

Examining Medical Students' Attitudes Towards Autism Spectrum Disorder (ASD)

Chance Stevenson¹, Dr. Changiz Mohiyeddini², Dr. James Grogan³

¹B.S., Oakland University William Beaumont School of Medicine

²Ph.D., Professor in the Department of Foundational Medical Studies, Oakland University William Beaumont School of Medicine

³Ph.D., Professor in the Department of Foundational Medical Studies, Oakland University William Beaumont School of Medicine

Introduction

- As defined by the National Institute of Mental Health, **Autism Spectrum Disorder (ASD)** is a neurological and developmental disorder that affects how people **interact** with others, **communicate**, **learn**, and **behave**.¹ However, there is a **wide variation** in the type and severity of symptoms experienced.¹
- A study by Austriaco et al. reported a **low general knowledge of ASD amongst medical students** and in particular, medical students were unfamiliar with sensory issues often seen in children with ASD.²
- A study done by Cage et. al, suggests **dehumanizing attitudes** (seeing another as less than human) **to those on the autism spectrum** may still be prevalent in **non-autistic individuals**.³
- Currently there is a **lack of information** on medical students' attitudes on ASD, the impact of personality on attitudes towards ASD, and the attitudes towards the management of ASD
- Identifying** deficiencies regarding ASD in medical students and **addressing** them and their causes is needed in order to better care for this seemingly growing population.
- Research Question:** Does medical students' scores on the personality domain of openness impact their attitudes towards Autism Spectrum Disorder and its management?
- Anticipated outcomes/Hypothesis:** Medical students' awareness towards features of ASD and its management options improves with this study. Openness will be positively correlated with positive attitudes towards ASD

Aims and Objectives

- To **improve** medical students' **awareness** towards features and management options of ASD via an education intervention.
- To **identify** if medical students' results on the **openness** personality domain impacts **recognition** of ASD characteristics and/or **attitudes** towards ASD.
- To **identify** medical students' **attitudes** towards ASD **management**, including Applied Behavioral Analysis (ABA) Therapy.

Methods

- Participants:** Consenting English speaking **medical students** at OUWB School of Medicine
- Design:** Cross-sectional survey based design
- Study Location:** Online
- Sample Size:** n=25 students
- Methods:** Study information + Consent + **Qualtrics survey (with all components)** was emailed to medical students at OUWB
- Tools:**
 - Openness to experience (Big Five Inventory)** → Impact of personality domain of openness
 - Marlowe-Crowne Social Desirability Short Form** → Validated method to assess the tendency to respond in socially desirable way, even if it might not be entirely truthful
 - Knowledge/attitudes survey with Likert Scale** → Pre and Post-test
 - Educational intervention** → Module on ASD and ABA therapy
- Estimated Completion Time for participants:** 15-20 minutes
- Data was collected anonymously via **Qualtrics** and analyzed using statistics in conjunction with Microsoft Excel.
 - Data analysis included: T-test (paired and unpaired with alpha of 0.05); mean calculations; standard deviation calculations; confidence interval calculations; Pearson correlation coefficient.

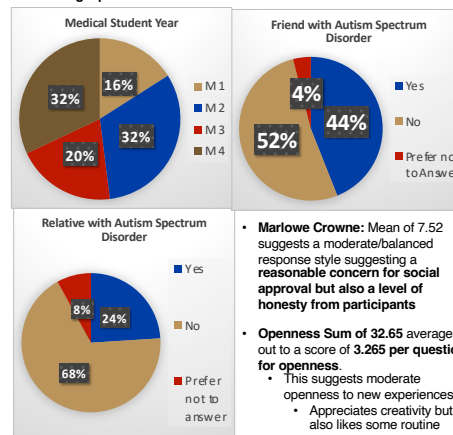
- Data Collection Duration:** ~ 6 months

- Openness** was calculated for each individual using a modified 10 question version of the Big Five Inventory with a 5 point Likert Scale.
- Marlowe-Crowne** was calculated using a 13 question (1 point for true, 0 points for false)
- Attitudes towards ASD** consisted of an 8 question survey using a 6-point Likert scale.
- Knowledge on ASD** was assessed using a 8 question survey with a 6-point Likert scale
- Knowledge on ABA therapy** was assessed using a 10 question survey with a 6-point Likert scale
- The **BFI personality component (openness)** was compared to the **initial responses** regarding attitudes towards ASD
- Initial ASD attitudes and knowledge were compared to post-educational exposure
- Similarly initial knowledge on ABA therapy was compared to knowledge post-educational exposure



Results

- Demographics: n= 25**



- Marlowe Crowne:** Mean of 7.52 suggests a moderate/balanced response style suggesting a reasonable concern for social approval but also a level of honesty from participants
- Openness Sum of 32.65** averages out to a score of **3.265 per question for openness**.
 - This suggests moderate openness to new experiences
 - Appreciates creativity but also likes some routine

Survey Overview

	# of Questions	Mean	STD DEV	Sample Size	Confidence Interval
Openness (BFI)	10	32.65	5.92	23	(30.23, 35.07)
Marlowe Crowne Short Form	13	7.52	2.37	23	(6.55, 8.49)
Attitudes Towards ASD (Pretest)	8	40.41	4.6	22	(38.48, 42.33)
Knowledge on ASD (Pretest)	8	32	5	22	(29.91, 34.09)
Knowledge on ABA (Pretest)	10	37.23	4.88	22	(35.19, 39.27)
Attitudes Towards ASD (Posttest)	8	41.43	5.36	14	(38.62, 44.24)
Knowledge on ASD (Posttest)	8	36.5	6.55	14	(33.07, 39.93)
Knowledge on ABA (Posttest)	10	44.79	6.05	14	(41.61, 47.96)

Openness (BFI) relation to Attitudes towards Autism Spectrum Disorder

- Participant openness scores were averaged per question (eg. 36 became 3.6 since there were 10 questions)
- Given the calculated mean of 3.27, participants were then categorized into 2 groups based on openness scores
 - Group A had a higher scoring openness score (>3.27) (n=11)
 - Group B had a lower openness score (≤ 3.27) (n=11)
- Attitudes towards ASD scores was then compared between the 2 groups
- Pearson Correlation Coefficient (r)** was **-0.07**, suggesting a very weak negative correlation between the two variables

Test: Two-Sample Assuming Unequal Variances			
	Group A Attitudes Scores (n=11)	Group B Attitudes Scores (n=11)	Statistical Significance
Mean	4.09	5.22	No
95% Confidence Interval	(4.08, 5.39)	(4.85, 5.59)	
P value (two tailed, alpha 0.05)	0.39		

Pretest vs Posttest, Evaluation of Educational Intervention

t-Test: Two-Sample Assuming Equal Variances					
	PRETEST ATTITUDES TOWARDS ASD		POSTTEST ATTITUDES TOWARDS ASD		Statistical Significance
Mean	40.41		41.43		No
95% Confidence Interval	(38.48, 42.33)		(38.62, 44.24)		
P value (two tailed, alpha 0.05)	0.35				
	PRETEST KNOWLEDGE ASD		POSTTEST KNOWLEDGE ASD		Statistical Significance
Mean	32		36.5		No
95% Confidence Interval	(29.91, 34.09)		(33.07, 39.93)		
P value (two tailed, alpha 0.05)	0.03				
	PRETEST KNOWLEDGE ABA		POSTTEST KNOWLEDGE ABA		Statistical Significance
Mean	37.23		44.79		Yes
95% Confidence Interval	(35.19, 39.27)		(41.61, 47.96)		
P value (two tailed, alpha 0.05)	0.0002				

Results support a **statistically significant difference in knowledge on ABA therapy in the pretest vs posttest group**. This suggests that the educational intervention improved knowledge on ABA therapy. In particular, knowledge on concepts of Discrete Trial Training (DTT), Picture Exchange Communication Systems (PECS), and Pivotal Response Training (PRT).

Conclusions

- The educational intervention (module containing information regarding ASD and ABA therapy) did not achieve statistical significance for knowledge regarding ASD as a whole.
 - However, within the knowledge of ASD component, **self reported scores of "I know how to diagnose Autism Spectrum Disorder" were improved and statistically significant between the pre and post-test**.
 - Pretest mean 2.55, CI (2.05, 3.04), p=0.003
 - Posttest mean 3.92, CI (3.20, 4.65)
- The **educational intervention did achieve statistical significance in improving the knowledge regarding ABA therapy**.
 - Information included videos of ABA therapy, information regarding Discrete Trial Training (DTT), Picture Exchange Communication Systems (PECS), and Pivotal Response Training (PRT)
- The additional aim of assessing if openness to experience (BFI) impacts attitudes towards ASD was not statistically significant for this group of participants.
- Limitations of this study include limited sample size, participant attrition, and data collected from a single medical school.
 - Future studies may benefit from further incentivizing medical student participation, as this study provided educational learning without any financial incentive.
 - Furthermore, incorporating different medical institutions may help account for potential discrepancies on education on ASD amongst medical institutions.
- Given previous research highlighting deficiencies of medical students in knowledge and delivering care to individuals with ASD, future studies may choose to investigate other avenues to further improve medical education.
 - More direct experiences with individuals with ASD may further improve medical student knowledge as well as illuminate other potential areas for improvement for medical students.

References

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