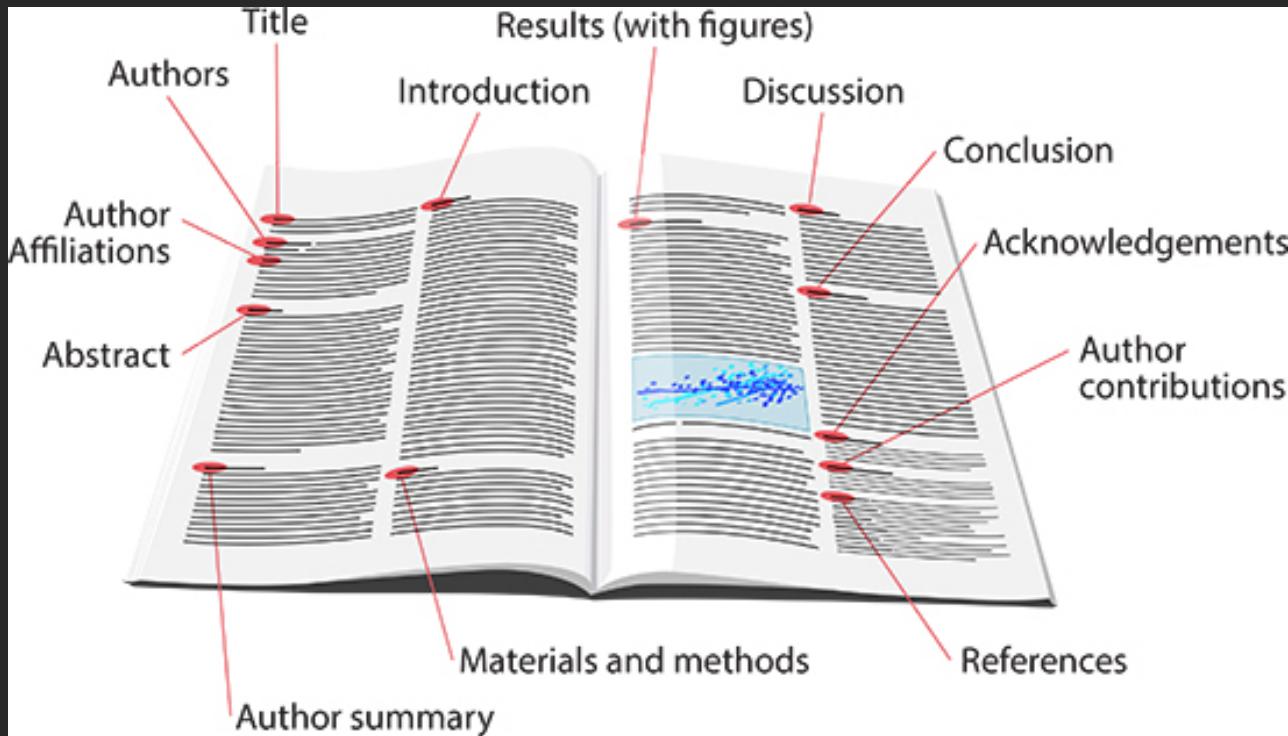
Is open to new ideas outside of their field

Carefully considers their sources, evidence and approaches to get the best results

"Hey, that's interesting"

# The anatomy of a paper

- Keywords
- Abstract
- Methodology
- Results



**Keywords** Global mental health · Community mental health · Rights-based approach · Community psychiatry

## **Abstract**

The movement for global mental health (MGMH) has raised awareness about the paucity of mental health services, particularly in low- and middle-income countries. In response, policies and programs have been developed by the World Health Organization and by the Lancet Commission on global mental health, among other organizations. These policy initiatives and programs, while recognizing the importance of being responsive to local needs and culture, are based on Western biomedical conceptualizations of emotional distress. In the paper, we discuss how a rights-based approach can promote the voice and participation of people with lived experience into the MGMH. We argue that a human rights framework can be enhanced by incorporating the conceptual approaches of critical inquiry and community mental health. We also discuss how rights-based approaches and service-user activism can productively reconfigure Western psychiatric conceptualizations of distress and provide both a moral and empirical justification for a paradigm shift within the MGMH.

begin by investigating several aspects of the switching process itself. We have been able to confirm that RV's voluntarily controlled switching in her therapy sessions could be repeated during fMRI studies, and that this could be done with sufficiently limited head motion. We developed protocols to isolate the switching process precisely in time, and were thus able to identify brain regions selectively activated during switching.

## METHODS

### Subject

RV is a middle-aged woman suffering from DID (based on meeting all four of the diagnostic criteria of the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*—DSM-IV). Her main personality will be called "A" (for adult). RV has two alternate personalities: a child of approximately 4–6 years of age ("C" for child) and a younger, pre-verbal personality ("B" for baby). Appropriate Institutional Review Board (IRB) approval for the procedures was obtained through McLean Hospital, with the condition that RV's therapist (P.C.W.) be present and act in a protective/therapeutic (rather than experimental) capacity during the imaging sessions.

### Head movement

None of RV's personalities enjoyed the fMRI environment; and "B", the youngest, found various aspects of it particularly unpleasant. Nevertheless, RV was able to switch easily between all three personalities. Head movement data collected during preliminary studies indicated that the adult ("A") and child ("C") personalities could maintain a stable head position fairly well, but the same was not true for the baby ("B"). Therefore, we decided to use only A\_to\_C and C\_to\_A transitions in the present study. In all seven runs used for the final analysis, translation excursions in x, y, and z did not exceed 1 mm, rotational excursions did not exceed 0.015 radians, and there was no obvious stimulus-correlated movement. Rare time points with combined movement greater than  $\frac{1}{2}$  voxel were modeled out in the analysis.

### Temporal precision of switching

Switching times between all three states were measured in preliminary fMRI studies. After a cue to switch was presented to her, RV pushed a button to indicate when she had switched. Average switch

time (and standard deviation) was 4 ( $\pm 1.4$ ) s. (This switching speed is more rapid than was reported for another subject in the imaging literature (Tsai, 1999), whose average switching time was approximately 30 s; however, it is consistent with reports (Putnam, 1988) of more extensive reviews of timing of switching in DID.) While RV can switch quickly, this should not be interpreted to mean that she can switch *every* 4 s. Protocols in some preliminary studies required RV to switch every 20 s, soon causing fatigue and less control of switching. Therefore, in all runs of the present study, gaps of approximately 30 s separated switching cues.

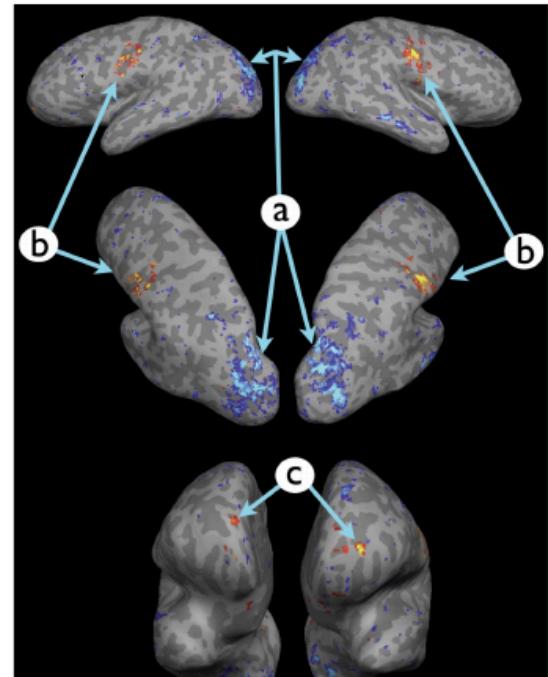
### Task paradigm

The goal was to make RV start to switch at a precise time, while isolating the switching process from general anticipatory or startle responses. Preliminary studies taught us that RV could switch in response to a variety of cues. Starting with audio-visual presentations of her therapist asking her to switch, we moved to increasingly abstract cues, ending with those described in the final paradigm. A background image was chosen based on its soothing qualities (as reported by all three personalities).

After viewing the background image (Figure 1a) for a variable amount of time (lasting at least 10 s), a sequence of preparatory images appeared, culminating in one of the four icons (Figure 1b) surrounded by a red rectangle, to indicate which action the subject should perform. Listed in order going clockwise from the upper left of Figure 1b, the choices were "NOACTION" (i.e., continued passive viewing of the background image); "C\_to\_A" (change from child to adult personality); "A\_to\_C" (change from adult to child personality); and "BUTTON" (push a button on the response box).

The timing for the preparatory and action cue sequence is shown in Figure 2. The four icons appear for 3 s; followed by an overlay of a bell shape in the middle (1 s on, 1 s off, 1 s on, 1 s off), and terminated by the action cue: a red box around one of the four pictures, for 3 s. The point of this sequence was to create a situation in which RV knows that a task is coming, and knows precisely when it is coming, but does not know which task will be required until the final cue—i.e., the red outline—appears.

In each run, there are 12 presentations of the red outline, with at least two instances of each switch type per run. The sequence is designed so that whenever the cue indicates that a personality switch should occur, RV is in the appropriate personality to make that switch.



### Statistical analysis

Five regressors and their first derivatives were used to model the events during the functional runs. The BELL regressor represented the occurrences of the bell image cue, with each occurrence modeled as a single TR event convolved with a double gamma hemodynamic response function. Similarly, the other four regressors corresponded to the times for each of the rectangle cues A\_to\_C, C\_to\_A, BUTTON, and NOACTION. These regressors were designed to capture brain activity during the period of time immediately following the switch cue. Note that the stimuli prior to the presentation of the switch cue were the same for at least 18 s independent of the subsequent action condition. Six

motion corrections using MCFLIRT (Jenkinson, Bannister, Brad, & Smith, 2002); slice-timing correction using Fourier-space time-series phase-shifting; removal of non-brain portions of the images using BET (Smith, 2002); high-pass temporal filtering (Gaussian-weighted least-squares straight line fitting, with sigma = 25.0 s). To reduce motion-related variability, a program (based on Lemieux, Salek-Haddadi, Lund, Laufs, & Carmichael, 2007) was used to generate single point nuisance regressors to model out time points exhibiting motion >1.7 mm ( $\frac{1}{2}$  voxel size).

### RESULTS

The main contrast ("A\_to\_C + C\_to\_A" versus NOACTION) yielded bilateral activations in several cortical sites, as shown in Figure 3. The strongest activation is seen in primary sensory motor areas near the face representation and is probably due to characteristic facial gesture made by RV when she switches (Figure 3a). Her facial gestures include partial closing of her eyes, and this is reflected in the negative activations seen at the back of the head during switches (Figure 3b). The cortical activations in prefrontal cortex (Figure 3c) will be discussed in the General Discussion section.

The most striking non-cortical finding was consistent bilateral activation in the nucleus accumbens, as shown in Figure 4. Again, while it is premature to allow draw conclusions based on one subject, this activation is consistent with the idea that DID develops to allow escape from pain and consequently has reinforcing (rewarding) value. This notion is discussed in more detail elsewhere (Wolk, Frederick, & Savoy, 2012).

These results justify the claims at the end of our Introduction. RV could switch in response to simple iconic cues, and these switches were rapid, consistent, and not accompanied by excessive head movements. The task paradigm enabled us to isolate

## **Quality Markers: Is it easy to read?**

## Quality Markers: Is it Peer Review?

- Always insist on peer review
- Not perfect, but insures quality baselevel
- Only Exception: Arxiv<sup>1</sup>



## Quality Markers: What is the Methodology?

- Type of data
- Type of analysis
- "Does it make sense?"

DESPITE OUR GREAT RESEARCH RESULTS, SOME HAVE QUESTIONED OUR AI-BASED METHODOLOGY.  
BUT WE TRAINED A CLASSIFIER ON A COLLECTION OF GOOD AND BAD METHODOLOGY SECTIONS, AND IT SAYS OURS IS FINE.



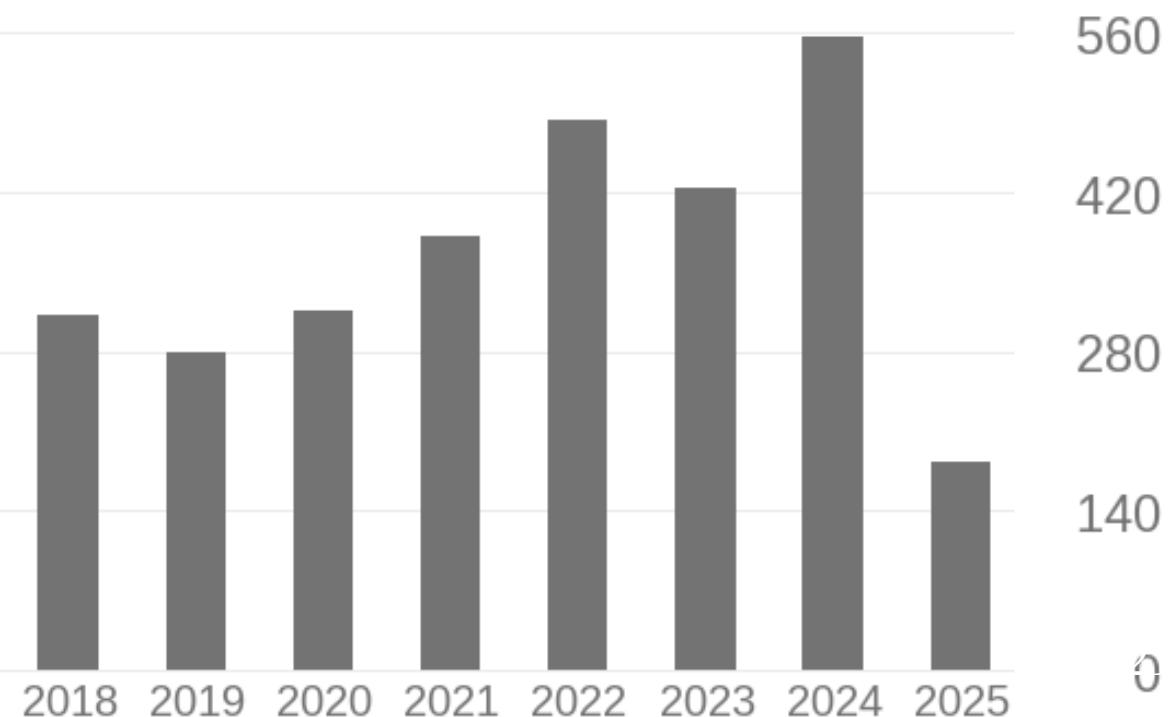
[VIEW ALL](#)

## Cited by

# Quality Markers: H-index

The h-index is an author-level metric that attempts to measure both the productivity and citation impact of the publications of a scientist or scholar.<sup>1</sup>

	All	Since 2020
Citations	5166	2367
h-index	37	30
i10-index	51	46



## Quality Markers: Proper sourcing

- Every claim is sourced
- Every referency is cited at least once
- Every source should be recent or a classic
- The sources are relevant to the topic
- The sources actually say what the author claims



# Congratulations

You are doing a science now!

# Things to ignore

- The journal
- The author

## **Step 3: The field of plural science**

# Non-clinical plurality in science

[https://www.academia.edu/37853723/NORMAL\\_DIMENSIONS\\_OF\\_MULTIPLE\\_PERSONALITY\\_WITHOUT\\_AMNESIA](https://www.academia.edu/37853723/NORMAL_DIMENSIONS_OF_MULTIPLE_PERSONALITY_WITHOUT_AMNESIA)  
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<https://jungpage.org/learn/articles/analytical-psychology/802-a-jungian-perspective-on-the-dissociability-of-the-self>  
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[https://www.researchgate.net/profile/Samuel-Veissiere/publication/278671032\\_Varieties\\_of\\_Tulpa\\_Experiences\\_The\\_Hypnotic\\_Nature\\_of\\_Human\\_Sociality\\_Personhood\\_and\\_Interphenomenality/links/5582522008aeab1e4666e9e1/Varieties-of-Tulpa-Experiences-The-Hypnotic-Nature-of-Human-Sociality-Personhood-and-Interphenomenality.pdf](https://www.researchgate.net/profile/Samuel-Veissiere/publication/278671032_Varieties_of_Tulpa_Experiences_The_Hypnotic_Nature_of_Human_Sociality_Personhood_and_Interphenomenality/links/5582522008aeab1e4666e9e1/Varieties-of-Tulpa-Experiences-The-Hypnotic-Nature-of-Human-Sociality-Personhood-and-Interphenomenality.pdf)  
<https://psyarxiv.com/5t3xk>  
<http://somatosphere.net/2015/varieties-of-tulpa-experiences-sentient-imaginary-friends-embodied-joint-attention-and-hypnotic-sociality-in-a-wired-world.html/>  
[https://web.archive.org/web/20180523140834/https://www.academia.edu/19614555/Neuroholographic\\_Organisms\\_An\\_Independent\\_Study\\_of\\_Sentient Thoughtforms](https://web.archive.org/web/20180523140834/https://www.academia.edu/19614555/Neuroholographic_Organisms_An_Independent_Study_of_Sentient Thoughtforms)  
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5468408/>  
<https://www.frontiersin.org/articles/10.3389/fpsyg.2019.01665/full>  
[https://www.researchgate.net/publication/356000324\\_Unusual\\_experiences\\_and\\_their\\_association\\_with\\_metacognition\\_investigating\\_ASMR\\_and\\_Tulpamancy](https://www.researchgate.net/publication/356000324_Unusual_experiences_and_their_association_with_metacognition_investigating_ASMR_and_Tulpamancy)  
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<https://www.lycoming.edu/schemata/pdfs/Sullivan.pdf>  
<https://link.springer.com/article/10.1007/s11013-007-9077-8>  
[https://www.researchgate.net/publication/310735596\\_A\\_psychotherapy\\_approach\\_to\\_treating\\_hostile\\_voices](https://www.researchgate.net/publication/310735596_A_psychotherapy_approach_to_treating_hostile_voices)  
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<https://pubmed.ncbi.nlm.nih.gov/21667387/>  
[https://www.researchgate.net/publication/313593768\\_Rethinking\\_Social\\_Cognition\\_in\\_Light\\_of\\_Psychosis\\_Reciprocal\\_Implications\\_for\\_Cognition\\_and\\_Psychopathology](https://www.researchgate.net/publication/313593768_Rethinking_Social_Cognition_in_Light_of_Psychosis_Reciprocal_Implications_for_Cognition_and_Psychopathology)  
<http://pubs.scielopub.com/rpbs/5/2/1/>  
<https://sci-hub.hkvisa.net/10.1080/15299732.2011.570592#>  
<https://archive.org/details/structuredynamic08jung/page/122/mode/2up>  
<https://www.youthandpolicy.org/articles/young-people-with-multiplicity/>

# The fault lines

## Etiology

- Fantasy: Itratiogenic / Socio-cognitive Model
- Trauma: Biologocial / Structural Dissocation Model

# The celebrities

- Simone Reinders
- Richard Kluft
- Onno van der Hart
- Philip Bromberg
- Janina Fisher
- Bessel van der Kolk
- Pierre Janet

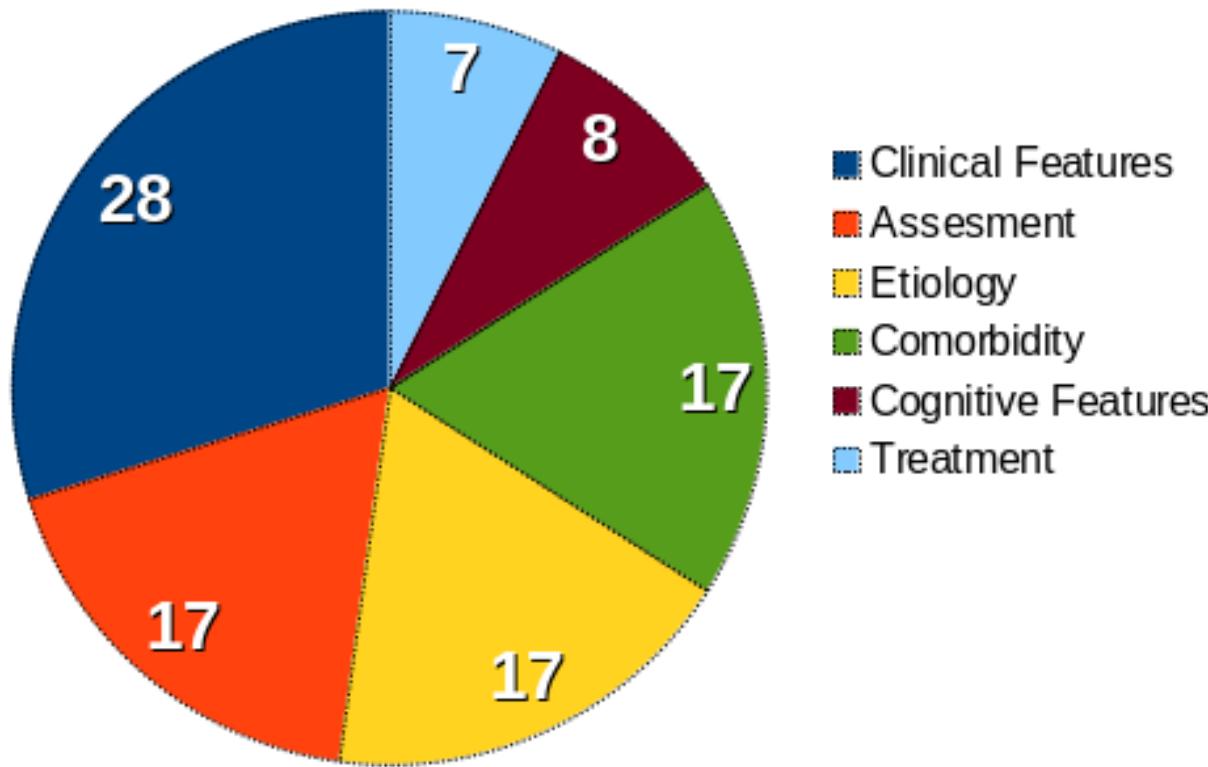
# The history

- Earliest accounts since the end of the 18th Century<sup>1</sup>
- Freud: Trauma is always subconscious
- 1970s: Sybil
- 1980s: Satanic Panic<sup>2</sup>
- 1990s: False Memory
- 2000s: Fantasy Model vs. Trauma Model
- 2010s: MRI Scans + Neurodiversity

## Important keywords

Topics of evidence based papers, in %

From 2011 - 2021



- MRI<sup>1</sup>
- Case Study<sup>2</sup>
- Hypothesis<sup>3</sup>

## Step 4: Examples

# Fact or Factitious? A Psychobiological Study of Authentic and Simulated Dissociative Identity States

A. A. T. Simone Reinders, Antoon T. M Willemsen, Herry P. J. Vos, Johan A. den Boer, Ellert R. S. Nijenhuis, 2012

*Choose quote*

# **What to learn?**

- How to do control groups?
- Introduction to different models of plurality
- Brainscience!

# Dissociative Identity Disorder

## Review of Research From 2011 to 2021

Guy A. Boysen, 2024

*Choose quote*

# **What to learn?**

- Getting an overview of the plural research of the 2010s
- Noticing the focus of said research, as well as the under-researched topic
- Check the statistics

# **The Persistence of Folly: A Critical Examination of Dissociative Identity Disorder. Part I. The Excesses of an Improbable Concept**

August Piper, Harold Mersky, 2004

In the end, positing scores, hundreds, and even thousands of alters defies common sense and reminds one of Tertullian's claim, *Credo quia absurdum est* ("I believe that which is impossible," 141).

*Argument from incredulity*

# **What to learn?**

- The anatomy of a bad paper?
- Debunking badly made arguments?
- Noticing the lack of quality markers

# **It's just a body: A community-based participatory exploration of the experiences and health care needs for transgender plural people**

Susan C. Turell, Christopher Wolf-Gould, Sana Flynn, Silver Mckie, Matthew A. Adan, The Redwoods, 2023

Academics have advocated for community-based participatory research as an important innovation to research with those in the transgender and gender non-conforming (TGNC) community (dickey, Hendricks & Bockting, 2016)Fine and Torre (2019) concluded that critical participatory action research with LGBTQIA+ youth “unveils the hidden” (p. 443) in ways that traditional research cannot.

# **What to learn?**

- How to do inclusive research
- The link between queerness and plurality
- Proper qualitative research

# Conclusion

