

# Attitudes and ethical concerns related to the application of Transcranial Magnetic Stimulation (TMS) in adolescents

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## Background

institute

Investigation into attitudes and ethical concerns around the use of repetitive Transcranial Magnetic Stimulation (TMS) for adolescents is of high priority, given that emerging studies are examining the safety and efficacy for this patient population. Informed consent and agency have also been identify as presenting a special set of challenges for adolescent treatment.

This study examines both adolescents and parental attitudes toward the use of TMS in adolescent depression. Inclusion of the latter group is key given the necessary role of parents in consenting to treatment. While there are a few studies examining the views of adolescents and parents in relation to TMS for adolescents with depression, these have not been studied in the US.

This study provides insights into the attitudes and ethical concerns of adolescents and parents about TMS. The overall lack of knowledge around TMS highlights the need for further work in engaging with the public about these types of interventions.

# Results

010A: "I think it's a little-- I don't know, cartoonish. Almost like "Frankenstein" or something. I've had some different treatments for muscle things but it's not been on my head. It's been like on my back, or my leg, or whatever. It seems less scary than your actual head."

008A: "...it would be really

critical for me that my kid was

on board with the decision."

013A: "Yeah, I just want to know like this TMS therapy, exactly, does it work permanently?"

005C: "Electromagnetic waves going to the brain, and even if you research it people don't really understand the brain. So that's the only thing, but that's what happens when you do stuff with your brain. It's a risk you have to take."

Attitudes about TMS

004A: "Maybe this could be something that would be a better sell for those who are just totally not into taking pills [...] the fewer pills the better."

016C: "OK, I just wanted to ask the side effects, how long can the side effect last."

009A: "A 14-year-old or 16-year-old with no mental health concerns, in my opinion, does not have the capability to make rational thoughts and decision. They're just going through a lot. And so for them to be able to have complete 100% control by law boggles my mind..."

Decision making for adolescent TMS

009C: "I think if you're over the age of 14, I mean, you have the right to therapy. You have the right to consent to therapy. So, I feel like that should be the same thing for this. If you're over the age of 14, you have every right to say yes or no without a parent's consent."

002A "[T]hey're developing their own agency at this age, and you can be very careful about respecting that balance between their autonomy and being the parent."

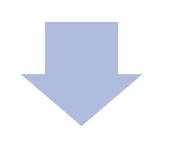
005C: [if I were younger than 12] I would be a little more hesitant just because I feel like it would be harder for me to have an understanding"

#### Methods

Recruitment via
Mayo Clinic, Penn
State, and National
Network of
Depression Centers



Consent (adults) or assent (adolescents) documents sent to participants with a study information sheet



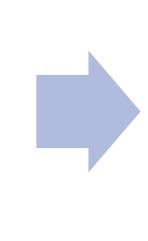
Transcription of online interviews by 3PlayMedia



Semi-structured interviews with five adolescents (aged 13-17 years) and parents of adolescents (n=15)



Iterative process of creating the codebook



Qualitative analyses using Dedoose & guided by the theoretical framework of pragmatic neuroethics

#### Table 1. Description of the Study Samples

		Parents of Adolescents (n=15)	Adolescents (n=5)
Gender			
	Male	5 (33.33%)	3 (60%)
	Female	10 (66.67%)	2 (20%)
Age			
	Median	N/A	16
	Range	26-35 (n=1, 6.67%)	13-17
		36-45 (n=10, 66.57%)	
		46-55 (n=4, 26.67%)	
Race/Ethnicity			
	Hispanic	2 (13.33%)	1 (20%)
	Non-Latino White	5 (33.33%)	2 (40%)
	African American	6 (40%)	2 (40.0%)
	Other	2 (13.3%)	O (O%)
Education			
	Middle school	N/A	2(40%)
	High school	N/A	3 (60%)
	College 4 years +	5 (33.33%)	N/A
	Advanced degree	9 (60%)	N/A
	Professional certificate	1 (6.67%)	N/A

### Discussion

- TMS was considered a safe and promising intervention for the treatment of adolescent depression
- Most participants were not aware of TMS and did not have strong preferences or ethical concerns for or against the use of TMS to treat adolescents with depression
- Participants worried about the side effects and long-term effects of TMS in adolescents,
   but also about the side effects and risks associated with antidepressant medication
- Most parents agreed that time constraints and availability of clinics is a key consideration in their decision-making process
- Adolescents' involvement in decision making varied greatly

#### Conclusions

- Parents have interest in the application of TMS as a treatment for adolescent depression and point to future practical considerations that remain to be addressed in order to harness this powerful tool for this patient population.
- Furthermore, future work in educating the general public on what TMS is and how it works would be needed to allow TMS to become a socially acceptable treatment method for depression in adolescents.

# Acknowledgements

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Disclosures: None

