



SUICIDE PHENOTYPE:

FROM LINGUISTICS TO NEUROLOGY

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INTRODUCTION

- The neurolinguistic phenotype of suicide includes observable brain and language markers linked to elevated suicide risk.
- Reflects dysregulation in emotional processing and cognitive control.
- Combines alterations in brain function (e.g. amygdala-prefrontal connectivity) with specific language patterns.
- Early identification may improve prevention strategies.

OBJECTIVES

- Identify key neurological and linguistic features associated with suicidal risk.
- Explore the integration of brain imaging and language analysis for early detection.

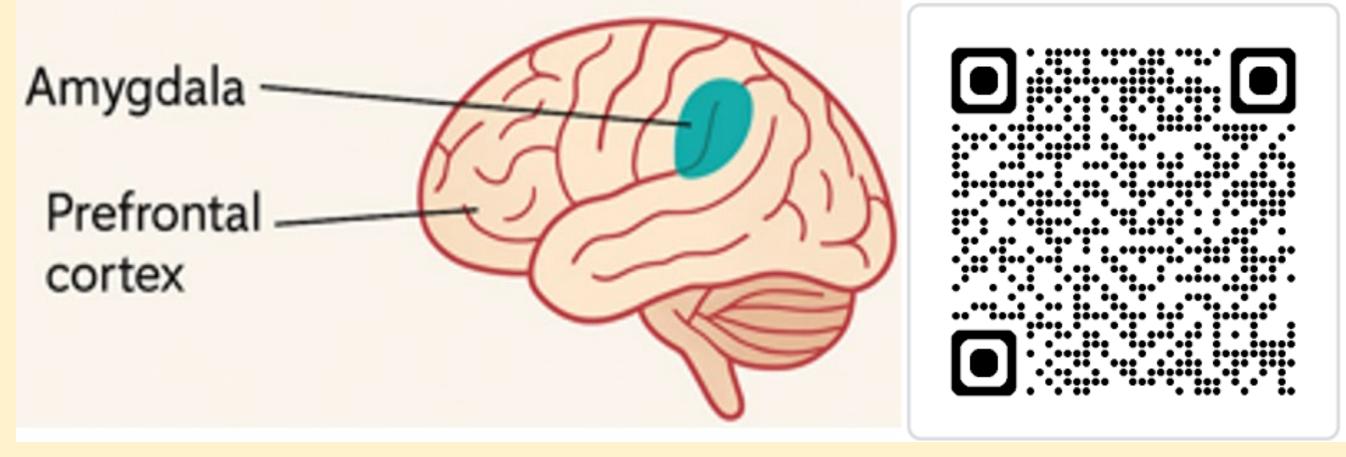
METHODS

- 15 high-risk individuals assessed using:
- → Functional MRI (fMRI) during exposure to emotional stimuli.
- → Automated Natural Language Processing
 (NLP) of spoken and written language.
- Brain regions analyzed:
- → Amygdala.
- → Prefrontal cortex.
- Language analysis focused on:
- → Syntax and semantics.
- → Cognitive distortions (e.g. dichotomous thinking, rumination).
- → Emotional valence and self-referential patterns.



RESULTS

- fMRI findings:
- → Increased amygdala activity.
- → Decreased prefrontal cortex activation.
- --- Associated with emotional distress
- → Reduced cognitive inhibition.



- Linguistic markers:
 - High use of negative emotional language (themes of guilt, despair)
 Frequent self-deprecating and all-or-nothing expressions
 There's no way out
 - Marked reduction in positive emotional content

DISCUSSION

- Neurolinguistic phenotype helps identify individuals at risk before behavioral signs emerge.
- Integration of fMRI and NLP offers a novel, multidimensional assessment tool.
- Supports development of targeted interventions based on emotional and cognitive dysregulation.
- Opens a path toward more personalized, preventative mental health strategies.