

**EFFECTS OF DOSAGE AND TYPE OF MENTAL HEALTH SERVICES RECEIVED
BY INDIVIDUALS WITH SEVERE MENTAL ILLNESS FOLLOWING RELEASE
FROM CUSTODY**

**REDUCING SOCIAL STIGMAS SURROUNDING MENTAL HEALTH AS A RESULT
OF THE AVAILABILITY OF REMOTE MENTAL HEALTH SERVICES**

A Thesis Prospectus
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By
George Corbin

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George Corbin
Nora Dale
Aatmika Deshpande
Katherine Korngiebel
Paige Krablin
Emma Wilt

On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

ADVISORS

Catherine Baritaud, Department of Engineering and Society

L Peter Alonzi, School of Data Science

K. Preston White, Jr, Department of Engineering Systems and Environment

Michael C. Smith, Department of Engineering Systems and Environment

In the past 18 months, the COVID-19 pandemic has completely and suddenly forced a dramatic change in how mental health services are provided to individuals suffering from mental illness. The entire industry of mental health services, organized around in-office treatment for patients, was forced to restructure itself for a completely remote patient base. Telehealth methods certainly did exist before the COVID-19 pandemic, as noted by the Congressional Research Service's Duff and Sarata (2020), however practitioners employing these methods were in the minority (p. 1). The effects of this drastic restructuring have implications both for mental health research, as any observational data before March 2020 will be conducted in an entirely different system than after, as well as the treatment itself. Given that it has been less than 2 years since mental health services were forced into an almost entirely online capacity, the effects of the shift are not fully understood by researchers, and there are several questions surrounding it that either have yet to be asked in an academic capacity or just haven't had enough time elapsed since March 2020 for thorough primary research. A method to determine two of the ramifications of the shift to online services will be discussed in this thesis prospectus. The first of these effects is on an ongoing mental health service research project since 2016 focusing on the identification and treatment of individuals in Albemarle-Charlottesville and Central Virginia regional jails suffering from severe mental illness, and how this population differs from jail residents as a whole. The other ramification with plans to be explored is the effect that the shift to online care has had, or will have, on the social stigma surrounding mental health. Both investigations are planned to be published in April 2021, with a more detailed timetable in their respective sections of this thesis prospectus.

EFFECTS OF DOSAGE AND TYPE OF MENTAL HEALTH SERVICES RECEIVED BY INDIVIDUALS WITH SEVERE MENTAL ILLNESS FOLLOWING RELEASE FROM CUSTODY

Since 2016, UVA School of Data Science Professor Loreto P. Alonzi and Department of Engineering Systems and Environment Professors Emeritus K. Preston White Jr and Michael C. Smith have been conducting an ongoing research project with a group of 4-7 4th year systems undergraduate students, changing each academic year. This year, the team of undergraduates consists of systems engineering majors Nora Dale, Aatmika Deshpande, Katherine Korngiebel, Paige Krablin, Emma Wilt and myself. The initial problem identified by the research team was stated excellently by Nardi et. al. in the project's 2017 publication:

Beginning in the 1960s, deinstitutionalization drastically curtailed the use of long-term mental hospitalization. While intended to integrate mentally ill patients into society and rehabilitate them within the local community, the movement displaced many of these people to the streets, jails, or prisons [(Sheth, 2009)]. As the mental hospitalization rate rapidly decreased, the prison rate climbed, due in part to increased incarceration of persons with mental illness.

(para. 2)

This is not a minor trend either. In a report to the Treatment Advocacy Center, Torrey et. al. (2014) assert that there are more than ten times the number of individuals suffering from severe mental illness in jail or prison in the US than in psychiatric hospitals (p. 6). Neither prisons nor jails are systems designed to treat mental illness. While there are without a doubt several ethical concerns with this situation, there are also economic issues. Henrichson, Rinaldi and Delaney (2015) found that the Albemarle-Charlottesville Regional Jail spends \$91.24 per day per inmate (p. 27). Several of the bed days are being spent on severely mentally ill individuals who could be receiving more effective care elsewhere. Not only will work towards alleviating this issue help link individuals suffering from severe mental illness to the help they need, but it will also help in reducing overcrowding at the institutions that formerly held the individuals suffering from

mental illness, and the money not spent on housing them can (hopefully) be reallocated to improve the conditions of the facility for the remaining inmates.

In order to aid in the alleviation of this issue, Alonzi, White and Smith, along with the annual team of 4th year undergraduates, have partnered with several local organizations in an attempt to identify and explain differences in the population of severely mentally ill inmates in local jails and the jail population as a whole. These partners include Albemarle-Charlottesville Regional Jail, Central Virginia Regional Jail, and the publicly-funded mental health service provider Region Ten, all of whom are providing data to the research. In addition to these partners, there are also several organizations with an interest in the research being conducted, such as the Jefferson Area Community Criminal Justice Board (CCJB), whose representative to the team, Neal Goodloe, has worked closely with the research team for years and co-authored its 4 most recent annual publications. Ultimately, the hope is to use the more thorough understanding of the population of inmates with severe mental illness to inform policy decisions aimed at improving both the mental health services provided to individuals with severe mental illness and their overall treatment in the local criminal justice system.

Every year, due to the influence of the group of 4th year undergraduate researchers, the project's focus is shifted to a new way of viewing the population of inmates or ex-inmates suffering from severe mental illness, as well as how effective different methods of treatment are. Previously research has fallen into two broad categories. Firstly, some research, such as that conducted by Dalton et. al. (2018), broadens the scope of the project to take new views on the situation. In their case, the focus was put on the mental health screener given to inmates at local jails to determine any trends in who receives said screener and any patterns in who is 'screened in', meaning they show signs of suffering from severe mental illness. The other category

research falls in is reviewing previous work to check for possible biases or add to existing conclusions. Continuing the mental health screener example, Bramham et. al. (2020) were able to build directly off of the 2018 research team’s findings by identifying possible racial and gender biases in the way the mental health screener is conducted. Most recently, Donkoh-Moore et. al. (2021) put focus on the difference in behavioral data, such as the Return To Custody (RTC) rate of individuals with severe mental illness upon release from jail depending on whether or not they were linked to services at Region Ten. While the information is undoubtedly useful, this year’s team of undergraduates noted that Donkoh-Moore et. al., as well as the teams of previous years, have used ‘linkage to mental health services’ as the only data point related to a patient’s out-of-jail treatment. This year, the research team is aiming to create a more nuanced picture of how linkage to mental health services can affect the behavior of individuals with severe mental health, with more attention given to type of treatment received, diagnosis, retention of the individual at Region Ten, and similar data points focused on providing more detail to the team’s understanding of the population of individuals with severe mental illness who were linked to mental health services. Figure 1 (p. 5) is a tree diagram describing the different categorizations these individuals that have been used in previous years. The diagram makes the imbalance in research focus clear – previous years’ research teams have investigated the demographics and behaviors of populations defined by several different metrics defined by measured risk of severe mental illness, however there is no further nuance for an individual’s treatment method beyond a single binary variable. We hope to expand ‘linked’ out into more conditions than just a return to custody binary to provide extra nuance to the data concerning linkage to services outside of the jail. To achieve this deeper understanding, the team will be using inmate records from Albemarle-Charlottesville Regional Jail and Central Virginia

Regional Jail, as well as patient records from Region Ten. Although there is not a unique identifier linking the two, Professor Alonzi and two undergraduate students working with him are creating a machine-learning powered algorithm to match inmate records to patient records, with a corresponding confidence level for each match. Once inmate records and patient records are linked, we will be able to use the resultant database to analyze patient behavior and demographic information in much the same way as previous years, but this time using a much more nuanced picture of post-release treatment rather than a binary ‘linkage’ variable. The COVID-19 pandemic is going to have a strong impact on our data, as previously stated in the introduction. We will be dividing our data into two separate datasets, one consisting of individuals who received treatment before March 2021, and one consisting of individuals receiving treatment after March 2021. Potentially, significant differences between the results of conducting the same methodology on the two different datasets may illuminate unexpected trends in the way virtual treatments affect individuals with severe mental illness compared to traditional, in-person offerings.

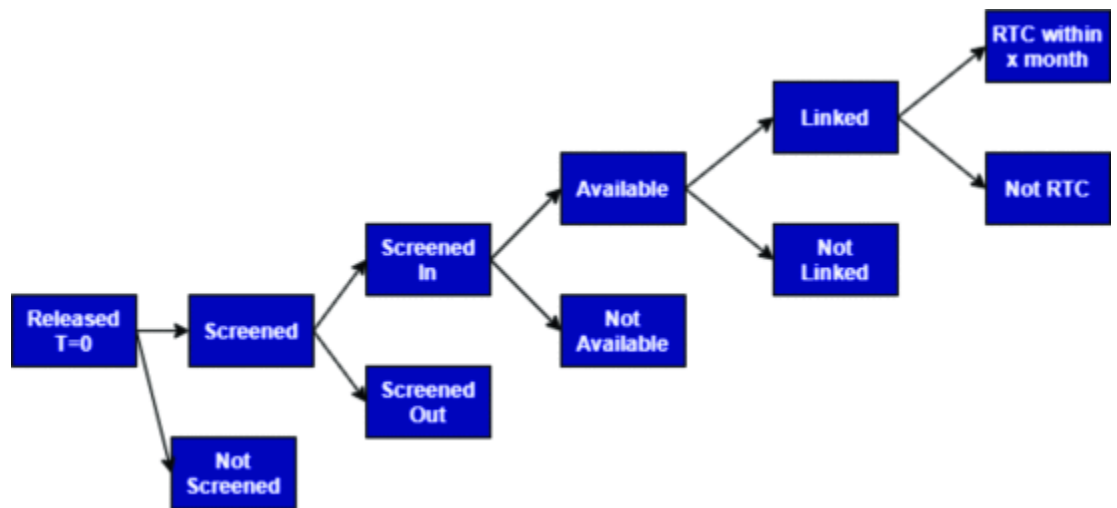


Figure 1: Groupings of individuals in local jails with regards to severe mental illness identification and treatment (from Donkoh-Moore et. al., methodology section, 2021)

Currently, the process of getting NDAs signed from all researchers as well as partner organizations is still underway, but is expected to be completed by the end of November. Once the NDAs have been signed by all involved parties, the undergraduate researchers will be able to access the data and begin an exploratory data analysis to identify patterns with a more nuanced definition of ‘linkage to mental health’. An abstract of the project will be finalized on February 26, 2021, with the full paper being finalized on April 12, 2021. The conference paper is expected to be published as part of the 2022 SIEDS conference on April 30, 2021.

REDUCING SOCIAL STIGMAS SURROUNDING MENTAL HEALTH AS A RESULT OF THE AVAILABILITY OF REMOTE MENTAL HEALTH SERVICES

It goes without saying that mental illness can be viewed as a psychological problem, but focusing only on the psychological aspects misses a lot of the picture. One major aspect, as pointed out by Corrigan and Watson (2002), is the social stigma mental illness carries with it, which Corrigan and Watson liken to the illness’ symptoms themselves in terms of severity (para. 1). This stigma can manifest itself in several different forms, often multiple at the same time. These forms include but are not limited to: fear of being excluded and even feared by others, being infantilized by peers and even being viewed as incapable of making decisions for themselves (Corrigan & Watson, para. 7). The social stigma surrounding mental illness is a major social issue, and as would be expected from a problem of its severity, there is an incredible amount of research on why the stigma exists, how it manifests, how the symptoms can be treated, and even how the stigmas themselves can be combated. However, the entire mental health services system has been forced to restructure as a result of the COVID-19 pandemic, and the effects of this shift are still not entirely understood, including the effect this has had on the social stigma surrounding mental illness. Shifts in cultural perception can take time, and the rigorous observational studies required to identify a shift in cultural perception is not fast either.

Increasing the degree of uncertainty in the effects of the shift, as noted by Duff and Sarata (2020), even US government regulations on mental health services have shifted to accommodate more remote services, by both shifting funds to encourage this type of treatment, but also relaxing privacy regulations on mental telehealth (para. 7). However, through a synthesis of existing literature on mental health stigma and the mental health services system under COVID-19, we can predict the effects that technologies enabling remote mental health services, namely remote video conferencing software, will have on the social stigma surrounding mental health, or if there will be an effect at all.

In order to predict the effect widespread use of virtual meeting technologies for mental health services will have on the stigma surrounding mental health, an implementation of the specific Social Construction of Technology as defined by Johnson (2005), will be used, focusing on commonly implemented telehealth technologies. As stated by Reay, Looi and Keightley (2020), “[these technologies] include telephone-delivered therapy, Videoconferencing, mental-health apps and internet-delivered programs” (para. 2). These technologies are divided into 2 categories, synchronous and asynchronous, and surprisingly every function of in-person mental health services mentioned by the authors that had a telehealth counterpart fell into the realm of synchronous, as shown in Figure 2 (p. 8). This idea that asynchronous telehealth services offer a new suite of tools to service providers is substantiated by the authors, citing excitement about the technology from medical professionals in the field (Reay, Looi & Keightley, para. 2-3). Expert testimony, such as that found in existing academic writings, may provide an inaccurate or biased view of the relationships different social groups have with the two types of telehealth technologies. Instead, publications by various non-expert sources will be used to develop an understanding of these relationships. DeMelo (2021) provides an excellent example of a source

that could be used for this model, as her casual advice columns are credible and researched from expert opinion, but are still tailored to target a particular social group. The SCOT model of these telehealth technologies may only be directly relevant when looking at how the technologies have influenced various social groups and not the other way around, however an understanding of the influences for either certain design decisions or the prevalence of certain specific artifacts (such as zoom) over others has the potential to lead to potential and unexpected findings. This is particularly true when looking at influences for design aspects or specific artifacts that become particularly relevant in the second stage of the methodology to develop predictions for how remote mental health services may impact the stigma surrounding mental illness.

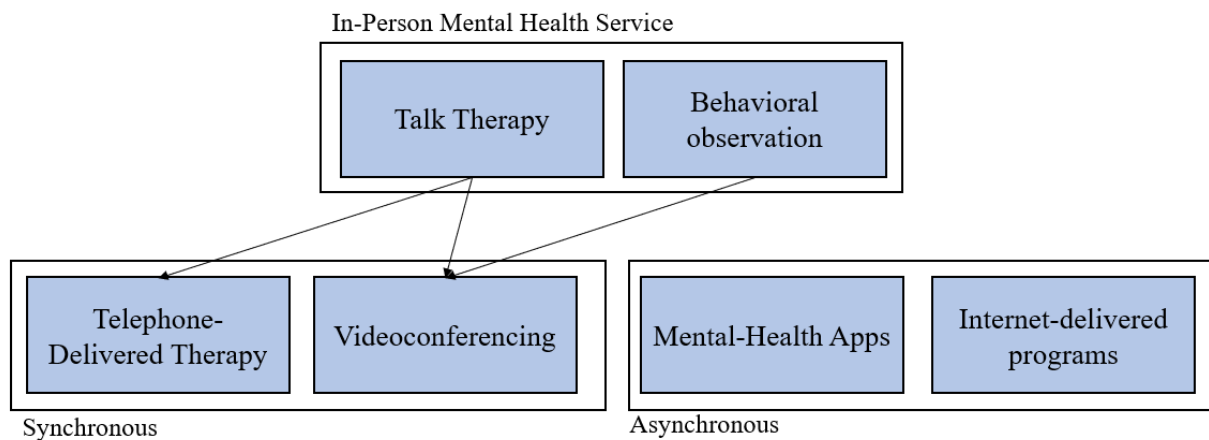


Figure 2: In-person mental health service functions and telehealth counterparts (Adapted by George Corbin (2021) from Reay, Looi and Keightley 2020)

An understanding of the relationships social groups have with technology alone will not be enough to predict the effect they will have on the stigma surrounding mental illness. In a 2015 literature review, Thornicroft et. al. demonstrated that there exists a wealth of research with the purpose of developing social interventions to directly combat the stigma surrounding mental illness (Literature search methods section, para. 1). Furthermore, different interventions can be designed to not only target stigma differently, such as reducing stigmas held in those close to individuals suffering from mental illness, or reducing the effect these stigmas have on the

individual, but also have different demographics they are more effective against (Thornicroft et. al., Evidence from systematic reviews section, para. 1). Although this research is on intentional interventions to target stigma, it is possible that changes to the mental health service system due to the COVID-19 pandemic have had effects similar to proposed interventions, or made said interventions more feasible. To aid in the identification of similar effects, the SCOT model developed earlier will be used alongside early research describing the exact changes to the mental health services system, as described by Figure 3. Ideally, there will exist similarities between identified changes to the mental health services system relating to the use of telehealth technology, in tandem with one or more social groups' relationship with said technology, that mimics an effective intervention against mental health stigma. If no connections of this nature exist, there is still the possibility that the effects of the restructuring of the mental health services system, and its interaction with telehealth technologies, may make existing identified interventions more feasible, from either an economic or effectiveness perspective.

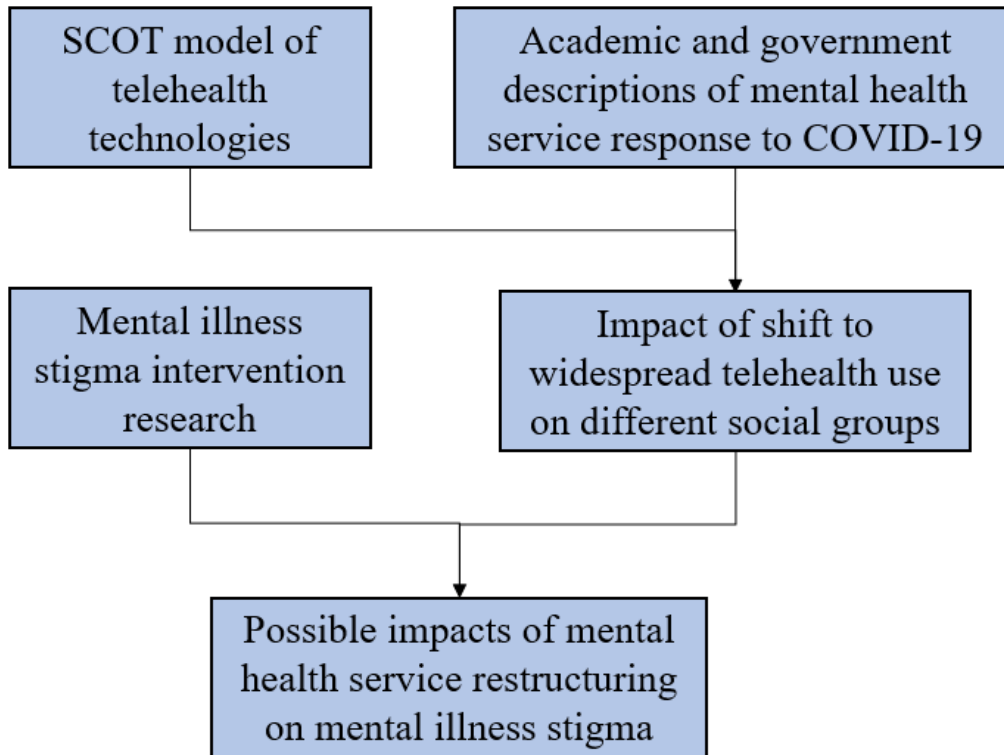


Figure 3: Interaction of methodology elements and synthesis structure (George Corbin, 2021)

The process of defining the SCOT model of major telehealth technologies will begin immediately after the oral presentation of this prospectus on November 11. As this is the foundation of the thesis, this model will continue being developed through March 1, 2022. While this is being developed, starting February 1, mental illness stigma interventions will be identified. The abstract of the thesis will be written by March 1st. Starting that same day, the two elements will come together and the process of connecting the effects of the system restructuring and stigma interventions will be conducted until the end of March 2022. An undergraduate thesis paper describing the project will be finalized during the month of April 2022.

CONNECTING TELEHEALTH AND STIGMA BACK TO MENTAL ILLNESS IN THE PENAL SYSTEM

Although there has not yet been research to confirm or deny it, there is a belief among members of organizations working with the Mental Illness Treatment in Local Jails research team that one possible barrier to potentially mentally ill individuals being linked to treatment after release is the social stigma surrounding mental health. While not part of the primary focus of the project, this is a secondary research question one of the project's partners has asked to be looked into. With the expectation that this question is looked into, the results of the investigation into possible effects of the widespread use of telehealth technologies for mental health services on the stigma surrounding mental health could be used as evidence towards identification of trends in the effect mental health stigma may have on linkage rates of individuals in Albemarle-Charlottesville Regional Jail or Central Virginia Regional Jail, thus immediately contributing to meaningful and actionable research to improve conditions for individuals suffering from mental illness.

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