



Taal is een signaal

Het gebruik van automatische taal- en spraakanalyse bij psychose

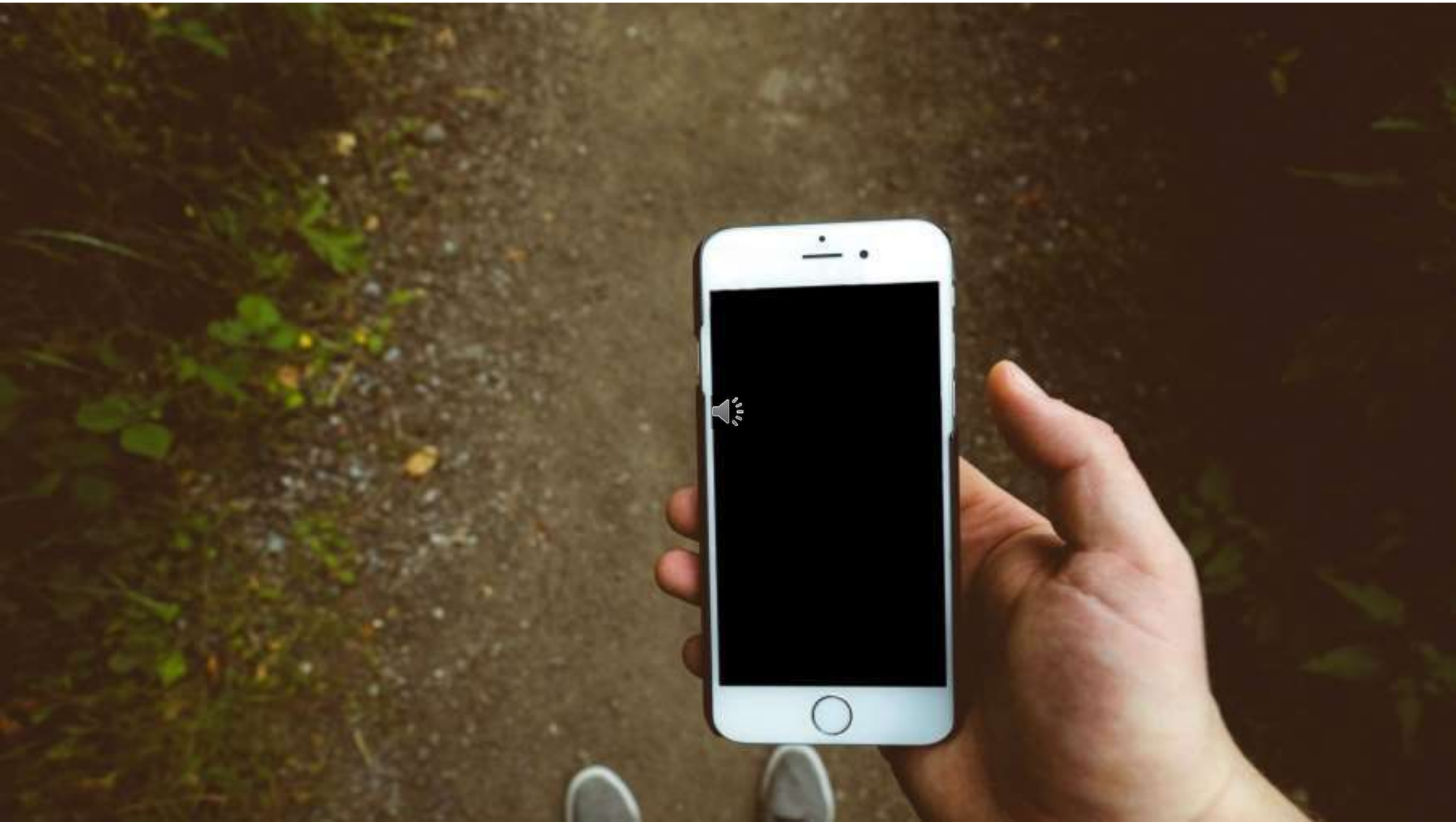
Dr. Sanne Schuite-Koops
Universitair Docent, Center for Clinical Neuroscience and Cognition

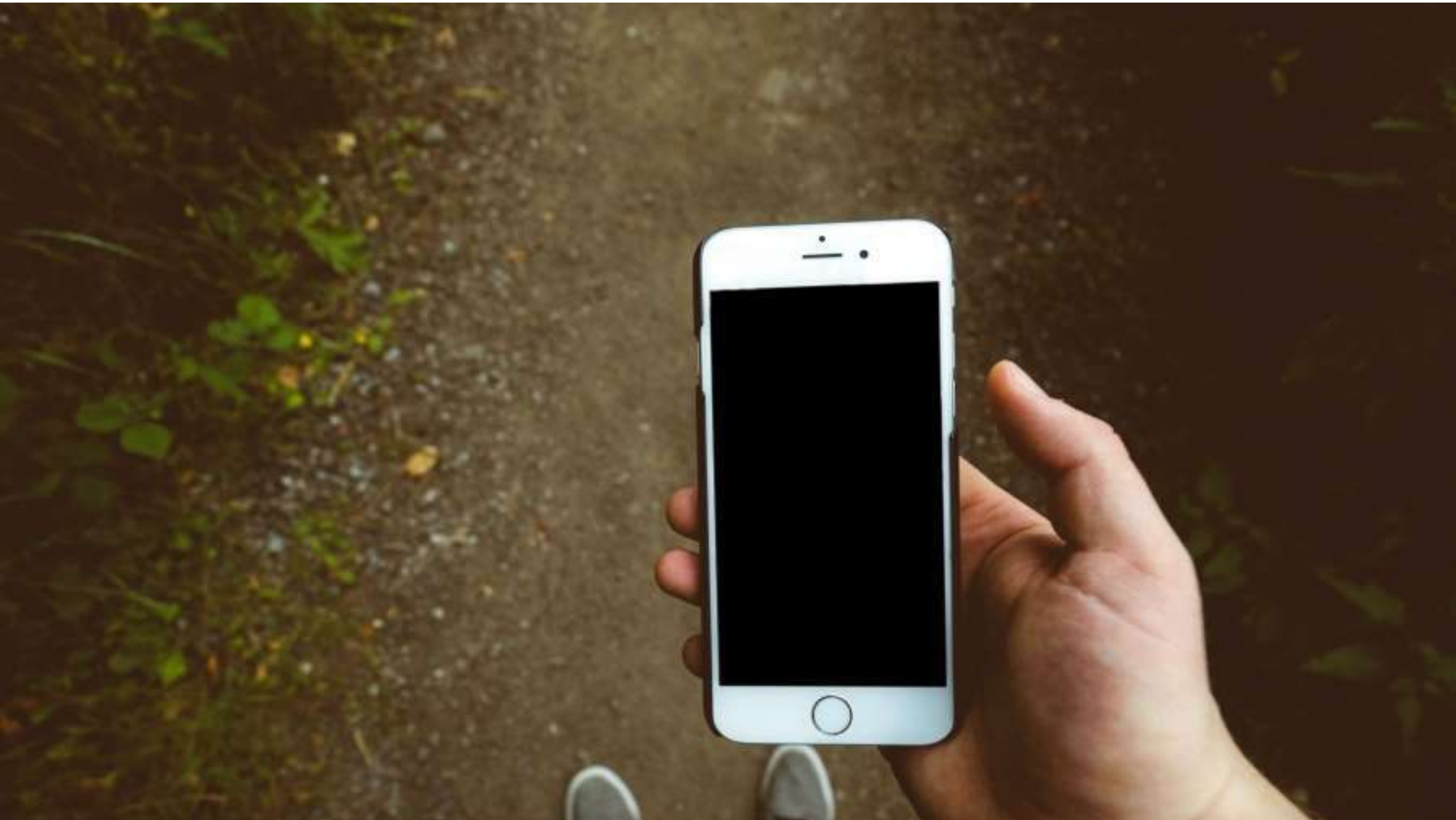
NPS 2-daagse 12 maart 2026

UMCG:

Disclosure belangen

(potentiële) belangenverstrengeling	Geen
Voor bijeenkomst mogelijk relevante relaties met bedrijven	Geen
<ul style="list-style-type: none">• Sponsoring of onderzoeksgeld:	TRUSTING – Horizon Europe DELTA_LANG – ERC Synergy Language in Psychosis – Wellcome Trust







“Language is a
window to the
human mind”

-Steven Pinker



Groepseffecten

Gestresst

Kalm



Groepseffecten

Gestresst

Kalm



Individuele variatie

Ratelt

Slaat dicht



Groepseffecten

Gestresst

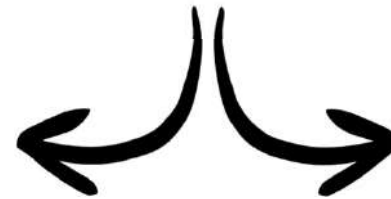
Kalm



Individuele variatie

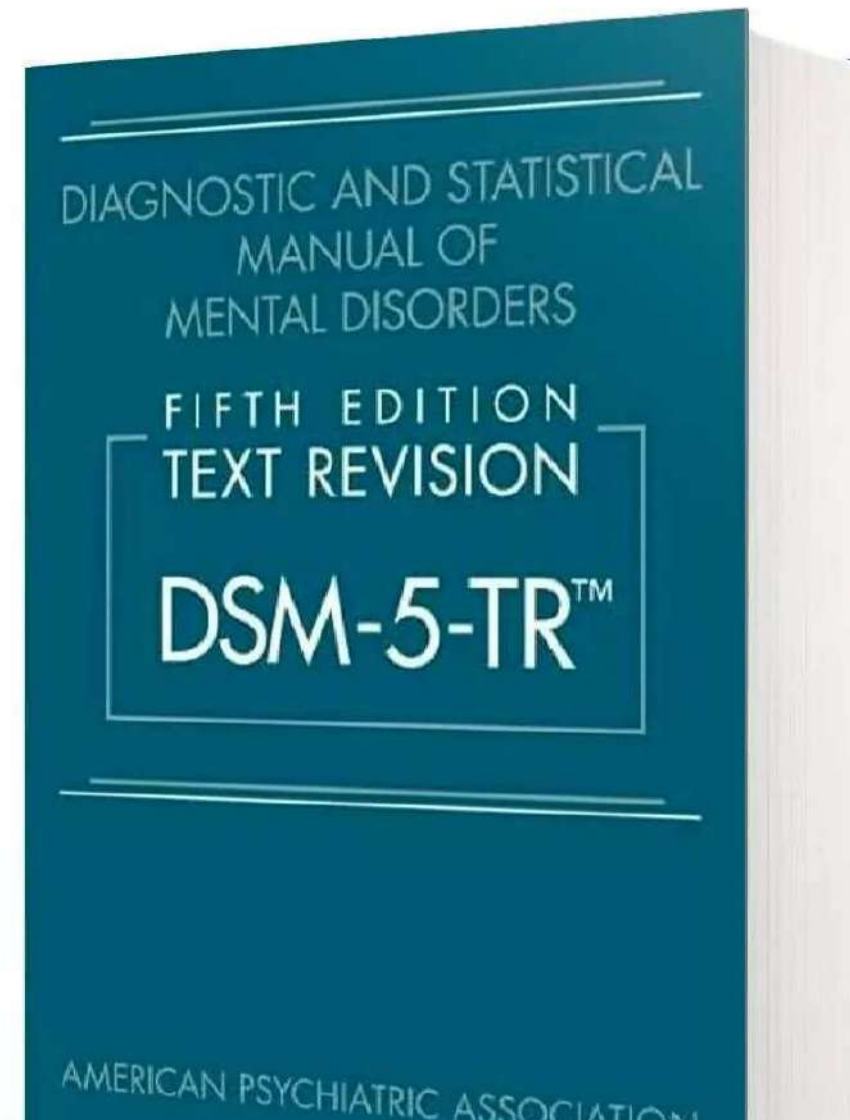
Ratelt

Slaat dicht



DSM-5 Criteria for Schizophrenia

- Two or more of these symptoms must be present for at least one month (can be less if being successfully treated)
And at least one symptom must be either (1), (2), or (3)
 - (1) Hallucinations
 - (2) Delusions (can be either bizarre or nonbizarre)
 - (3) Disorganized speech (e.g., frequent derailment or incoherence)
 - (4) Grossly disorganized or catatonic behavior
 - (5) Negative symptoms (e.g., affective flattening, alogia or avolition).
- Continuous disturbance for 6 months (attenuated symptoms, residual symptoms)
- Social or occupational dysfunction (or both) for significant portion of the time
- Notes: Catatonia can also be used as a specifier for any other diagnosis



Hoe kun je aan de manier
waarop iemand praat
herkennen dat iemand een
psychose heeft, of krijgt?

A blue audio waveform is centered horizontally across the image. The waveform consists of several distinct pulses of varying amplitudes and durations. Overlaid on the center of the waveform is a black rounded rectangle containing the word "AKOESTIEK" in a white, serif, all-caps font.

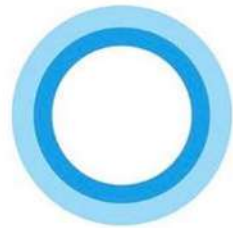
AKOESTIEK

“Hey Siri”



2011

“Hey Cortana”



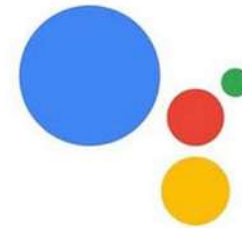
2014

“Alexa”



Whisper

“OK Google”

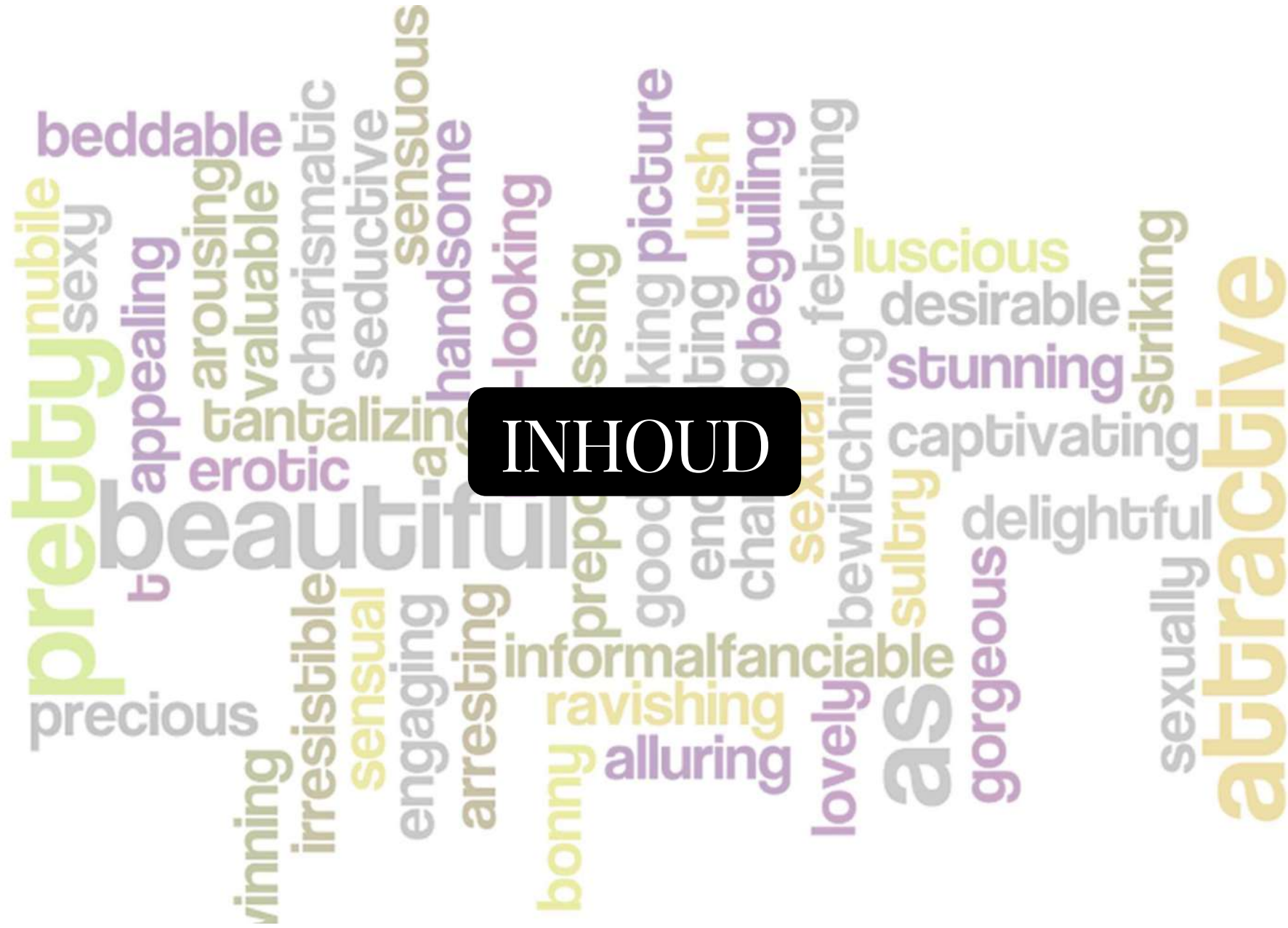


2016

“Hi Bixby”



2017



INHOUD

TRANSFORMERS



TRANSFORMERS



ChatGPT

Officieel heet ons land het
Koninkrijk der ...



Ongeveer 25.270.000.000 resultaten (0,31 seconden)

Tip: **Beperk deze zoekopdracht tot resultaten in het Nederlands..** Meer informatie over filteren op taal.



Wikipedia
<https://nl.wikipedia.org/wiki/THE>

THE - Wikipedia

ṭhē, achtste letter uit arabisch alfabet (Sindhi) · **THE**, afkorting voor de Technische Hogeschool Eindhoven, nu Technische Universiteit Eindhoven · **THE**, afkorting ...



Wikipedia
https://en.wikipedia.org/wiki/Vertaal_deze_pagina

The - Wikipedia

In Middle English, **the** (**þe**) was frequently abbreviated as a þ with a small e above it, similar to **the** abbreviation for that, which was a þ with a small t above ...

[Article](#) · [Geographic usage](#) · [Ye form](#) · [Abbreviations](#)



Dictionary.com
https://www.dictionary.com/the/Vertaal_deze_pagina

THE Definition & Usage Examples

The definition: (used, especially before a noun, with a specifying or particularizing effect, as opposed to **the** indefinite or generalizing force of **the** ...

The :



Vertaald uit het Engels - Het is een grammaticaal lidwoord in het Engels, dat personen of dingen aanduidt die al of op het punt staan genoemd te worden, ter discussie staan, geïmpliceerd of anderszins verondersteld bekend zijn bij luisteraars, lezers of sprekers. Het is het bepaald lidwoord in het Engels. [Wikipedia \(Engels\)](#)

[Originele beschrijving bekijken](#)

[Feedback](#)



Google books:
130.000.000 boeken

Ongeveer 1 resultaten (0,41 seconden)

Afbeeldingen :



Wonderbaarlijk diadeem in G...
True game



Wonderbaarlijk diadeem in G...
True game



Wonderbaarlijk diadeem in G...
True game

Feedback

Nog 6 afbeeldingen



true-game.ru

https://true-game.ru > ... > Gidsen: Genshin Impact

Wonderbaarlijk diadeem in Genshin Impact: walkthrough

27 nov 2023 — ... het Koninkrijk der Pinguïns. Om deze zoektocht succesvol te voltooien,

Hoe waren je zwemlessen
in je jeugd?





You

Wat is een normaal antwoord op de vraag "hoe waren je zwemlessen in je jeugd?"





You

Wat is een normaal antwoord op de vraag "hoe waren je zwemlessen in je jeugd?"



ChatGPT

Een normaal antwoord op de vraag "hoe waren je zwemlessen in je jeugd?" kan variëren afhankelijk van je eigen ervaringen. Hier zijn enkele mogelijke antwoorden:

1. "Mijn zwemlessen waren geweldig! Ik herinner me nog hoe opgewonden ik was om te leren zwemmen, en het was een leuke ervaring die me veel zelfvertrouwen heeft gegeven in het water."
2. "Eerlijk gezegd vond ik mijn zwemlessen best spannend. In het begin was ik een beetje bang voor water, maar mijn instructeurs waren geduldig en hielpen me om mijn angst te overwinnen."
3. "Mijn zwemlessen waren oké. Ik was niet echt een waterrat, maar het was een belangrijke vaardigheid om te leren. Het duurde even voordat ik echt comfortabel was in het water, maar uiteindelijk is het me gelukt."
4. "Ik herinner me dat mijn zwemlessen behoorlijk uitdagend waren. Soms was het moeilijk, maar ik ben blij dat ik heb doorgezet. Het heeft me uiteindelijk een sterke zwemmer gemaakt."

→ Het belangrijkste is om eerlijk te zijn over je eigen ervaringen en gevoelens ten opzichte van de zwemlessen in je jeugd.

DE You

Is "het is een blauw gebouw" een normaal antwoord op de vraag "hoe waren je zwemlessen in je jeugd?"





You

Is "het is een blauw gebouw" een normaal antwoord op de vraag "hoe waren je zwemlessen in je jeugd?"

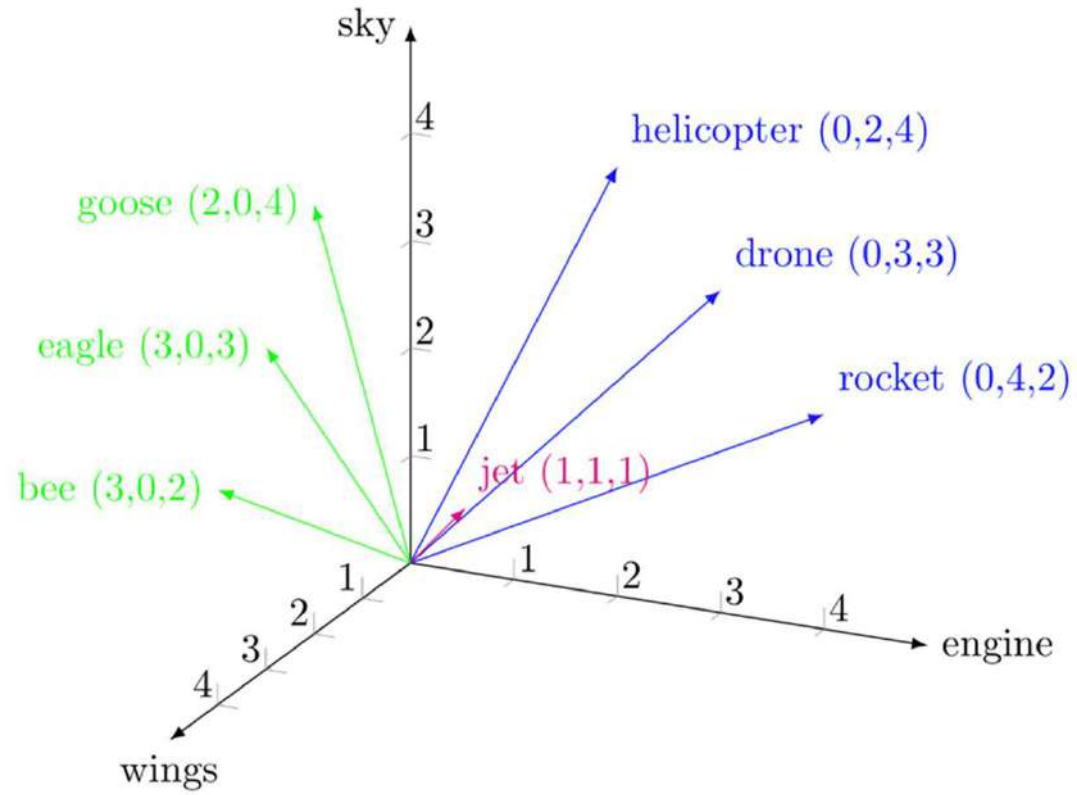


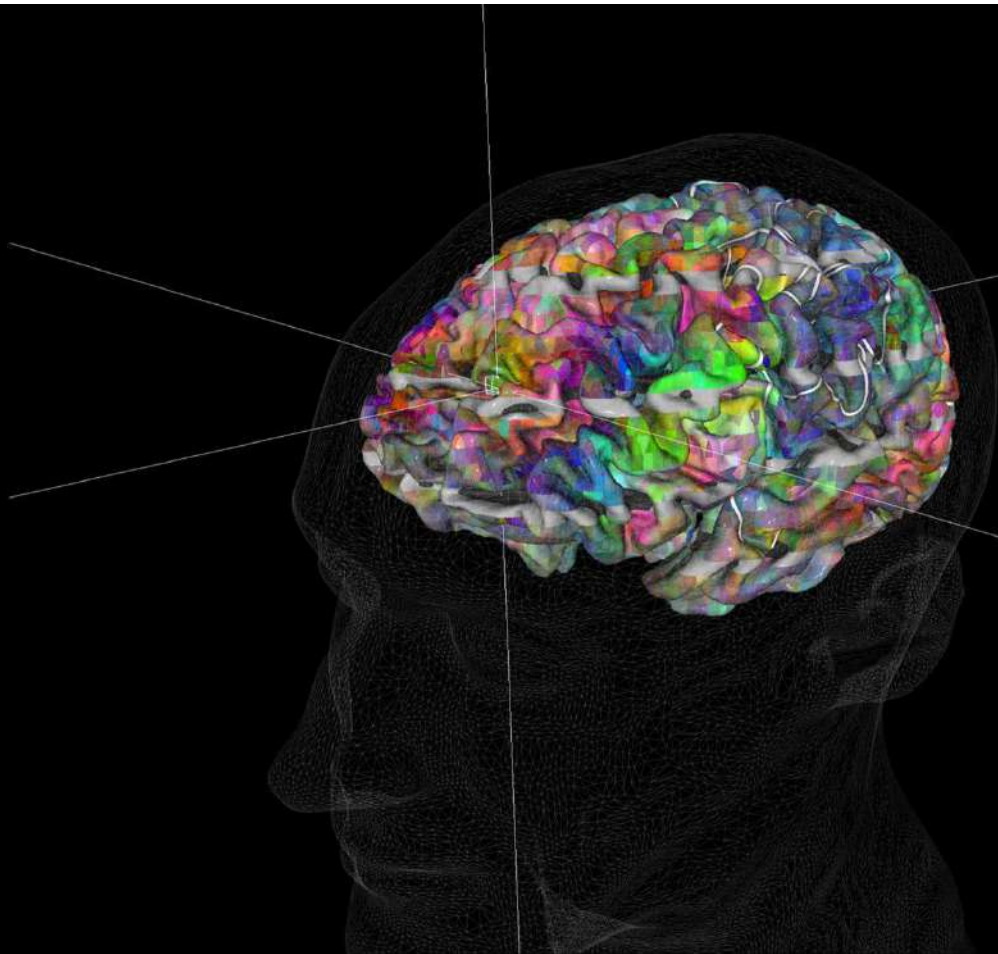
ChatGPT

Nee, "het is een blauw gebouw" zou geen normaal antwoord zijn op de vraag "hoe waren je zwemlessen in je jeugd?" Het lijkt erop dat dit antwoord niet relevant is voor de gestelde vraag en mogelijk een misverstand of vergissing is. Een gepast antwoord zou eerder informatie bevatten over de ervaringen tijdens zwemlessen, zoals hoe de lessen werden gegeven, of ze plezierig waren, en of er bepaalde herinneringen aan verbonden zijn.



thought
improvisation
fantasy
literature
example
author
personal
oral
myth
wisdom
narration
anecdote
history
memory
tale
story
legend
message
storytelling
experience
communication
gossip
information
writing
entertainment
events
word
sharing
poetry
fiction
education





voxel [19,17,56] left
model performance: 0.227 (p=0.000)



Good, very high



penny egg
coins pearls
champagne
item bread
cup coin dough
spoon cups slice
gold dollar strips
jewelry pieces
powdered
pound

Akoestiek

Acoustic speech markers for schizophrenia-spectrum disorders: a diagnostic and symptom-recognition tool

J. N. de Boer^{1,2}, A. E. Voppel¹, S. G. Brederoo¹, H. G. Schnack^{2,3},
K. P. Truong⁴, F. N. K. Wijnen² and I. E. C. Sommer¹

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Abstract

Background. Clinicians routinely use impressions of speech as an element of mental status examination. In schizophrenia-spectrum disorders, descriptions of speech are used to assess the severity of psychotic symptoms. In the current study, we assessed the diagnostic value of acoustic speech parameters in schizophrenia-spectrum disorders, as well as its value in recognizing positive and negative symptoms.

Methods. Speech was obtained from 142 patients with a schizophrenia-spectrum disorder and 142 matched controls during a semi-structured interview on neutral topics. Patients were categorized as having predominantly positive or negative symptoms using the Positive and Negative Syndrome Scale (PANSS). Acoustic parameters were extracted with OpenSMILE, employing the extended Geneva Acoustic Minimalistic Parameter Set, which includes standardized analyses of pitch (F0), speech quality and pauses. Speech parameters were fed into a random forest algorithm with leave-ten-out cross-validation to assess their value for a schizophrenia-spectrum diagnosis, and PANSS subtype recognition.

Results. The machine-learning speech classifier attained an accuracy of 86.2% in classifying patients with a schizophrenia-spectrum disorder and controls on speech parameters alone. Patients with predominantly positive v. negative symptoms could be classified with an accuracy of 74.2%.

Conclusions. Our results show that automatically extracted speech parameters can be used to accurately classify patients with a schizophrenia-spectrum disorder and healthy controls, as well as differentiate between patients with predominantly positive v. negative symptoms. Thus, the field of speech technology has provided a standardized, powerful tool that has high potential for clinical applications in diagnosis and differentiation, given its ease of comparison and replication across samples.

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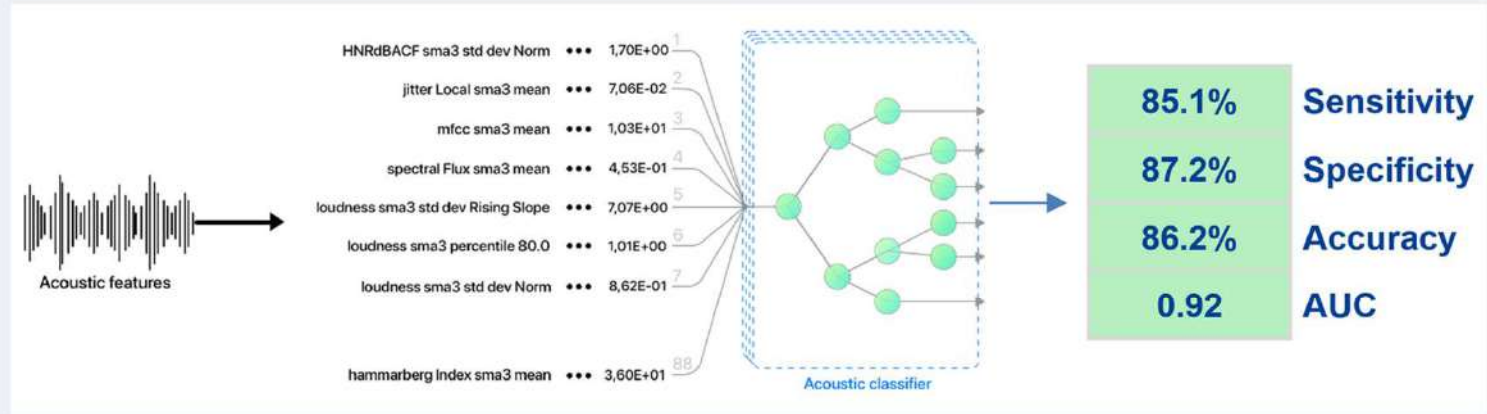
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Transformer

Quantified language connectedness in schizophrenia-spectrum disorders



AE Voppel^{a,*}, JN de Boer^{a,b}, SG Brederoo^a, HG Schnack^{b,c}, IEC Sommer^a

^a Department of Biomedical Sciences of Cells and Systems, University of Groningen, University Medical Center Groningen, Groningen, the Netherlands

^b Department of Psychiatry, UMCU Brain Center, University Medical Center Utrecht, Utrecht University, Utrecht, the Netherlands

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ARTICLE INFO

Keywords:
Word similarity
Psychosis
Semantic model
Speech
Natural language processing
Biomarker

ABSTRACT

Language abnormalities are a core symptom of schizophrenia-spectrum disorders and could serve as a potential diagnostic marker. Natural language processing enables quantification of language connectedness, which may be lower in schizophrenia-spectrum disorders. Here, we investigated connectedness of spontaneous speech in schizophrenia-spectrum patients and controls and determine its accuracy in classification. Using a semi-structured interview, speech of 50 patients with a schizophrenia-spectrum disorder and 50 controls was recorded. Language connectedness in a semantic word2vec model was calculated using consecutive word similarity in moving windows of increasing sizes (2–20 words). Mean, minimal and variance of similarity were calculated per window size and used in a random forest classifier to distinguish patients and healthy controls. Classification based on connectedness reached 85% cross-validated accuracy, with 84% specificity and 86% sensitivity. Features that best discriminated patients from controls were variance of similarity at window sizes between 5 and 10. We show impaired connectedness in spontaneous speech of patients with schizophrenia-spectrum disorders even in patients with low ratings of positive symptoms. Effects were most prominent at the level of sentence connectedness. The high sensitivity, specificity and tolerability of this method show that language analysis is an accurate and feasible digital assistant in diagnosing schizophrenia-spectrum disorders.

Transformer

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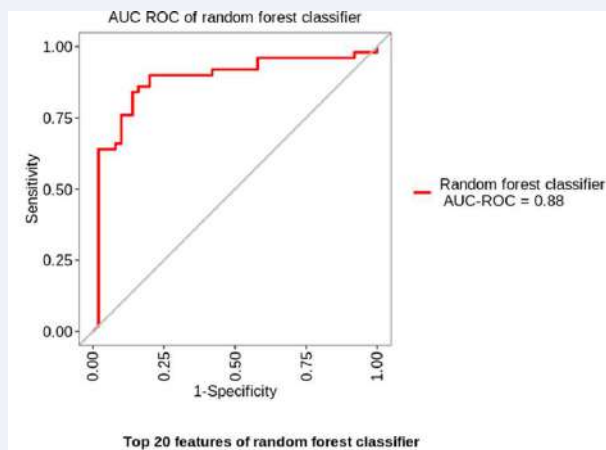
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84% Sensitivity

86% Specificity

85% Accuracy

0.88 AUC

Medicatie

ARTICLE OPEN



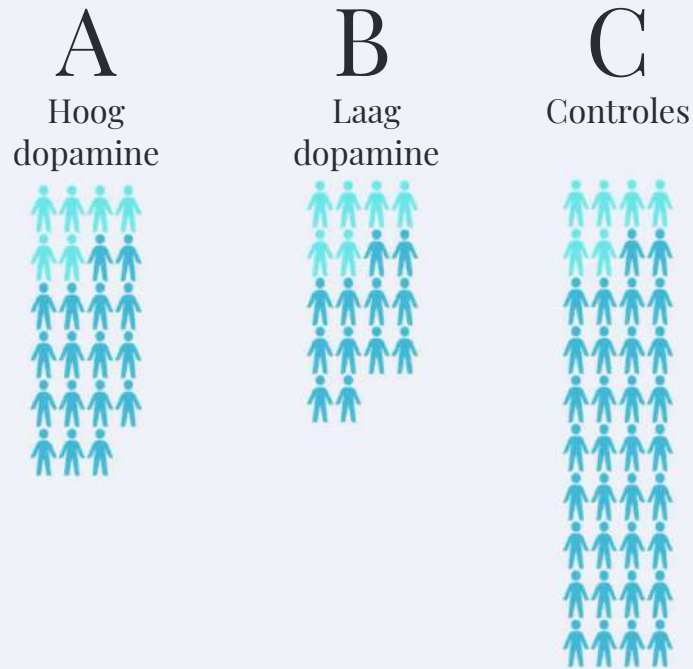
Language disturbances in schizophrenia: the relation with antipsychotic medication

J. N. de Boer^{1,2}, A. E. Voppel², S. G. Brederoo², F. N. K. Wijnen³ and I. E. C. Sommer²

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npj Schizophrenia (2020)6:24 | <https://doi.org/10.1038/s41537-020-00114-3>

Medicatie



ARTICLE OPEN



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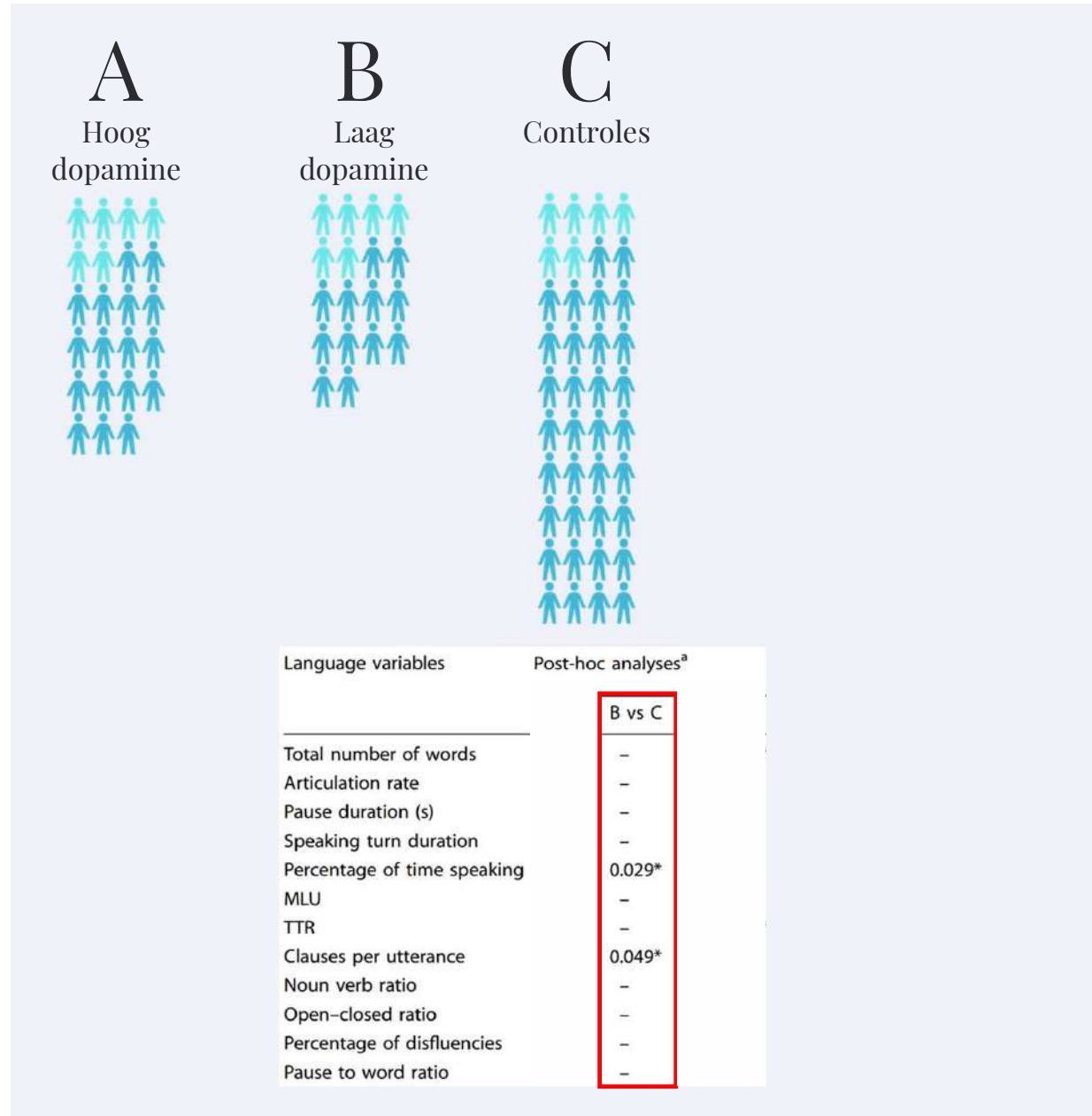
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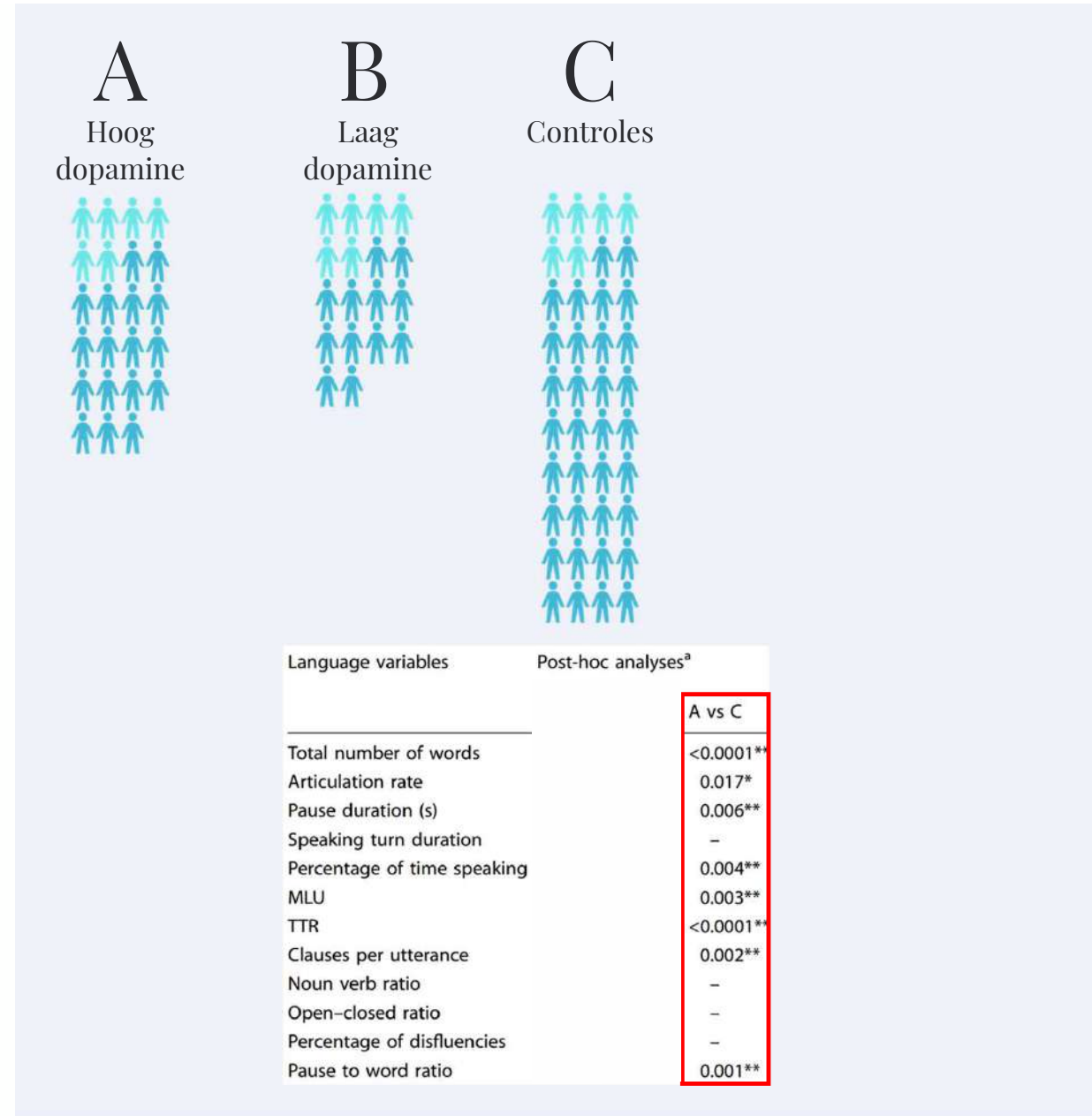


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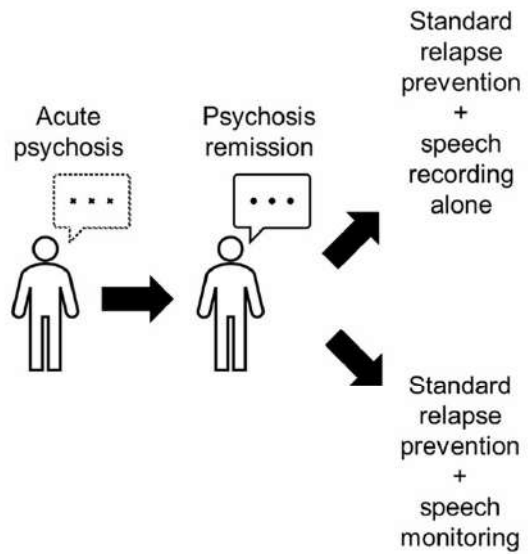
npj Schizophrenia (2020)6:24; <https://doi.org/10.1038/s41537-020-00114-3>



Maar hoe kunnen we dit in
de klinische praktijk
gebruiken?

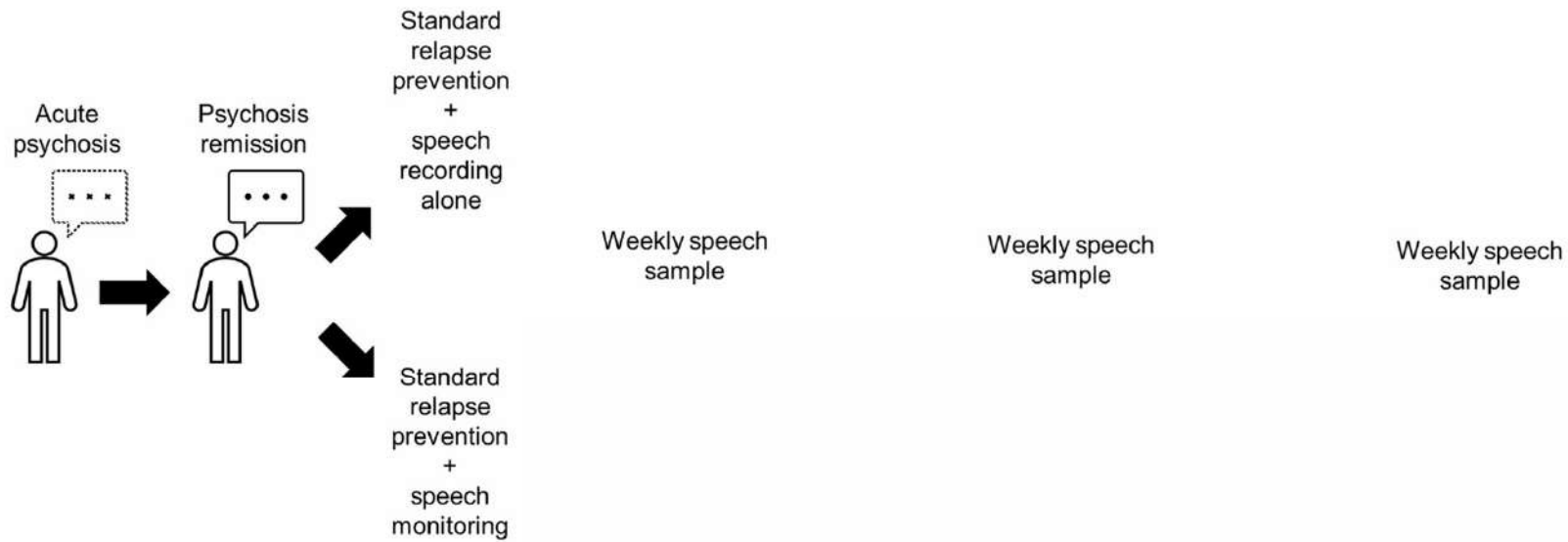


TRUSTING aims to develop a user-friendly, trustworthy speech-based tool for the prediction of relapse in psychosis.



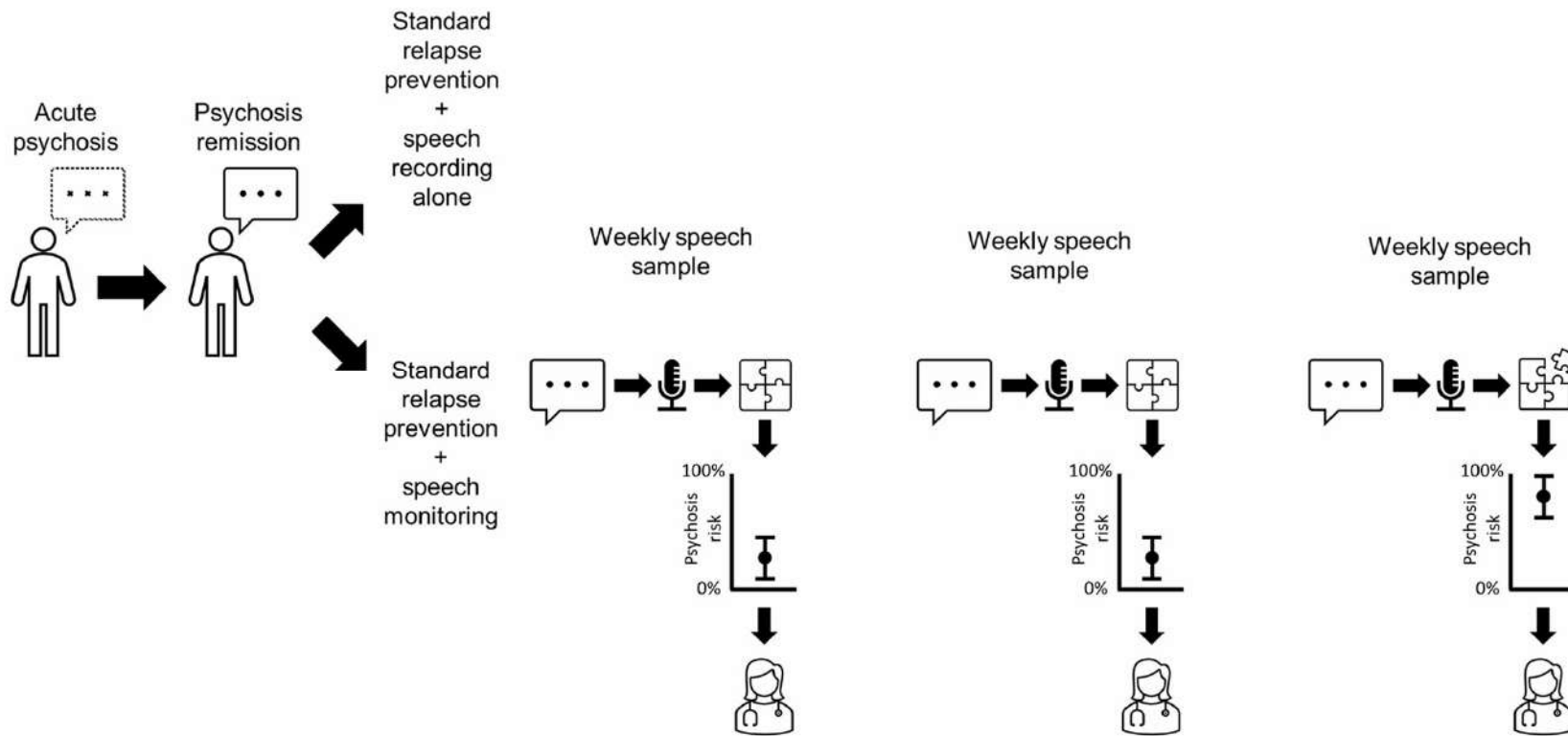


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