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Healthcare Service Use, Help-seeking Behaviors, and Health and Wellbeing in Attenuated Psychosis

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Abstract

Persons with serious mental illness (SMI) receive poorer-than-standard healthcare, contributing to a 20-year reduction in the average life expectancy of persons with SMI. While extant literature describes the health disparities experienced by persons with SMI, little research examines the relationship between attenuated psychotic symptoms, healthcare service use, and help-seeking behaviors that may contribute to the disparities in this vulnerable population. This study explores the relationships between attenuated psychotic symptoms, physical health symptoms and related distress, healthcare service use, and help-seeking intentions to better understand health disparities in vulnerable and marginalized populations, such as individuals with SMI. Only a portion of individuals exhibiting symptoms meet criteria for a psychiatric illness based on the psychosis continuum. Subjects with Attenuated Psychotic Symptoms (APS; symptoms that are qualitatively similar to those of frank psychosis but attenuated in severity) were studied to examine hypotheses related to the health disparities and healthcare service inequities present in the SMI population because they often have analogous health disparities, comparable psychological and social characteristics as persons with SMI, and represent roughly 2% of college samples, which approximates the epidemiological risk of psychosis. Data was collected from one hundred and twenty-five undergraduate and graduate students attending the University of Nebraska-Lincoln. Selected measures examined individuals' demographics, physical health symptoms, medical provider-diagnosed severe/chronic health conditions, healthcare service use, help-seeking intentions, attenuated psychotic symptoms, and psychological wellbeing. Analyses included descriptive statistics, Pearson's correlation coefficients, and T-tests. The study's findings indicate that physical and attenuated psychotic symptoms are inversely correlated with help-seeking intentions, with healthcare service use

correlated only with physical symptoms. These findings suggest that as symptoms and corresponding distress increase, people are less likely to engage in help-seeking behaviors, possibly related to barriers associated with symptoms such as decreased or low energy, avolition, or other challenges related to physical and mental health. Findings also indicate a need for further analysis of healthcare service use engagement and help-seeking behavior, including life-style and other health-related behaviors, to identify intervention targets to improve mental and physical health.

Keywords: serious mental illness, help-seeking behaviors, attenuated psychosis

Healthcare Service Use, Help-seeking Behaviors, and Health and Wellbeing in Attenuated Psychosis

People with serious mental illness (SMI) receive poorer-than-standard healthcare (Lempp et al., 2009). This lack of healthcare contributes to a 20-year reduction in the average life expectancy of persons with SMI (Kugathasan et al., 2019). This health disparity is not attributed to psychiatric illness, but to the same common underlying medical conditions placing people in the general population at higher risk of death (Heiberg, 2019). Among the suspected causes of the disparity are lifestyle habits, such as cigarette smoking (Carney et al., 2016) side effects of antipsychotic medication (Osborne et al. 2007), and healthcare service inequities related to various barriers like diagnostic overshadowing (Shefer et al., 2014). Furthermore, people with schizophrenia spectrum disorders and other SMI are less likely to seek medical healthcare services which may contribute to poorer health (Osimo et al., 2020).

Research on populations with known health vulnerabilities short of severe illness is often useful for understanding processes that also apply to populations with frank illness (Gal et al., 2017). Less research attention has been paid to psychosocial factors such as differences in help-seeking behavior. Research on populations with known vulnerabilities to SMI has the methodological advantage of avoiding confounding effects of psychosis, institutionalization, and related characteristics of frank psychosis (McGlashan et al., 2010). One such vulnerability is *attenuated psychotic symptoms* (APS), which are qualitatively similar to the symptoms of frank psychosis but attenuated in severity (Montague & Hochheiser, 2017). APS are considered to represent vulnerability factors in individuals who do not otherwise meet the criteria for a psychotic disorder or other clinical SMI diagnosis, and who do not experience the severe disruption of routine behavioral functioning typical of SMI (McGlashan et al., 2010). People

with APS show psychological and social characteristics of SMI populations (McGlashan et al., 2010). Persons with APS represent 2% of college samples, which is an approximation of the epidemiological risk of psychosis in the general population (Montague and Hochheiser, 2017). Also, people with APS experience health disparities comparable to those observed in SMI populations (Gai et al, 2017).

Aims

In this study, participants with attenuated psychotic symptoms (APS) were recruited to evaluate hypotheses about health disparities and healthcare services in that population. Examining the relationship between attenuated psychotic symptoms, healthcare service engagement, physical health symptoms and related distress, and help-seeking intentions should help to improve our understanding of the health disparities that people with SMI face. The specific factors of interest included frequency of physical symptoms, physical health symptom distress, help-seeking intentions, healthcare service use behavior, attenuated negative (ANPS) and positive (APPS) psychotic symptoms, and psychological well-being. Hypotheses generally predict those displaying a higher severity or frequency of attenuated psychotic symptoms would report lower help-seeking intentions and poorer psychological wellbeing.

Research Hypotheses

RH 1: Persons endorsing more attenuated psychotic symptoms will likely also endorse higher distressing physical health symptoms, report lower medical healthcare service use, lesser help-seeking intentions with physical healthcare providers, and greater help-seeking intentions with behavioral healthcare providers in comparison to those endorsing fewer attenuated psychotic symptoms.

RH 2: Persons endorsing more distressing physical symptoms will likely also endorse higher attenuated psychotic symptoms and related distress, report greater medical healthcare service use, lower behavioral healthcare service use, higher help-seeking intentions with medical healthcare providers, and lower help-seeking intentions with behavioral healthcare providers in comparison to those endorsing less distressing physical health symptoms.

Method

Participants and Procedures

This research is a sub-study of the large-scale, longitudinal Biopsychosocial Health Study using baseline, cross-sectional data gathered from a series of online surveys administered via Qualtrics. These surveys included the *Prescreening, Initial,* and *First* surveys that comprise the baseline portion of the study's data collection. The Biopsychosocial Health Study was approved by the Institutional Review Board University of Nebraska-Lincoln. The overarching, longitudinal, Biopsychosocial Health Study focuses on biological, psychological, social, cognitive, behavioral, and environmental factors that contribute to individuals' health and wellness.

Participants were undergraduate and graduate college students recruited through the University of Nebraska's psychology department's SONA mass screening, a study blurb posted in the honors students' newsletter, in addition to several other school email listservs (e.g., pre-health majors, disability services, university housing). A stratified recruitment strategy was used to disproportionately recruit individuals with severe or chronic medical or psychological health conditions, which created a saturated subsample of participants with reported disabilities. Non-international student participants had the choice of receiving compensation in the form of SONA credits or Amazon e-gift cards for their completion of the surveys. International students were

compensated via a raffle ticket lottery process that entered them into a pool to potentially win a series of prizes (e.g., Roku, Fitbit, Amazon Fire Tablet). Participants that completed all seven of the study surveys through the full longitudinal portion of the study were entered into a lottery to win an Amazon Fire Tablet as an additional prize to their remuneration payments for the individual surveys completion.

An IRB-approved online electronic consent form was presented to participants, which they reviewed and subsequently provided their electronically informed consent to before being transferred to the *Pre-screening* survey. Participants provided their electronically informed consent for their participation in the full longitudinal online Biopsychosocial Health Study that includes up to seven online surveys administered via Qualtrics, if found eligible, prior to engaging in any of the questionnaires. The study's inclusion criteria were: (a) having access to either a laptop or a desktop computer on which participants could complete the surveys; (b) being between the ages of 18 and 35; (c) living in the United States at the time of participation in the study; (d) being able to read and speak English; and (d) having internet access to take the online surveys. To eliminate any discrepancies in responses and results, the surveys included items to detect random responses and inattention to the study during the data collection process. For example, items such as "Please choose '3' (applied to me very much or most of the time) so we know you are still following along" were included. If during the third baseline survey participants: 1) missed more than one of the attention-check validity items indicating inattentive or random responding or 2) missed one of the attention-check validity items indicating inattentive or random responding and took less time than 70% of the average completion time, their data were excluded from the data.

One hundred and twenty-five undergraduate and graduate students between the ages of 18 to 25 (M= 20.82, SD= 2.878) attending the University of Nebraska-Lincoln participated in this study. The majority of the participants identified as female (n = 103, 82.4%), while males comprised the minority (n = 22, 17.6%). Most participants identified as White (n = 103, 82.4%), followed by Asian (n = 14, 11.2%), other (n = 5, 4%), Black or African American (n = 2, 1.6%), and Native Hawaiian/Pacific Islander (n = 1, 0.8%).

Measurement

The questions included in this study examined relationships between physical health, healthcare service use, help-seeking intentions, attenuated negative and positive psychotic symptoms associated with SMI, and psychological well-being.

Reflective and formative constructs were examined in this study, with the reflective constructs including scales derived from well-validated self-report instruments and the formative ones representing a collective tally of items creating a variable (e.g., number/frequency of physical health symptoms, vaccine, and other healthcare service use behavior). Reliability analyses were conducted for all reflective constructs derived from measure total and sub-scales. For those measures, reliability was determined through the examination of the scales Cronbach's alpha with a = 0.70 or greater indicating that the construct demonstrated "acceptable" to "excellent" reliability within this data sample (Taber, 2017). For reflective constructs with less than 10 items, the acceptable range for Cronbach's alpha was 0.50 or higher, with follow-up examination of the inter-item correlations between r = 0.15 and r = 0.50 to determine acceptable reliability within this dataset (Taber, 2017).

Demographics

Participant demographics included participant age, ethnicity, race, sex at birth, medical history (e.g., diagnosed severe or chronic health conditions), and individual and family psychiatric history (e.g., lifetime inpatient/outpatient psychotherapy) [PSYC1].

Other Measures

The 20-item *General Help-Seeking Questionnaire* (GHSQ; Wilson et al., 2005) was used to assess the likelihood and willingness of an individual to seek help from peers, family, or professionals, regarding mental health, specifically emotional/personal issues or suicidal thoughts. Each item consists of a scale ranging from 1-7, with "1" corresponding to "extremely unlikely" and "7" corresponding to "extremely likely." Question 1 focuses on personal or emotional problems and question 2 focuses on suicidal ideations. Each subsection measures help-seeking intentions. This questionnaire is validated by a study on intent for help-seeking behaviors for psychological help within a high school population which found the GHSQ to have satisfactory reliability and validity and has a large range of applications (Wilson et al., 2005). Cronbach's alpha was not used to examine reliability for help-seeking intentions as each of the constructs consists of one item or a tallied grouping of a few items from the questionnaire. Study variables derived from this measure include general help-seeking intentions for personal and emotional problems and for suicidal ideation across medical and behavioral healthcare providers respectively, healthcare providers collectively, and spiritual providers.

The 33-item *Cohen-Hoberman Inventory of Physical Symptoms* (CHIPS; Cohen & Hoberman, 1983) was used to assess levels of participants' distress corresponding to common physical health symptoms within the past two weeks. Each item consists of a scale ranging from "0" (no distress) to "4" (extreme distress). The total scale score ranges from 0-132 with higher

scores indicating greater distress from physical health symptoms. This measure was validated by a study investigating the factor structure and psychometric properties of healthy individuals of a general population which found this measure to be multidimensional and internally consistent in terms of physical symptoms (Allen et al., 2017). This scale demonstrated excellent reliability within this study sample via a Cronbach's alpha of 0.921. The study variable derived from this measure is participants' distressing physical health symptoms.

The 15-item *Motivation and Pleasure Scale-Self-Report* (MAP-SR-18; Llerena et al., 2013) was used to assess motivation and pleasure domains consistent with negative psychotic symptoms. Each item consists of a scale ranging from "0" being "no pleasure" or "not at all" to 4 being "extreme pleasure" or "very often" corresponding to whether the measure item is assessing the frequency or level of participants' reported pleasure. The total scale scores range from 0-60 with some items being reverse-scored. Higher total scores indicate higher ANPS. This measure was validated by a study investigating the reliability and validity of the self-report measure on persons with schizophrenic disorders which found this measure to have good internal consistency and convergent validity (Llerena et al., 2013). This scale demonstrated good reliability within this study sample via a Cronbach's alpha of 0.876. The study variable derived from this measure is attenuated negative psychotic symptoms (ANPS).

The 21-item *Prodromal Questionnaire-Brief Modified to Likert Scale* (PQ-B-21; Loewy et al., 2011) was used to assess thoughts, feelings, and experiences relating to attenuated positive psychotic symptoms (APPS). Each item consisted of a Likert scale ranging from "0" being "never" or "not at all" to "4" being "daily" or "extremely" depending on if the item is assessing frequency or level of distress corresponding to APPS. The total score for the distress variable ranges from 0-84. The total score for the frequency variable also ranges from 0-84. Higher total

scores on this measure indicate greater reported quantity of attenuated positive psychotic symptoms (APPS) and higher endorsement of related symptom distress (D-APPS). The original PQ-B measure was validated by a study investigating the validity of the self-report measure on adolescents and young adults who completed clinical assessments at psychosis research clinics which found this measure to be an effective and efficient measure for prodromal psychosis syndromes within help-seeking populations (Loewy et al., 2011). Another study validated this measure by completing a systematic review of the PQ-B-21 and found support of this measure as a preliminary screening tool for UHR (Savill et al., 2018). The APPS scale score from our modified version of this measure demonstrated good reliability within this study sample via Cronbach's alpha of 0.865. The study variables derived from this measure are participants' reported quantity of attenuated positive psychotic symptoms (APPS), endorsement of APPS-related symptom distress (D-APPS).

The 18-item *Psychological Wellbeing (*PWB-18; Ryff et al., 1995) was used to assess happiness and overall well-being. Each item consists of a scale ranging from "1" being "strongly agree" to "5" being "strongly disagree." The total score on each of the subscales range from 3-21 with higher scores indicating greater psychological well-being across the domains of self-acceptance, purpose in life, positive relationships with others, personal growth, environmental mastery, and autonomy. This measure was validated by a study investigating the factor structure and its relationship to standardized psychological well-being in a general population sample from Newfoundland (Kafka & Kozma, 2002). This study found this measure to produce three higher-order factors instead of just one. Since these subscales are comprised of 3 items, the six-factor model approach was used to examine both the Cronbach's alpha and inter-item correlations. This measure proved to have internal consistency reliability measurements (Kafka & Kozma 2002).

This measure demonstrates acceptable reliability within this data sample via Cronbach's alphas ranging from 0.519-0.831 and inter-item correlations ranging from 0.16-0.62. The study variables derived from this measure are self-acceptance, purpose in life, positive relationships with others, personal growth, environmental mastery, and autonomy.

The *Alcohol and Substance Use Frequency* measure (ASUF) is a modified version of an *Alcohol Use Frequency and Drug Use Frequency* measure (DUF; O'Farrell et al., 2003). This modified version includes updates in language to better reflect modern recreational use practices, specifically in college populations. This measure asks participants about current physical health status including severe/chronic health condition diagnoses, the frequency of a variety of physical health symptoms experienced (ranging from daily to weekly, or not applicable), use of over-the-counter and prescription medications/treatments, diverse substance use covering both medicinal and recreational substances (including if they were prescribed or not), how these substances are consumed (e.g., orally, intravenously), and under what circumstances the substances are used (e.g., with whom and site of use) within the past thirty days. The study variables derived from this measure include the frequency of participants' endorsed physical health symptoms and the presence of a diagnosed severe/chronic physical health condition. The frequency of participants' endorsed physical health symptoms variable was created by tallying scores on the ASUF measures health symptom item such that higher scores indicate an increased frequency of physical health symptoms. The binary presence of a diagnosed physical health condition variable was created from the item asking participants to report whether they have a medical provider-diagnosed physical health condition present within the past twelve months such that "0" indicates no medical provider diagnosed physical health condition and "1" indicates the presence of one or more severe/chronic physical health diagnoses. A second variable was created as a tally

score of the number of participants' medical provider diagnosed physical health conditions where higher numbers indicate the presence of more diagnosed severe/chronic physical health conditions.

Data was collected from the *Center of Disease Control and Prevention Annual Census* (NHIS, 2018). The variables derived from this census survey include number of healthcare provider visits in the last 12 months (HLTH14), time since last routine physical health care check-up (HLTH8), number of personal healthcare providers (HLTH6), pneumonia vaccine status (VCN2), treatment status, flu vaccine status, and COVID-19 vaccine status. For the purpose of this study's analyses, the variables related to engagement in healthcare services from this measure were reverse coded so that higher numbers denoted increased engagement/service use. The scale translation was based on percentiles coming from the lowest reported number provided across responses. The index variable creation was based off a scale with a 25^{th} percentile of 2, 50^{th} percentile of 4, 75^{th} percentile of 6 and the 100^{th} percentile of 50. Index variables were created to examine the use of healthcare services and resources such as psychotherapy and vaccinations. For behavioral healthcare service use, scores of "0" indicated never having used psychotherapy nor inpatient behavioral healthcare services in a lifetime, "1" indicated having used either psychotherapy *or* inpatient behavioral healthcare services in lifetime, and "2" indicated having used psychotherapy *and* inpatient behavioral healthcare services in lifetime. For vaccine use behavior, scores of "0" indicated no flu, COVID-19, nor pneumonia vaccine use at baseline (time 0 months), "1" indicated either flu, COVID-19, or pneumonia vaccine use, "2" indicated two out of the three vaccines, and "3" indicated all three vaccines being used.

Statistical Analyses

Statistical analyses including descriptive statistics, bivariate correlations, and independent-sample T-tests were conducted using SPSS (Version 28). Descriptive statistics included mean, standard deviation, and range. Pearson's Bivariate correlations examined relationships between physical health symptoms and diagnosed medical conditions, help-seeking intentions, service use behavior, psychological well-being, attenuated psychotic symptoms and APPS, D-APPS, ANPS, physical health symptom frequency, and distressing physical health symptoms. A T-test was used to examine healthcare help-seeking intentions in the subsample of medical illness versus no medical illness. This was done by using a continuous variable for frequency/problematic health symptoms and attenuated psychotic symptoms in regression. This determined if they predicted likelihood in engaging in help-seeking behavior as separated into a total single scale score. The combination of these analyses allowed for testing of research hypotheses as explained below.

To determine the relationship between endorsement of attenuated psychotic symptoms and distress associated with attenuated psychotic symptoms, question 2 from the ASUF health symptoms subsection scale regarding health system frequency and the CHIPS total score related to distress corresponding to physical health symptoms was used. Questions from CHIPS with independent variables predicting attenuated psychotic symptoms and APPS distress was used.

Descriptives

Descriptive statistical analysis was used to summarize demographics information regarding the study population. Data collected from the demographics included information such as age, sex, ethnicity Hispanic/Latinx, presence of a chronic health condition, and race.

Descriptive statistical analysis summarized the mean, standard deviation, and range for the demographics and all other variables included in the study.

Correlations

Pearson's correlation coefficient was used to measure if there was a significant relationship between the two variables. Pearson's Bivariate correlations examined relationships between physical health symptoms and diagnosed medical conditions, help-seeking intentions, service use behavior, psychological well-being, attenuated psychotic symptoms and APPS, D-APPS, ANPS, physical health symptom frequency, and distressing physical health symptoms. Calculations of the correlation coefficient allowed for the testing of the research hypotheses to determine if there was a significant relationship between symptoms and help-seeking behaviors. Pearson's Bivariate correlations address research hypotheses that persons endorsing higher attenuated psychotic symptoms will likely also endorse more distressing physical health symptoms, display less medical healthcare service use and help-seeking intentions with physical healthcare providers, and higher help-seeking intentions with behavioral healthcare providers. The correlation analysis also addresses the research hypothesis that persons endorsing more distressing physical symptoms will endorse higher attenuated psychotic symptoms, display higher medical healthcare service use, higher help-seeking intentions with medical healthcare providers, but less behavioral healthcare service use and help-seeking intentions with behavioral healthcare providers.

T-Tests

T-test analyses were conducted to compare the means of different variable groups in the study. T-tests were conducted between the lower APPS group and the higher APPS group to examine the mean differences in help-seeking intentions, service use, distressing physical health

symptoms, and within the dimensions of psychological well-being. T-test analyses were also conducted between the higher ANPS group and the lower ANPS group to examine mean differences in help-seeking intentions, service use, distressing physical health symptoms, and within the dimensions of psychological well-being. Similarly, T-test analyses were also conducted between the higher distressing physical health symptoms group and the lower distressing physical health symptoms group to examine mean differences in help-seeking intentions, service use, number of diagnoses, and within the dimensions of psychological well-being. Independent sample T-tests examined research hypotheses that persons with higher attenuated psychotic symptoms will likely also endorse more distressing physical health symptoms, less medical healthcare service use, lower help-seeking intentions with physical healthcare providers, and higher help-seeking intentions with behavioral healthcare providers in comparison to those endorsing lower attenuated psychotic symptoms. The hypothesis explored was that persons endorsing more distressing physical symptoms will also endorse higher attenuated psychotic symptoms, display more medical healthcare service use, report higher help-seeking intentions with medical healthcare providers, but lower engagement in behavioral healthcare services and help-seeking intentions with behavioral healthcare providers in comparison to those endorsing less distressing physical health symptoms.

Results

Descriptives

One hundred and twenty-five undergraduate and graduate students between the ages of 18 to 25 (M= 20.82, SD= 2.878) attending the University of Nebraska-Lincoln participated in this study. The majority of the participants identified as female (n = 103, 82.4%), while males comprised the minority (n = 22, 17.6%). Most participants identified as White (n = 103, 82.4%), followed

by Asian (n = 14, 11.2%), other (n = 5, 4%), Black or African American (n = 2, 1.6%), and Native Hawaiian/Pacific Islander (n = 1, 0.8%).

Table 1. *Demographics/Descriptives*

Age (years), mean (SD) [range]	20.82 (2.878) [14]
Female	103, (82.4%)
Male	22, (17.6%)
White	103 (82.4%)
Black or African American	2 (1.6%)
Asian	14 (11.2%)
Native Hawaiian/Pacific Islander	1 (0.8%)
Other	5 (4%)
Ethnicity Hispanic/Latinx, n (%)	8 (6.4%)
Chronic Health Condition (CHC) Dx, n (%)	71 (56.8%)
Attenuated Positive Psychotic Symptoms – Quantity (APPS)	4.23 (4.135) [21]
Attenuated Positive Psychotic Symptoms – Distressing Symptoms (APPS)	3.74 (3.683) [21]
Attenuated Negative Psychotic Symptoms (ANPS)	21.46 (9.95) [54]
Problematic/Distressing Physical Health Symptoms	17.51 (16.179) [81]
Frequency of Physical Health Symptoms	10.28 (6.702) [31]
Diagnosis of a Severe or Chronic Health Condition	0.57 (0.497) [1]
Number of Severe or Chronic Health Conditions	1.42 (2.045) [10]
General Help-seeking for Personal and Emotional Problems	30.89 (8.058) [51]
General Help-seeking for Suicidal Ideation	32.01 (10.193) [48]

Medical Healthcare Providers Help-seeking for Personal and Emotional Problems	3.42 (1.733) [6]
Medical Healthcare Providers Help-seeking for Suicidal Ideation	3.72 (2.144) [6]
Behavioral Healthcare Providers Help-seeking for Personal and Emotional Problems	4.18 (1.755) [6]
Behavioral Healthcare Providers Help-seeking for Suicidal Ideation	5.37 (1.543) [6]
Number of Healthcare Provider Visits in the Last 12-Months (HLTH14)	0.38 (0.486) [1]
Time Since Last Routine Physical Healthcare Check-up (HLTH8)	0.33 (0.472) [1]
Number of Personal Healthcare Providers (HLTH6)	0.77 (0.424) [1]
Pneumonia Vaccine (VCN2)	1.56 (0.846) [3]
Lifetime Psychotherapy Outpatient Treatment (PSYC1)	0.91 (0.284) [1]
Autonomy	14.71 (3.393) [14]
Environmental Mastery	14.62 (4.075) [17]
Personal Growth	18.18 (2.968) [13]
Positive Relationships with Others	15.1 (4.21) [16]
Purpose in Life	16.45 (3.361) [17]
Self-acceptance	15.73 (4.523) [18]

Correlations

Pearson's bivariate correlations were computed to evaluate this study's research hypotheses that persons endorsing higher attenuated psychotic symptoms will likely also endorse more distressing physical health symptoms, display less medical healthcare service use and help-seeking intentions with physical healthcare providers, and higher help-seeking intentions with behavioral healthcare providers. The correlation analysis also addresses the research hypothesis that persons endorsing more distressing physical symptoms will endorse higher attenuated

psychotic symptoms, display higher medical healthcare service use, higher help-seeking intentions with medical healthcare providers, but less behavioral healthcare service use and help-seeking intentions with behavioral healthcare providers. They additionally examined the relationships between all of the study variables including physical health symptoms and diagnosed medical conditions, help-seeking intentions, service use behavior, psychological well-being, attenuated psychotic symptoms, APPS, D-APPS, ANPS, physical health symptom frequency, and distressing physical health symptoms. Results from these correlations supported the study hypotheses that the greater the APS, the greater the experience of more distressing physical health symptoms, and the lower the help-seeking intentions for medical service use, the less medical service use for vaccines, and the greater behavioral health help-seeking intentions for personal and emotional problems. Results also supported the hypothesis that the greater level of distressing physical symptoms, the greater the APPS symptoms, the greater medical health service use, Results from these correlations did not support the study hypotheses that the greater the APS, the less medical service use in terms of providers and visits and the greater the help-seeking intentions of behavioral healthcare providers help-seeking for suicidal ideation. Results from these correlations did not support the study's hypotheses that the greater the amount of distressing physical health symptoms, the greater the help-seeking intentions for behavioral health, and the lower the behavioral health service use.

A significant positive correlation was found between Physician Diagnosed Severe or Chronic Health Condition(s) and participants reported distressing physical health symptoms r (123) = 0.281, $p < 0.001$, and Physical Health Symptom Frequency r (123) = 0.325, $p < 0.001$. A significant positive correlation was found between the number of severe or chronic health conditions (CHCs) and APPS r (123) = 0.190, p = [< 0.05], ANPS r(123) = [0.181], p = [< 0.05],

physical health symptom frequency *r* (123) = [0.381], *p* = [< 0.001] and distressing physical health symptoms *r* (123) = [0.410], *p* = [< 0.001]. A significant positive correlation was found between the frequency of physical health symptoms and APPS *r* (123) = [0.402], *p* = [< 0.001], D-APPS *r (*123) = [0.422], *p* = [< 0.001], ANPS *r* (123) = [0.316], *p* = [< 0.001] and distressing physical health symptoms *r* (123) = [0.727], *p* = [< 0.001]. A significant positive correlation was found between distressing physical health symptoms and APPS *r* (123) = [0.598], *p* = [< 0.001], D-APPS *r* (123) = [0.655], *p* = [< 0.001], ANPS *r* (123) = [0.445], *p* = [< 0.001] and physical health symptom frequency *r* (123) = [0.727], *p* = [< 0.001].

A significant negative correlation was found between general help-seeking for personal and emotional problems and APPS *r* (123) = [-1.780], *p* = [< 0.05], ANPS *r (*123) = [-0.373], *p* = [< 0.001], physical health symptom frequency *r (*123) = [-0.182], *p* = [< 0.05] and distressing physical health symptoms *r* (123) = [-0.208], *p* = [< 0.05]. A significant negative correlation was found between general help-seeking for suicidal ideation and APPS *r* (123) = [-0.230], *p* = [< 0.05], D-APPS *r* (123) = [-0.300], *p* = [< 0.001], ANPS *r* (123) = [-0.553, *p* = [< 0.001], physical health symptom frequency *r* (123) = [-0.339], *p* = [< 0.001] and distressing physical health symptoms *r (*123) = [-0.374], *p* = [< .001].

A significant negative correlation was found between any healthcare provider help-seeking for suicidal ideation and APPS *r (*123) = [-0.230], *p* = [< 0.05], D-APPS *r (*123) = [-0.297], *p* = [< 0.001), ANPS *r* (123) = [-0.350], *p* = [< 0.001], physical health symptom frequency *r* (123) = [-0.223], *p* = [< 0.05] and distressing physical health symptoms *r* (123) = [-0.244], *p* = [< .005]. No significant correlations were found for any healthcare provider help-seeking for personal and emotional problems.

A significant negative correlation was found between medical healthcare providers help-seeking for suicidal ideation and APPS *r* (123) = [-0.188], *p* = [< 0.05], D-APPS *r* (123) = [-0.206], *p* = [< 0.05), ANPS *r* (123) = [-0.278], *p* = [< 0.005], physical health symptom frequency *r (*123) = [-0.214], *p* = [< 0.05] and distressing physical health symptoms *r* (123) = [-0.223], *p* = [< .05]. No significant correlations were found for medical healthcare provider help-seeking for personal and emotional problems.

A significant negative correlation was found between behavioral healthcare providers' help-seeking for suicidal ideation and D-APPS *r* (123) = [-0.255], *p* = [< 0.05) and ANPS *r* (123) = [-0.286], *p* = [< 0.001], No significant correlations were found for behavioral healthcare provider help-seeking for personal and emotional problems.

A significant negative correlation was found between spiritual providers' help-seeking for personal and emotional problems and ANPS *r* (123) = [-0.269], *p* = [< 0.005], physical health symptom frequency *r* (123) = [-0.223], *p* = [< 0.05] distressing physical health symptoms *r* (123) = [-0.215], *p* = [< 0.05]. A significant negative correlation was found between spiritual providers' help-seeking suicidal ideation and ANPS *r* (123) = [-0.392], *p* = [< 0.001], physical health symptom frequency *r* (123) = [-0.306], *p* = [< 0.001] and distressing physical health symptoms *r* (123) = [-0.291], *p* = [< 0.005].

A significant positive correlation was found between the number of healthcare provider visits in the last 12-months and physical health symptom frequency *r* (123) = [0.262], *p* = [< 0.005] and distressing physical health symptoms *r* (123) = [0.345], *p* = [< 0.001]. A significant negative correlation was found between the time since the last routine physical healthcare check-up and ANPS *r* (123) = [-0.255], *p* = [< 0.005]. A significant positive correlation was found between the number of personal healthcare providers and physical health symptom frequency *r*

(123) = [0.200], p = [< 0.05] and distressing physical health symptoms r (123) = [0.185], p = [< 0.05].

A significant positive correlation was found between the use of the pneumonia vaccine and APPS r (123) = [0.177], p = [< 0.05] and distressing physical health symptoms r (123) = [0.268], p = [< 0.005]. No significant correlations were found for the flu vaccine nor the COVID-19 vaccine.

A significant positive correlation was found between lifetime psychotherapy outpatient treatment and APPS r (123) = [0.447], p = [< 0.001], D-APPS r (123) = [0.394, p = [< 0.001), ANPS r (123) = [0.367], p = [< 0.001], physical health symptom frequency r (123) = [0.336], p = [< 0.001] and distressing physical health symptoms r (123) = [0.418], p = [< 0.001]. No significant correlations were found for lifetime psychotherapy inpatient treatment.

A significant negative correlation was found between autonomy and APPS r (123) = [-0.251], p = [< 0.005], D-APPS r (123) = [-0.271], p = [< 0.005), ANPS r (123) = [-0.339], p = [< 0.001], physical health symptom frequency r (123) = [-0.287], p = [< 0.001] and distressing physical health symptoms r (123) = [-0.323], p = [< 0.001]. A significant negative correlation was found between environmental mastery and APPS r (123) = [-0.502], p = [< 0.001], D-APPS r (123) = [-0.524], p = [< 0.001), ANPS r (123) = [-0.667], p = [< 0.001], physical health symptom frequency r (123) = [-0.424], p = [< 0.001] and distressing physical health symptoms r (123) = [-0.536], p = [< 0.001]. A significant negative correlation was found between personal growth and APPS r (123) = [-0.276], p = [< 0.005], D-APPS r (123) = [-0.358], p = [< 0.001), ANPS r (123) = [-0.481], p = [< 0.001], physical health symptom frequency r (123) = [-0.192], p = [< 0.05] and distressing physical health symptoms r (123) = [-0.307], p = [< 0.001]. A significant negative correlation was found between positive relationships and others and APPS r

(123) = [-0.465], *p* = [< 0.001], D-APPS *r* (123) = [-0.390], *p* = [< 0.001), ANPS *r* (123) = [-0.603], *p* = [< 0.001], physical health symptom frequency *r* (123) = [-0.263], *p* = [< 0.005] and distressing physical health symptoms *r* (123) = [-0.342], *p* = [< 0.001]. A significant negative correlation was found between purpose in life and APPS *r* (123) = [-0.253], *p* = [< 0.005], D-APPS *r* (123) = [-0.231], *p* = [< 0.05], ANPS *r* (123) = [-0.482], *p* = [< 0.001] and distressing physical health symptoms *r* (123) = [-0.230], *p* = [< 0.05]. A significant negative correlation was found between self-acceptance and APPS *r* (123) = [-0.500], *p* = [< 0.001], D-APPS *r* (123) = [-0.503], *p* = [< 0.001), ANPS *r* (123) = [-0.687], *p* = [< 0.001], physical health symptom frequency *r* (123) = [-0.374, *p* = [< 0.001] and distressing physical health symptoms *r* (123) = [-0.491], *p* = [< 0.001].

A significant positive correlation was found ANPS and APPS *r* (123) = [0.384], *p* = [< 0.001], D-APPS *r* (123) = [0.397] *p* = [< 0.001), physical health symptom frequency *r* (123) = [0.316], *p* = [< 0.001] and distressing physical health symptoms *r* (123) = [0.445], *p* = [< 0.001].

A significant positive correlation was found between APPS quantity and ANPS *r* (123) = [0.384] *p* = [< 0.001], physical health symptom frequency *r* (123) = [0.402], *p* = [< 0.001] and distressing physical health symptoms *r* (123) = [0.598], *p* = [< 0.001]. A significant positive correlation was found between APPS frequency and ANPS *r* (123) = [0.371] *p* = [< 0.001], physical health symptom frequency *r* (123) = [0.384], *p* = [< 0.001] and distressing physical health symptoms *r* (123) = [0.589], *p* = [< 0.001].

A significant positive correlation was found between D-APPS quantity and ANPS *r* (123) = [0.387] *p* = [< 0.001], physical health symptom frequency *r* (123) = [0.422], *p* = [< 0.001] and distressing physical health symptoms *r* (123) = [0.655], *p* = [< 0.001]. A significant positive correlation was found between D-APPS amount of distress and ANPS *r* (123) = [0.390] *p* = [<

0.001], physical health symptom frequency r (123) = [0.398], p = [< 0.001] and distressing physical health symptoms r (123) = [0.645], p = [< 0.001].

Table 2. *Correlations*

Variable	*APPS*	*D-APPS*	*ANPS*	*Physical Health Symptom Frequency*	*Problematic/Distressing Physical Health Symptoms*
CHCs Diagnosis	0.131	0.107	0.127	0.325***	0.281***
Number of CHCs	0.190*	0.196	0.181*	0.381***	0.410***
Frequency of Physical Health Symptoms	0.402***	0.422***	0.316***	-	0.727***
Distressing Physical Health Symptoms	0.598***	0.655***	0.445***	0.727***	-
General Help-seeking for Personal and Emotional Problems	-1.780*	-0.168	-0.373***	-0.182*	-0.208*
General Help-seeking for Suicidal Ideation	-0.230*	-0.300**	-0.553***	-0.339***	-0.374***
Any Healthcare Provider Help-seeking for Personal and Emotional Problems	-0.031	-0.017	-0.109	-0.046	-0.019
Any Healthcare Provider Help-seeking for Suicidal Ideation	-0.230*	-0.297**	-0.350***	-0.223*	-0.244**
Medical Healthcare Provider Help-seeking for Personal and	-0.171	-0.197	-0.165	-0.165	-0.156

Emotional Problems					
Medical Healthcare Provider Help-seeking for Suicidal Ideation	-0.188*	-0.206*	-0.278**	-0.214*	-0.223*
Behavioral Healthcare Provider Help-seeking for Personal and Emotional Problems	0.118	0.165	-0.02	0.086	0.122
Behavioral Healthcare Provider Help-seeking for Suicidal Ideation	-0.153	-0.255*	-0.286***	-0.138	-0.159
Spiritual Healthcare Provider Help-seeking for Personal and Emotional Problems	-0.035	0.049	-0.269**	-0.233**	-0.215*
Spiritual Healthcare Provider Help-seeking for Suicidal Ideation	-0.138	-0.046	-0.392***	-0.306***	-0.291**
Number of Healthcare Provider Visits in Last 12-Months	0.145	0.202	0.067	0.262**	0.345***
Time Since Last Routine Physical Healthcare Check-up	-0.059	-0.054	-0.255**	-0.108	0.064
Number of Personal Healthcare Providers	0.08	0.029	-0.122	0.200*	0.185*
Flu Vaccine	-0.056	-0.087	-0.106	-0.013	-0.027

COVID-19 Vaccine	-0.116	-0.104	-0.127	0.137	0.036
Pneumonia Vaccine	0.177*	0.099	0.162	0.071	0.268**
Lifetime Psychotherapy Outpatient Treatment	0.447***	0.394***	0.367***	0.336***	0.418***
Lifetime Psychotherapy Inpatient Treatment	-0.071	-0.096	0.06	-0.002	0.034
Autonomy	-0.251**	-0.271**	-0.339***	-0.287***	-0.323***
Environmental Mastery	-0.502***	-0.524***	-0.667***	-0.424***	-0.536***
Personal Growth	-0.276**	-0.358***	-0.481***	-0.192*	-0.307***
Positive Relationships with Others	-0.465***	-0.390***	-0.603***	-0.263**	-0.342***
Purpose in Life	-0.253**	-0.231*	-0.482***	-0.049	-0.230*
Self-Acceptance	-0.500***	-0.503***	-0.687***	-0.374***	-0.491***
ANPS	0.384***	0.387***	-	0.316***	0.445***
APPS	-	-	0.384***	0.402***	0.598***
D-APPS	-	-	0.390***	0.398***	0.645***

Note: * = $p < 0.05$ ** = $p < 0.01$ *** = $p < 0.001$

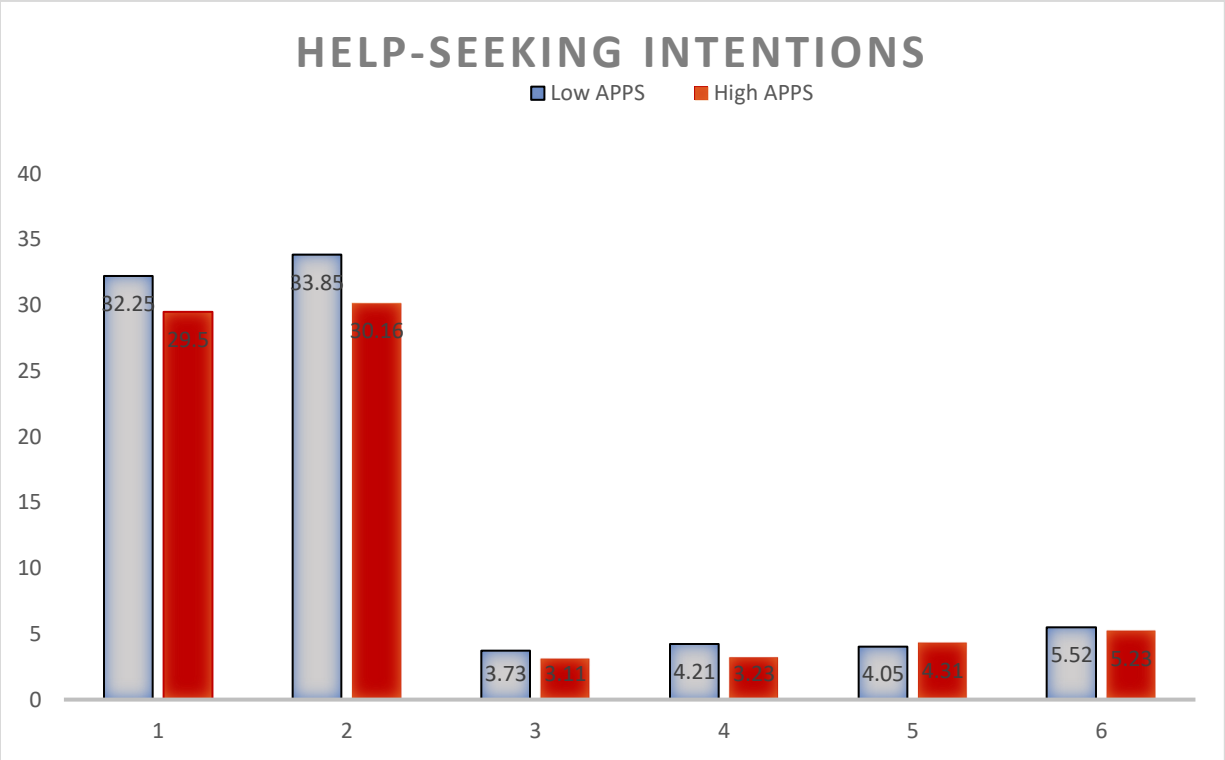
Independent Sample T-Tests

Mean Differences in Help-Seeking Intentions Between High and Low APPS Groups

Across the different areas of help-seeking intentions, it was found that persons with lower attenuated positive psychotic symptoms (APPS) displayed an increased likelihood of seeking help across several different variables. The results from the T-test analyses supported the research hypotheses that the higher APS group would report greater distressing physical health

symptoms and more help-seeking intentions from medical providers than the low APS group. Also that the higher distressing symptom group would report lower behavioral healthcare service use and help-seeking intentions than the low distressing symptom group. The results from the T-test analyses did not support the research hypothesis that persons with higher APPS would engage in less medical healthcare service use than the low APPS group and that those with more distressing physical health symptoms would engage in more medical care and medical help-seeking intentions than the low physical symptom distress group. The lower APPS group reported an increased likelihood in seeking help for suicidal ideations (M = 33.85, 95% CI [0.12 to 7.27], t (122) = 2.043, p = 0.043), from medical providers regarding personal emotional problems (M = 3.73, 95% CI [0.01 to 1.22], t (123) = 2.015, p = 0.046), and from medical providers regarding suicidal ideations (M = 4.21, 95% CI [0.23 to 1.73], t (121) = 2.594, p = 0.011).

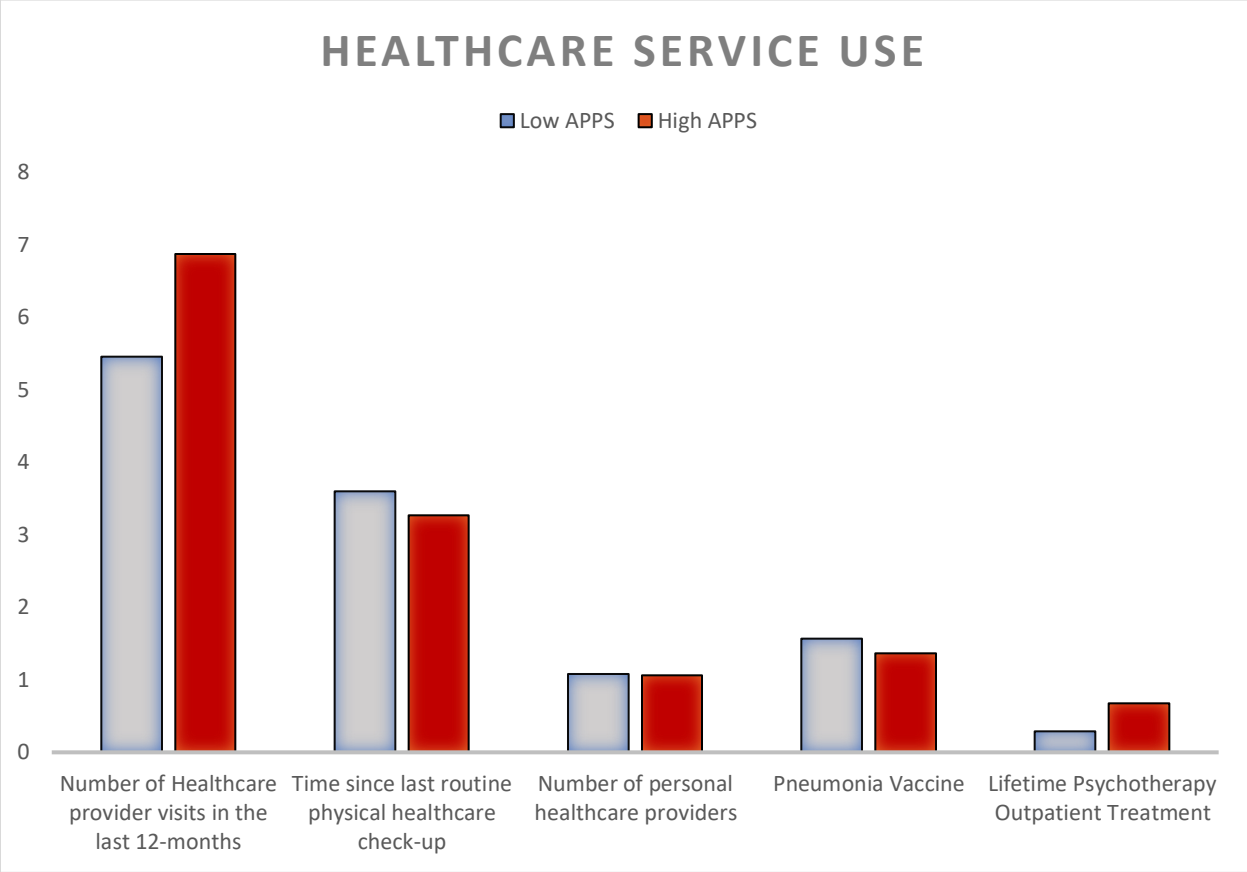
Graph 1. *Help-Seeking Intentions Across APPS Groups*



Mean Differences in Service Use Behavior Between High and Low APPS Groups

Relating to dimensions of actual healthcare service use, persons in the lower APPS group reported lower use of outpatient psychotherapy services within their lifetime (M = 0.29, 95% CI [-0.56 to -0.23], t (123) = -4.726, $p < 0.001$) and a shorter average time since their last routine check-up with a medical provider (M = 3.60, 95% CI [0.03 to 0.62], t (123) = 2.207, p = 0.029).

Graph 2. *Healthcare Service Use Across APPS Groups*



Mean Differences in Distressing Physical Health Symptoms Between High and Low APPS Groups

Persons in the lower group APPS also reported less distressing physical health symptoms than those in the higher APPS group (M = 11.70, 95% CI [-17.08 to -6.36], t (123) = -4.330, p < 0.001).

Mean Differences in Psychological Well-being Between High and Low APPS Groups

Regarding the dimensions of psychological well-being, persons in the lower APPS group reported higher psychological well-being relating across all of the dimensions including environmental mastery (M = 16.22, 95% CI [1.89 to 4.55], t (123) = 4.796, p < 0.001), personal growth (M = 18.83, 95% CI [0.28 to 2.34], t (123) = 2.519, p = 0.013), positive relations with

others (*M* =16.86, 95% CI [2.18 to 4.90], *t* (123) = 5.155, *p* < 0.001), purpose in life (*M* = 17.06, 95% CI [0.07 to 2.42], *t* (123) = 2.092, *p* = 0.039), and self-acceptance (*M* = 17.65, 95% CI [2.43 to 5.33], *t* (123) = 5.286, *p* < 0.001).

Mean Differences in Help-Seeking Intentions Between High and Low ANPS Groups

For the different areas of help-seeking intentions, it was found that persons in the lower ANPS group reported increased help-seeking intentions across several of the different variables. Persons in the lower ANPS group reported an increased help-seeking intentions for personal emotional problems (*M* = 32.88, 95% CI [1.05 to 6.62], *t* (123) = 2.728, *p* = 0.007) and suicidal ideations (*M* = 36.39, 95% CI [5.04 to 11.68], *t* (122) = 4.983, *p* < 0.001) from general from medical providers regarding suicidal ideation (*M* = 4.29, 95% CI [0.34 to 1.83], *t* (121) = 2.888, *p* = 0.005), and from behavioral healthcare providers regarding suicidal ideations (*M* = 5.76, 95% CI [0.21 to 1.28], *t* (122) = 2.765, *p* = 0.007).

Mean Differences in Service Use Behavior Between High and Low ANPS Groups

Relating to dimensions of actual service use, persons in the lower ANPS group reported less use of outpatient psychotherapy services within their lifetime (*M* = 0.33, 95% CI [-0.45 to -0.11], *t* (123) = -3.260, *p* < 0.001) and a shorter average time since their last routine check-up with a medical provider (*M* = 3.70, 95% CI [0.21 to 0.79], *t* (123) = 3.442, *p* < 0.001).

Mean Differences in Distressing Physical Health Symptoms Between High and Low ANPS Groups

Persons in the lower ANPS group also reported less distressing physical health symptoms than those in the higher ANPS group (*M* = 10.72, 95% CI [-18.33 to -7.81], *t* (123) = -4.915, *p* < 0.001).

Mean Differences in Psychological Well-being Between High ANPS and Low ANPS Groups

Regarding the dimensions of psychological well-being, persons in the lower ANPS group reported greater psychological well-being across all of the dimensions including in autonomy (M = 15.43, 95% CI [0.21 to 2.57], t (123) = 2.324, p = 0.022), environmental mastery (M = 16.72, 95% CI [2.77 to 5.28], t (123) = 6.324, $p < 0.001$), personal growth (M = 19.33, 95% CI [1.25 to 3.20], t (123) = 4.503, $p < 0.001$), positive relations with others (M = 16.85, 95% CI [1.99 to 4.73], t (123) = 4.841, $p < 0.001$) , purpose in life (M = 17.58, 95% CI [1.05 to 3.31], t (123) = 3.822, $p < 0.001$), self-acceptance (M = 18.07, 95% CI [3.10 to 5.89], t (123) = 6.382, $p < 0.001$).

Mean Differences in Help-Seeking Intentions Between High and Low Distressing Physical Health Symptoms Groups

For help-seeking intentions, it was found that persons in the lower distressing physical health symptom group reported increased help-seeking intentions across several different variables. Persons in the lower distressing physical health symptom group reported greater help-seeking intentions for personal emotional problems (M = 33.73, 95% CI [3.05 to 8.41], t (123) = 4.238, $p < 0.001$), suicidal ideations (M = 35.92, 95% CI [4.47 to 11.18], t (122) = 4.612, $p < 0.001$) from general medical providers regarding personal emotional problems (M = 3.79, 95% CI [0.14 to 1.35], t (123) = 2.452, p = 0.016) and from medical providers regarding suicidal ideation (M = 4.16, 95% CI [0.13 to 1.63], t (121) = 2.324, p = 0.022). In regard to help-seeking intentions for behavioral healthcare providers, there were no statistically significant mean differences between the high and low distressing physical health symptoms groups.

Mean Differences in Service Use Between High and Low Distressing Physical Health Symptoms Groups

Relating to dimensions of actual service use, persons with lower distressing physical health symptoms reported lower use of outpatient psychotherapy services within their lifetime (M = 0.32, 95% CI [-0.50 to -0.16], t (123) = -3.850, $p < 0.001$) and a shorter average time since their last routine check-up with a medical provider (M = 3.46, 95% CI [-0.26 to 0.34], t (123) = 0.270, p = 0.041). Persons with lower distressing physical health symptoms also reported a lesser number of medical provider-diagnosed severe or chronic health conditions within the last 12 months than those with higher lower distressing physical health symptoms (M = 0.84, 95% CI [-1.87 to -0.48], t (123) = -3.341, $p < 0.001$).

Mean Differences in Psychological Well-being Between High and Low Distressing Physical Health Symptoms Groups

Regarding the dimensions of psychological well-being, persons with lower distressing physical health symptoms reported higher psychological well-being relating to the variables of Autonomy (M = 15.43, 95% CI [0.33 to 2.69], t (123) = 2.540, p = 0.012), environmental mastery (M = 16.72, 95% CI [2.41 to 4.99], t (123) = 5.683, $p < 0.001$), personal growth (M = 19.33, 95% CI [0.55 to 2.583], t (123) = 3.045, p = 0.003), positive relations with others (M = 16.85, 95% CI [1.29 to 4.12], t (123) = 3.775, $p < 0.001$), purpose in life (M = 17.58, 95% CI [0.27 to 2.60], t (123) = 2.430, p = 0.017), and self-acceptance (M = 18.07, 95% CI [2.53 to 5.42], t (123) = 5.448, $p < 0.001$).

Conclusion

This study's results partially support the research hypotheses that persons endorsing higher APS will likely also endorse more distressing physical health symptoms, report less

medical healthcare service use, lower help-seeking intentions with medical healthcare providers, and greater help-seeking intentions with behavioral healthcare providers in comparison to those endorsing lower APS. It also supports the hypotheses that persons endorsing more distressing physical symptoms will likely also endorse higher APS and related distress, report using more medical healthcare services, less behavioral healthcare services, higher help-seeking intentions with medical healthcare providers, and less help-seeking intentions with behavioral healthcare providers in comparison to those endorsing fewer distressing physical health symptoms. Contrary to research hypotheses, the relationships between the variables found in this study did not support the hypotheses that greater APS associated with less medical service use as examined via number of healthcare providers and healthcare visits. Additionally, greater APS was not associated with higher help-seeking intentions of behavioral healthcare providers for suicidal ideation. Results from these correlations analyses did not support the study hypotheses that higher distressing physical health symptoms were associated with higher help-seeking intentions for behavioral health and lower behavioral health service use. The results from the T-test analysis also did not support the hypothesis that persons endorsing more APS in the higher APS group would use less medical healthcare service use than those with fewer APS in the low group. Also, that those with more distressing physical health symptoms engage in more medical healthcare services and report higher help-seeking intentions from medical healthcare providers than the low physical symptom distress group. While these contradictions in results can be potentially explained by the sample size, there are other possible explanations for the differing, but not necessarily counterintuitive findings. First, since this study was conducted in a sample of undergraduate and graduate college students differences in findings may be related to differences in access to healthcare services or financial circumstances related to treatment. Second, since the

study analyses examined these factors without controlling for social determinant of health factors such as SES, urbanization, social connected, and stigma, there might be other potential confounding factors contributing these findings. For instance, internalized stigma is known to be associated with individuals' healthcare service use behavior and tendency to seek help from others, particularly healthcare providers (Drapalski et al., 2013). Another prominent factor related to help-seeking and healthcare service use behavior is medical/healthcare service-related trauma, which was not included in this study (Hall & Hall, 2013).

This study also found that regarding actual service use, persons with increased symptoms relating to both physical and mental health are more likely to engage in overall healthcare service use. This finding suggests that a person's engagement in outpatient behavioral healthcare service use is impacted by a person's physical health symptoms, specifically frequency and distress of symptoms, and APS. The study's findings suggest that the frequency and distress related to physical health symptoms may serve as a better indicator for persons engagement in overall healthcare services than their mental health symptoms. This finding suggests that those experiencing physical health symptoms that are perceived as distressing are more likely to seek out help to alleviate this symptom. On the contrary, those with distressing health symptoms are not as likely to seek out behavioral help. Another finding regarding healthcare service use is that as distress of physical symptoms, APPS distress, and quantity of APPS increase, there is a greater likelihood of having the pneumonia vaccine. The increased likelihood of having had a pneumonia vaccine being positively associated with distress of physical symptoms, APPS distress, and quantity of APPS supports the background literature highlighting relationships between respiratory functioning and SMI; wherein, various lung diseases (e.g., COPD,

emphysema, lung cancer) are increasingly prevalent and contribute to one of the larger health disparities seen in the SMI population (Correll et al., 2022).

Results of this study regarding psychological well-being found that as there is an increase in distress related to both physical health symptoms and APS, psychological well-being decreases across all of the dimensions including autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance. This suggests that persons' experiencing increased distress related to both physical and mental health symptoms tend to report poorer overall psychological well-being that may affect their self-concept, esteem, and identity, interpersonal relationships, social connectedness and community integration, life satisfaction and overall quality of life.

Discussion

This study highlights barriers from the literature including how people with schizophrenia spectrum disorders and other SMI are less likely to seek medical and behavioral healthcare services (Osimo et al., 2020). This is important because this disparity could contribute to a 20-year reduction in the average life expectancy of persons with SMI (Kugathasan et al., 2019). Some potential methods to address these barriers is through increased outreach interventions and *recovery orientation*. Recovery orientation focuses on the empowerment of strengths and skills to promote autonomy using holistic care (Rickwood et al., 2005). Literature supports the use of outreach interventions to promote help-seeking behaviors in young adults as it makes healthcare more accessible (Rickwood et al., 2005). For instance, outreach interventions that focus on empowerment and encouragement of helping others have demonstrated increased efficacy in the young adult population (Rickwood et al., 2005). Recovery

orientation programs also promote hope in recovery in younger populations which in turn would alleviate help-seeking fears and promote help-seeking behaviors (Rickwood et al., 2005).

These findings suggest that persons with increased symptoms and corresponding distress may be deterred from seeking healthcare, especially from medical providers. These increased symptoms and corresponding distress may also serve as a barrier to seeking healthcare because of factors such as low motivation, decreased energy, and other challenges associated with these symptoms and distress. As suggested by this study, persons with SMI experiencing distressing symptoms associated with this diagnosis are thus less likely to seek out professional help to alleviate these symptoms.

The relationship between increasing APPS and distressing symptoms with decreasing psychological well-being demonstrates the critical need to establish more holistic and "whole-health" interventions in the healthcare field to increase both physical and mental health. These treatments promoting a balance in mental and physical health through lifestyle changes and health-related behaviors are an ideal treatment approach to mitigate all symptoms and corresponding distress.

Strengths:

This study examines relationships between physical health, attenuated psychosis, healthcare service use, and help-seeking intentions in a sample of vulnerable emerging adults experiencing comorbid physical and mental health concerns. This provides helpful information relevant to health disparities and inequities in more severe clinical population samples. This study addresses the literature gap of the relationships between physical and mental health symptoms and their related distress, healthcare service use, and help-seeking behaviors. This study also included data attention checks to prevent invalid data and random responding. The

study's group-comparison design that examines group differences across study variables covering help-seeking, healthcare service use behaviors, and psychological well-being between low and high APS and distressing physical health symptoms speaks to how increased experiences of physical and mental health symptoms and related distress may influence persons likeliness of engaging in the various health behaviors including both service use and help-seeking, as well as how their symptom severity can affect various domains of psychological well-being, and consequently their overall health, wellbeing, and quality of life.

Limitations:

This study also poses several limitations. The first limitation of this study includes its cross-sectional design. By using a cross-sectional design, it is not possible to make causal inferences regarding help-seeking behaviors as a direct mechanism corresponding to mental or physical health symptoms and related distress. This limits the extent to which we can attribute help-seeking behaviors to the examined help-seeking intentions examined in the analyses with participants physical/mental health symptoms and distress. Another limitation of this study comes from its small sample size. Using a small homogenous participant sample consisting only of college students who were primarily white (n = 103, 82.4%) females 85 (82.5%) prevents the results from being generalizable to other populations, especially adult SMI clinical samples. Additionally, the study's use of median-split dichotomous variables to examine the group differences across variables reduces the power of the results and may also contribute to error.

Future Directions

Future research will benefit from expanding on these findings through further examination of the relationships between physical/mental health symptoms and related distress, healthcare service use, help-seeking behavior, and psychological well-being. Such studies should

use converging methods that incorporate other forms of data collection outside of self-report measures (e.g., objective assessments, actigraphy, medical chart data [appointment logs]), longitudinal data analysis, and various other evaluations of individuals' engagement in healthcare services and help-seeking behaviors. Incorporating other modes of data collection will remove self-report biases and improve accuracy of research data. It could also be helpful to include other lifestyle and health-related behaviors such as sleep, diet/nutrition, physical activity, substance use, and social participation among others in research models to explore their potential as treatment intervention targets that may simultaneously improve persons physical and mental health, and consequently their overall quality of life. Future studies should use larger and more diverse samples outside of college student populations. This would allow for better understanding of healthcare service use and help-seeking behaviors outside of non-clinical college samples. Examining these factors in clinical populations will allow for a better understanding of possible interventions targeting modification of health-behaviors across a range of disciplines such as biological, psychological, sociological, economic, and environmental.

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