



Original article

Distinct patterns of formal treatment and informal support strategies among U.S. college students with elevated symptoms of depression and/or anxiety: A cluster analysis

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ABSTRACT

Objective: Elevated depressive and anxiety symptoms, as well as depressive and anxiety disorders, are prevalent among U.S. college students, yet formal mental health treatment use remains low. Informal support strategies, such as seeking help from non-professionals and using self-guided therapy, are common responses to distress that may function independently of or alongside formal treatment. This study aimed to characterize how college students with elevated depression and/or anxiety symptoms combine formal treatments with informal strategies. **Method:** Data were drawn from the 2022–2023 Healthy Minds Study, including 29,945 U.S. college students ($M_{age} = 20.98$ years) with elevated PHQ-9 and/or GAD-7 scores. A TwoStep cluster analysis identified subgroups based on engagement across four behaviors: psychotherapy, psychopharmacology, non-professional help-seeking, and self-guided therapy. Post-hoc tests assessed sociodemographic differences across clusters.

Results: Among participants, 91.9 % ($n = 27,506$) were categorized into seven clusters: (1) no engagement (10.2 %); (2) non-professional help-seeking only (24.7 %); (3) non-professional help-seeking and psychotherapy (12.8 %); (4) non-professional help-seeking and psychopharmacology (6.7 %); (5) psychotherapy and psychopharmacology (7.1 %); (6) non-professional help-seeking, psychotherapy, and psychopharmacology (19.1 %); and (7) non-professional help-seeking, psychotherapy, psychopharmacology, and self-guided therapy (11.3 %). Sociodemographic characteristics differed significantly across clusters.

Conclusions: Nearly 90 % of students with elevated symptoms engaged in at least one form of support, with many utilizing multiple. Non-professional help-seeking was a particularly common strategy, used both independently and alongside formal treatments. These findings underscore the importance of understanding informal supports, reducing barriers to formal care, and tailoring services to students' diverse needs and preferences.

1. Introduction

Symptoms of psychological disorders (Adams et al., 2022; Bitsko, 2013; Czeisler, 2020; Duffy et al., 2007), as well as prevalence rates of depressive and anxiety disorders (Kessler et al., 2005; Mojtabai et al., 2016; Weinberger et al., 2018), have increased among adolescents and

young adults in recent years. Among U.S. college students, 75 % report moderate to severe symptoms of mental health problems, 16 % have a diagnosed depressive disorder, and 13 % have a diagnosed anxiety disorder, fueling concerns about a 'college mental health crisis' (Eisenberg et al., 2007; Fischbein and Bonfine, 2019; Lederer and Hoban, 2022; Lipson et al., 2016). Colleges may be well-positioned to

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reduce this burden, as they often offer free or subsidized mental health services (Eisenberg et al., 2012). Early mental health treatment (e.g., during college) is important, as it can prevent longer-term negative outcomes (Kessler et al., 2001).

There are numerous avenues through which college students may seek help for mental health problems, including formal treatment (e.g., psychotherapy and psychopharmacology) and informal support (e.g., help-seeking from non-professional(s) and self-guided therapy). Despite their greater comparative need, relative to older adults, young adults are less likely to utilize formal treatment (Blanco et al., 2008; Eisenberg et al., 2012; Lipson et al., 2007). They appear to be more likely to seek informal support, such as help-seeking from non-professional(s) and self-guided therapy, which consists of using websites or apps that offer accessible symptom management tools (Eisenberg et al., 2012, 2007; Holtz et al., 2025; Melcher et al., 2022; Schleider et al., 2020). Although help-seeking from non-professionals may offer emotional validation and practical support, it is not an evidence-based clinical intervention and should not be viewed as a substitute for treatment for anxiety or depression. Nonetheless, help-seeking from non-professional(s) is linked to lower risk for major depressive disorder (Werner-Seidler et al., 2017). Further, cognitive behavior therapy (CBT)-based self-guided therapy is associated with reduced depressive symptoms (Firth et al., 2017). It is worth noting, however, that self-guided online CBT is generally less effective than guided online formats, suggesting that while self-guided tools can offer benefits, they may not achieve the same symptom improvement as interventions that include clinician or coach support (Karyotaki et al., 2017).

Further, disparities persist in formal treatment engagement. White and U.S.-born young adults access formal treatment at higher rates than many of their Black/African American, Hispanic/Latine, or Asian/Asian American peers (Olsson et al., 2023; Panchal et al., 2024). Despite systemic barriers to accessing care that disproportionately affect these groups in the U.S., some student populations show elevated levels of formal treatment seeking; cisgender women, transgender individuals, and sexual minority (e.g., lesbian, gay, bisexual, queer, or asexual) students seek formal treatment more often than cisgender men and heterosexual students (Addis, 2008; Budge et al., 2013; Chang et al., 2024). More nuanced research is needed to explore how diverse college students engage in *multiple* forms of formal treatment and informal support; it is an important next step toward understanding how socio-demographic factors may impact the lived experiences of seeking treatment and support for mental health problems.

Currently, research is limited in its focus on formal treatment among college students (Tomczyk et al., 2018), often not accounting for informal support strategies. Studies that compare predictors of one treatment (e.g., psychotherapy) to another (e.g., psychopharmacology) potentially overlook the fact that many students engage in multiple behaviors simultaneously. A person-centered analysis, which identifies groups of students based on behaviors rather than theoretical predictor-outcome variable relationships, offers an ecologically valid method to understand how students in distinct subgroups use formal treatment, such as psychotherapy and psychopharmacology, and informal support strategies, such as help-seeking from non-professional(s) and self-guided therapy, to alleviate mental distress (Howard and Hoffman, 2018). As such, this study uses a person-centered approach to examine how college students with elevated (i.e., at least moderate) symptoms of depression and/or anxiety, those likely in need of treatment, engage in psychotherapy, psychopharmacology, help-seeking from non-professional(s), and self-guided therapy.

2. Methods

2.1. Participants and procedures

Data were from 2022 to 2023 Healthy Minds Study (HMS), an annual U.S. survey of college students' mental health. At over 600 institutions,

random samples of students were invited via email. Campuses with >4000 students randomly selected 4000 students to participate; smaller schools invited all students. Participants had to be 18 years or older and had a chance to win cash prizes (\$100–\$500). The 2022–2023 response rate was 9 %, consistent with prior years. HMS received IRB approval from Advarra and is protected by a Certificate of Confidentiality from the NIH. Each institution obtained IRB approval as needed; this analysis was deemed exempt status from human subjects approval from Brigham and Women's Hospital. Data are available upon request at: <https://healthymindsnetwork.org/hms/>

The survey consisted of five modules: three core (demographics, mental health status, and service utilization/help-seeking) and two electives selected by each institution from 14 available topics. To focus on young adults' developmentally unique experiences, we limited the sample to students aged 18–29 years. We further restricted the sample to those with elevated depressive (PHQ-9 ≥ 10) and/or anxiety (GAD-7 ≥ 10) symptoms to capture individuals likely in need of treatment (Levis et al., 2024; Spitzer et al., 2006). Cases with missing data (<10 %) were excluded via listwise deletion. The full analytic sample included 29,945 students.

2.2. Measures

2.2.1. Sociodemographic characteristics

Participants reported their age and were categorized into three groups: 18–21, 22–25, and 26–29. Gender was self-reported and recoded as cisgender male, cisgender female, and transgender or another gender (i.e., transgender male/man, transgender female/woman, genderqueer/non-conforming, non-binary). Sexual orientation was recoded as heterosexual/straight and LGBQA (i.e., lesbian, gay, bisexual, queer, or asexual). Race/ethnicity was self-reported, and the four largest racial groups were used in post-hoc analyses: Black/African American, Asian/Asian American, Hispanic/Latine, and White. Participants were asked at what age they immigrated to the U.S., with responses categorized as U.S.-born or non-U.S.-born.

2.2.2. Financial stress

Participants were asked, "How would you describe your financial situation right now?" using a five-point Likert scale (1=*never stressful*, 5=*always stressful*). Financial stress was then categorized into three groups: low (1–2.33), medium (2.34–3.66), and high (3.67–5).

2.2.3. Psychotherapy

Participants were asked, "Have you ever received counseling or therapy for mental health concerns?" Participants who attended at least one session in the past twelve months were coded as 1, and those with zero sessions in the past twelve months were coded as 0.

2.2.4. Psychopharmacology

Participants were asked if they had taken any of the following prescription medications in the past twelve months: psychostimulants, antidepressants, antipsychotics, antianxiety medications, mood stabilizers, sleep medications, or another medication for mental or emotional health. Those who reported taking one or more prescription medication were coded as 1, and those who selected "none" were coded as 0.

2.2.5. Self-guided therapy

Participants were asked the yes (1) or no (0) question: "do you utilize any self-guided therapy resources through a phone app or website?" Self-guided therapy was defined for participants as "a therapy program or set of resources that you work through without working directly with a mental health professional."

2.2.6. Help-seeking from non-professional(s)

Participants were asked, "In the past twelve months, have you received support for your mental or emotional health from any of the

following sources?" They selected: (1) *roommate*, (2) *friend (not a roommate)*, (3) *significant other*, (4) *family member*, (5) *religious counselor*, (6) *support group*, (7) *faculty member*, (8) *staff member*, (9) *other non-clinical source*, and/or (10) *none*. Those who endorsed at least one non-professional source of support were coded as 1; those who selected "none" were coded as 0.

2.2.7. Depressive symptoms

Participants completed the Patient Health Questionnaire-9 (PHQ-9), which measures past-two-week symptoms of major depressive disorder (MDD) using a four-point Likert scale (0=*not at all*, 3=*nearly every day*; Kroenke et al., 2001). The PHQ-9 showed good reliability in our sample ($\alpha=0.81$). Following clinical guidelines, participants with a sum score ≥ 10 were at risk for at least moderate MDD (Levis et al., 2024).

2.2.8. Anxiety symptoms

Participants completed the Generalized Anxiety Disorder-7 (GAD-7), which measures past-two-week symptoms of GAD on a four-point Likert scale (0=*not at all*, 3=*nearly every day*; Spitzer et al., 2006). The GAD-7 showed good reliability in our sample ($\alpha=0.83$). Following clinical guidelines, participants with a sum score ≥ 10 were at risk for at least moderate GAD (Spitzer et al., 2006).

2.3. Data analysis

Bivariate correlations among the four primary variables were low (highest $r = 0.25$), indicating minimal redundancy and supporting their inclusion in a cluster analysis (Hair et al., 2019). A TwoStep Cluster Analysis, commonly used with large datasets (Griffin et al., 2014; Rundle-Thiele et al., 2015), was conducted. First, individuals are grouped into pre-clusters; then, pre-clusters are analyzed to determine the optimal number of clusters using the Bayesian Information Criterion (BIC), which balances model fit and simplicity. Cluster quality is evaluated with a silhouette coefficient, where values between 0.5 and 1.0 indicate cohesion (i.e., the degree to which participants within each cluster share characteristics) and separation (i.e., how different each cluster is from the other clusters).

We included four binary variables – psychotherapy, psychopharmacology, help seeking from a non-professional, and self-guided therapy – to identify distinct clusters of participants with similar profiles. Post-hoc analyses compared clusters on six variables: race, gender, sexual orientation, immigrant status, age, and financial stress. Chi-squared tests compared the distribution of each category across clusters.

3. Results

3.1. Participants

Participant characteristics, depressive and anxiety symptoms, and rates of engagement in psychotherapy, psychopharmacology, self-guided therapy, and help-seeking from non-professional(s) are displayed in Table 1. Help-seeking from non-professional(s) was most prevalent (74.9 %), followed by psychotherapy (46.4 %), psychopharmacology (37.0 %), and self-guided therapy (11.9 %). In our analytic sample of students with elevated (≥ 10) PHQ-9 and/or GAD-7 score(s), mean levels of depressive (PHQ-9 = 13.97) and anxiety symptoms (GAD-7 = 12.73) were both in the moderate clinical ranges, indicating a need for treatment (Kroenke et al., 2001; Saulnier et al., 2024).

3.2. Patterns of engagement in treatment and help-seeking behaviors

A TwoStep cluster analysis identified seven well-separated and cohesive clusters of students (silhouette score=0.9) based on engagement in psychotherapy, psychopharmacotherapy, help-seeking from non-professional(s), and self-guided therapy. The clusters encompassed 91.9 % of students ($n = 27,506$); the rest were classified as outliers (i.e.,

Table 1
Sociodemographic characteristics for the full analytic sample ($N = 29,945$).

Characteristics	Mean (SD) or %	Range
Age (years)	20.98 (2.67)	18–29
	18–21	68.60 %
	22–25	22.70 %
	26–29	8.60 %
Gender	Cisgender woman	71.10 %
	Cisgender man	19.10 %
	Transgender or another gender	7.90 %
Race	White	55.50 %
	Asian/ Asian American	13.60 %
	Hispanic/ Latine	13.80 %
	Black/ African American	11.20 %
Sexual orientation	Heterosexual/ straight	55.8 %%
	LGBQA*	43.7 %%
Immigration status	U.S.-born	86.3 %
	Not U.S.-born	13.7 %
Financial stress	Low (1–2.33)	3.52 (1.12)
	Medium (2.34–3.66)	18.10 %
	High (3.67–5)	30.00 %
Psychotherapy		46.40 %
Psychopharmacology		37.00 %
Self-guided therapy		11.90 %
Help-seeking from non-professional(s)		74.90 %
Depressive symptoms (Patient Health Questionnaire-9; PHQ-9)**	13.97 (5.35)	10–27
Anxiety symptoms (General Anxiety Disorder 7-item Scale; GAD-7)**	12.73 (4.73)	10–21

* LGBQA: lesbian, gay, bisexual/pansexual, queer, or asexual.
** The full analytic sample ($N = 29,945$) is restricted to participants with PHQ-9 ≥ 10 and/or GAD-7 ≥ 10 .

not fitting into any cluster). For each cluster, maximum use refers to 100% of students in a cluster engaging in a particular behavior; moderately high use refers to 50% or more students in a cluster engaging in a particular behavior. Students in each cluster are described as follows: no engagement in treatment or informal support (Cluster 1); maximum use of help-seeking from non-professional(s) (Cluster 2); maximum use of help-seeking from non-professional(s) and psychotherapy (Cluster 3); maximum use of help-seeking from non-professional(s) and psychopharmacology (Cluster 4); moderately high use of psychotherapy and psychopharmacology (Cluster 5); maximum use of help-seeking from non-professional(s), psychotherapy, and psychopharmacology (Cluster 6); and maximum use of self-guided therapy; moderately high help-seeking from non-professional(s), psychotherapy, and psychopharmacology (Cluster 7). The percentage of students in each cluster and the proportion of treatment and help-seeking behaviors within each cluster are displayed in Table 2.

3.3. Post-hoc analyses

Characteristics of students within all groups are displayed in Table 3. Notable sociodemographic differences as a result of Chi-Square tests are discussed below.

3.3.1. Race

Among White students, assignment to clusters that combined formal treatment and help-seeking from non-professional(s) was most common (74.3 % of cluster four, and 74.2 % of cluster six). Their use of combined formal and informal support (cluster six; 74.2 %) was greater than their use of formal treatment alone (59.2 % of cluster five). The least prevalent cluster among White students was cluster one (no engagement: 40.5 %). By contrast, the most prevalent cluster for Hispanic/Latine, Black/ African American, and Asian/Asian American students was cluster one (19.3 %, 18.5 %, and 21.8 %, respectively). Among these students,

Table 2Cluster frequencies and proportion of treatment and help-seeking behaviors within each cluster for students in the full analytic sample ($N = 29,945$).

	1: No Engagement	2: Maximum use of help-seeking from non-professional(s)	3: Maximum use of help-seeking from non-professional(s) and psychotherapy	4: Maximum use of help-seeking from non-professional(s) and psychopharmacology	5: Moderately high use of psychotherapy and psychopharmacology	6: Maximum use of help-seeking from non-professional(s), psychotherapy, and psychopharmacology	7: Maximum use of self-guided therapy; moderately high use of help-seeking from non-professional(s), psychotherapy, and psychopharmacology
Cluster Frequency*	10.2 %	24.70 %	12.80 %	6.70 %	7.10 %	19.10 %	11.30 %
Percentage within cluster engaging in:							
Help-seeking from non-professional(s)	0 %	100 %	100 %	100 %	0 %	100 %	85.90 %
Psychotherapy	0 %	0 %	100 %	0 %	73.70 %	100 %	62.60 %
Psychopharmacology	0 %	0 %	0 %	100 %	65.50 %	100 %	50 %
Self-guided therapy	0 %	0 %	0 %	0 %	0 %	0 %	100 %

* Cluster frequency represents the percentage of students in the full analytic sample ($N = 29,945$) assigned to each cluster.

assignment to cluster five (psychotherapy and psychopharmacology: 15.4 % Hispanic/Latine, 14.1 % Black/African American, 11.3 % Asian/Asian American) was more common than assignment to cluster six (non-professional help-seeking, psychotherapy, and psychopharmacology: 10 %, 6.9 %, and 8.8 %, respectively).

3.3.2. Gender

Among cisgender males, assignment to cluster one (33.9 % of cluster one: no engagement) was the most prevalent (other clusters 12.6 %-21.5 %). By contrast, cluster one was the least prevalent cluster for cisgender female and transgender students (62.7 % and 3.4 % of cluster one, respectively). Among cisgender males, the second most prevalent clusters were help-seeking from non-professionals only (21.5 % of cluster two) and psychotherapy and psychopharmacology (22 % of cluster five), and the least prevalent clusters involved a combination of formal and informal supports (12.6–16.4 % of clusters three through seven). Cisgender females showed the opposite trend, as they were most likely to be assigned to clusters combining formal services with help-seeking from non-professional(s) (75 %-77.8 % of clusters three and seven). Transgender students displayed similar patterns to cisgender females, with one exception: whereas cluster seven (all forms of support) was the most common cluster for cisgender females (77.8 %), this cluster was only moderately common among transgender students (8.3 %).

3.3.3. Sexual orientation

Among heterosexual/straight students, cluster one (68.5 %) and cluster two (66.2 %) were the most prevalent clusters, with cluster six (40.4 %) being the least prevalent. LGBTQA students demonstrated an opposite pattern, with cluster six (59.6 %) being the most prevalent, and clusters one (31.5 %) and two (33.8 %) being the least prevalent clusters.

3.3.4. Immigration status

Among U.S.-born students, cluster one (80.1 %) was the least prevalent cluster, whereas the most prevalent clusters involved combining help-seeking from non-professional(s) and formal services: 92.1 % of cluster four and 86.4 % of cluster six. For non-U.S.-born students, the least prevalent clusters involved combining help-seeking from non-professional(s) and formal services (7.9 % and 7.8 %, respectively) compared to other clusters. The most prevalent cluster was cluster one (19.9 %).

4. Discussion

Our person-centered approach of identifying seven distinct student groups based on the use of psychotherapy, psychopharmacology, help-seeking from non-professional(s), and self-guided therapy highlights college students' diverse and complex use of support strategies among

those with probable depression or anxiety. Encouragingly, nearly 90 % of students engaged in at least one treatment or informal help-seeking behavior, and almost two-thirds used multiple. Help-seeking varied by sociodemographic factors, such as engagement level in any treatment or help-seeking and the likelihood to combine formal treatment and informal support strategies. These findings suggest demographically related influences on treatment access and/or preferences, offering valuable clinical insights on how to best support young adults.

4.1. Help-seeking from non-professional(s) is highly prevalent

The most prevalent cluster, represented by one in four students, consisted of those who sought help from non-professional(s) only, suggesting that this is an appealing and/or accessible option. Although help-seeking from non-professionals is not an empirically based replacement for formal treatment, particularly those with probable depression or anxiety, our observed pattern is consistent with research showing young adults favor help-seeking from non-professional(s) (Eisenberg et al., 2012). Our analysis also demonstrates the various ways students combine help-seeking from non-professional(s) with other behaviors. Clusters three, four, six, and seven, comprising half the sample, showed that along with help-seeking from non-professional(s), students sought psychotherapy, psychopharmacology, and/or self-guided therapy. As psychotherapy and psychopharmacology is the gold-standard combined treatment for depression and anxiety (Cuijpers et al., 2014; Guidi et al., 2016), we saw that one out of five students (cluster six) pursued this combination along with help-seeking from non-professional(s). That using psychotherapy and psychopharmacology alongside help-seeking from non-professional(s) was more prevalent than using the two treatments alone may highlight students' flexibility in pursuing formal treatment practices alongside informal support. Conversations with trusted non-professionals may confer benefit through human connection and perceived social support, which has been linked to lower depression and anxiety symptoms among college students (Hefner and Eisenberg, 2009). However, it remains unclear whether help-seeking from non-professional(s) consistently complements or complicates the effects of formal treatment; as such, routine assessment of students' engagement in non-professional mental health help-seeking may be warranted in clinical settings.

4.2. Self-guided therapy was uncommon, with nuances observed

Despite the greater use of self-guided therapy among young adults relative to adults in other age groups (Holtz et al., 2025), we observed relatively low uptake in its use at baseline (11.9 %) compared to psychotherapy (46.4 %), psychopharmacology (37 %), and help-seeking from non-professional(s) (74.9 %). This unexpected finding challenges the notion that college students broadly prefer informal supports

Table 3

Proportions of individuals within each treatment/ help-seeking cluster.

		1: No Engagement	2: Maximum use of help-seeking from non-professional(s)	3: Maximum use of help-seeking from non-professional(s) and psychotherapy	4: Maximum use of help-seeking from non-professional(s) and psychopharmacology	5: Moderately high use of psychotherapy and psychopharmacology	6: Maximum use of help-seeking from non-professional(s), psychotherapy, and psychopharmacology	7: Maximum use of self-guided therapy; moderately high help-seeking from non-professional(s), psychotherapy, and psychopharmacology
Race	White	40.5 % _a	52.3 % _b	57.6 % _c	74.3 % _d	59.2 % _{c,e}	74.2 % _d	62.2 % _e
	Hispanic	19.3 % _a	16.5 % _b	16.2 % _b	10.9 % _{c,d}	15.4 % _b	10 % _d	12.4 % _c
	Black	18.5 % _a	12.3 % _b	12.4 % _b	6.7 % _c	14.1 % _b	6.9 % _c	13 % _b
	Asian	21.8 % _a	18.9 % _b	13.8 % _c	8 % _d	11.3 % _c	8.8 % _d	12.4 % _c
Gender	Cis male	33.9 % _a	21.5 % _b	16.1 % _c	16.4 % _c	22 % _b	12.6 % _d	13.9 % _d
	Cis female	62.7 % _a	73.7 % _b	75 % _{b,c}	73.7 % _b	69.4 % _d	73.4 % _b	77.8 % _c
	Trans or another gender	3.4 % _a	4.8 % _b	8.9 % _c	9.8 % _c	8.6 % _c	14. % _d	8.3 % _c
Sexual Orientation	Straight	68.5 % _a	66.2 % _a	53.7 % _b	54.1 % _b	55.2 % _b	40.4 % _c	53.6 % _b
Immigration Status	LGBQA	31.5 % _a	33.8 % _a	46.3 % _b	45.9 % _b	44.8 % _b	59.6 % _c	46.4 % _b
	U.S.-born	80.1 % _a	83.9 % _b	87.4 % _c	92.1 % _d	87.4 % _c	92.2 % _d	86.4 % _c
	Non-U.S. born	19.9 % _a	16.1 % _b	12.6 % _c	7.9 % _d	12.6 % _c	7.8 % _d	13.6 % _c
Age (years)	18–21	71.0 % _a	71.1 % _a	70.4 % _a	65.7 % _{b,c}	63.5 % _b	67.3 % _c	63.9 % _b
	22–25	20.9 % _a	21.5 % _{a,b}	22.3 % _{a,b}	23.7 % _{a,b,c}	24.6 % _{b,c}	23.7 % _{a,b,c}	25.8 % _c
	26–29	8.1 % _{a,b,c}	7.4 % _c	7.3 % _{a,c}	10.6 % _{b,d}	11.8 % _d	9.0 % _{a,b}	10.3 % _{b,d}
Financial Stress								
	Low	17.6 % _{a,b,c,d}	17.9 % _{c,d}	19.8 % _{a,c,e}	16.4 % _{b,d}	16.8 % _{a,b,c,d}	20.8 % _e	15.0 % _b
	Medium	30.0 % _{a,b,c}	32.6 % _c	31.1 % _{a,c,e}	28.9 % _{a,b}	26.9 % _b	29.0 % _{a,b}	28.7 % _{a,b}
	High	52.4 % _{a,b,c}	49.5 % _c	49.1 % _{a,c}	54.7 % _{b,d}	56.3 % _{b,d}	50.2 % _{a,c}	56.3 % _d

Note: Percentages not sharing subscripts differ at $\alpha = 0.05$ as indicated by Chi-Square tests. Subscripts should only be compared horizontally, not vertically.

(including self-guided therapy) to formal treatment. Students typically combined self-guided therapy with other supports: 85.9 % also engaged in help-seeking from non-professional(s), 62.6 % in psychotherapy, and 50 % in psychopharmacology. As such, self-guided therapy was most often not a standalone treatment but an additional resource for students. Possible explanations include greater symptom severity requiring multiple approaches, clinician recommendations to supplement treatment with self-guided therapy, and/or higher mental health literacy leading to engagement in multiple forms of support. Additional research is needed to understand why students use self-guided therapy in conjunction with other supports.

Our findings that self-guided therapy is common among students already engaged in treatment complicate prior findings that self-guided therapy is a particularly appealing option for students reluctant to pursue formal treatment. Since self-guided therapy may or may not deliver evidence-based care or improve symptoms, clinicians should monitor potential effectiveness alongside treatment. Developers of self-guided therapy resources for college students should reconsider targeting treatment-naïve individuals and instead may best serve college students by integrating self-guided tools into formal treatment programs.

4.3. Sociodemographic differences were observed between clusters

White, cisgender female, transgender, U.S.-born, and LGBQA students were *least* likely to be in cluster one (no treatment or informal support). Conversely, non-White, cisgender male, non-U.S.-born, and straight/heterosexual students were *most* likely to be in cluster one. This aligns with existing research on mental health service disparities by race and immigration status, as well as elevated mental health help-seeking rates among cisgender women and transgender individuals (Addis, 2008; Budge et al., 2013; Chang et al., 2024; Olsson et al., 2023; Panchal et al., 2024). White and U.S.-born students in our sample likely experience factors that facilitate formal treatment, such as increased access to resources about the mental healthcare system, lower cultural stigma about mental health, and higher levels of trust in healthcare (Gary, 2005; González et al., 2010; Williams and Mohammed, 2009). By contrast, non-White and non-U.S.-born individuals may experience barriers that hinder formal treatment access. Cisgender men may avoid seeking mental health help due to gender norms discouraging emotional vulnerability (Affleck et al., 2018).

Our person-centered approach offers novel insight into how identity factors relate to combined formal treatment and informal support strategies. White, cisgender female, transgender, U.S.-born, and LGBQA students were significantly more likely to be in cluster six (psychotherapy, psychopharmacology, and help-seeking from non-professional(s)) than cluster five (psychotherapy and psychopharmacology). By contrast, Hispanic, Black/African American, and Asian/Asian American, cisgender male, heterosexual, and non-U.S.-born students displayed the opposite pattern. This finding represents a noteworthy advancement in understanding how diverse groups use combinations of mental health treatment. Cultural differences may explain why some groups prefer or more readily combine professional treatment with help-seeking from non-professional(s), while others display a possible preference for discussing mental health with professionals only. Clinicians should discuss whether conversations about mental health extend beyond the boundaries of formal treatment, and respect for different norms regarding formal treatment and informal support strategies should be integrated into culturally competent care.

4.4. Limitations

Like all studies, ours has limitations. First, while most measures referred to past-year behavior, the self-guided therapy item used present tense ("do you use?"), introducing a potential temporal mismatch, which may have led to a lower endorsement rate relative to other forms

of help-seeking. We retained this variable, assuming general alignment between present and past-year use, though overlap with other treatment and help-seeking cannot be confirmed. Second, help-seeking from non-professional(s) was dichotomized, grouping those who sought help from one non-professional with those who sought help from many. All non-professionals were treated equally, despite likely differences (e.g., help from a parent likely differs from help from a faculty member). This approach was chosen to maintain a parsimonious cluster model; disaggregating all ten non-professional sources would substantially increase model complexity, likely yielding small cell sizes and reducing the overall interpretability of the clusters. Nonetheless, future research should explore help-seeking from different non-professional(s) in detail to shed light on how specific sources of informal support may differentially relate to treatment engagement and/or mental health symptoms.

5. Conclusions

Using a large, national sample of U.S. college students with at least moderate symptoms of depression and/or anxiety and therefore likely in need of treatment, this study makes novel contributions to the literature on mental health treatment and help-seeking behaviors. By examining the use of psychotherapy, psychopharmacology, help-seeking from non-professional(s), and self-guided therapy, we identified seven distinct student groups based on engagement patterns. While college students are often described as low utilizers (Blanco et al., 2008; Eisenberg et al., 2012; Lipson et al., 2019), we found that most engage in at least one behavior, most commonly help-seeking from non-professional(s) alone or alongside formal services. We also found that identity factors such as race, gender, sexual orientation, and immigration status appear to influence patterns of help-seeking and treatment engagement. Overall, college students use diverse, often multiple strategies to address mental health concerns. Colleges and mental health providers should conceptualize help-seeking broadly and offer culturally informed treatment recommendations and care.

CRedit authorship contribution statement

G. Alice Woolverton: Writing – review & editing, Writing – original draft, Visualization, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Conceptualization. **Chang Zhao:** Writing – review & editing, Methodology. **Ritika Rastogi:** Writing – review & editing, Visualization, Methodology. **Andrew R. Chang:** Writing – review & editing, Methodology. **Wenbo Zhang:** Writing – review & editing, Investigation. **Felix Lou:** Writing – review & editing. **Tiffany Yip:** Writing – review & editing, Supervision. **Richard T. Liu:** Writing – review & editing, Visualization, Supervision. **Cindy H. Liu:** Writing – review & editing, Writing – original draft, Visualization, Supervision, Methodology.

Declaration of competing interest

The authors have no potential conflicts of interest or financial disclosures.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.psychres.2026.117044](https://doi.org/10.1016/j.psychres.2026.117044).

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