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Effect of Psilocybin on Empathy and Moral Decision-Making

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The Effects of Psilocybin On Empathy and Moral Decision Making

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Abstract Abstracted

Empathy is the ability for human beings, as well as all other mammals, to understand the mental state of another person on an emotional level. It allows us to feel compassion and promote the well-being of those around us. Impaired empathic abilities lead to severe negative social consequences and influence the development and treatment of several psychiatric disorders, specifically in disorders such as antisocial personality disorder. Furthermore, empathy has been shown to play a crucial role in moral and prosocial behavior. In neuroscience and psychiatry research, the serotonin system has been shown to be involved in modulating empathy and moral behavior.

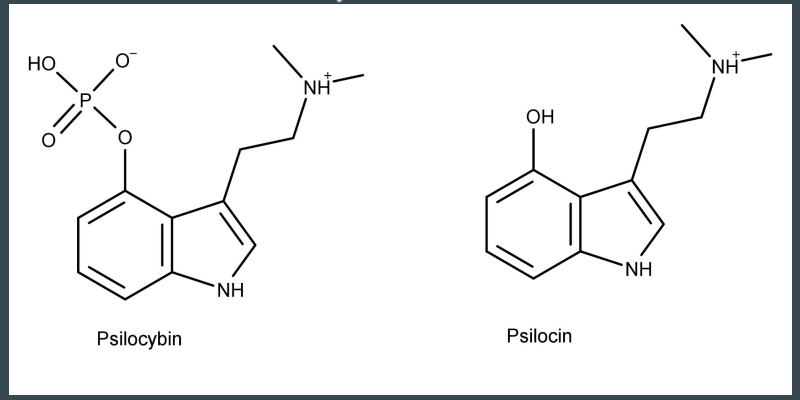
However the relative contribution of the various serotonin receptor subtypes to is still quite unknown to science. Empathy deficits are clinically relevant because of evidence that a higher number of depressive episodes is associated with a significant impairment in the sufferer's perspective-taking abilities. This suggests that the ability to feel empathy is increasingly distorted as depression progresses.

The researches claim the following as their hypothesis: “We hypothesize that psilocybin impairs cognitive empathy for negative stimuli as shown in the reading the mind in the eyes test, whereas it increases emotional empathy. Further, we hypothesize that psilocybin reduces utilitarian choice of action in personal moral dilemmas.” (Pokorny, 2017)

What Is Psilocybin?

Psilocybin mushrooms have been used by cultures around for centuries for ritual. They have a remarkable ability to seemingly expand the users consciousness and allow them to interact with the world around them on a deeper level than when in a sober state.

Psilocybin converts to psilocin in your stomach so that it can pass the blood-brain barrier.. Psilocin main mechanism of action in the brain is its agonism of serotonin in the frontal lobe. Its attachment to the 5-HT 2A receptors in the brain produce the mystical hallucinations that people experience when consuming the substance. It's therapeutic potential comes from its ability to increase neuroplasticity immediately, causing new connections in your brain to form.



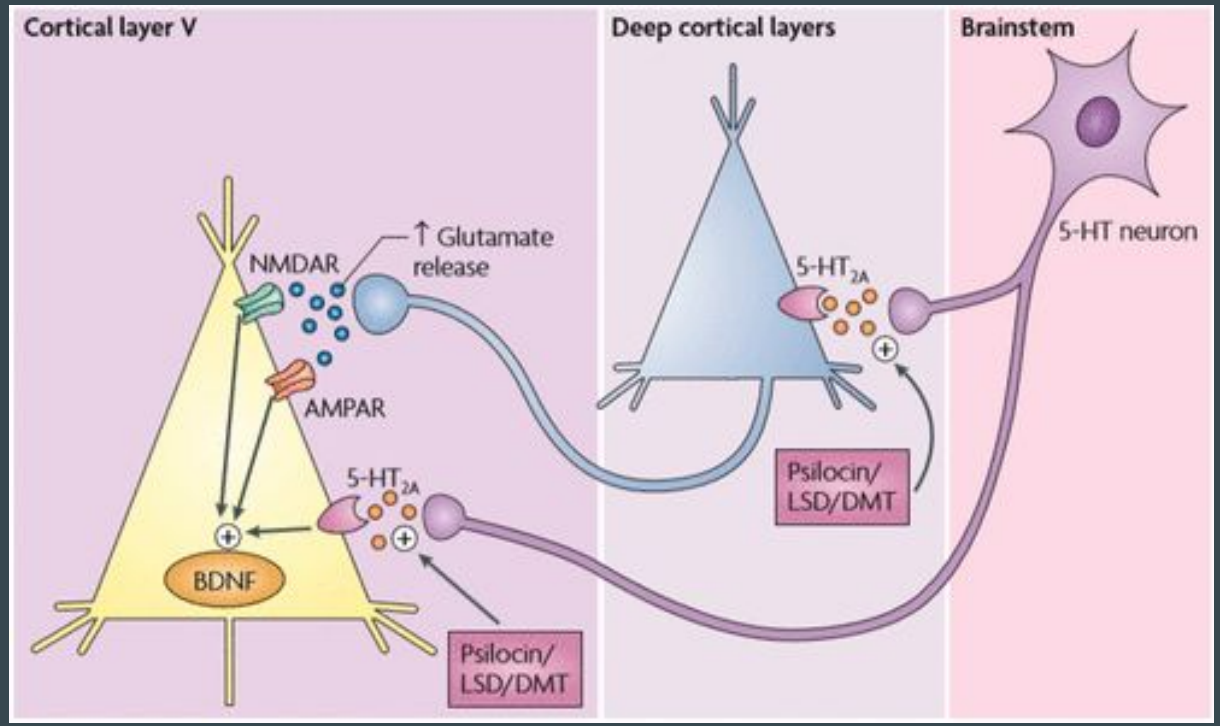
Psilocybe cubensis: The most common species of psychoactive mushrooms.

Three Types of Empathy

- Psychologists Daniel Goleman and Paul Ekman divided empathy into three categories. These categories are: Cognitive empathy, emotional empathy, and compassionate empathy (Dou, 2020).
- Important to this research article are cognitive empathy and emotional empathy.
- Cognitive empathy is the ability to understand what a person is feeling without necessarily feeling it yourself.
- Emotional empathy is present when you physically are feeling the same as another person you are interacting with, as if their emotions or feelings are infecting you.

What are the 5-HT Receptors?

- The 5-HT receptors are a group of receptors in your brain that modulate the excitatory and inhibitory release of serotonin.
- 5-hydroxytryptamine is the chemical name for serotonin.
- Psilocybin acts on the 5-HT 2a and 1a receptors more than any other receptor.
- Psilocybin's conversion to psilocin and subsequent agonism of these receptors are the reason that psilocybin has the effects it does.



Methods

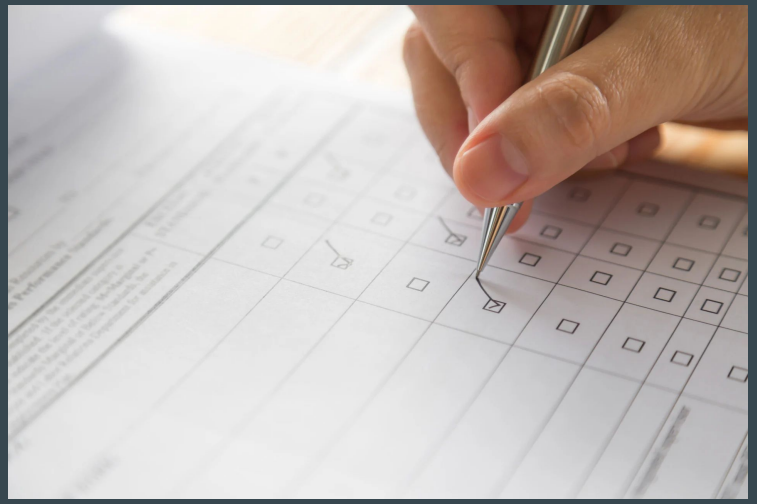
- Investigated what the effects of a dose of psilocybin (0.215mg/kg) would be in healthy human subjects.
- Subjected participants to multiple tests. Some regarding drug experience, but mostly on empathy and morality. These tests are referred to as MET and MDT.
- 32 healthy human participants were the subjects for the study.
- Subjects were required to abstain from any psychoactive drugs for 2 weeks before the trials began.

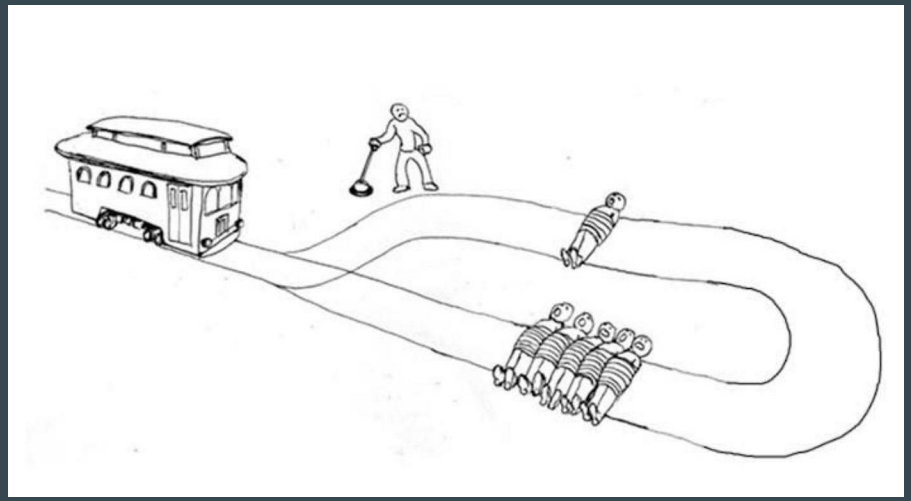
Design and Procedure

- The study was designed to be double-blind and placebo-controlled. The placebo was mannitol.
- 2 experimental sessions. One session where the subjects received the psilocybin and a second one where they received the placebo.
- The psilocybin and the placebo were both administered in identical gel capsules.
- The 2 sessions were separated by at least 10 days.
- The MET and the MDT were completed on a computer in a quiet room 160 minutes after substance administration.
- The Altered States of Consciousness Rating Scale (5D-ASC) was used 360 minutes after drug intake.
- The Positive and Negative Affect Schedule (PANAS) was applied before and 360 minutes after drug intake.

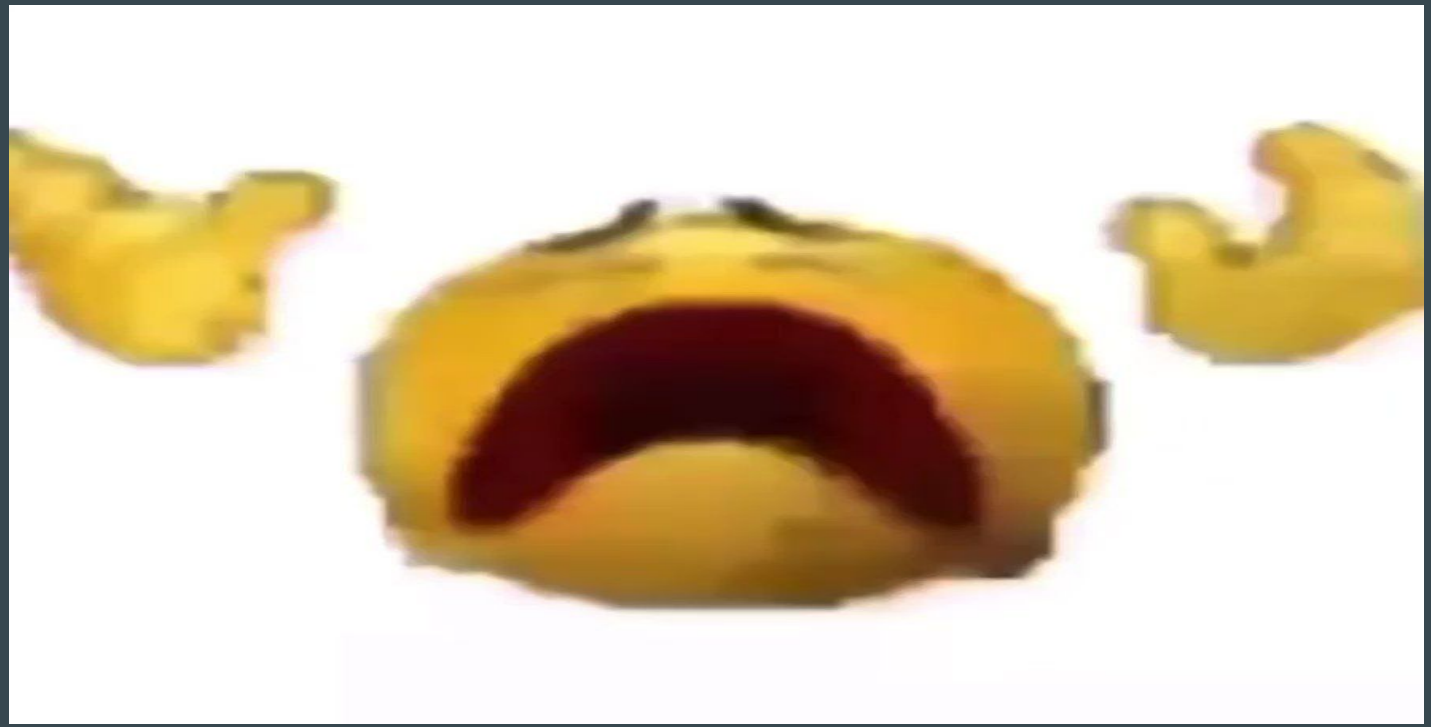
Measures

- **The Interpersonal Reactivity Index (IRI):** It is a self-report questionnaire used to measure trait empathy.
- **The Multifaceted Empathy Test (MET):** The MET is a computer-assisted test evaluating cognitive empathy, explicit emotional empathy, and implicit emotional empathy.
- **The Moral Dilemma Test:** The MDT utilizes two sets of matched scenarios featuring moral dilemmas, with each set containing 22 vignettes illustrating various types of dilemmas.
- **The 5D-ASC:** This was used to assess subjective drug effects in both experimental sessions. It is a standardized questionnaire comprising 94 items to be answered on visual analogue scales.
- **The PANAS:** This was used to assess the self-reported positive and negative effects of the psilocybin and placebo.





FINALLY THE RESULTS



Results: The Interpersonal Reactivity Index (IRI)

Image citation: (Pokorny, 2017)

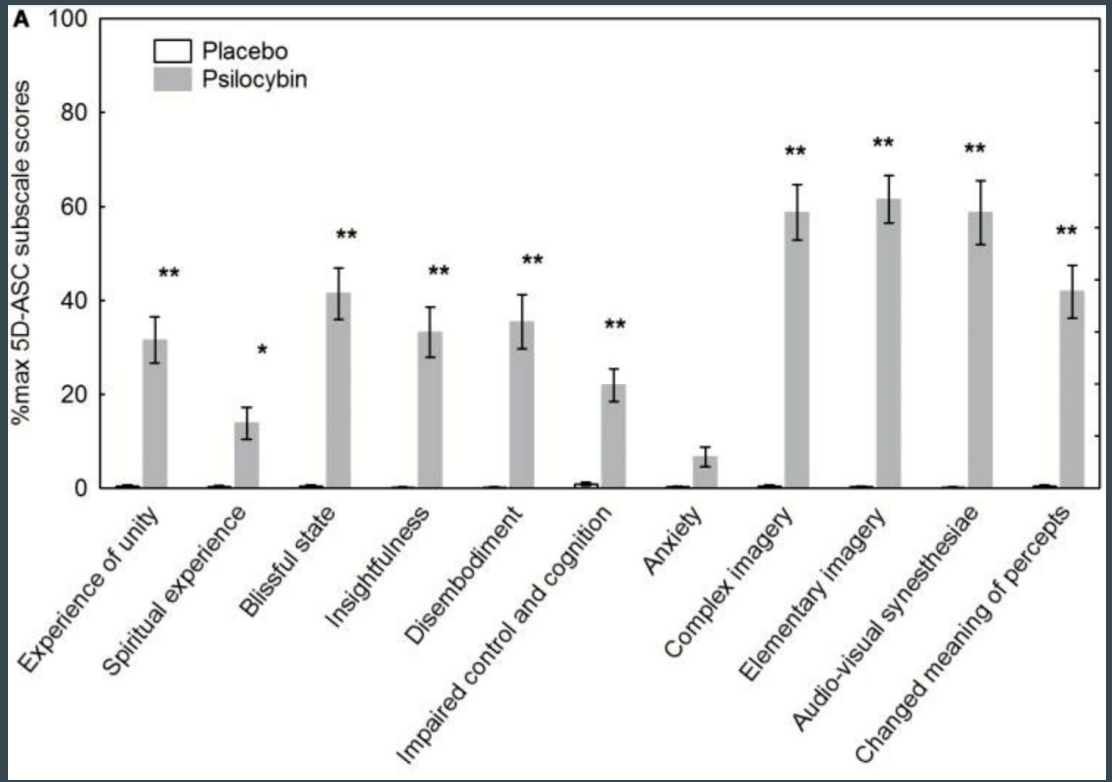
Self-Reported Trait Empathy Scores of the Interpersonal Reactivity Index (IRI) of 32 Subjects

IRI subscale	Mean	SD	Min	Max
Perspective taking (4–20)	15.19	2.18	9	19
Fantasy (4–20)	12.56	3.23	6	19
Empathic concern (4–20)	13.84	2.41	9	20
Personal distress (4–20)	08.69	2.58	5	15

Results: The 5D-ASC

- There was a very significant drug*scale interaction. The placebo didn't induce any sort of noticeable state in any of the participants.
- However, the psilocybin induced fairly extreme changes in nearly all facets of the test, aside from anxiety.

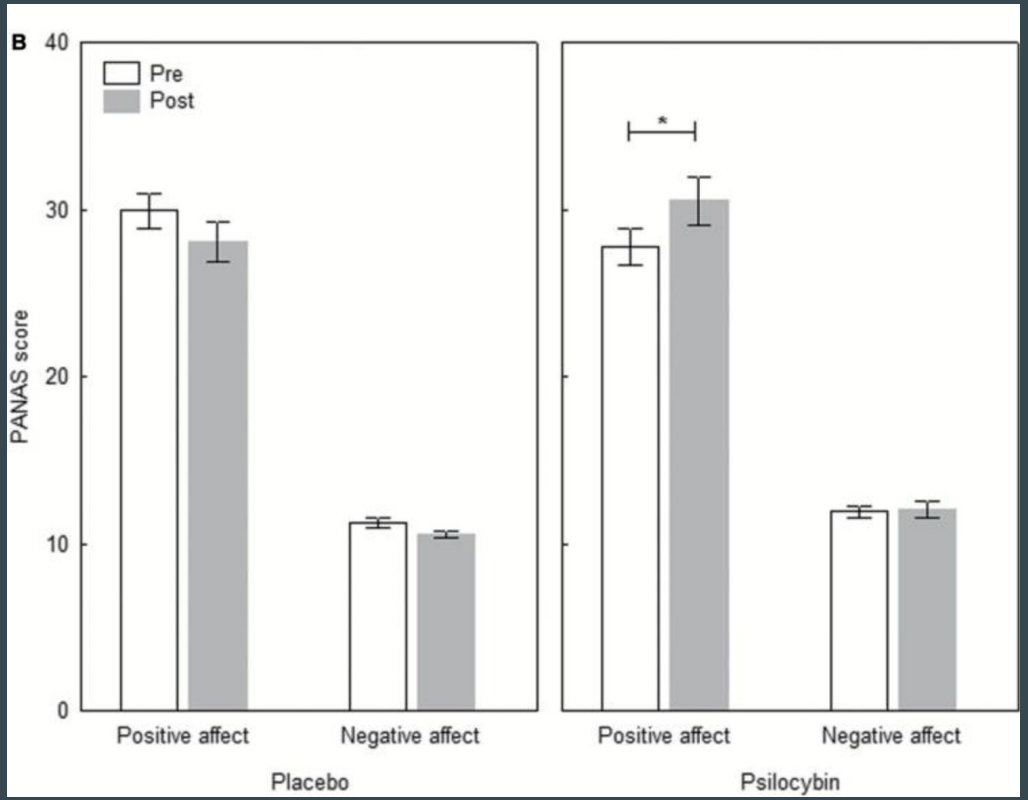
Image citation: (Pokorny, 2017)



Results: The PANAS

- In this graph, we see the subjective mood states of the participants compared from pre to post (360 minutes after drug intake).
- The placebo had a higher pre-positive affect than the psilocybin, but a lower post-positive affect.
- The negative affect was nearly the same in both cases.

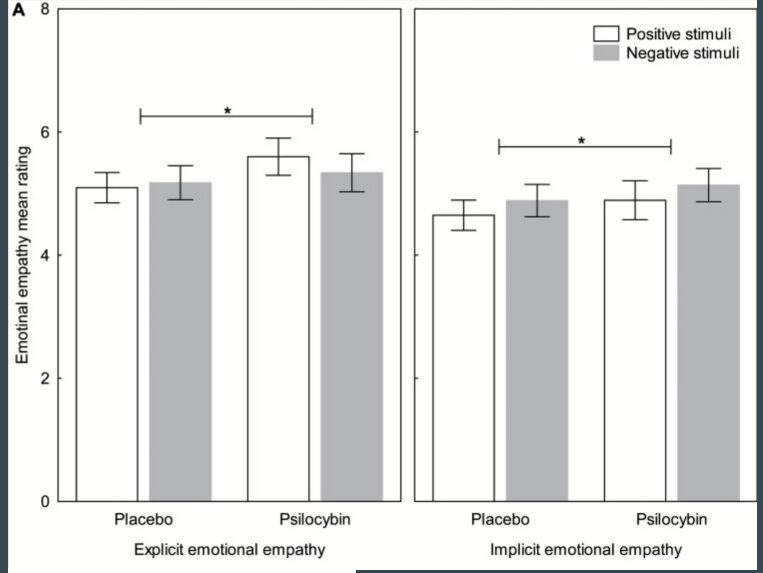
Image citation: (Pokorny, 2017)

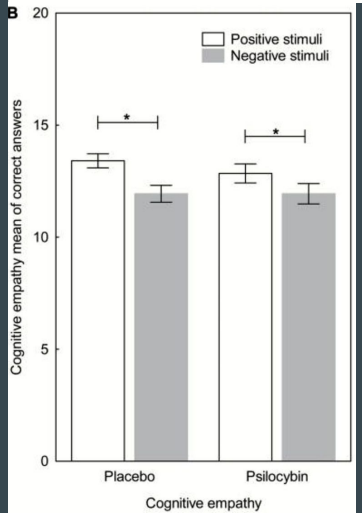


Results: MET

- The results of the Multifaceted Emapathy Test revealed that psilocybin significantly increased explicit emotional empathy compared to the placebo.
- For implicit emotional empathy, the test revealed that psilocybin increased implicit emotional empathy compared to the placebo.
- There was no significant interaction between psilocybin and the placebo for cognitive empathy.

Image citation: (Pokorny, 2017)





Results: MDT

- The results of the Moral Dilemma Test revealed that there were no significant differences between the psilocybin and placebo groups.
- However, in the nonmoral dilemma scenarios, the psilocybin group did worse than the placebo group. An example of this is “Should I eat ice-cream or pizza.”

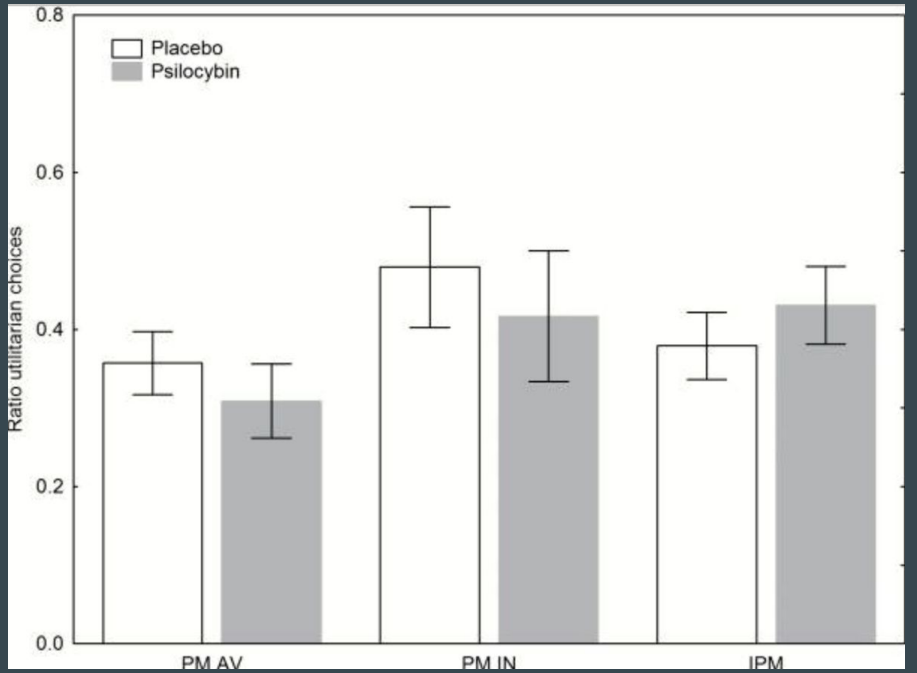


Image citation: (Pokorny, 2017)

Discussion: Key Takeaways

- Psilocybin significantly increased explicit and implicit emotional empathy.
- The increase in implicit emotional empathy was independent of stimuli valence. (A stimuli valence is defined as “The value associated with a stimulus as expressed on a continuum from pleasant to unpleasant or from attractive to aversive.”) **(APA, 2018)**
- Implicit emotional empathy increase was related to alterations in the meaning of percepts.
- There was no significant change in cognitive empathy between placebo and psilocybin.
- Psilocybin did not lead to significant differences in decision-making on hypothetical moral dilemmas compared to placebo.
- The findings in this study suggest that 5-HT2A and 5-HT1A receptor systems may be important in the experience of emotional empathy regardless of the emotional valence of the stimuli. **(Emotional empathy measures one's current experience of another person's emotional state, while cognitive empathy, aka Theory of Mind, requires identifying the other person's emotions accurately.)**
- Psilocybin modulates the processing and recognition of negative social and nonsocial stimuli via 5-HT2A and/or 5-HT1A receptor activation.

Conclusion

The results suggest that 5-HT2A and possibly 5-HT1A receptors are involved in implicit emotional empathy and explicit emotional empathy, extending previous findings.

It seems that from the results of this study that empathy is a trait that can be chemically altered using pharmacological methods. This has massive implications for the treatment of mental disorders that are associated with a lack of empathic ability and are thought to be untreatable or are very difficult to treat. Examples could include ASPD (Anti Social Personality Disorder) and BPD (Borderline Personality Disorder).

Further studies need to be done on the efficacy of psilocybin in treating psychiatric disorders before any real conclusions can be made about its therapeutic potential, but I am very optimistic about it. The other issue with this is that the DEA still classifies psilocybin as a schedule I substance, which makes it hard to study and also hard to use in a clinical setting.

Discussion Questions

It seems in modern society that showing empathy towards one another is something we value greatly and helps society in the long run. If this is true, then do you think we have a moral obligation to increase empathic capacity as much as possible around us?

Furthermore, if psilocybin has the potential to increase empathic capacity after a single dose, is it ethically acceptable to introduce others to psilocybin?

CITATIONS

The Effects of Psilocybin on Empathy and Moral Decision Making Research Article:

Pokorny, T., Preller, K. H., Kometer, M., Dziobek, I., & Vollenweider, F. X. (2017). Effect of Psilocybin on Empathy and Moral Decision-Making. International Journal of Neuropsychopharmacology, 20(9), 747–757. https://doi.org/10.1093/ijnp/pyx047

Definiton of Stimuli Valence:

APA Dictionary of Psychology. (n.d.). Dictionary.apa.org. https://dictionary.apa.org/emotional-valence

Three Types of Empathy:

Dou, T. (2020, June 24). What is empathy? Learn about 3 types of empathy. Casper test. Retrieved April 17, 2023, from https://acuityinsights.app/2020/06/empathy-1/