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Myths and Fables of Electroconvulsive Therapy: Knowledge, Attitudes, and Stigmas of ECT in College Students

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By

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Contents

Abstract

This study builds upon extensive research on Electroconvulsive Therapy's (ECT) effectiveness and advancements over time while providing insight into its continuous stigmatization as a psychotherapeutic treatment. The literature provided in this paper explores ECT's historical background and its misrepresentations in society commonly perpetuated in the media. To further examine present day perceptions of ECT, this study evaluated Bard College undergraduate students' (n = 24) knowledge, attitudes, and stigmas towards ECT. The data was collected using a five part questionnaire concerning the socio-demographic of participants (part 1), stigmas about ECT (part 2), knowledge about ECT (part 3), sources of knowledge of ECT (part 4), and attitudes towards ECT (part 5). Findings illustrate that students with more stigmatized beliefs had more negative attitudes towards ECT. Students studying in the Science, Math, & Computing (SMC) Department had significantly more positive attitudes towards ECT than students studying in the Social Studies (SS) Department. Where students learned or heard of ECT, specifically 'Internet' and 'Non-medical Books', impacted both knowledge and attitude rates. Students who learned about ECT from three or more sources of knowledge had more positive attitudes and lower stigmatized beliefs towards ECT than students who had two or less sources of knowledge. This study contributes to research which aims to provide a more balanced depiction of ECT and should inspire continued exploration in this domain.

Keywords: ECT, stigmas, knowledge, attitudes, sources of knowledge

Myths and Fables of Electroconvulsive Therapy:

Knowledge, Attitudes, and Stigma of ECT in College Students

Electroconvulsive Therapy (ECT), popularly referred to as Electroshock Therapy, is a psychotherapeutic treatment and technique that has been used since 1938 to treat a variety of psychiatric disorders. ECT is an effective and safe treatment for a variety of psychological disorders but has received controversial feedback since its implantation into medical practice in the 1930s. ECT's early applications and questionable ethics (Payne & Prudic, 2009), negative depictions in media (Domino, 1983), and associations with homophobia through Electrical Aversion Therapy (Chenier, 2015) are all leading factors in the stigmatization of ECT today. This research explores college students' attitudes toward ECT as a form of treatment based on their knowledge of it and stigmatized beliefs towards it. The pre-existing literature explored in this paper provides examples of ECT's history of stigmatization, effectiveness, and the importance of understanding that it is misrepresented and looked at through an outdated perspective.

Despite its controversial past and history of *public stigma*, defined as the prejudice and discrimination endorsed by the general population that affects a person (Corrigan et al., 2012), it is found to be a beneficial treatment and can be used ethically (Trifu et al., 2021). Public stigmas in the mental health fields are leading factors in society's perception of psychotherapeutic treatments. ECT is one of the alternative treatments to medication-resistant depression and as compared to other treatments, is found to be the most efficacious for symptom remission of mental disorders such as major depressive disorder (MDD) (Chen et al., 2017), but many people do not know of its effectiveness or what the process consists of.

This study explores where and how people know about ECT, the kinds of attitudes and beliefs they hold today about this psychotherapeutic practice, and how these variables affect our

decisions. Where and how we learn about new ideas is impactful on our attitudes and beliefs. The knowledge we have from the sources of knowledge in which information is obtained, such as our education system, plays a crucial role in our beliefs. These beliefs can shape our attitudes towards a concept, especially controversial ones, and potentially feed into preexisting stigmatizations. College students are an important social group for creating public opinions and setting trends because they are the future voices of our generation. Students with negative depictions of ECT may contribute to further limitations of ECT's use and society's outdated understanding of ECT as a psychotherapeutic treatment (Gedek et al, 2021).

Literature Review

Electroconvulsive Therapy: Mechanics

Electroconvulsive Therapy involves a convulsive seizure induced into the patient from electrodes attached to the patient's temples. A current that ranges between 70 and 130 volts is administered for 0.1 to 0.5 seconds leaving the seizure to last between thirty and fifty seconds (The Michigan Law Review Association, 1976). Currently, in common practice, three placements have been standardly used: bitemporal (BT), bifrontal (BF) and right unilateral (RUL). In principle, it has been argued that all of these are associated with symptom improvement at the end of the intervention (Trifu et al., 2021). Electroconvulsive therapy's main method is to cause changes in brain chemistry, which has shown to reverse the symptoms of certain mental health conditions, specifically medication-resistant depression and bipolar disorder (Soda et al., 2020).

History and Advancements

Although research leading up to 2023 demonstrates ECT as both an effective and relatively safe treatment for a variety of mental health disorders, it is still looked at as a last

resort treatment choice (Li et al., 2020). ECT has been an easy target for public speculation and concern because of its early applications violating biomedical ethical principles of autonomy and beneficence (Payne & Prudic, 2009). Advancements in technology and standards for informed consent pre ECT treatment, now firmly adhered to, were initially established in a 1978 report from an American Psychiatric Association (APA) DSM-5 to encourage and implement ethical practices in psychotherapeutic settings (American Psychiatric Association, 2013).

The mechanics and lack of consent were not the only factors provoking this public anger. The indignation with ECT was so strong that it gave rise to an anti-psychiatry movement in the United States and Europe between the 1960s and 70s. ECT's negative depiction in the media and its controversial past with homophobia were leading factors in its continuous speculation. The 1975 film *One Flew Over the Cuckoo's Nest* is known for its display of Electroconvulsive Therapy (ECT) as a psychotherapeutic treatment. It is one of many televised films that portrays ECT as an abusive form of control used on "unruly" schizophrenic and depressed patients (Forman, 1975). This fictional story is one of the most memorable in the way it stigmatizes and haunts our attitudes towards mental illness and ECT (Domino, 1983).

Electrical Aversion Therapy is a technique used as a behavior modification that expels unpleasant stimuli in hopes to help a patient unlearn a specific behavior. Its first recorded use was to treat alcoholism in the 1930s and shortly after targeted homosexuality in the 1950s, both deemed as socially unacceptable behaviors (Chenier, 2015). ECT has been commonly categorized with Electrical Aversion Therapy because of its similar mechanics involving electrical currents induced into the patient. Electroshock to treat homosexuality did not last, but its association with homophobia and ECT has.

Advancements in separating ECT from the label of homophobia started with LGBTQ movements. The Gay Liberation Front against the American Psychiatric Association (APA) in 1970 led to the APA's removal of homosexuality from the American Psychiatric Association's Diagnostic and Statistic Manual in 1973 (Chenier, 2015). This has transitioned into the rise of human rights defenders in psychiatry implementing policy change on how mental health treatment is viewed and who has access to it. For example, the World Health Organization (WHO), an organization established in 1948 responsible for international public health, has taken strides towards advocating for basic human rights such as the implementation of mental health services and resources (World Health Organization, 2019).

This advocacy is particularly important because mental health care has a significant economic burden on low-income households in high-income countries. This results in specific groups of people not having access to potential treatment or resources in the mental health fields. A study examined 21 years of ECT data in Texas to evaluate the rates of use across different races. Although the use of ECT increased overall, white patients continued to use ECT more than African Americans, Latinos, and Asians. Knowledge of ECT, access to care, cultural beliefs, and stigmas were noted as areas of interest which may have potential influence on the disparity of these rates (Williams et al., 2016). It is important to look at ECT's historical context when highlighting its advancements and effectiveness as a form of treatment.

ECT's Effectiveness

ECT is stigmatized as not being effective, but the success rates of it as a treatment for majorly depressed patients, bipolar patients, schizophrenic patients, and suicidal patients has grown. ECT has been most frequently recommended in patients with major depression diagnoses, but continuous research has shown ECT's effectiveness in patients with schizophrenia

and mania (Payne & Purdic, 2009). There has been direct speculation with ECT use in patients with schizophrenia, but the American Psychiatric Association has provided positive recommendations with its use: “The introduction of effective antipsychotic medications markedly reduced the use of ECT in patients with schizophrenia. However, ECT remains an important treatment modality, particularly for patients with schizophrenia who do not respond to pharmacologic treatment” (APA, p. 16). Adult patients with depressive disorders who underwent ECT have shown significant progress measured by symptom rating scales, and the effectiveness of ECT has shown to be significantly better than pharmacotherapy for these patients (Geddes, 2003). ECT use has also shown positive success rates in severe and medication resistant bipolar disorder (Perugi et al., 2017). A previous meta-analytic review on ECT in depression revealed ECT’s superiority over the following comparative variables: antidepressants in general, tricyclic antidepressants (TCAs), and monoamine oxidase inhibitors (MAOIs) (Pagnin et al, 2004).

ECT also shows to be an effective treatment for a variety of different patients, such as pregnant people, adolescents, and elderly people (Anderson, 2009; Wachtel et al, 2011; & Copeland et al, 2002). Rates of depression in pregnancy, specifically during the second and third trimesters, is significantly high (Bennet et al, 2004). Although there have been multiple efforts from legislative bodies and advocacy groups to include pregnant people in clinical drug trials to assess efficacy and safety, there is still a lack of trial inclusion in the pharmaceutical world (Kazma et al, 2021). In terms of ECT in pregnant people, previous studies have found ECT to be an effective treatment with low risks to the fetus for persons with severe psychological disorders during pregnancy (Anderson, 2009). Similarly, multiple published reports have demonstrated ECT’s safety and effectiveness in pediatric patients with a wide range of psychological disorders. More specifically, ECT success rates have been commonly shown in youth with autism and other

neurodevelopmental disabilities (Wachtel et al, 2011). In geriatric psychiatry, ECT has also been shown to be an effective treatment in elderly patients with severe affective disorders and delusional depression (Copeland et al, 2002).

These findings bring up the question of when ECT is recommended and most commonly used. The indications of ECT in children and adolescents are similar to adults. This criteria, as stated by Lee E. Wachtel in the source "When is electroconvulsive therapy appropriate for children and adolescents?", includes cases of "severe affective, psychotic, and catatonic pathology that has proven refractory to psychotropic medications and causes significant functional impairment" (Wachtel et al., 2011). ECT has proven to be and remains a vital treatment for people with a variety of severe disorders and illnesses (Kellner et al, 2020). More specifically, ECT's success rate in patients with severe depression, mania, and psychosis directly helps in the prevention and reduction of suicide (Fink et al, 2014). This literature on the results of ECT across a variety of socio demographic groups speaks directly to its overall effectiveness and legitimacy as a psychotherapeutic treatment, but it continues to be looked past.

Stigmas of ECT

ECT's effectiveness has proven to be high and the use of ECT in unethical ways no longer exists, but the social memory of it as a past treatment remains and plays a role in the stigmatization of it today (Chen et al., 2017). The stigmatization of ECT is rooted deeper within the stigmas of mental illness as a whole, the patients themselves, and all treatments associated with it. The lack of public awareness and or knowledge of safe and effective advancements in psychiatry feed into these public stigmas, which can therefore directly affect social stigmas and self stigmas. *Social stigmas* refer to negative stereotypes coming from people in one's own social

network, which can contribute to *self stigmas*, the internalization of society's projections of a concept such as mental health treatment (Owen et al., 2012).

Negative attitudes and stigmas of ECT exist in both the general community and within health services themselves (Saarma et al., 2023). Public movements, such as the anti-psychiatry movement of the 1970s, challenged the validity of psychiatric diagnoses and methods (Nasser, 1995). ECT being a relatively new treatment during this time made it easy to target and criticize and therefore potentially contributes to its ongoing stigmatizations. The anti-psychiatry movement was partially organized by former mental health patients themselves (Dain, 1989). The past experiences that these patients had with psychiatry and its treatments is important to highlight. Previous psychotherapeutic techniques, such as ECT, have violated ethical practice techniques. Although this plays a huge role in the stigmatization of ECT today, this movement helps us continue to look at the history of ECT and highlight its advancements since that period.

If a treatment is seen in negative terms, this will directly influence its rates of use. It has been found that patients' contentment with their social support has been linked to positive psychotherapeutic outcomes and lower rates of early termination from treatment (e.g., Corrigan, 2004; Link et al., 2001; Sirey et al., 2001). Specifically to ECT, it has been found that counseling intervention is effective in decreasing stigma in patients undergoing ECT (Sadeghian et al, 2022). Such counseling is helpful in the way it acts as an educational tool to help patients better accept and understand ECT as a treatment. It is also an opportunity for patients to express their emotions in a stigma free environment which will help alleviate and work through *self stigmas*. Counseling and information sessions are not only beneficial for the patient but also for family members of patients undergoing ECT. A previous study has shown that family pre-ECT teaching intervention and counseling helped decrease depression, anxiety, and stress levels in family

members of patients undergoing ECT (Shamsaei et al, 2019). This highlights how important education from reliable sources is when working towards destigmatizing ECT and its use.

Knowledge and Sources of Knowledge

Sources of knowledge, or where one is getting information about ECT, can influence one's understanding of ECT, or their knowledge of it, and therefore affect rates of stigmatized beliefs or one's attitude towards it. Media plays a crucial role in the portrayal of ECT by commonly broadcasting it as a cruel, harmful, and inhumane form of treatment (Mcdonald & Walter, 2009). Not only do media platforms portray ECT in a negative connotation, but psychiatric patients in general are stigmatized as dangerous, typically broadcasted this way on prime-time television (Fink & Tasman, 1992). The general public, those not in medical or psychology fields, are typical consumers of this false data. Medical interns have shown to have more knowledge, and therefore more positive attitudes associated with ECT than the general public due to their main source of information being medical books (Bhat et al., 2020).

Experiencing ECT as a patient is a form of personal knowledge and therefore also improves the attitudes towards it, helping destigmatize it as a form of treatment (Aoki et al., 2016). Previous studies have found that patients' subjective attitudes towards ECT were positive and reported having high satisfaction rates with the treatment and the department of administration itself (Rush et al, 2018). These findings emphasize on the importance of ECT's administration being at an accredited clinic with specific patient resources such as support groups. Similarly, patients who were initially uncertain of ECT, with negative attitudes associated with it, reported having an increase in attitudes post treatment (Pettinati et al, 2016). Patients being in a safe environment with professionals willing to be as informative as possible about ECT has resulted in more positive attitudes towards it as a psychotherapeutic treatment.

Aim

The purpose of this study is to create a more balanced depiction of Electroconvulsive Therapy (ECT). There are currently thousands of published articles concerning ECT's use and effectiveness, yet it still remains highly controversial and stigmatized. This research was aimed to assess undergraduate students' attitudes, knowledge, and beliefs towards ECT and to see how these variables interact. Additionally, students' sources of knowledge of ECT were assessed to see if attitude and knowledge rates were impacted by where students learned or heard of ECT. Another goal was to see if students' department of study (Science, Math, and Computing Department vs. Social Studies Department) had an impact on attitude and knowledge rates as well. Based on the above literature, these goals were broken into 6 working hypotheses. Hypothesis 1 suggests that the lower the rate of student's knowledge of Electroconvulsive therapy (ECT), the more negative attitudes there will be. Hypothesis 2 suggests that the higher the rate of student's stigmas of Electroconvulsive Therapy (ECT), the more negative attitudes there will be. Hypothesis 3 suggests that the student's sources of knowledge will influence student's knowledge rates of Electroconvulsive Therapy (ECT). Hypothesis 4 suggests that the student's sources of knowledge will influence students' attitude rates of Electroconvulsive Therapy (ECT). Hypothesis 5 suggests that students studying in the SMC department will have more positive attitudes towards ECT than students studying in the SS department. Hypothesis 6 suggests that students studying in the SMC department will have higher rates of knowledge about ECT than students studying in the SS department.

Methods

Participants

Undergraduate students attending Bard College in Annandale-on-Hudson, New York were recruited. Students in their 2nd, 3rd, or 4th year of study were recruited, leaving out 1st year students because Bard College students do not declare their major or department of study until their 2nd year of studies. Participants were elected to participate in this survey via a recruitment email sent to the four following focus groups at Bard College: biology department, psychology department, economics department, and sociology department. Recruitment flyers with a QR code link to the surveys were also posted in multiple Bard College academic buildings. Exclusion and inclusion criteria were dependent on academic class and department of major. Participants who were not in their 2nd, 3rd, or 4th year of undergraduate studies, or a part of the four focus groups, were excluded from data analysis.

Of the original sample size (n = 35), 11 participants were excluded from data analysis. 9 participants withdrew from the study midway through the surveys while 2 participants did not meet the level of education requirement (2nd, 3rd, or 4th year). With a new sample size of 24 participants, 15 participants were in the Science, Math, and Computing (SMC) Department (Psychology = 15(62.5%); Biology = 0(0.0%)) and 9 participants were in the Social Studies (SS) Department (Sociology = 6(25.0%); Economics = 3(12.5%)). Among all students, 14(58.3%) identified as cisgender female and 5(20.8%) identified as cisgender male. The remaining gender identities consisted of 3(12.5%) Transgender Male participants, 1(4.2%) Non-binary/Third Gender participant, and 1(4.2%) participant that identified as both Cisgender Female and Non-binary/Third Gender. The majority of respondents were students in their 4th year of study, accounting for 50% (12 students). The remaining two education levels made up the remaining

50% of the participants (2nd year = 6 students; 3rd year = 6 students). Over half of the participants were White 14(58.3%), 3(12.5%) were Asian or Pacific Islander, and 2(8.3%) participants were Hispanic or Latino. The remaining participants had more than 1 Ethnicity (Hispanic or Latino & Asian or Pacific Islander = 1; Hispanic or Latino & Black or African American = 1; White & Asian or Pacific Islander; White & Black or African American = 1; White, Hispanic or Latino, & Black or African American = 1). Religion varied with a majority of students religiously unaffiliated 11(45.8%). 6(25.0%) students were Christian while 4(16.7%) students were Jewish. The remaining 3 students preferred not to answer (4.2%), chose 'other' (4.2%), and were both religiously unaffiliated and Hindu (4.2%). A majority of participants said they did not take any of the Psychology courses listed (54.2%) while 2(8.3%) students said they have taken *PSY 216* Gender in the History of Psychological Disorder, 4(16.7%) students recorded taking *PSY 210* Adult Abnormal Psychology, and 5(20.8%) students said they have taken both *PSY 237* Drugs and Human Behavior and *PSY 210*.

Materials

After giving informed consent via the online data collector source Qualtrics, participants were asked to complete five online surveys and a voluntary anonymous raffle sign up sheet if inclined to participate. The questionnaire consisted of five parts concerning the socio-demographic of participants (part 1), stigmas about ECT (part 2), knowledge about ECT (part 3), sources of knowledge of ECT (part 4) and attitudes towards ECT (part 5).

A demographic survey evaluated the socio demographics of participants based on 'Gender', 'Ethnicity', 'Sexual Orientation', 'Religion', 'Education Level', and 'Major'. All participants were Bard College students and had the option to indicate if they had taken any of the following psychology courses offered in the Bard Psychology Department: *PSY 216* Gender

in the History of Psychological Disorder, *PSY 237* Drugs and Human Behavior, and *PSY 210* Adult Abnormal Psychology. This data was accounted for as a potential indicator influencing participants' knowledge and attitudes towards ECT.

The second survey evaluated participants' stigmas towards ECT, adapted from past research that analyzed the awareness and perception of ECT in psychiatric patients. Participants indicated how much they agreed or disagreed with the statements from "Strongly Disagree" to "Strongly Agree" based on the 7 common beliefs (see Table 1) compiled from local literature in print media (Arshad et al, 2007).

Table 1

Stigmatized Beliefs of ECT Questionnaire

1	Electroconvulsive Therapy (popularly referred to as Electroshock Therapy), is a treatment of last resort.
2	Electroconvulsive Therapy (ECT) causes severity in mental and physical illness in the long run.
3	ECT can cause total and irreversible insanity.
4	ECT is a form of torture and an in-humane treatment method.
5	ECT is used unnecessarily by Doctors for exploiting patients financially or otherwise.
6	ECT renders psychopharmacological treatment in- effective.
7	ECT is a permanent treatment for mental illnesses.

Note. Source: (Arshad et al., 2007)

The third survey evaluated participants' knowledge about ECT, adapted from past research that analyzed Polish student's knowledge, attitudes, and beliefs of ECT (Gedek et al,

2021). Participants were asked to indicate if the statements were true or false where 1 was "definitely false" and 5 was "definitely true" (see Table 2).

Table 2

Knowledge of ECT Questionnaire

1	ECT is mainly used in the treatment of depression.
2	ECT is currently performed in the United States.
3	ECT is less effective than drugs.
4	ECT is safer than drugs.
5	Scientists understand the mechanism of action of ECT.
6	ECT uses memory deterioration so that the patient forgets what was troubling them (which was the cause of their problems).
7	ECT works by making the patient feel punished for what they did wrong.
8	In psychiatric hospitals, ECT is partially used to monitor and punish patients.
9	Patients experience severe pain during ECT procedures.
10	At the start of the ECT procedure the patient is conscious, but loses consciousness as a result of the "shock" they experience during the procedure.
11	Anesthetics are used during ECT.
12	ECT causes a seizure in the patient.
13	Patients participating in ECT may withdraw from it.
14	ECT may affect patients' ability to think clearly and reasonably in the long term (over 6 months).

15	ECT worsens the memory of events that occurred a few weeks before the start of treatment.
16	Adverse effects of ECT may show up months or even years after the completion of treatment.
17	The currently used technique of ECT procedures does not differ significantly from that which was introduced in 1938.

Note. Source: (Gedek et al., 2021)

The fourth survey evaluated participants' sources of knowledge of ECT, also adapted from past research that analyzed Polish students' knowledge, attitudes, and beliefs of ECT (Gedek et al, 2021). Participants were asked to indicate how they learned or heard of ECT using a multiple-choice format consisting of 10 different platforms. These choices ranged from examples such as "Film and Television" to "Lecture or courses", with the option for participants to select multiple answers (see Table 3).

Table 3

Sources of Knowledge of ECT

1	Film & Television
2	Lectures or Courses
3	Professional Publications
4	Conversations with people who experienced Therapy
5	Conversations with Psychiatrists
6	Newspapers & Magazines

7	Non-medical Books
8	Personal Experience
9	Internet
10	Other Sources

Note. Source: (Gedek et al., 2021)

The fifth survey evaluated participants' attitudes towards ECT, adapted from past research that analyzed knowledge and attitude differences towards ECT among medical interns and the general public (Bhat et al., 2020). Participants were asked to indicate if the 16 questions were correct or not where 1 was "No", 2 was "I Don't Know", and 3 was "Yes" (see Table 4).

Table 4

Attitudes Towards ECT Questionnaire

1	Is ECT dangerous and should not be used?
2	Is ECT an inhumane treatment?
3	I will advise a close relative to receive ECT if recommended.
4	I would undergo ECT treatment.
5	Is ECT often given as a punishment to violent/angry patients?
6	Following discovery of new medicines, is treatment with ECT never required?
7	If ECT fails in a patient, will no other treatments succeed?
8	Is ECT at times lifesaving?

9	Is treatment with ECT cruel?
10	Is treatment with ECT outdated?
11	Should treatment with ECT be outlawed?
12	Once a person is given ECT, in future, is ECT the only treatment option?
13	Does ECT get you better quicker than drugs?
14	ECT is given indiscriminately to people.
15	Is ECT the worst treatment option under any circumstances?
16	Is ECT often given to people who do not need it?

Note. Source: (Bhat et al., 2020)

Statistical analysis

All statistical analyses below were performed using the statistical software tool Jamovi. Data was first exported from Qualtrics to google sheets for data cleaning purposes to help identify data errors such as incomplete responses. All remaining data was then imported into Jamovi for statistical testing and analysis for each hypothesis.

The analysis of hypothesis 1, which suggests that the lower the rate of student's knowledge of Electroconvulsive therapy (ECT), the more negative attitudes there will be, was determined by using survey 3 and survey 5. Scoring for survey 3 was determined by using a five-point likert scale where 1 means "definitely false", 2 - "false", 3 - "I don't know", 4 - "true", 5 - "definitely true". Responses suggested respondent's knowledge towards ECT where "definitely true" would indicate a higher score of knowledge, "I don't know" would indicate a neutral score of knowledge, and "definitely false" would indicate a lower score of knowledge.

The analysis of individual questions concerning rates of attitude in survey 5 was determined by using a non-nominal scoring scale adapted from previous research. There were three possible responses to each item in Survey 5 where the "Yes" response suggested a positive attitude, the "No" response suggested a negative attitude, and the third response of "I don't know" suggested a neutral attitude. To calculate the total attitude score, a positive response was scored as "+1", a negative response was scored as "-1", and a neutral response was scored as "0". Therefore, the total attitude score could vary from −16 to +16. Questions 4, 5, and 8 of Survey 5 were scored using a reverse rating scale. Scored data from Survey 3 and Survey 5 was then further analyzed by running a Pearson's Correlation test to find the relationship between students' knowledge and attitude rates.

The analysis of hypothesis 2, which suggests that the higher the rate of student's stigmas of Electroconvulsive Therapy (ECT), the more negative attitudes there will be, was determined by using survey 2 and survey 5. Scoring for survey 2 was determined by using a five-point likert scale where 1 means 'Strongly Disagree', 2 - 'Disagree', 3 - 'I don't know', 4 - 'Agree', & 5 - 'Strongly Agree'. Responses suggested students' stigmas towards ECT where 'Strongly Disagree' indicated a lower rate of stigma, 'I don't know' indicated a neutral rate of stigma, and 'Strongly Agree' indicated a higher rate of stigma. Scored data from Survey 2 and Survey 5 was analyzed using a Pearson's Correlation test to find any relationships between students' stigmatized beliefs and attitude rates.

The analysis of hypothesis 3, which suggests that the students' sources of knowledge will influence student's knowledge rates of Electroconvulsive Therapy (ECT), was determined by using survey 3 and survey 4. To begin analysis, descriptives were run to see the variations of the most common sources of knowledge selected. For more detailed analysis, the sources of

knowledge from survey 3 were separated into different grouping variables in Jamovi. In terms of scoring, if the participant did select the course, they were manually given a “1” and if the participant did not select the source, they were given a “0”. This was repeated 8 times for each individual source. 2 sources (‘Professional Publications’ & ‘Personal Experience’) were excluded from statistical analysis for lack of recorded data. An Independent Samples T-test was then run individually for each source of knowledge to analyze the relationships with students’ knowledge rates.

The analysis of hypothesis 4, which suggests that the students’ sources of knowledge will influence students’ attitudes towards Electroconvulsive Therapy (ECT), was determined using survey 3 and survey 5. Similar to Hypothesis 3, an Independent Samples T-test was run individually for each source of knowledge to analyze the relationships with students’ attitude rates. Statistical analysis for both Hypothesis 3 & 4 was not informative enough, so a transformed variable (Source Type) was made by grouping participants who chose only 1 or 2 sources (Single Source) and grouping participants who chose 3 or more sources (Multiple Sources). Three Independent Samples T-tests were then run for further exploration of the source type on students’ attitude, knowledge, and stigma rates of ECT.

The analysis of hypothesis 5, which suggests that students studying in the SMC department will have more positive attitudes towards ECT than students studying in the SS department, was determined using survey 1 and survey 5. Scored data was analyzed using an Independent Samples T-test.

The analysis of hypothesis 6, which suggests that students studying in the SMC department will have higher rates of knowledge about ECT than students studying in the SS

department, was determined using survey 1 and survey 4. Scored data was also analyzed by running an Independent Samples T-test.

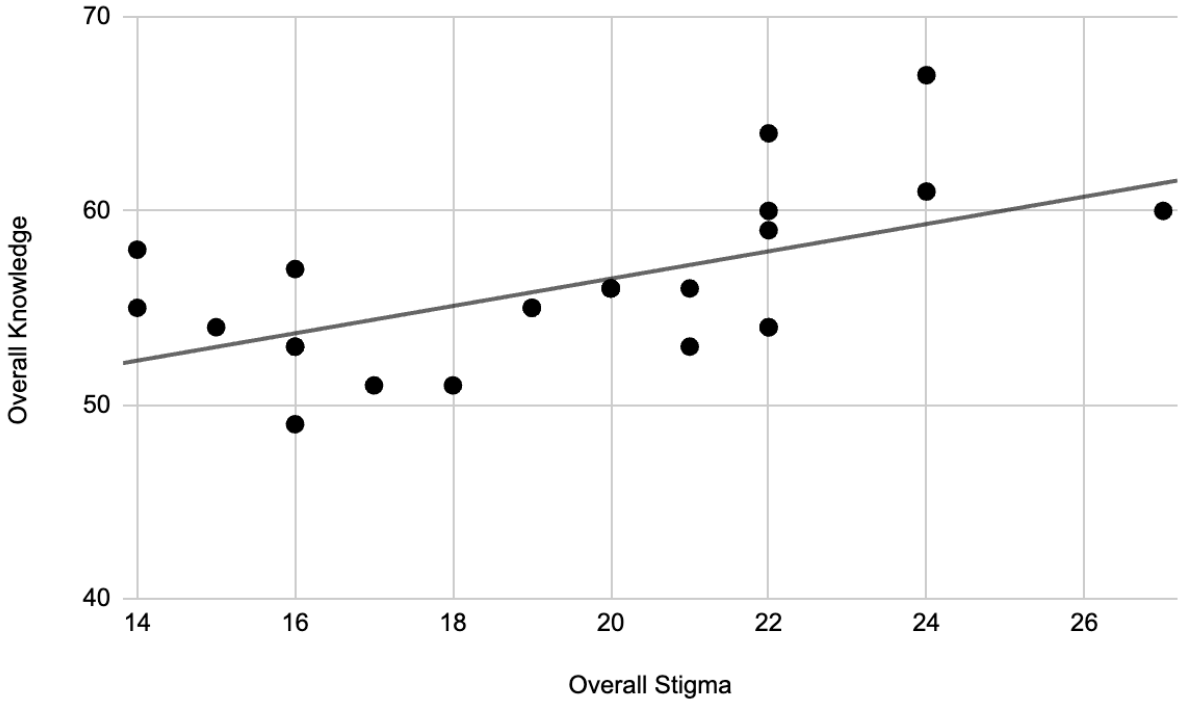
Results

Hypothesis 1

A Pearson's Correlation test was used to explore Hypothesis 1 and the relationship between students' knowledge and students' attitudes towards ECT. Hypothesis 1 was rejected $t(22) = -0.29$, $p = .156$. To deepen my understanding of students' knowledge levels, a Pearson's Correlation test was run to see potential relationships between students' knowledge and stigma rates. A positive correlation between the two variables was found $t(22) = 0.583$, $p = 0.003$. Students who had high scores of stigma also had high scores of knowledge of ECT (see Figure 1).

Figure 1

Relationship Between Students' Knowledge & Stigma Rates



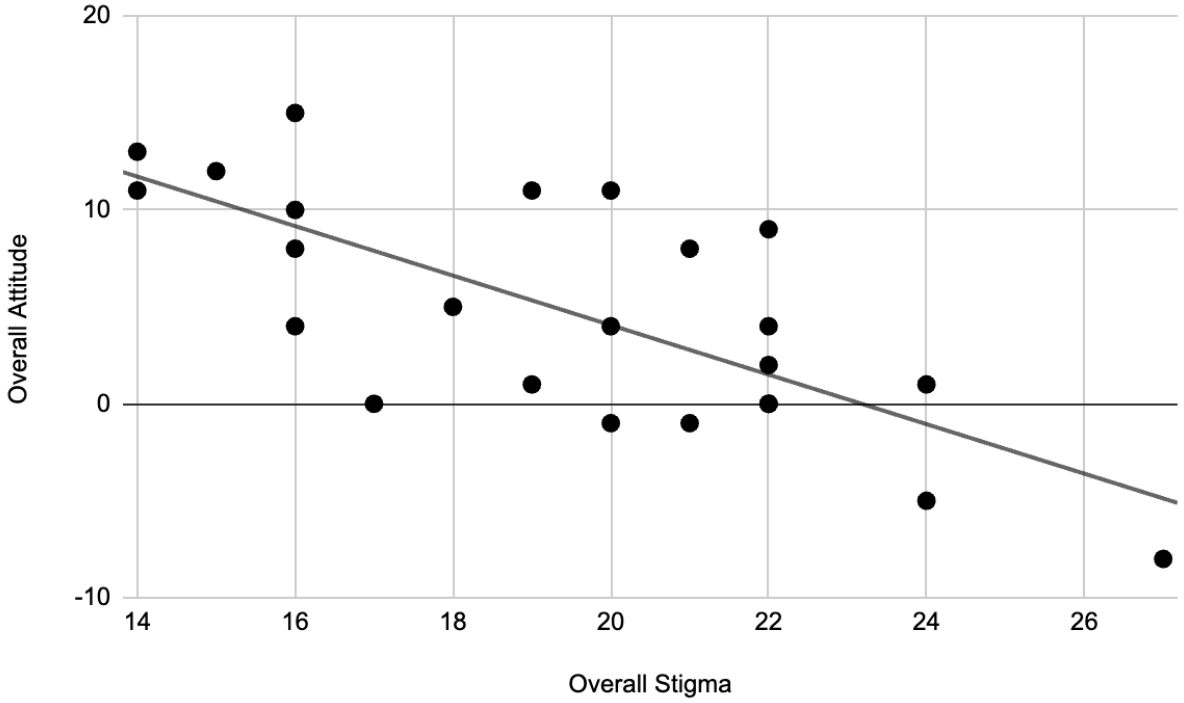
Note. This figure demonstrates the positive correlation found between students' stigmas and students' knowledge of ECT.

Hypothesis 2

A Pearson's Correlation test was used to explore Hypothesis 2 and the relationship between students' stigmas of ECT and students' attitudes towards ECT. Hypothesis 2 was supported with a statistically significant relationship found between students' stigmas and attitudes towards ECT $t(22) = -0.727$, $p < .001$. The higher the students' stigmatized beliefs of ECT, the more negative attitudes they had towards it. Visual details are displayed below in Figure 2.

Figure 2

Relationship Between Students' Stigma and Attitude Rates of ECT



Note. This figure demonstrates the negative correlation found between students' overall stigma and overall attitude rates. High attitude scores (y-axis) indicate more positive attitudes towards ECT and high stigma scores (x-axis) indicate more stigmatized beliefs.

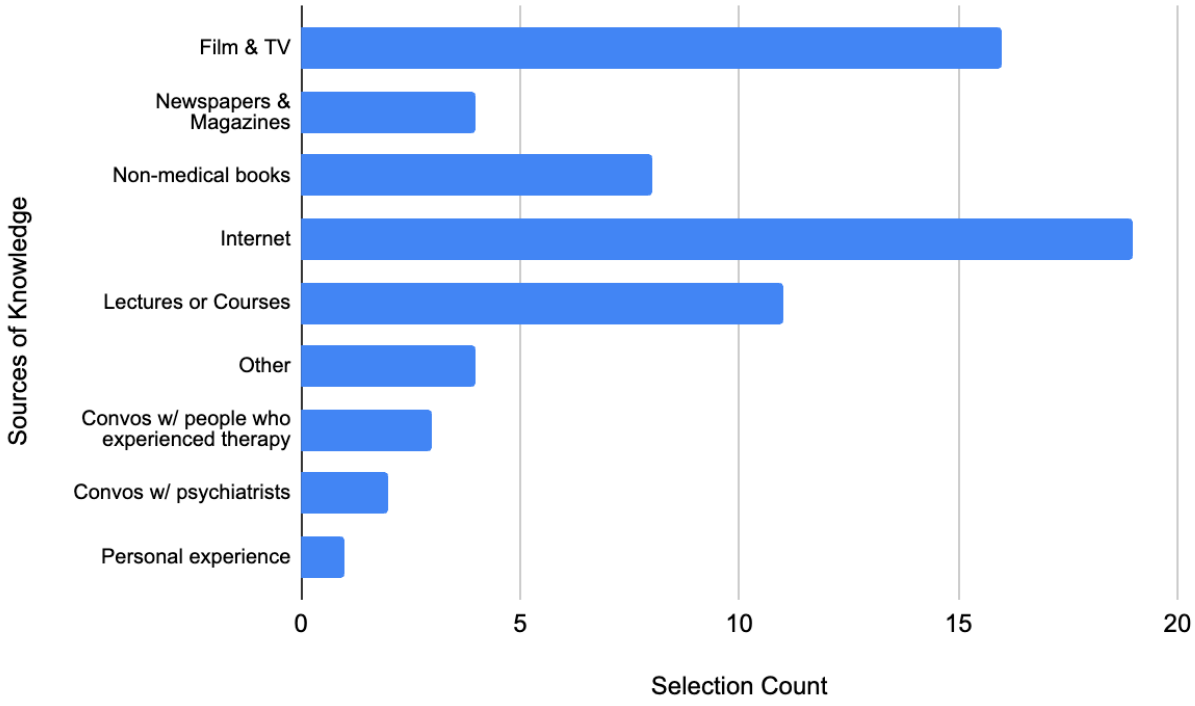
Hypothesis 3

The first form of analysis for Hypothesis 3 displayed the descriptives and frequencies of students' sources of knowledge (see Figure 3). The internet had the most counts with 19(27.9%) where 'Film & TV' was close behind with a count of 16(23.5%). 'Lectures or Courses' and 'Non-medical books' were the 3rd and 4th most common sources with counts of 11(16.2%) and 8(11.8%). Both 'Newspapers & Magazines' and 'Other' were selected the same amount resulting in a total of 4(5.9%) each. The remaining 3 sources had the lowest counts ('Convos w/ people

who experienced Therapy' = 3(4.4%), 'Convos w/ Psychiatrists' = 2(2.9%), & 'Personal Experience' = 1(1.5%).

Figure 3.

Frequencies of Sources of Knowledge



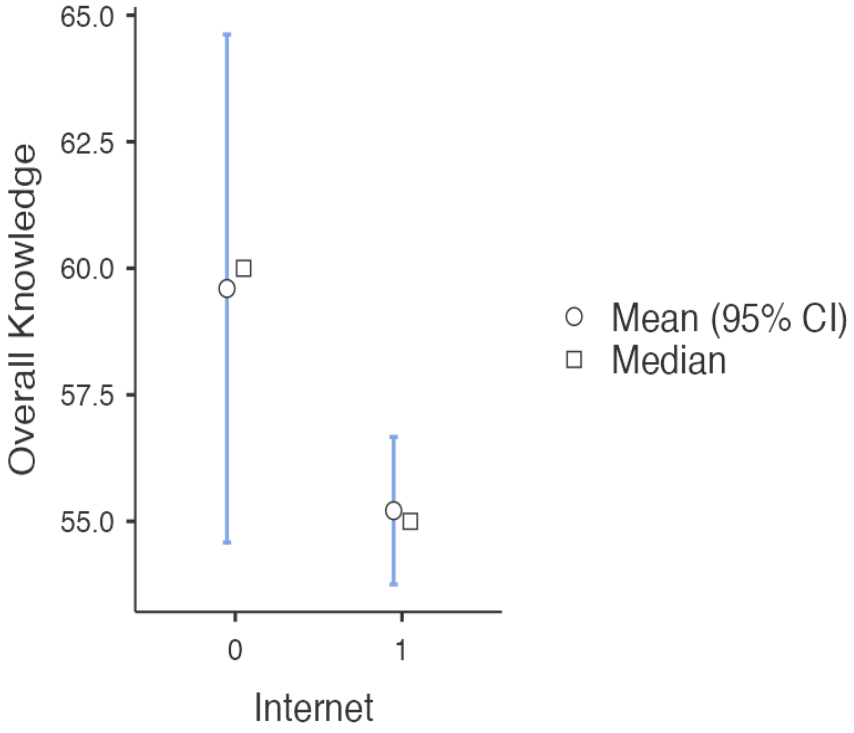
Note. This figure demonstrates the frequencies of sources of knowledge based on selection count. Selection count refers to the overall number of times each source was selected from participants in Survey 4.

Independent Samples T-Tests were then run to analyze the relationships between individual sources and students' knowledge rates. The 19 students who selected 'Internet' (M = 55.2, SD = 3.24) compared to the 5 students who did not (M = 59.6, SD = 5.73) demonstrated significantly lower knowledge scores $t(22) = 2.29$, $p = 0.032$ (see Figure 4). This was the only significant result found when analyzing individual sources and knowledge rates. The following 7

sources found no significant differences. The 16 students who selected ‘Film & Television’ (M= 56.2, SD = 4.41) compared to the 8 students who did not (M = 56.0, SD = 4.17) demonstrated no statistically significant relationships $t(22) = -0.102$, p=0.920. The 11 students who selected ‘Lectures or Courses’ (M = 56.2, SD = 2.18) compared to the 13 students who did not (M = 56.1, SD = 5.39) demonstrated no statistically significant relationships $t(22) = -0.0603$, p = 0.952). The 8 students who selected ‘Non-medical books’ (M = 54.5, SD = 2.78) compared to the 16 students who did not (M = 56.9, SD = 4.55) demonstrated no statistically significant relationships $t(22) = 1.38$, p = 0.181. Both students who selected ‘Newspapers & Magazines’ (M = 54.5, SD = 1.29) and students who selected ‘Other Sources’ (M = 57.8, SD = 4.86) compared to students who did not select ‘Newspapers & Magazines’ (M = 56.5, SD = 4.47) or ‘Other Sources’ (M = 55.8, SD = 4.06) demonstrated no significant differences in knowledge in either tests $t(22) = 0.852$, p = 0.403; $t(22) = -0.852$, p = 0.403. The 3 students who selected ‘Conversations with People who Experienced Therapy’ (M = 59.7, SD = 6.66) compared to the 21 students who did not (M = 55.6, SD = 3.64) also demonstrated no statistically significant relationships $t(22) = -1.64$, p = 0.116. Lastly, the 2 students who selected ‘Conversations with Psychiatrists’ (M = 52.5, SD = 2.12) compared to the 22 students who did not (M = 56.5, SD = 4.16) demonstrated no statistically significant relationships with knowledge rates $t(22) = 1.31$, p = 0.204).

Figure 4

Relationship Between 'Internet' & Students' Knowledge Rates



Note. This figure demonstrates how students' overall knowledge rates compare depending on whether 'internet' was selected as a source of knowledge. Whether students selected 'internet' or not is visually differentiated by '0' and '1'.

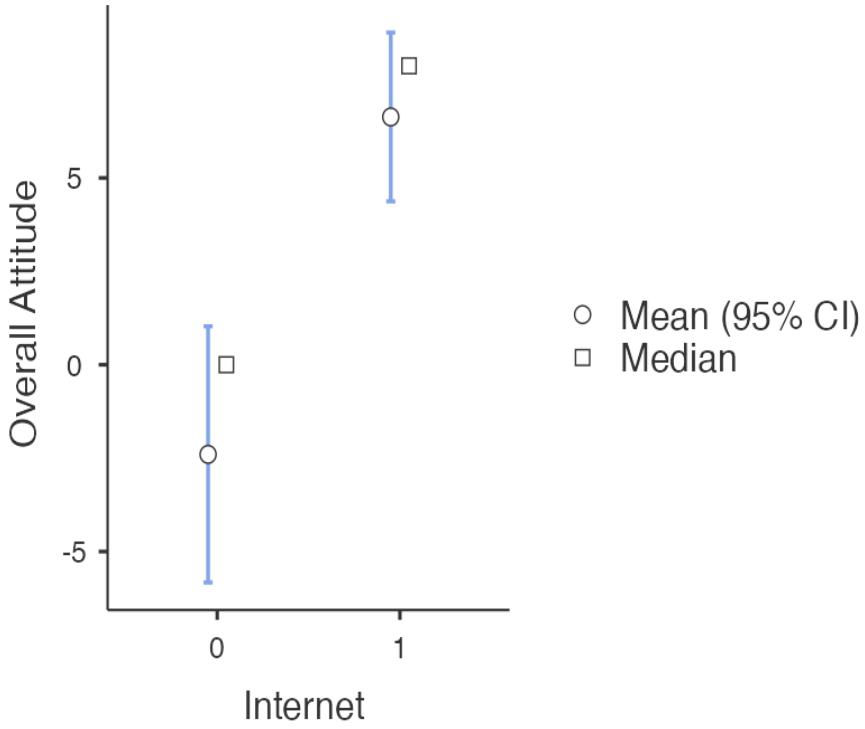
Hypothesis 4

Independent Samples T-tests were also used to analyze the relationships between individual sources of knowledge and attitude rates suggested in Hypothesis 4. The 19 students who selected 'Internet' (M = 6.63, SD = 5.02) compared to the 5 students who did not (M = -2.40) had significantly more positive attitude rates towards ECT $t(22) = -3.71$, $p = 0.001$ (see Figure 5). A statistically significant result between the attitude rates of the 8 students who selected 'Non-medical books' (M = 8, SD = 5.77) and the 16 students who did not (M = 3.06, SD

= 5.59) was also found. The students who selected ‘Non-medical books’ had significantly more positive attitudes towards ECT than those who did not select the source $t(22) = -2.07$, $p = 0.05$ (see Figure 6). The 16 students who selected ‘Film & Television’ ($M = 4.75$, $SD = 6.89$) compared to the 11 students who did not ($M = 4.75$, $SD = 4.23$) demonstrated no significant differences in attitude rates $t(22) = 0.000$, $p = 1.00$. The 11 students who selected ‘Lectures or Courses’ ($M = 5.73$, $SD = 6.81$) compared to the 13 students who did not ($M = 3.92$, $SD = 5.44$) demonstrated no significant differences in attitude rates either $t(22) = -0.722$, $p = 0.478$. The 4 students who selected ‘Newspapers & Magazines’ ($M = 4.50$, $SD = 5.92$) compared to the 20 students who did not ($M = 4.80$, $SD = 6.21$) showcased no significant differences in attitude rates $t(22) = 0.089$, $p = 0.930$. Similarly, the 4 students who selected ‘Other Sources’ ($M = 5.75$, $SD = 4.79$) compared to the 20 students who did not ($M = 4.55$, $SD = 6.35$) demonstrated no significant relationships with attitude rates $t(22) = -0.356$, $p = 0.725$. The 3 students who selected ‘Conversations with People who Experienced Therapy’ ($M = 8.67$, $SD = 6.66$) compared to the 21 students that did not ($M = 4.19$, $SD = 5.90$) demonstrated no significant differences in attitude rates. Lastly, the 2 students who selected ‘Conversations with Psychiatrists’ ($M = 6.00$, $SD = 8.49$) compared to the 22 students who did not ($M = 4.64$, $SD = 6.03$) also did not demonstrate any significant differences in attitude rates $t(22) = -0.300$, $p = 0.767$.

Figure 5

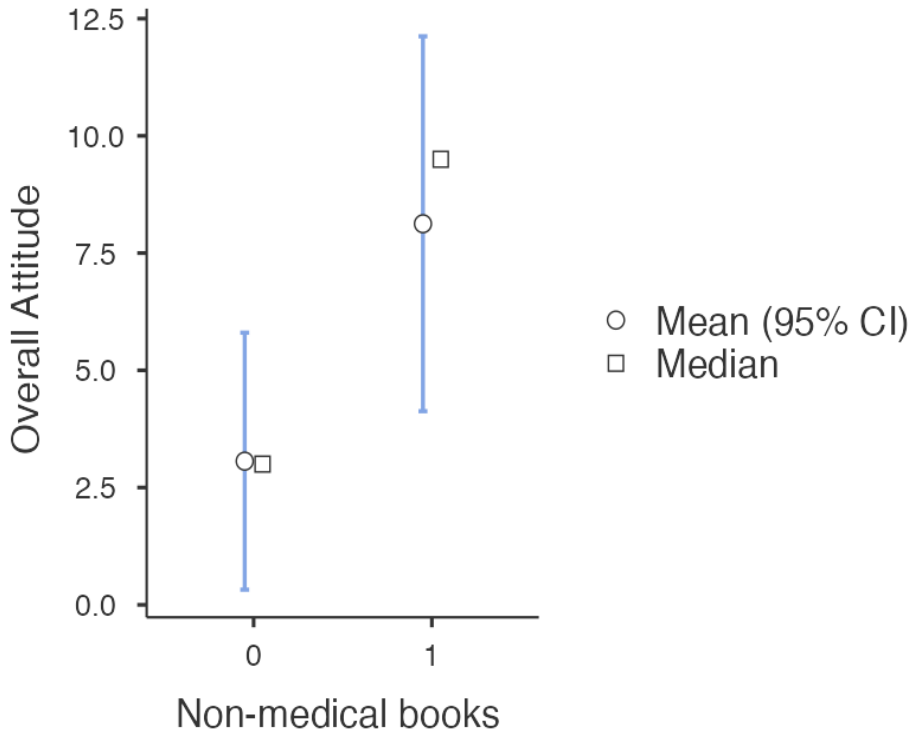
Relationship Between 'Internet' & Students' Attitude Rates



Note. This figure demonstrates how students' overall attitude rates compare depending on whether 'internet' was selected as a source of knowledge. Whether students selected 'internet' or not is visually differentiated by '0' and '1'. Although only numbers -5 through 10 are approximately displayed on the y-axis, the overall attitude scores could range from -16 to 16.

Figure 6

Relationship Between 'Non-medical Books' & Students' Attitude Rates



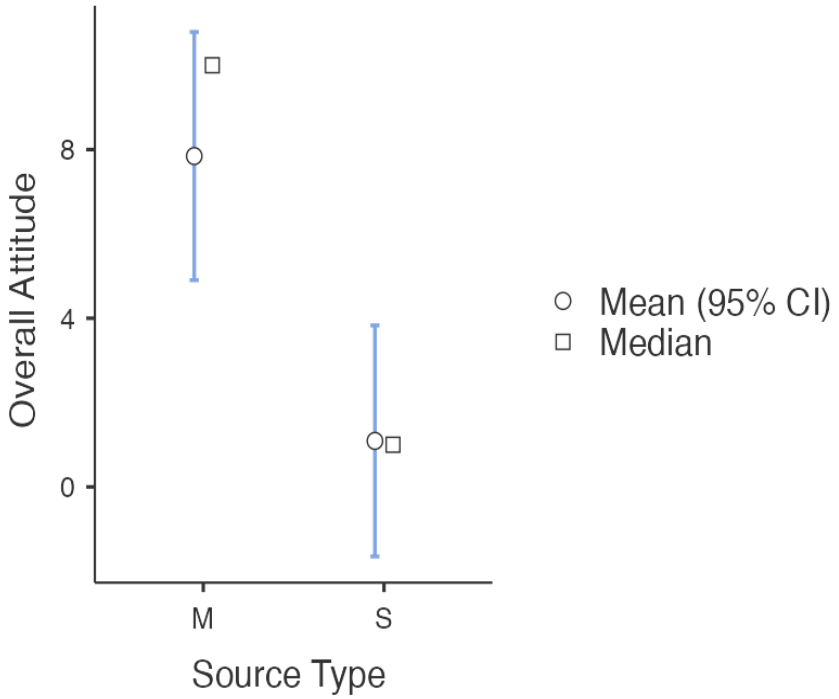
Note. This figure demonstrates how students' overall attitude rates compare depending on whether 'Non-medical books' was selected as a source of knowledge. Whether students selected 'Non-medical books' or not is visually differentiated by '0' and '1'. Although only numbers 0.0 through 12.5 are approximately displayed on the y-axis, the overall attitude scores could range from -16 to 16.

For further analysis of the relationships between students' sources of knowledge and knowledge, attitude, and stigma rates, 3 Independent Samples T-tests were run with the grouping variable 'source type' which separated the students who selected multiple sources and the students who selected 2 sources or less. The first test evaluated the relationship between students' sources and knowledge rates. The 13 students who selected multiple sources in the

survey (M = 13, SD = 2.63) compared to the 11 students who selected 2 or less sources in the survey (M = 11, SD = 5.32) did not demonstrate statistically significant differences in knowledge rates $t(22) = -1.37$, $p = 0.185$. However, the 13 students who selected multiple sources (M = 7.85, SD = 5.45) compared to the 11 students who selected 2 or less sources (M = 1.09, SD = 4.64) demonstrated significantly more positive attitude rates towards ECT $t(22) = 3.25$, $p = 0.004$ (see Figure 7). Similarly, the 13 students who selected multiple sources (M = 18.1, SD = 3.04) compared to the 11 students who selected 2 or less sources (M = 21.2, SD = 3.27) had significantly lower rates of stigmatized beliefs towards ECT $t(22) = -2.34$, $p = 0.029$ (see Figure 8).

Figure 7

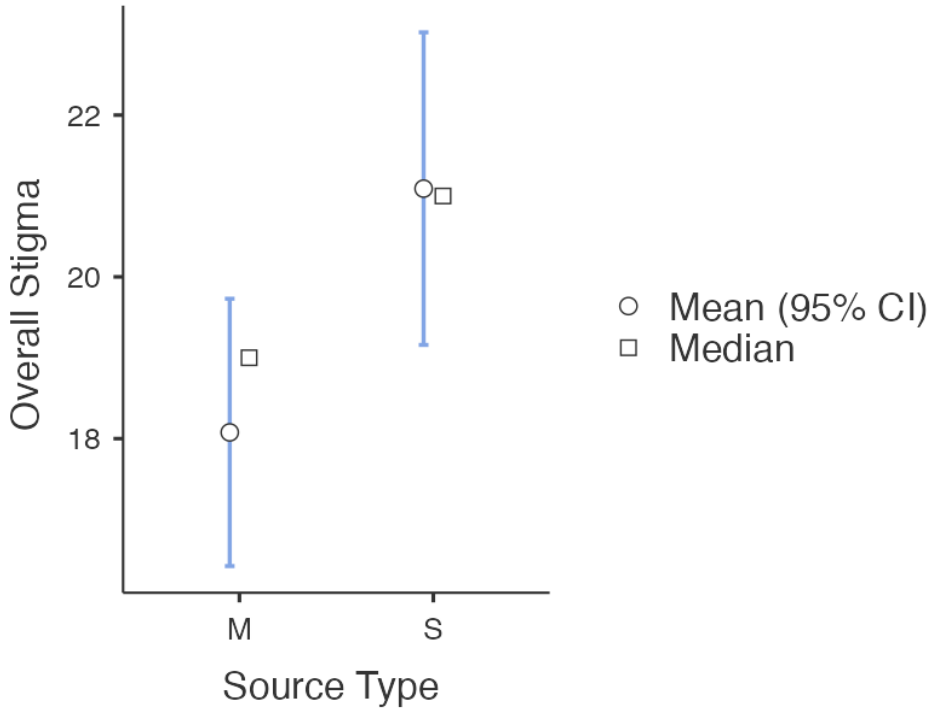
Relationship Between Source Type & Students' Attitude Rates



Note: This figure demonstrates the relationship between source type and students' overall attitude scores. The source type 'M' stands for multiple sources and the source type 'S' stands for single source. Although only numbers -4 through 12 are approximately displayed on the y-axis, the overall attitude scores could range from -16 to 16.

Figure 8

Relationship Between Source Type & Students' Stigma Rates



Note: This figure demonstrates the relationship between source type and students' overall stigmatized beliefs scores. The source type 'M' stands for multiple sources and the source type 'S' stands for single source. Although only numbers 16 to 24 are approximately displayed on the y-axis, the overall stigma scores from collected data ranged from 14 to 27.

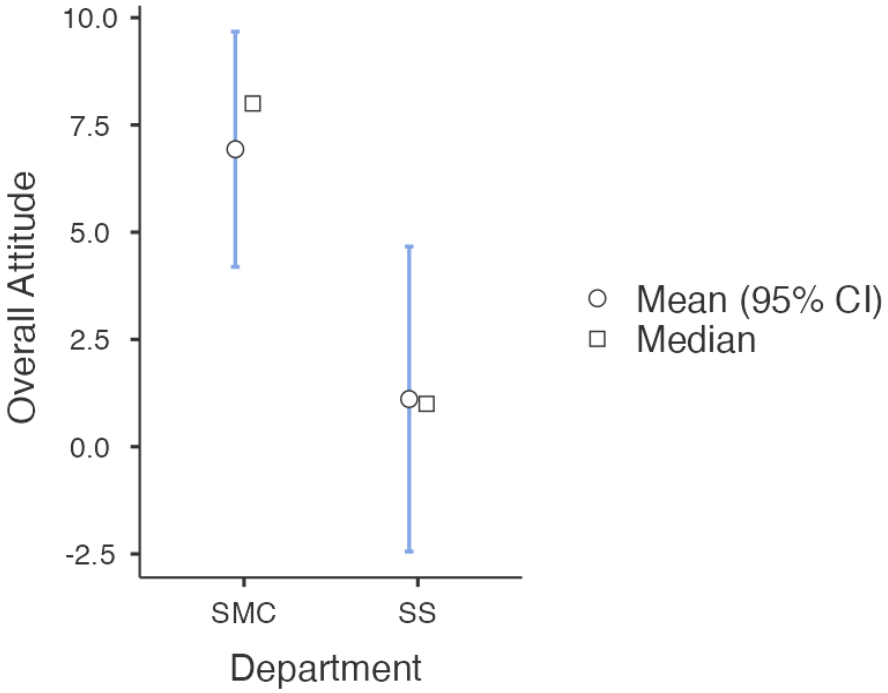
Hypothesis 5

An Independent Samples T-test was used to analyze Hypothesis 5 by comparing students' department of study with their overall attitude rates towards ECT. Hypothesis 5 was supported and results showed that the 15 students in the SMC department ($M = 6.93$, $SD = 5.42$) compared to the 9 students in the SS department ($M = 1.11$, $SD = 5.44$) demonstrated significantly more positive attitudes towards ECT $t(22) = 2.54$, $p = 0.018$ (see Figure 9).

To explore this concept more, an Independent Samples T-test was run to compare the students' attitude rates who did select that they took any of the displayed Psychology courses in Survey 1 with the students' attitude rates who did not select that they took any of the listed courses. The 11 students who did take any of the listed Psychology courses ($M = 11$, $SD = 5.31$) compared to the 13 students who did not take any of the listed courses ($M = 1.77$, $SD = 5.04$) demonstrated more positive attitudes towards ECT $t(22) = -3.07$, $p = 0.006$ (see Figure 10).

Figure 9

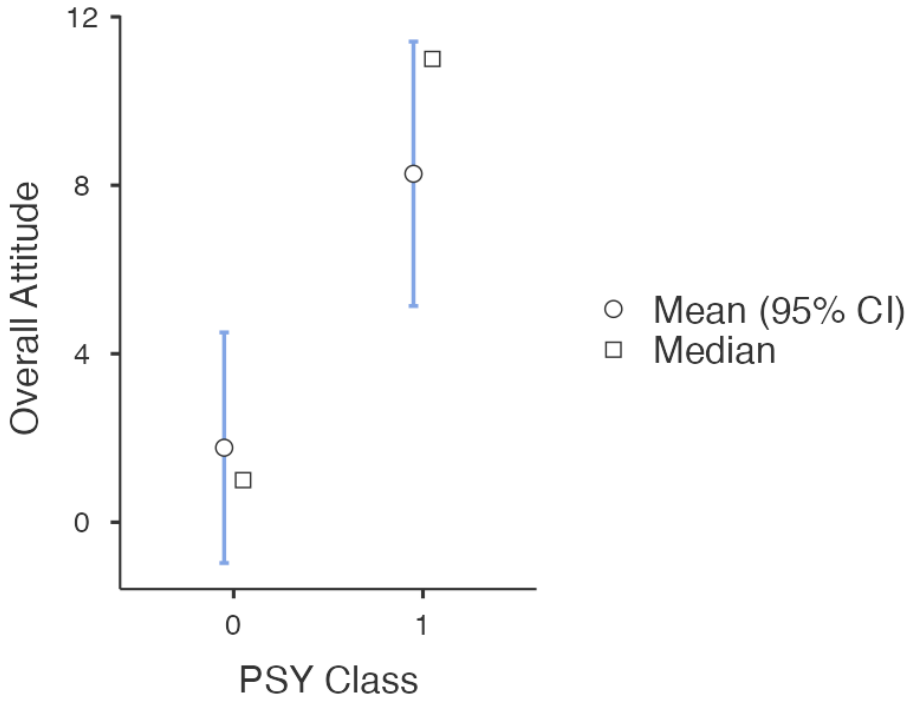
Relationship Between Department & Students' Attitude Rates



Note: This figure demonstrates the relationship between students' department of study and their overall attitude scores towards ECT. The department 'SMC' stands for the Science, Math, & Computing department, and the department 'SS' stands for Social Studies department. Although only numbers -2.5 through 10.0 are displayed on the y-axis, the overall attitude scores could range from -16 to 16.

Figure 10

Relationship Between Psychology Courses & Students' Attitude Rates



Note. This figure demonstrates the relationship between students who selected a psychology course and their attitudes versus students who did not select a psychology course. 'PSY Class' means psychology classes and is visually differentiated by '0' and '1'. '0' indicates no PSY classes were selected whereas '0' indicates that any of the listed PSY classes were selected.

Hypothesis 6

An Independent Samples T-test was also performed to analyze Hypothesis 6 by comparing students' department of study with their overall knowledge rates of ECT. The 15 students in the SMC department (M = 55.9, SD = 1.96) compared to the 9 students in the SS department (M = 56.6, SD = 6.52) did not show any significant differences in knowledge rates of

ECT $t(22) = -0.386$, $p = 0.703$. Hypothesis 6, which suggests that students studying in the SMC department will have higher rates of knowledge of ECT than students studying in the SS department, was therefore rejected.

Discussion

ECT has shown to be an effective and safe treatment for a variety of psychiatric disorders (Payne & Purdic, 2009). Despite these positive outcomes, negative attributes are still associated with it (Chen et al., 2017). The purpose of this study was to observe this more by assessing the knowledge, attitudes, and stigmatized beliefs of ECT among Bard College Undergraduate students. This study specifically focused on undergraduate students because they are the future doctors, therapists, and educators of our time, and it is important to understand how their perceptions of certain concepts vary and form (Richmond et al., 2014). Five important variables (sources of knowledge, department of study, attitude, knowledge, & stigmas) were examined in this paper and all play a part in affecting societal and personal perceptions of ECT.

Attitude rates of ECT among students were looked at based on overall knowledge and stigma rates. As hypothesis 1 suggests, a positive correlation between knowledge rates and attitude rates was thought to be found. Interestingly, there was no relationship found between students' knowledge and attitude rates. After exploring the knowledge variable more, this study found that students with high rates of stigmatized beliefs also had high knowledge rates of ECT. Although seemingly paradoxical at first, this result provides interesting insight. Potentially, the more knowledge of ECT has provided students with more information to form their own opinions of it. Confirmation bias in the face of contradictory evidence can also heighten preexisting feelings that students may have had towards ECT pre-study (Klayman, 1995). The belief of media power over factual knowledge is common and may have also been an influential

factor (Picard & Yeo, 2011). Hypothesis 2, which suggested that the higher the rate of student's stigmas of Electroconvulsive Therapy (ECT) the more negative attitudes there would be, was supported in this study and provides more comprehension. When comparing the rejection of Hypothesis 1 and the significant findings in Hypothesis 2, there is a notably stronger relationship between attitude and stigma than attitude and knowledge. Students' attitudes towards ECT were not from a lack of knowledge but potentially from preexisting beliefs, fears, or reluctances of ECT.

Previous studies have found that the sources of information in which students hear of or learn about ECT influences their perceptions of it (Gedek et al., 2021). This study explored this concept by looking into how different sources of knowledge impacted students' attitude and knowledge rates, as suggested in Hypothesis 3 and Hypothesis 4. Students who selected the internet as a form of information had lower rates of knowledge of ECT. This finding is probably related to the misrepresentations of ECT that circulate on various media platforms. Cooperation between mental health organizations and media platforms is a potential step in stopping the spread of such misinformation. Interestingly, students who selected the internet as a source of knowledge had more positive attitudes towards ECT. This is inconsistent with previous studies which have found that negative perceptions of ECT, which can be found on online platforms such as YouTube, have a significant impact on shaping the attitudes of young people (Genc et al., 2020). Although seemingly anomalous at first, the internet provides access to a variety of educational resources that can shape a student's attitude in a more positive direction.

Due to a small sample size of participants, 'Non-medical Books' was the only other source of knowledge with significant findings. Students who selected non-medical books as a form of information had more positive attitudes towards ECT. Similarly to the relationship

between the internet and students' attitudes, this finding is seemingly contradictory at first. A potential explanation could be that the term 'Non-medical books' gives little insight into the other books students could be referring to. Possibilities of other books could include autobiographies, nonfiction stories, or essays; all in which could provide factual information of the use, effectiveness, and personal experiences of ECT. To explore students' sources of knowledge more, participants were grouped into a multiple sources group and a single source group. This study found that students who had three or more sources of knowledge had more positive attitudes towards ECT than those who only had two or less sources of knowledge. Similarly, students in the multiple sources group had lower stigmatized beliefs towards ECT than those in the single source group. Having multiple sources of knowledge from different platforms could have played a role in creating a more balanced depiction of ECT and therefore could have influenced these findings.

This study also found that attitudes towards ECT differ in the following two departments: Science, Math, & Computing (SMC) and Social Studies (SS). As suggested in Hypothesis 5, the findings demonstrated that students in the SMC department had more positive attitudes associated with ECT compared to students in the SS department. This result is consistent with previous studies that have found more negative attitudes towards ECT associated with students not in the medical or psychology fields (Gedek et al., 2021). More specifically, some psychology courses at Bard College provide educational insight into ECT and can potentially influence students' attitude rates. This study found that students who reported having taken any of these psychology courses had significantly more positive attitudes towards ECT. The informative insight from these courses has shown to be influential in the way it shapes students' attitudes. Educational systems should continue to be researched in terms of the information being taught

and its impacts on students' perceptions of different concepts. Although there are relationships between students' departments and attitudes, there was no relationship between students' department of study and their knowledge of ECT. Hypothesis 6 was therefore rejected and further supports the idea that the role of other factors, such as preexisting beliefs from different sources of information, are more influential on Bard College students' attitudes towards ECT than their factual knowledge rates.

This work, and the awareness of ECT in particular, is important because it highlights ECT's history of abuse and trauma which plays a role in its misrepresentations today. By being stereotypical or biased towards ECT, a lot can be lost in terms of not accepting it as a potential treatment option. We need to work towards destigmatizing a treatment that has been unjustly ignored & highlight its advancements. This study has presented interesting findings regarding students' perceptions of ECT and should continue to be explored, especially in academic settings.

Limitations

Although a lot of valuable information was found in this study, there were limitations that have taken away from the validity of these findings. The community in which this study was conducted in, Bard College, is a small community and therefore led to a small sample size (n = 24). Inclusion and exclusion criteria were strict in terms of students' academic major and therefore affected the number of participants. Department of study was made up of only two academic majors each and data collected from the SMC department only had participants from the psychology department. If biology students participated in the study, the results for the SMC department could have looked different.

In terms of the questionnaires used, there was inconsistency across where they were sourced from. For example, Survey 2 was adapted from research performed in Pakistan (Arshad et al., 2007), Surveys 3 and 4 were adapted from research performed in Poland (Gedek et al., 2021), and Survey 5 was adapted from research performed in India (Bhat et al., 2020). Although informative results were found using these questionnaires, variables could look different across cultures. Surveys were also from studies published in different time periods. For example, Survey 2 was published in 2007 (Arshad et al., 2007), Surveys 3 and 4 were published in 2021 (Gedek et al., 2021), and Survey 5 was published in 2020 (Bhat et al., 2020). The Psychology courses listed in Survey 1 were also chosen based on personal experience and can therefore limit the validity of those findings. Different experiences across students who have taken those courses in different academic years or with different professors was also not accounted for and could have affected results.

In terms of statistical analysis, the sources of knowledge were difficult to analyze because participants selected multiple sources in the questionnaire. Having this questionnaire as a multiple choice option where more than one source could be picked led to difficulties, such as low counts of certain sources when comparing differences in overall knowledge and attitude rates for individual participants. The sources of knowledge might have provided more information if participants were asked to select the main source of information in which they have heard or learned of ECT. Reverse scoring was used for three questions in Survey 5 and should be noted as well.

Recommendations

This study acts as an educational review of undergraduate college students' perceptions of ECT and should be explored further. Future studies should consider having a larger sample size

that looks into students from different universities, not just a small liberal arts college. Bard College is in the NorthEast region of the United States, so comparisons between students in different geographical regions in the United States could be more informative. Future research should include a review of other possible treatments for medication-resistant cases and provide more information regarding current accessibility rates of ECT and mental health resources in general. Specific concerns about risks and side effects of ECT should also be looked into further. Although specific statements in Survey 2, *Knowledge of ECT Questionnaire*, touched on the effects of ECT on memory (see Table 2), memory loss is a leading factor in the reluctances and fears people may have when they think of ECT and should be researched further (Cabrera et al., 2021).

Conclusion

This study has identified gaps in students' perceptions towards Electroconvulsive Therapy (ECT). ECT has been controversial since its inception because of public fears stemming from societal memories of ECT and other psychiatric interventions used for social control in the past (Cabrera et al, 2021). Due to this overarching historical memory of ECT commonly perpetuated in the media, it is important that the ethical developments and applications of ECT continue to be highlighted. Continuing this research on the stigmatizations of ECT in different communities can help with identifying underlying biopsychosocial concerns that may be affecting these rates. Future implementations of accessible mental health treatments and educational resources are potential steps in creating a more balanced depiction of ECT.

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Appendix A

Institutional Review Board (IRB) Approval

Bard College — Institutional Review Board

Date: 12/06/2022
To: Madison Brown
Cc: Elena Kim; Nazir Nazari
From: Ziad M. Abu-Rish, IRB Chair
Re: Myths and Fables of Electroshock Therapy: Knowledge, Attitudes, and Stigma of ECT in College Students

DECISION: APPROVED

Dear Subash,

The Bard Institutional Review Board reviewed the revisions to your proposal. Your proposal is approved through December 6, 2023. Your case number is 2022DEC6-BRO.

Please notify the IRB if your methodology changes or unexpected events arise.

We wish you the best of luck with your research.

Ziad M. Abu-Rish, Ph.D.
IRB Chair
Associate Professor of Human Rights and Middle Eastern History
Bard College
zaburish@bard.edu

Appendix B

Consent Form

INFORMED CONSENT AGREEMENT

Title: Myths and Fables of Electroshock Therapy: Knowledge, Attitudes, and Stigma of ECT in College Students
Principle Investigator: Madison Brown, Bard Psychology Program
Overseeing Investigator: Prof. Elena Kim, Bard Psychology Program
Institution: Bard College

Introduction
You are being asked to be a participant in five surveys for a Senior Project in the Psychology Program at Bard College. This study will be conducted by Bard College 4th year student and principal researcher, Madison Brown, and will be overseen by Bard College Psychology faculty member and advisor, Elena Kim. Please read the following information carefully prior to proceeding to the surveys.

Purpose
The purpose of this experiment is to evaluate the factors that may influence beliefs and attitudes towards Electroconvulsive Therapy (ECT) as a form of psychotherapeutic treatment. Knowledge and the sources of knowledge in which information is obtained plays a crucial role in why we might have positive or negative attitudes towards a certain concept, especially a concept as controversial as Electroconvulsive Therapy. The current experiment seeks to examine these ideas and their relationships to ECT.

Study Procedure
You will participate in one demographic survey and four separate surveys evaluating your knowledge, attitudes, and beliefs towards Electroconvulsive Therapy. The surveys will be done online through the data collection platform Qualtrics. The study will take approximately 15 minutes.

Risks and Discomforts
Although there is minimal potential risk associated with this study or your participation, you may experience slight discomfort when reporting on Electroconvulsive Therapy or reflecting on personal experiences associated with Electroconvulsive Therapy.

Benefits
Benefits may include increased awareness of ECT as well as participant's further interest and investigation in ECT as a form of therapy.

Appendix B

Consent Form

Compensation
In exchange for participating in the experiment, you will have the chance to enter an anonymized raffle through Qualtrics with a chance to win a $100 e-gift card. Participation in the raffle will be optional. Participants will be asked to indicate if they would like to participate in the raffle with a chance to win a prize by selecting 'yes' or 'no' on the last section of the surveys. You will remain anonymous throughout the raffle process.

Exclusion/Inclusion Criteria
Individuals must be over the age of 18 to participate in this study. Individuals must be an undergraduate student of Bard College in either the Psychology, Biology, Economics, or Sociology Departments.

Confidentiality.
You will not provide your name in this study and we will not know the identity of any participant. Thus, your data will be anonymous.

Contact.
If you have questions about this study, please contact Madison Brown (mb2382@bard.edu). If you have questions about your rights as a research participant, please contact the Bard College Institutional Review Board (IRB@bard.edu).

Agreement.
The nature and purpose of this research has been sufficiently explained and I agree to participate in this study. I understand that I am free to withdraw at any time without incurring any penalty. I certify that I am at least 18 years of age.

By checking the box below I am indicating that I am in agreement with the above statement of consent.

Appendix C

Recruitment Email

Hello,

My name is Madison Brown and I am the principal researcher for my senior project at the institution of Bard College in the Psychology Department.

The goal of this study is to look deeper into the knowledge of psychotherapeutic techniques and our perceptions of them. Participants will be asked to complete a brief set of surveys that will approximately take up 15 minutes of your time.

Would you like to participate? To see if eligible, please read the following requirements below:

Why should you participate?
- You will **help** me produce a successful senior project.
- Your role as a participant is both **anonymous** and **confidential** throughout the whole process.
- You will have the chance to enter a raffle and **win** a $100 e-gift card.

Who can participate?
- Those who are 18 years of age or older.
- Those who attend Bard College and are in their 2nd, 3rd, or 4th year.
- Those whose majors are in either of the following departments: biology, psychology, economics, or sociology.

If interested in participating in this study, please click the following link:
https://bardpsych.iad1.qualtrics.com/jfe/form/SV_bkY4fhpx0c6nMnY

If you have any questions or concerns, please contact Madison Brown, principal researcher, at mb2382@bard.edu, or Elena Kim, overseeing advisor, at ekim@bard.edu.

Best,
Madison Brown, Principal Researcher

Appendix D

Recruitment Flyer

Appendix E

Debrief Form

Thank you for participating in this study.

The purpose of these surveys was to evaluate the factors that may influence beliefs and attitudes towards Electroconvulsive Therapy (ECT) as a form of psychotherapeutic treatment. Particpant's knowledge of ECT, sources of knowledge of ECT, beliefs/stigmas of ECT, and attitudes towards ECT were recorded in the surveys. Data was collected specifically from Bard College students in the following four departments: Biology, Psychology, Economics, and Sociology. These divisions were targeted to evaluate if the knowledge, attitudes, and beliefs towards Electroconvulsive Therapy differ between Science Math & Computing (SMC) students and Social Studies (SS) students.

Although you have already completed the experiment, your involvement is still voluntary, and you may choose to withdraw the data you provided prior to debriefing, without penalty or loss of compensation offered to you. Withdrawing your submission will not adversely affect your relationship with Bard College, the researchers, or any of our affiliates.

If you agree to allow us to use your data, it will remain confidential. No names were taken in this study, and your answers will only be shared with the researchers for analysis and exploratory reasons.

Please click the appropriate box below if you do, or do not, give permission to have your data included in the study (if you do not give permission, your information will not be retained or used). If you have questions or concerns about this research or your role as a participant, please contact Madison Brown, principal researcher, at mb2382@bard.edu, or Elena Kim, overseeing advisor, at ekim@bard.edu.