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Using the Counseling Center Assessment of Psychological Symptoms-70 (CCAPS-70) and the Personality Assessment Inventory (PAI) to Predict Treatment Duration and Premature Termination

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To the Graduate Council:

I am submitting herewith a dissertation written by Marci Michelle Breedlove entitled "Using the Counseling Center Assessment of Psychological Symptoms-70 (CCAPS-70) and the Personality Assessment Inventory (PAI) to Predict Treatment Duration and Premature Termination." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Psychology.

Brent S. Mallinckrodt, Major Professor

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Using the Counseling Center Assessment of Psychological Symptoms-70 (CCAPS-70) and
the Personality Assessment Inventory (PAI) to Predict Treatment Duration and Premature
Termination

A Dissertation Presented for
the Doctor of Philosophy
Degree
The University of Tennessee, Knoxville

Marci Michelle Breedlove
August 2013

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Dedication

For Mila

Let yourself be silently drawn by the strange pull of that which you truly love.
It will not lead you astray.

-Rumi

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Abstract

Severity of client psychological distress, along with scarcity of clinical resources such as effective screening tools, continues to increase in university counseling centers. Pearson's correlation, logistic regression, and standard multiple regression analyses were used to compare the concurrent and predictive validity of two measures of global psychological functioning, the Counseling Center Assessment Psychological Functioning-70 (CCAPS-70) and the Personality Assessment Inventory (PAI). Results demonstrated support for both instruments' ability to identify symptoms placing clients at risk for premature counseling termination and subsequent prolonged psychological distress. Implications for clinical practice and further research pertaining to university counseling center services are discussed.

Keywords: college student mental health, premature termination, assessment, Counseling Center Assessment of Psychological Symptoms

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Chapter 1

Introduction and Literature Review

Evidence points to an increase in the severity of psychological symptoms in university students in recent years (Barr, Rando, Krylowicz, & Winfield, 2010; Benton, Robertson, Tseng, Newton, & Benton, 2003; Erdur-Baker, Aberson, Barrow, & Draper, 2006; Gallagher, 2009; Gallagher, Gill, & Sysco 2000; Kadison & DiGeronimo, 2004; Kitzrow, 2009; Locke et al., 2011). A 2012 survey by the American College Health Association polled over 99,000 college students across 141 campuses in the U.S. Responses indicated that academics (46%), family problems (28%), intimate relationships (32%), finances (34%), sleep difficulties (26%), the death of a family member or friend (16%), career related issues (25%), and issues related to personal appearance (22%) had been “traumatic or very difficult to handle” within the last 12 months for these students. In a similar study of college student mental health, nearly half of the student sample fit criteria for a DSM-IV-TR diagnosis in the past year. Alcohol use disorders (20%), mood related disorders (34%), and personality disorders (18%) were among the most commonly observed (Blanco et al., 2010).

The nature of time sensitive services in college counseling centers and a growing demand for services, without corresponding increased resources, necessitates screening and treatment planning that is optimal and accurate (Barr et al., 2010; Gallagher, 2009). Two national surveys of college counseling center directors report that, due to limited staff, 51% (Barr et al., 2011) and 33% (Gallagher & Taylor, 2011) of college counseling centers currently place limits on the number of sessions clients may receive, and that the mean number of sessions completed over the previous year was 5.5 (Barr et al., 2011) and 5.6 (Gallagher & Taylor, 2011). Mean clinical

staff to student ratios were 1 to 1,879 (Barr et al., 2011) and 1 to 1,600 (Gallagher & Taylor, 2011). In 2011, Barr et al. reported that 77% of college counseling center directors' operating budgets either decreased or remained the same as the previous academic year. Because crucial treatment concerns must be addressed with increasingly less clinical staff time, these circumstances underscore the need for specialized and efficient screening instruments to identify at-risk individuals presenting for college counseling center services.

One of the greatest barriers to efficient and effective mental health services in the face of limited resources is premature termination from treatment (Hatchett, 2004; Ogrodniczuk, Joyce, & Piper, 2004; Romans et al., 2011). Premature termination refers to “a breakdown of the counseling process” (April & Nicholas, 1997) made evident by a unilateral decision by the client to stop treatment, and is operationalized by researchers in divergent ways (Hatchett & Park, 2003). Costs of premature termination include decreased cost-effectiveness of counseling center services (Garfield, 1994; Masi, Miller, & Olson, 2003), less desirable treatment outcomes for clients who drop out (Saatsi, Hardy, & Cahill, 2007; Westmacott, Hunsley, Best, Rumstein-McKean, & Schindler, 2010), and delays in available treatment for those seeking it (Rodolfa, Rapaport, & Lee, 1983). Clients who unilaterally terminate are more likely to access counseling services repeatedly over time and ultimately report more severe and persistent symptoms (Ogrodniczuk, Joyce, & Piper, 2005). Meta-analyses have revealed premature termination rates ranging from 30%-57% (Garfield, 1994), 20% (Swift & Greenberg, 2012), and 47% (Wierzbicki & Pekarik, 1993).

Many studies have noted client demographics such as ethnic minority status (Lester, Resick, Young-Xu, & Artz, 2010; Levy, Thompson-Leonardelli, Smith, & Coleman, 2005; Owen, Imel, Adelson, & Rodolfa, 2012), sex (Hatchett, 2004; Rodolfa, Rapaport, & Lee, 1983), lower education levels (Hopko, Robertson, & Coleman, 2008), socioeconomic disadvantage (Garfield, 1994; Kelly, Epstein, & McCrady, 2004; Plyler, 2000), and youth (Richmond, 1992; Swift & Greenberg, 2012) as correlates of premature termination. Other factors, such as the working alliance (Farrand, Booth, Gilbert, & Lankshear, 2009; Lazaraton, Anagnostopoulos, Vlassopoulos, Tzavara, & Zeliou, 2006; Meier, Donmall, McElduff, Barrowclough, & Heller, 2006), client readiness for change (Prochaska, DiClemente, & Norcross, 1992; Smith, Subich, & Kalodner, 1995), client pretreatment expectations (Carter et al., 2012; Lock, Couturier, Bryson, & Agras, 2006; Reis & Brown, 2006), and client presenting and/or comorbid problem(s) (Dare, Eisler, Russell, Treasure, & Dodge, 2001; Garcia, Kelley, Rentz, & Lee, 2011; Graff, Griffin, & Weiss, 2008) are frequently associated with premature counseling termination. In particular, some studies have linked personality disorders (Farrand, Booth, Gilbert, & Lankshear, 2009), hostility (Eurelings-Bontekoe et al., 2009; Plyler, 2000; Rusch et al., 2008), disordered eating (Carter et al., 2012; Swift & Greenberg, 2012), chronic and/or severe mood disturbance (Graff, Griffin, & Weiss, 2007), social phobia (Hofman & Suvak, 2006), substance abuse (Kelly, Epstein, & McCrady, 2004) and lower global functioning ratings (Lampropoulos, Schnieder, & Spengler, 2009) to higher premature termination rates.

Despite numerous attempts to illuminate determinants and predictors of premature termination, research findings thus far are mixed and even contradictory (Carter et al., 2012; Garcia, Kelley, Rentz, & Lee, 2011; Garfield, 2004; Rodolfa, Rapaport, & Lee, 1983). However,

a sizable number of studies suggest that clients' risk for premature termination is greatest during initial stages of psychological treatment (Garfield, 1994; Hatchett, 2004; Robinson, 1996; Swift & Greenberg, 2012). Rodolfa, Rapaport, and Lee (1983) reported that increased rates of client attrition immediately after intake were associated with longer intake sessions. Epperson, Bushway, and Warman (1983) found higher premature termination rates among clients who reported that their clinician had not accurately assessed their initial area(s) of concern. As such, timely and accurate identification of symptoms and presenting concerns during early stages of treatment is an important aspect of subsequent therapy completion.

Because some researchers have noted a high prevalence of premature termination (Epperson, Bushway, & Warman, 1983; Hatchett, 2004; Swift & Greenberg, 2012), streamlined yet sound screening and assessment procedures should be integral to university counseling center service delivery. Of the many well established assessment instruments that are routinely used in college counseling centers, including those used to predict premature termination among university counseling center clients (Hatchett, Han, & Cooker, 2002; Romans et al., 2011), few were created to specifically measure large-scale psychological functioning within the college context (Locke et al. 2011). Many studies evaluating the use of these specialized instruments have used small samples from single university settings and have employed short-term inquiries whose results leave some doubts about the instruments' reliability and validity (Locke et al., 2011). Consequently, many practitioners and scholars familiar with the needs of university students have called for a taxonomy of treatment concerns common to college counseling center clients (Chandler & Gallagher, 1996; Heppner et al., 1994; Hoepfner, Hoepfner, & Campbell, 2009).

College Student Mental Health

Due to a combination of normal developmental and psychopathological considerations, college student clients experience psychological distress that differs significantly from the general adult clinical population, and this distress is multifaceted in presentation and etiology (Benton, Robertson, Tseng, Newton, & Benton, 2003; Heppner et al., 1994). Among the most commonly reported psychological problems affecting college students are interpersonal concerns (Benton et al., 2003; Cairns, Massfeller, & Deeth, 2010; Chandler & Gallagher, 1996), academic stress (Locke et al., 2011), somatic problems (Heppner et al., 1994), and substance use (Locke et al., 2011; Perera, Torabi, & Kay, 2011). These issues often arise from other contextual sources and influence additional problems, such as eating concerns (Barker & Galambos, 2007), mood disturbance (Locke et al., 2011), and sleep impairment (Lund, Reider, Whiting, & Prichard, 2010). These factors suggest the possibility of distinctive clinical profiles requiring specialized courses of treatment (Heppner et al., 1994).

A number of studies have investigated the relationship between mental health, adjustment to college, and academic success. For example, depression has been found to predict academic attrition rates (Wintre & Bowers, 2007), whereas low self-esteem, frequent alcohol use, and higher overall levels of reported stress are significantly related to lower GPA and the intent to leave college (Pritchard & Wilson, 2003). Research indicates that 7% of college counseling center clients strongly fear they will become violent (Hayes, Crane, & Locke, 2010), and 8% strongly considered suicide or attempted suicide after beginning college (Locke, 2009). The dearth of relevant and validated assessment and screening procedures for this population has

impeded both clinicians' and researchers' efforts to understand college student mental health (Locke et al., 2011).

Assessment and Screening in College Counseling Centers

Screening and assessment procedures routinely used in university counseling centers may have limited clinical applicability or may lack empirical support for their use within this context (Locke et al., 2011; Millon, Strack, Millon-Niedbala, & Grossman, 2008). The Psychological Distress Inventory (PDI; Lustman, Sowa, & O'Hara, 1984) was created to assess college students' life stress, but measures only four domains (i.e., anxiety, depression, somatic issues, and stress). Locke and colleagues (2011) suggest that academic functioning is an integral component of college student functioning and is thus a necessary construct that college counseling center assessment inventories must address. The reliability of the College Adjustment Scales (CAS; Anton & Reed, 1991) has been questioned due to concerns about its small normative sample (Pinkney, 1992). Only scant exploration of the K-State Problem Identification Rating Scales (Robertson et al., 2006) is available at present in the literature.

Instruments designed for a broad adult clinical population, such as the Outcome Questionnaire-45 (OQ-45; Lambert et al., 1996) are used frequently with college students. Because such measures were not designed to identify common challenges to healthy college student development and how these constructs influence one another, problem areas relevant to university counseling centers, namely academic distress, are likely underrepresented by these inventories (Locke et al., 2011; Millon et al., 2008). Product and licensing fees that are required to obtain OQ-45 software greatly reduce its feasibility in university counseling centers. Single domain assessments, such as the Beck Depression Inventory (BDI; Beck, Ward, Mendelson,

Mock, & Erbaugh, 1961), the Eating Disorders Inventory-II (Garner, 1991), and Alcohol Use Disorders Identification Test (AUDIT; Fleming, Barry, & McDonald, 1991) provide valuable information about specific symptoms, but these scales neglect other relevant areas of global functioning, and like the OQ-45, are likely to exacerbate the financial burdens and the time constraints already felt by college counseling centers (Locke et al., 2011; Millon et al., 2008). Because a sizable number of college counseling center clients present with multiple treatment concerns (Heppner et al., 1994; Krumrei, Newton, & Kim, 2010), the exploration of possible problems using multiple assessment tools is not feasible.

The Counseling Center Assessment of Psychological Symptoms (CCAPS)

The Center for the Study of Collegiate Mental Health (CSCMH) is a multi-disciplinary group of mental health professionals working with and on behalf of university students throughout the U.S. that was formed to create a large scale database to track mental health trends, conduct research, and to ultimately inform clinical practice with university students (Locke, 2009). These collaborative efforts resulted in a measure called the Counseling Center Assessment of Psychological Symptoms-70 (CCAPS-70; Locke et al., 2011), a global screening instrument designed to capture the majority of college students' most prevalent psychological concerns. Following initial analyses, a 62-item version (CCAPS-62; Locke et al., 2011) emerged due to concerns about the clinical interpretability and cross-loading of certain CCAPS-70 items. These eight items, such as "I sometimes feel outside my body," loaded on multiple scales and were deemed to be too vague for practical clinical application (Locke et al., 2011). Now in use at over 500 university counseling centers in the U.S., the CCAPS is quickly administered and scored, is a standard component of the widely used Titanium Schedule software package, and

can be used free of charge in either short (34-item) or long (62-item) form by university counseling centers that already utilize Titanium Schedule. However, despite its increasing popularity, the number of studies investigating the CCAPS' psychometric properties and its clinical viability within its target population remains relatively small (Boswell, McAleavey, Castonguay, Hayes, & Locke, 2012; Cheng, Mallinckrodt, Soeg, & Sevig, 2010; Locke, 2009; Locke et al., 2011; Locke et al., 2012; Martin, Hess, Ain, Nelson, & Locke, 2012).

Available research on the psychometric properties of the CCAPS-62 and CCAPS-34 in a university counseling center context offers promising results. In analyses using a large college counseling center sample from 53 institutions ($N = 24,215$), internal consistency estimates for the CCAPS-62 subscales ranged from .78 to .91 (Locke et al., 2011). In other college student clinical samples, correlations ranging from .57 to .81 (Locke et al., 2011) and .58 to .81 (McAleavey et al., 2012) have been noted between CCAPS-62 subscales and related domain-specific instruments measuring eating problems, anger expression, family stress, alcohol use, depression, anxiety, social phobia, and overall adjustment to college. In a subsequent study using a slightly smaller college counseling center sample ($N = 19,082$) who completed the CCAPS-34, subscales demonstrated reliability coefficients ranging from .82 to .89 (Locke et al., 2012). A pilot study using CCAPS-70 data from 66 U.S. collegiate institutions found that approximately 5% of the variance was accounted for by institutional factors, suggesting the generalizability of the CCAPS scales in measuring presenting problems common to university counseling center clients across geographic regions. The same study, comparing participants' scores at intake and again after 6 weeks in mental health treatment, revealed a significant

decrease in reported suicidal ideation. The researchers point to these findings to suggest the CCAPS' possible utility in therapy outcome research (Locke, 2009).

With regard to predictive and discriminant validity, the CCAPS-62 Depression scale recently demonstrated higher baseline depression and delayed depression remission in university counseling center clients who reported previous counseling experience (Boswell, McAleavey, Castonguay, Hayes, & Locke, 2012). The same study found the CCAPS-62 Depression scale to significantly predict subsequent diagnoses of Major Depressive Disorder and Dysthymia, whereas the Substance Use and Hostility scales differentiated between externalizing symptoms, such as aggression and internalizing symptoms, such as anxiety and depression. Using a sample from 16 university counseling centers, McAleavey et al. (2012) found moderate yet significant differences between clinical and nonclinical groups on seven CCAPS-62 subscale scores. Citing the limitations of "checklist" screening tools that ask clients directly about frequently stigmatized psychological concerns, Cheng et al. (2010) assessed the CCAPS-70's ability to indirectly "red flag" college students who may self-injure. Results indicated that non-suicidal self injury correlated significantly with a combined CCAPS-70 symptom profile of anxiety, depression, social isolation, depersonalization and dissociation, and (especially in male respondents) outwardly directed anger.

Because such risk factors are often not initially apparent, additional research needs to address effective screening that could help alert college counseling center clinicians to significant treatment considerations that may otherwise be missed. Locke et al. (2011) assert that future research should explore the extent to which CCAPS-62 scales correlate with similar and dissimilar symptom measures. Further research concerning the CCAPS' psychometrics will

enhance knowledge about its strengths and weaknesses within its target population. Specifically, further investigation into its convergence with previously validated instruments and its predictive validity in the course of treatment is needed.

The Personality Assessment Inventory

The Personality Assessment Inventory (PAI; Morey, 1991) is a 344-item self-report measure used to assess various aspects of adult psychological functioning. Research on the PAI's reliability and validity was conducted using a non-clinical sample of university students, a non-clinical community sample, and a clinical sample of patients from 69 treatment facilities (Morey, 1991). Subsequent studies have successfully used the PAI and its scales to establish the convergent validity of new or commonly used instruments, some measuring specific symptom groups and some measuring global functioning (Kurtz, Morey, & Tomarken, 1993; Rosner, 2004; Veazey, Ray, Wagner, & Miller, 2005). In studies examining symptom sets relevant to college students, the PAI Anxiety Related Disorders scale effectively distinguished depressed participants from those with post-traumatic stress disorder (McDevitt-Murphy, Weathers, Flood, Eakin, & Benson, 2007), and accurately categorized clients with histories of suicidal behaviors and violence toward others versus those who did not (Sinclair et.al., 2012).

The PAI's positive impression management (PIM) and negative impression management (NIM) scales have effectively identified deliberate feigning and the underreporting of symptoms in university students (Blanchard, McGrath, Pogge, & Khadivi, 2003; Hopwood, Morey, Rogers, & Sewell, 2007; Morey & Lanier, 1998; Peebles & Moore, 1998). A comparison between the PAI and two other instruments, the Minnesota Multiphasic Personality Inventory (MMPI) and the Bell Object Relations Inventory (BORI), provided evidence for its convergent, concurrent

and construct validity in the identification of Borderline Personality Disorder traits in a college student sample (Kurtz et al., 1993). The PAI's Alcohol Problems (ALC) scale has correctly identified college students with problematic drinking behaviors (Ruiz, Dickinson & Pincus, 2002). Hopwood and Moser (2011) successfully used the PAI to substantiate the construct validity of internalizing (e.g., depression and anxiety) and externalizing (e.g., antisocial behavior, substance abuse) dimensions of psychopathology in college student participants.

These findings suggest that the PAI can provide an excellent basis for investigating the validity of the CCAPS and other measures frequently used in university counseling centers. The PAI is relatively time consuming to administer and score, and as such, its value as a college counseling center screening tool is questionable. However, psychometric comparison of the PAI with the CCAPS is likely to offer valuable information about the CCAPS' concurrent and construct validity, provide further clarity as to whether certain psychological symptoms predict client attrition, and inform the ongoing improvement of university counseling center screening and assessment practices.

Statement of the Problem

The available literature on the psychological concerns of college students is abundant, yet consensus regarding the most valid and cost effective assessment and screening methods for this population does not yet exist (Millon et al., 2008). Studies examining the viability of global assessment instruments created for and normed on college students are few (Locke et al., 2011), as are those exploring counseling duration and constructive treatment planning within university counseling centers (Hatchett, 2004; Lampropoulos, Schnieder, & Spengler, 2009). The urgency of identifying an effective general screening instrument is evident in findings such as, the second

leading cause of death among college students is suicide (Locke et al., 2011; Mowbray et al., 2006).

The demand for effective and responsible service delivery necessitates that these concerns be identified quickly and reliably (Sladen & Mozdierz, 1985). University counseling center clients are unlikely to obtain the quality and duration of mental health care they need unless symptom related attrition risks are more precisely identified and addressed. Therefore, this project aimed to address the growing need for an optimal screening self-report inventory specific to college counseling center client treatment issues. The current study measured the concurrent and predictive validity of the CCAPS using a university counseling center sample. Specifically, this project explored (a) convergence between the PAI and CCAPS-70 instruments in the form of expected correlations between scales; (b) the CCAPS-70 as a predictor of treatment duration, and (c) the CCAPS-70 as a predictor of premature (client initiated) termination.

Based on the review of literature presented here, it is hypothesized that CCAPS-70 scales will converge significantly with PAI scales measuring similar constructs. Specifically, it is expected that 1) the CCAPS-70 Depression scale will correlate significantly with the PAI Borderline Features and Suicidal Ideation scales, 2) the CCAPS-70 Eating Concerns scale will correlate significantly with the PAI Anxiety scale, 3) the CCAPS-70 Substance Use scale will correlate significantly with the PAI Alcohol Problems scale, 4) the CCAPS-70 Anxiety and Social Anxiety scales will correlate significantly with the PAI Anxiety scale, and 5) the CCAPS-70 Family Distress scale will correlate significantly with the PAI Perceived Non-support scale. Further, it is hypothesized that CCAPS-70 Hostility, Eating Concerns, Substance Use,

Depression, and Academic Distress scale scores will be positively associated with client initiated termination and negatively associated with treatment duration. The final purpose of this project was to explore other CCAPS and PAI subscales as predictors of premature termination.

Chapter 2

Method

Participants

The sample for this study consisted of 2747 university counseling center clients at a major public university in the southeast U.S. Participants for this study were limited to individual and group therapy clients who agreed in writing, at the time of intake to services, to allow their demographic and assessment information and results to be used in subsequent archival research. Each participant met state age requirements for consent to services (17 years).

Of the 2747 sets of client data available for analysis, only 425 (15%) had completed both the CCAPS and the PAI. Of these 425, ages ranged from 17 to 51, and their mean age was 22.40 ($SD = 4.14$). This subsample included 288 (68%) women, 135 (32%) men, and two (1%) who did not report their sex. With regard to sexual orientation, 8 (2%) identified as bisexual, 12 (3%) as gay, 322 (76%) as heterosexual, 6(1%) as lesbian, and 5 (1%) as “questioning.” Nine (2%) participants selected “prefer not to answer,” and 18 (4%) did not respond. Regarding ethnic identity, 17 (4%) participants identified as African American, 7 (2%) were Asian American or Asian, 313 (74%) were Caucasian, 11 (3%) were Latino/a, 8 (2%) were Multiracial, 6 (1%) preferred not to answer, 5 (1%) were international students, and 8 (2%) did not respond.

Measures

The Counseling Center Assessment of Psychological Symptoms-70 (CCAPS-62; Locke et al., 2011). The CCAPS-62 is a self-report global symptom screening instrument designed for and normed on university students. The CCAPS-70 contains nine scales measuring nine factors: depression, eating concerns, substance use, generalized anxiety, hostility, social

anxiety, family distress, spirituality, and academic distress. Using a 5-point partially anchored scale, the CCAPS-70 asks respondents to rate how well each item describes them in the last two weeks (0 = *not at all*; 4 = *extremely well*). Sample items include, “I am not able to concentrate as well as usual,” “My family is basically a happy one,” and “I drink more than I should.”

Using a large and culturally diverse college student sample obtained from over 135 institutions in the U.S., Locke et al. (2011) conducted exploratory and confirmatory factor analyses on CCAPS-70 data. Due to excessive cross loadings and/or concerns about some items’ clinical and empirical utility, eight items were omitted from a revised 62-item version of the CCAPS. Reported internal reliability (alpha coefficients) for the CCAPS-70 scales ranged from .80 (Academic Distress) to .93 (Eating Concerns and Spirituality), whereas alphas for the CCAPS-62 ranged from .78 for the Academic Distress scale to .91 for the Depression scale.

In the same sample, CCAPS-62 test-retest reliability over one and two week periods ranged from .78 and .76, respectively, for the Academic Distress scale to .93 and .92, respectively, for the Depression scale. Significant correlations between the CCAPS-62 scales and referent measures such as the Beck Depression Inventory (BDI; Beck et al., 1961), the Beck Anxiety Inventory (BAI; Beck, Epstein, Brown, & Steer, 1988), and the Self-Report Family Inventory (SRFI; Beavers, Hampson, & Hulgus, 1985; 1990) provide evidence of its convergent and construct validity. CCAPS-70 alpha coefficients for the current study were .90 (Depression), .86 (Eating Concerns), .79 (Substance Use), .82 (Generalized Anxiety), .72 (Hostility), .65 (Social Anxiety), .73 (Family Distress), .82 (Academic Distress), and .94 (Spirituality). Alpha for the full scale was .94.

The Personality Assessment Inventory (PAI; Morey, 1991). The 344 items of the PAI are assigned to 22 scales, including 11 clinical scales, 2 interpersonal scales, 4 validity scales, and 5 treatment scales. Clinical scales measure anxiety (ANX), depression (DEP), paranoia (PAR), borderline features (BOR), antisocial features (ANT), and alcohol problems (ALC). Interpersonal scales measure styles of social interaction on dominant-submissive (DOM) and a warm-cold (WRM) dimensions. Inconsistency (ICN), infrequency (INF), negative impression management (NIM), and positive impression management (PIM) comprise the validity scales assessing the respondent's tendency to present oneself in a disingenuous manner, endorse test items carelessly or randomly, and/or demonstrate incongruent response patterns during test administration. Treatment scales assess constructs such as treatment rejection (RXR), suicidal ideation (SUI), nonsupport (NON), stress (STR), and aggression (AGG).

Sample PAI items include "People are afraid of my temper," "I've lost interest in things I used to enjoy," and "I just don't seem to relate to people very well." Responses are rated on a fully anchored 4-point scale, and include F (*False, Not At All True*), ST (*Slightly True*), MT (*Mainly True*), and VT (*Very True*). For the full scales, test-retest reliability ranging from .66 to .90 in a college undergraduate sample and .85 to .94 in a sample of community adults is reported (Weiner & Greene, 2008). Coefficients alpha for the PAI's full scales are reported as .81 (community sample), .86 (clinical sample), and .82 (college student sample). Reported mean correlations between full scale items for a normative community sample, a clinical sample, and a college student sample are .22, .29, and .21, respectively (Morey, 1991).

Procedure

Demographic, session attendance, and reason for termination data for this study consisted of archival data collected between July 1, 2007 and May 30, 2010. These dates were chosen to obtain sufficient data corresponding with archival CCAPS-70 and PAI data, which were obtained immediately prior to participants' intake sessions between July 2008 and July 2009. Participants indicated consent by initialing "I consent to the use of my de-identified assessment data" in their intake paperwork. Some participants completed more than one service episode (and therefore more than one intake) during the specified time frame. To maximize data matching accuracy, only initial PAI and/or CCAPS scores, termination reason data, and session attendance data were included in analyses.

CCAPS-70, demographic, and session attendance data were electronically spooled from Titanium software according to dates of service. Reason for termination data were taken manually from Titanium counseling termination notes, most of which included a "drop down" menu of categorical termination descriptors from which therapists could choose to explain clients' termination. Examples of Titanium termination descriptors were "walk-in services sufficient to meet client's needs," "terminated for summer break," and "client no-showed and did not reschedule." All were initially coded into four broad categories: (a) terminated due to mutual agreement, (b) client initiated termination, (c) terminated due to external factors and (d) "other" to account for termination data not adequately or clearly represented by the first three categories. Some termination notes were completed in earlier versions of Titanium and were completed in narrative form. These were also initially coded for content according to the above 4 categories.

Next, the 4 broad categories were then expanded into 15 sub-classifications, which are displayed in Table 1. Each of the 15 sub-classifications mapped onto one of the 4 primary ones.

Attendance statuses for each individual, group, or walk-in/triage session were archived in Titanium under one of the following categories: (a) Attended, (b) Client rescheduled, (c) Client cancelled, (d) Client no showed, (e) Counselor cancelled, or (f) Counselor rescheduled. Because each participant's PAI data were archived separately as individual printable downloadable files, they were entered manually. After entry, PAI and reason for termination data were filtered and cross-checked for accuracy using the SPSS random number generator. The random number generator allows the user to extract a random subsample from an existing data set for the purpose of examining a representative portion of the larger sample.

Table 1
Final Termination Reason and Sub-Termination Reason Classifications

Termination Reason	<i>n</i>	%
1. Terminated due to mutual agreement	192	24
1.a Triage/walk-in sufficient to meet client's needs	12	2
1.b Terminated due to mutual agreement/treatment goals met	124	15
1.c Client referred to group, psychiatric services only, or to services outside of agency	56	7
2. Client initiated termination	441	54
2.a Client no showed and did not reschedule	199	24
2.b Client cancelled and did not reschedule	63	8
2.c Client terminated but should have continued	25	3
2.d Client did not call for first appointment/did not confirm first appointment following initial triage contact	87	11
2.e Client declined or did not pursue recommended services	67	8
3. Terminated due to external factors	130	16
3.a Terminated due to winter/summer break	50	6
3.b Client withdrawing/withdrew from the university	9	1
3.c Client graduated or transferred schools	40	5
3.d Group ended	21	3
3.e Therapist left agency	10	1
4. Other	55	7
4a. Therapist initiated termination	3	0
4b. Other	52	6

Note. *N* = 818.

Chapter 3

Results

Preliminary Analyses

Due to the large time frame over which the data were collected (May 2008 through September 2009), natural attrition of clients who did not complete treatment, and clients who continued in treatment but did not complete assessments, there was a substantial amount of missing data. Listwise deletion was used to omit entire cases at one data collection period that containing more than 20% missing data. Of the 2747 cases with useable data at one or more data collection points, 1093 contained CCAPS data, 736 contained PAI data, 855 contained demographic data, 818 contained termination data, and 2020 contained session attendance data. Table 2 provides a more complete description of the overlap in missing data.

Because these are standardized measures whose means can be compared to other samples, we decided not to conduct transformations to correct for non-normality of the data. To explore sex differences in CCAPS and PAI subscales, two separate one-way multivariate analyses of variance (MANOVA) were conducted. Results revealed significant differences between men and women for the CCAPS-70, $F(10, 807) = 8.95, p < .01, \eta^2 = .10$, and for the PAI, $F(22, 359) = 4.21, p < .01, \eta^2 = .21$. Using only cases with four or more completed sessions, MANOVA again detected significant sex differences for the CCAPS, $F(10, 450) = 4.94, p < .01, \eta^2 = .10$ and for the PAI, $F(22, 217) = 2.64, p < .01, \eta = .21$. Follow up univariate analyses revealed significantly higher PAI scale means for men in Negative Impression Management, Mania, Schizophrenia, Antisocial Features, Alcohol Use, Drug Use, Suicidal Ideation, and Perceived Nonsupport. Mean PAI Warmth, CCAPS-70 Eating Concerns,

Table 2

Detailed Listing of Overlap in Missing Data

Available Data	<i>n</i>	%
Participant identification number only	239	9
CCAPS only	1084	40
PAI only	3	0
Attendance only	61	2
Demographics only	177	6
CCAPS and Attendance only	157	6
CCAPS and Demographics only	128	5
PAI and CCAPS only	2	0
PAI and Attendance only	3	0
PAI and Termination Reason only	3	0
Demographics and Attendance only	5	0
CCAPS, PAI, and Attendance only	10	0
CCAPS, PAI, and Termination Reason only	12	0
CCAPS, Attendance, and Demographics only	40	2
CCAPS, Attendance, and Termination Reason only	1	0
PAI, Attendance, and Demographics only	2	0
PAI, Attendance, and Termination Reason only	163	6
PAI, Demographics, and Termination Reason only	1	0
CCAPS, PAI, Attendance, and Demographics only	18	1
CCAPS, PAI, Attendance, and Termination Reason only	273	10
CCAPS, PAI, Demographics, and Termination Reason only	5	0
PAI, Attendance, Demographics, and Termination Reason only	70	3
PAI, CCAPS, Attendance, Termination Reason, and Demographics	290	11

Note. *N* = 2747. Attendance = number of sessions completed and session attendance status combined. CCAPS = Counseling Center Assessment of Psychological Symptoms. PAI = Personality Assessment Inventory. Termination Reason = main and sub-termination reasons combined.

CCAPS-70 Family Distress, CCAPS-70 Anxiety scale means were significantly greater for women. Means, standard deviations, subscale F values, and effect size estimates are displayed in Tables 3a, 3b, 3c, and 3d.

Table 3a
Means, Standard Deviations, and MANOVA for Effects of Sex Differences in CCAPS-70 Scale Scores

CCAPS-70 Scale	Women (<i>n</i> = 542)		Men (<i>n</i> = 276)		Univariate		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>F</i> (1, 816)	<i>p</i>	η^2
Eating Concerns	1.36	0.89	0.94	0.70	44.97***	.00	.05
Anxiety	1.89	0.91	1.68	0.96	10.04**	.00	.01
Substance Use	1.07	0.77	1.25	0.85	8.54**	.00	.01
Spirituality	2.19	1.36	2.48	1.35	7.84**	.01	.01
Family Distress	1.58	0.90	1.40	0.87	7.12**	.01	.01
Depression	2.00	0.84	1.85	0.89	5.88*	.02	.01
Other	1.39	0.66	1.37	0.62	0.10	.76	.00
Hostility	1.25	0.85	1.23	0.87	0.09	.77	.00
Academic Distress	2.07	1.01	2.04	1.07	0.08	.77	.00
Social Anxiety	1.83	0.77	1.82	0.82	0.04	.84	.00

Note. Multivariate analysis of variance (MANOVA). Wilks' lambda = .90, $F(10, 807) = 8.95$, $p < .01$, $\eta^2 = .10$. CCAPS-70 = Counseling Center Assessment of Psychological Symptoms – 70. CCAPS-70 scales listed according to descending *F* values. Triage, intake, and initial sessions included in analysis.

* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 3b
Means, Standard Deviations, and MANOVA for Effects of Sex Differences in PAI Scale Scores

PAI Scale	Women (n = 261)		Men (n = 121)		Univariate		
	M	SD	M	SD	F(1, 380)	p	η^2
Antisocial Features	50.72	9.65	57.59	12.14	35.33***	.00	.09
Negative Impression Management	54.78	10.39	59.58	12.50	15.47***	.00	.04
Drug Use	49.27	9.61	53.55	12.71	13.27***	.00	.03
Schizophrenia	56.97	13.31	62.06	13.31	12.12***	.00	.03
Mania	50.72	10.73	54.97	11.88	12.08***	.00	.03
Perceived Nonsupport	55.59	13.31	60.65	13.40	11.90***	.00	.03
Alcohol Use	50.23	10.73	54.60	13.04	11.87***	.00	.03
Suicidal Ideation	55.24	14.64	59.60	17.64	6.43**	.01	.02
Anxiety Related Disorders	58.80	12.61	55.29	13.44	6.13**	.01	.02
Warmth	48.89	11.35	45.93	11.46	5.59*	.02	.01
Anxiety	66.63	13.92	63.11	12.89	5.54*	.02	.01
Paranoia	54.26	11.93	57.23	12.53	4.95*	.03	.01
Inconsistency	50.03	7.86	51.98	8.18	4.91*	.03	.01
Aggression	48.82	12.56	51.69	13.03	4.22*	.04	.01
Somaticizing	53.66	9.55	52.41	8.85	1.47	.23	.00
Borderline	61.94	12.26	63.29	12.58	0.99	.32	.00
Depression	65.91	15.53	67.60	15.45	0.98	.32	.00
Dominance	46.98	11.70	48.07	11.70	0.71	.40	.00
Infrequency	53.69	8.82	52.90	8.40	0.69	.41	.00
Positive Impression Management	41.94	10.81	41.13	10.62	0.47	.50	.00
Treatment Rejection	40.93	9.76	40.61	11.17	0.08	.77	.00
Stress	56.97	10.82	57.23	10.24	0.05	.82	.00

Note. Multivariate analysis of variance (MANOVA). Wilks' lambda = .80, $F(22, 359) = 4.21$, $p < .01$, $\eta^2 = .21$. PAI = Personality Assessment Inventory. PAI scales listed according to descending F values. Triage, intake, and initial sessions included in analysis.

* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 3c
Means, Standard Deviations, and MANOVA for Effects of Sex Differences in CCAPS-70 Scale Scores

CCAPS-70 Scale	Women (<i>n</i> = 316)		Men (<i>n</i> = 145)		Univariate		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>F</i> (1,459)	<i>p</i>	η^2
Eating Concerns	1.41	0.90	0.99	0.70	25.49**	.00	.05
Anxiety	2.01	0.90	1.74	0.99	8.40**	.00	.02
Family Distress	1.75	0.92	1.54	0.92	5.44*	.02	.01
Spirituality	2.24	1.35	2.48	1.40	3.19	.08	.01
Depression	2.14	0.82	2.00	0.82	2.86	.09	.01
Substance Use	1.13	0.79	1.20	0.81	0.82	.37	.00
Other	1.48	0.69	1.42	0.60	0.77	.38	.00
Hostility	1.33	0.87	1.37	0.93	0.27	.61	.00
Academic Distress	2.06	1.02	2.03	0.98	0.12	.73	.00
Social Anxiety	1.92	0.79	1.93	0.85	0.02	.88	.00

Note. Multivariate analysis of variance (MANOVA). Wilks' lambda = .90, $F(10, 450) = 4.94$, $p < .01$, $\eta^2 = .10$. CCAPS-70 = Counseling Center Assessment of Psychological Symptoms - 70. Number of sessions completed ≥ 4 . CCAPS-70 scales listed according to descending *F* values.

* $p < .05$, ** $p < .01$.

Table 3d
Means, Standard Deviations, and MANOVA for Effects of Sex Differences in PAI Subscale Scores

PAI Subscale	Women (<i>n</i> = 170)		Men (<i>n</i> = 70)		Univariate		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>F</i> (1,238)	<i>p</i>	η^2
Antisocial Features	49.66	9.34	56.46	12.18	21.80**	.00	.08
Schizophrenia	56.51	13.29	63.60	13.29	14.11**	.00	.06
Perceived Non Support	56.59	13.84	63.64	13.15	13.23**	.00	.05
Negative Impression Management	55.11	10.31	60.36	12.59	11.26**	.00	.05
Warmth	48.38	11.47	43.74	12.00	7.89**	.01	.03
Drug Use	49.69	9.93	53.97	14.12	7.10**	.01	.03
Suicidal Ideation	56.55	15.17	62.60	18.55	6.89**	.01	.03
Mania	49.86	10.83	53.93	11.41	6.79**	.01	.03
Alcohol Use	50.21	11.45	54.41	12.44	6.36**	.01	.03
Aggression	49.11	13.22	53.70	13.13	6.01*	.02	.03
Inconsistency	50.18	7.58	52.51	8.38	4.41*	.04	.02
Paranoia	54.82	12.28	58.39	12.07	4.21*	.04	.02
Depression	66.64	15.19	70.80	13.99	3.90*	.05	.02
Borderline Features	62.37	12.13	65.70	12.30	3.70	.06	.02
Anxiety Related Disorders	59.79	12.87	56.97	13.19	2.34	.13	.01
Treatment Rejection	39.76	9.33	37.76	10.08	2.19	.14	.01

Table 3d
(continued)

PAI Subscale	Women ($n = 170$)		Men ($n = 70$)		Univariate		
	M	SD	M	SD	$F(1,238)$	p	η^2
Positive Impression Management	41.53	11.13	39.50	10.64	1.69	.20	.01
Stress	57.16	10.85	58.91	10.21	1.33	.25	.01
Somaticizing	54.38	10.00	53.40	8.86	0.51	.48	.00
Infrequency	53.08	9.12	52.27	9.11	0.39	.53	.02
Dominance	46.69	11.20	46.27	10.69	0.07	.79	.00

Note. Multivariate analysis of variance (MANOVA). Wilks' lambda = .79, $F(22, 217) = 2.64$, $p < .01$, $\eta^2 = .21$. PAI = Personality Assessment Inventory. PAI scales listed according to descending F values. Number of sessions completed ≥ 4 .

* $p < .05$, ** $p < .01$.

Tests of Hypotheses

The first hypotheses predicted that certain CCAPS-70 scales would converge significantly with particular PAI scales when the PAI and the CCAPS-70 were completed together during a single administration (at intake to services). Consequently, data from all cases, regardless of the treatment duration were included for this analysis. It was specifically hypothesized that the CCAPS-70 scales' strongest significant correlations with PAI scales would be revealed as follows: 1) CCAPS-70 Depression with PAI Depression, 2) CCAPS-70 Eating Concerns with PAI Anxiety, 3) the CCAPS-70 Anxiety and the PAI Anxiety scales, 4) CCAPS-70 Substance Use with PAI Alcohol Use, 5) the CCAPS-70 Hostility and the PAI Aggression scales, 6) the CCAPS-70 Social Anxiety and the PAI Anxiety scales, 7) the CCAPS-70 Family Distress and the PAI Perceived Non-support scales. It was also hypothesized that CCAPS-70 Depression would demonstrate significant positive associations with the PAI Borderline Features and Suicidal Ideation scales. Tables 4a through 4c display Pearson correlations between PAI and CCAPS-70 subscales, along with means and standard deviations.

Table 4a
Means, Standard Deviations, and Intercorrelations for CCAPS-70 Scales

		CCAPS-70 Scale											
CCAPS - 70 Scale	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	
1 Depression	1.95	0.85	--										
2 Eating Concerns	1.19	0.84	.41 ^{***}	--									
3 Substance Use	1.15	0.81	.37 ^{***}	.24 ^{***}	--								
4 Anxiety	1.80	0.94	.59 ^{***}	.32 ^{***}	.31 ^{***}	--							
5 Hostility	1.26	0.88	.47 ^{***}	.25 ^{***}	.39 ^{***}	.40 ^{***}	--						
6 Social Anxiety	1.83	0.79	.58 ^{***}	.24 ^{***}	.34 ^{***}	.47 ^{***}	.45 ^{***}	--					
7 Family Distress	1.51	0.89	.51 ^{***}	.32 ^{***}	.22 ^{***}	.31 ^{***}	.50 ^{***}	.39 ^{***}	--				
8 Academic Distress	2.05	1.02	.50 ^{***}	.30 ^{***}	.23 ^{***}	.32 ^{***}	.23 ^{***}	.30 ^{***}	.22 ^{***}	--			
9 Spirituality	2.27	1.38	.21 ^{***}	.06 [*]	.23 ^{***}	.05	.13 ^{***}	.19 ^{***}	.19 ^{***}	.17 ^{***}	--		
10 Other	1.38	0.65	.51 ^{***}	.29 ^{***}	.35 ^{***}	.48 ^{***}	.48 ^{***}	.41 ^{***}	.41 ^{***}	.27 ^{***}	.17 ^{***}	--	

Note. CCAPS-70 = Counseling Center Assessment of Psychological Symptoms-70.

*** $p < .001$, ** $p < .01$, * $p < .05$.

Table 4b
Correlations Between CCAPS-70 and PAI Scales

CCAPS-70 Scale		PAI Scale										
		ICN	INF	NIM	PIM	SOM	ANX	ARD	DEP	MAN	PAR	SCZ
1	Depression	.25***	-.06	.53***	-.53***	.45***	.56***	.48***	.79***	.06	.52***	.56***
2	Eating Concerns	.07	.08	.18***	-.28***	.28***	.30***	.28***	.31***	.13**	.19***	.24***
3	Substance Use	.19***	-.08	.29***	-.36***	.22***	.30***	.21***	.36***	.14**	.30***	.31***
4	Anxiety	.05	.09	.32***	-.38***	.45***	.76***	.53***	.42***	.13**	.28***	.34***
5	Hostility	.10*	-.05	.38***	-.42***	.31***	.37***	.43***	.38***	.34***	.52***	.38***
6	Social Anxiety	.21**	-.06	.39***	-.42***	.34***	.45***	.41***	.49***	.02	.43***	.56***
7	Family Distress	.11*	-.06	.37***	-.34***	.25***	.26***	.34**	.41***	.13**	.45***	.36***
8	Academic Distress	.14**	-.04	.24***	-.31***	.32***	.31***	.17***	.53***	.08	.19***	.39***
9	Spirituality	.17***	-.10*	.16***	-.21***	.12*	.09	.04	.29***	-.05	.18***	.24***
10	Other	.16***	-.01	.39***	-.29***	.33***	.40***	.38***	.42***	.16***	.32***	.48***

Note. CCAPS-70 = Counseling Center Assessment of Psychological Symptoms-70. PAI = Personality Assessment Inventory. ICN = Inconsistency, INF = Infrequency, NIM = Negative Impression Management, PIM = Positive Impression Management, SOM = Somaticizing, ANX = Anxiety, ARD = Anxiety Related Disorders, DEP = Depression, MAN = Mania, PAR = Paranoia, SCZ = Schizophrenia.

*** $p < .001$, ** $p < .01$, * $p < .05$.

Table 4b (continued)

CCAPS-70 Scale		PAI Scale										
		BOR	ANT	ALC	DRG	AGG	SUI	STR	NON	RXR	DOM	WRM
1	Depression	.71***	.15***	.18***	.22***	.21***	.53***	.45***	.52***	-.66***	-.31***	-.39***
2	Eating Concerns	.30***	.08	.13**	.03	.05	.15**	.18**	.19***	-.31***	-.12*	-.14**
3	Substance Use	.50***	.44***	.76***	.46***	.29***	.25***	.29***	.18***	-.34***	-.09	-.16***
4	Anxiety	.50***	.09	.10*	.11*	.13**	.20***	.25***	.18***	-.30***	-.23***	-.11*
5	Hostility	.61***	.29***	.22***	.18***	.63***	.30***	.46***	.35***	-.33***	.10*	-.22***
6	Social Anxiety	.50***	.10*	.09	.18***	.29***	.27***	.30***	.41***	-.37***	-.38***	-.62***
7	Family Distress	.44***	.13**	.08	.10*	.12*	.33***	.48***	.61***	-.34***	-.17***	-.29***
8	Academic Distress	.36***	.20***	.10*	.19***	.11*	.21***	.26***	.25***	-.27***	-.11*	-.15**
9	Spirituality	.27***	.20***	.15**	.25***	.16***	.23***	.24***	.34***	-.22***	-.13**	-.32***
10	Other	.46***	.26***	.17***	.26***	.19***	.29***	.34***	.30***	-.31***	-.13**	-.26***

Note. CCAPS-70 = Counseling Center Assessment of Psychological Symptoms-70. PAI = Personality Assessment Inventory. ICN = Inconsistency, INF = Infrequency, NIM = Negative Impression Management, PIM = Positive Impression Management, SOM = Somaticizing, ANX = Anxiety, ARD = Anxiety Related Disorders, DEP = Depression, MAN = Mania, PAR = Paranoia, SCZ = Schizophrenia, BOR = Borderline Features, ANT = Antisocial Features, ALC = Alcohol Use, AGG = Aggression, SUI = Suicidal Ideation, STR = Stress, NON = Perceived Nonsupport, RXR = Treatment Rejection, DOM = Dominance, WRM = Warmth.

*** $p < .001$, ** $p < .01$, * $p < .05$.

Table 4c

Means, Standard Deviations, and Intercorrelations Between PAI Scales

PAI Scale	<i>M</i>	<i>SD</i>	PAI Scale														
			1	2	3	4	5	6	7	8	9	10	11				
1 Inconsistency	51.07	8.13	--														
2 Infrequency	53.16	8.62	-.01	--													
3 Negative Impression Management	56.43	11.37	.22***	.04	--												
4 Positive Impression Management	41.10	10.80	-.12***	.12***	-.39***	--											
5 Somaticizing	53.13	9.43	.11**	.04	.44**	-.36**	--										
6 Anxiety	65.63	13.55	.08*	.05	.40**	-.53**	.59**	--									
7 Anxiety Related Disorders	58.20	13.11	.10**	.02	.45***	-.43***	.48***	.67***	--								
8 Depression	66.10	15.05	.26**	.01	.56***	-.50***	.51***	.58***	.48***	--							
9 Mania	52.54	11.21	.06	.01	.35***	-.35***	.20***	.17***	.26***	.03	--						
10 Paranoia	55.71	11.91	.23**	-.04	.53***	-.44***	.32***	.36***	.45***	.50***	.33***	--					
11 Schizophrenia	58.80	13.22	.27**	-.02	.67***	-.48***	.46***	.45***	.45***	.63***	.38***	.55***	--				

Table 4c (continued)

		PAI Scale												
	PAI Scale	<i>M</i>	<i>SD</i>	12	13	14	15	16	17	18	19	20	21	22
1	Inconsistency	51.07	8.13	.26***	.24***	.16***	.40***	.14***	.32***	.10**	.26***	-.23***	-.06	-.27***
2	Infrequency	53.16	8.62	.02	-.05	-.06	-.03	.01	-.04	-.05	-.04	.03	-.05	.05
3	Negative Impression Management	56.43	11.37	.58***	.36***	.14***	.25***	.25***	.46***	.38***	.49***	-.45***	-.12***	-.33***
4	Positive Impression Management	41.10	10.81	-.69***	-.35***	-.21***	-.19***	-.44***	-.34***	-.26***	-.32***	.53***	.17***	.32***
5	Somaticizing	53.13	9.43	.46***	.18***	.07	.15**	.20**	.30**	.30**	.26**	-.34**	-.13**	-.22**
6	Anxiety	65.63	13.55	.55***	.08*	.08*	.11**	.21***	.27***	.28***	.27***	-.42***	-.28***	-.23***
7	Anxiety Related Disorders	58.20	13.11	.54***	.06	.08*	.12**	.24***	.30***	.34***	.33***	-.42***	-.16**	-.24***
8	Depression	66.10	15.05	.69***	.20***	.15***	.21***	.23***	.56***	.41***	.57***	-.58***	-.33***	-.47***
9	Mania	52.54	11.21	.36***	.44***	.09*	.14***	.34***	.07	.15***	.12***	-.15***	.34***	.02
10	Paranoia	55.71	11.91	.64***	.24***	.12***	.14***	.40***	.34***	.38***	.57***	-.35***	-.08*	-.40***
11	Schizophrenia	58.80	13.22	.60***	.37***	.10***	.23***	.24***	.41***	.35***	.57***	-.43***	-.23***	-.56***
12	Borderline	62.68	11.91	--	.42***	.32***	.33**	.53***	.51***	.48***	.51***	-.64***	-.15***	-.36***
13	Antisocial Features	53.01	11.21	--	.45***	.53***	.35***	.25***	.19***	.18***	-.24***	.12**	-.13***	

Table 4c (continued)

PAI Scale	<i>M</i>	<i>SD</i>	PAI Scale										
			12	13	14	15	16	17	18	19	20	21	22
14 Alcohol Use	51.97	12.24			--	.48***	.27***	.17***	.14***	.06	-.24***	.03	-.04
15 Drug Use	50.93	11.51				--	.19**	.22**	.20**	.13**	-.24**	-.04	-.14**
16 Aggression	49.67	12.60					--	.22**	.19**	.19**	-.27**	.29**	-.21**
17 Suicidal Ideation	57.26	15.87						--	.27**	.39**	-.44**	-.18**	-.28**
18 Stress	57.17	10.78							--	.44**	-.34**	-.08*	-.17**
19 Perceived Nonsupport	56.80	13.13								--	-.33**	-.22**	-.54**
20 Treatment Rejection	40.03	10.19									--	.22**	.29**
21 Dominance	46.76	11.61										--	.31**
22 Warmth	47.65	11.50											--

Note. PAI = Personality Assessment Inventory. ICN = Inconsistency, INF = Infrequency, NIM = Negative Impression Management, PIM = Positive Impression Management, SOM = Somaticizing, ANX = Anxiety, ARD = Anxiety Related Disorders, DEP = Depression, MAN = Mania, PAR = Paranoia, SCZ = Schizophrenia, BOR = Borderline Features, ANT = Antisocial Features, ALC = Alcohol Use, AGG = Aggression, SUI = Suicidal Ideation, STR = Stress, NON = Perceived Nonsupport, RXR = Treatment Rejection, DOM = Dominance, WRM = Warmth.

*** $p < .001$, ** $p < .01$, * $p < .05$.

As expected, the CCAPS-70 Depression scale demonstrated the highest correlations with the PAI Depression, Borderline Features, and Suicidal Ideation scales, respectively. Similarly, the CCAPS Eating Concerns scale was correlated most strongly with PAI Anxiety, CCAPS Substance Use with PAI Alcohol Use, CCAPS Anxiety with PAI Anxiety, and CCAPS Family Distress with PAI Perceived Non-support. However, the hypothesis that CCAPS Social Anxiety would demonstrate a peak correlation with PAI Anxiety was not supported. The highest correlation among PAI scales with the CCAPS Social Anxiety scale was for the PAI Warmth scale the CCAPS Hostility scale and the PAI Aggression scale, the CCAPS Academic Distress subscale and the PAI Depression subscale, the CCAPS Spirituality subscale and the PAI Non-support subscale, and the PAI Borderline Features subscale.

Hypothesis 2 predicted that CCAPS-70 Hostility, Eating Concerns, Substance Use, Depression, and Academic Distress scales would demonstrate significant positive correlations with client initiated termination. To test this hypothesis, logistic regression analyses were used to predict a particular reason for termination, coded as a binary yes/no variable (mutual termination and/or termination determined by external factors = 0, client initiated termination = 1). Predictor variables were the two separate sets of PAI and CCAPS scales.

Hypothesis 2 received partial support. Omnibus tests of the CCAPS-70 model indicated that the full set of scales significantly predicted client initiated termination, $\chi^2(10, N = 418) = 23.11, p < .01$. Table 5 presents the results of this analysis. Wald criteria suggested among individual subscales that CCAPS-70 Hostility and Academic Distress scales were significant positive predictors of client initiated termination. Significant negative beta coefficients for the

Table 5
Logistic Regression Predicting Client Initiated Termination Using CCAPS-70 Scales

CCAPS-70 Scale	β	SE	Wald	Odds Ratio
Academic Distress	0.31	0.13	5.75*	1.37
Hostility	0.35	0.16	4.98*	1.41
Anxiety	-0.29	0.15	3.86*	0.75
Eating Concerns	-0.26	0.13	3.80*	0.77
Other	0.27	0.20	1.82	1.31
Social Anxiety	0.11	0.16	0.45	1.12
Spirituality	-0.05	0.08	0.36	0.95
Depression	-0.07	0.21	0.10	0.93
Family Distress	-0.02	0.14	0.03	0.98
Substance Use	-0.02	0.15	0.01	0.98
constant	-0.55	0.34	2.57	0.58

Note. Dependent variable coded as 0 = mutual or external reasons for termination, 1 = client initiated termination. $R^2 = .07$. CCAPS-70 = Counseling Center Assessment of Psychological Symptoms-70. CCAPS scales listed according to ascending Wald coefficients.

* $p < .05$.

CCAPS-70 Eating Concerns and Anxiety scales were inversely predictive of client initiated termination. The overall model correctly classified 59% of the sample as having unilaterally terminated or having terminated by mutual agreement or due to external factors, whereas the constant-only model correctly classified 55% of the sample.

PAI scales were examined next. Results are shown in Table 6. This full model was again found to significantly predict client initiated termination, albeit at a less significant level, $\chi^2(22, N = 217) = 36.07, p < .05$. PAI Inconsistency, Positive Impression Management, and Borderline Features scales were significant predictors of client initiated termination. A significant negative predictive relationship was found for PAI Suicidal Ideation. Overall, the PAI demonstrated higher correct classification (63%) and sensitivity rates (64%) than the CCAPS-70.

Two separate simultaneous multiple regression analyses were used to explore whether CCAPS-70 and PAI scales predicted mean duration of treatment. Regression results for the CCAPS-70 full model were significant, $F(10, 773) = 3.22, p < .001$, accounting for 4% of the outcome variance. The full set of PAI scales also significantly predicted duration of treatment, $F(22, 458) = 2.73, p < .01$. The full PAI model, however, explained 12% of the variance. CCAPS-70 Academic Distress and PAI Negative Impression Management scales were inversely predictive of treatment duration, whereas CCAPS-70 Family Distress, CCAPS-70 Eating Concerns, and PAI Suicidal Ideation scores predicted treatment duration. Regression coefficients contributing to the full CCAPS-70 and PAI models are shown in Tables 7 and 8, respectively.

Table 6
Logistic Regression Predicting Client Initiated Termination Using PAI Scales

PAI Scale	β	SE	Wald	Odds Ratio
Inconsistency	0.05	0.02	5.26*	1.05
Borderline Features	0.06	0.03	4.34*	1.06
Suicidal Ideation	-0.03	0.01	3.91*	0.98
Positive Impression	0.05	0.02	3.81*	1.05
Infrequency	0.03	0.02	3.61	1.03
Dominance	-0.03	0.02	2.55	0.97
Antisocial Features	0.03	0.02	2.46	1.03
Stress	0.03	0.02	2.27	1.03
Paranoia	-0.03	0.02	2.01	0.97
Treatment Rejection	0.02	0.02	1.11	1.02
Anxiety	-0.02	0.02	0.91	0.98
Alcohol Problems	-0.02	0.02	0.88	0.99
Warmth	0.02	0.02	0.85	1.02
Mania	0.02	0.02	0.72	1.02
Depression	0.02	0.02	0.66	1.02
Drug Problems	0.01	0.02	0.46	1.01
Schizophrenia	0.01	0.02	0.37	1.01
Somatic Complaints	-0.01	0.02	0.10	0.99
Anxiety Related Disorders	-0.01	0.02	0.09	1.00
Negative Impression	-0.01	0.02	0.08	0.99

Table 6
(continued)

PAI scale	β	SE	Wald	Odds Ratio
Perceived Nonsupport	0.00	0.02	0.03	1.00
Aggression	-0.01	0.02	0.01	1.01
Constant	-11.34	3.27	12.04	0.00

Note. Dependent variable coded as 0 = mutual or external reasons for termination, 1 = client initiated termination. $R^2 = .20$. PAI = Personality Assessment Inventory. PAI scales listed according to ascending Wald coefficients.

* $p < .05$.

Table 7

Regression Analysis Summary for Predicting Treatment Duration Using CCAPS-70 Scales

CCAPS-70 Scales	<i>b</i>	<i>SE_b</i>	β	<i>t</i>	<i>p</i>
Academic Distress	-3.78	1.15	-.14	-3.39**	.00
Eating Concerns	1.71	0.62	.11	2.77**	.01
Family Distress	1.60	0.66	.11	2.42*	.02
Spirituality	0.56	0.37	.06	1.53	.13
Depression	-0.73	0.94	-.05	-0.78	.44
Social Anxiety	0.59	0.75	.04	0.78	.44
Other	0.51	0.90	.03	0.57	.57
Hostility	0.22	0.68	.02	0.33	.74
Anxiety	0.21	0.66	.02	0.32	.75
Substance Use	-0.10	0.68	-.01	-0.14	.89
constant	9.26	1.58		5.87	.00

Note. $F(10, 773) = 3.22, R^2 = .04$ ($n = 784$). CCAPS = Counseling Center Assessment of Psychological Symptoms.

* $p < .05$, ** $p < .01$.

Table 8

Regression Analysis Summary for Predicting Treatment Duration Using PAI Scales

PAI Scale	<i>b</i>	<i>SE_b</i>	β	<i>t</i>	<i>p</i>
Suicidal Ideation	0.14	0.04	.23	3.24***	.00
Negative Impression Management	-0.18	0.08	-.18	-2.23*	.03
Perceived Nonsupport	0.12	0.06	.16	1.92	.06
Dominance	0.11	0.07	.12	1.69	.09
Depression	-0.12	0.07	-.16	-1.63	.11
Treatment Rejection	-0.13	0.08	-.11	-1.59	.11
Anxiety Related Disorders	0.09	0.06	.11	1.50	.13
Infrequency	-0.10	0.07	-.08	-1.45	.15
Antisocial Features	-0.09	0.07	-.09	-1.27	.21
Anxiety	0.08	0.07	.10	1.14	.26
Stress	0.07	0.07	.07	1.10	.27
Positive Impression Management	0.08	0.08	.08	0.97	.33
Schizophrenia	0.06	0.08	.08	0.78	.44
Paranoia	-0.05	0.07	-.06	-0.73	.47
Inconsistency	-0.05	0.08	-.04	-0.64	.52
Alcohol Use	0.04	0.06	.04	0.63	.53
Warmth	0.03	0.07	.03	0.47	.64
Drug Use	0.02	0.07	.03	0.36	.72
Aggression	0.02	0.06	.02	0.30	.77
Mania	0.01	0.08	.01	0.18	.86
Somaticizing	-0.01	0.08	-.01	-0.09	.93
Borderline Features	0.01	0.10	.01	0.05	.96

Table 8 (continued)

	<i>b</i>	<i>SE_b</i>	<i>β</i>	<i>t</i>	<i>p</i>
Constant	2.42	10.72		0.23	.82

Note. $N = 352$. $F(22, 329) = 1.91$, $R^2 = .11$, $p = .009$. PAI = Personality Assessment Inventory. PAI scales listed according to descending t values.

* $p < .05$, *** $p < .001$.

Chapter 4

Discussion

Overall, this study's findings provide support for the CCAPS-70's concurrent and convergent validity. CCAPS-70 scales were expected to converge significantly with PAI scales measuring comparable symptom constructs, and this hypothesis received strong support. Pearson correlations between these scales ranged from $r = .63$ (CCAPS-70 Hostility with PAI Aggression) to $r = .79$ (CCAPS Depression with PAI Depression). As mentioned by Locke et al. (2011) and McAleavey et al. (2012), due to comorbidities between psychological concerns, CCAPS scales are not orthogonal. In this study, overlap between symptom sets was represented in various CCAPS – PAI correlation as expected. For example, the significant convergence we expected to observe between CCAPS-70 Depression and PAI Suicidal Ideation, CCAPS-70 Depression and PAI Borderline Features, CCAPS-70 Family Distress and PAI Nonsupport, and CCAPS-70 Eating Concerns and PAI Anxiety confirms symptom co-occurrences well established by symptom prevalence research (Bruce et al., 2005; Morris, 2008) and diagnostic profiles common to certain psychiatric issues (DSM-IV, Text Revision; American Psychiatric Association, 2000).

Although the Spirituality scale was removed from the CCAPS during the instrument's initial development due to concerns about its clinical applicability, CCAPS researchers acknowledge its psychometric soundness as well as the need for a scale or set of items assessing how students cope and find meaning despite their distress (Locke et al., 2011). Interestingly, PAI Anxiety Related Disorders and PAI Anxiety demonstrated significant positive correlations with every CCAPS-70 subscale except Spirituality. The CCAPS Spirituality subscale's highest correlation was with PAI Nonsupport, and among CCAPS subscales, its negative correlation

with PAI Treatment Rejection was the weakest. The PAI Nonsupport scale, which measures the quality and availability of respondents' social support, frequently suggests higher than average levels of self-criticism and harsh judgment of others, along with a perception by the respondent that their interpersonal environment is cold and uncaring. Individuals with significantly elevated PAI Nonsupport scale scores are reported to have limited emotional tolerance for stress (Morey, 1991). These findings further substantiate Locke and colleagues' assertion that availability of a brief yet valid measure of college students' resilience is needed, and should be explored in ongoing research.

Although the CCAPS-70 Depression, Substance Use, Eating Concerns, Academic Distress, and Hostility scales were expected to significantly predict both client initiated termination and treatment duration, only some of these hypotheses were supported. The CCAPS-70 Anxiety and Eating Concerns subscales' negative correlations with client initiated termination are contrary with much of the premature termination literature. However, research thus far also acknowledges the complexity that various psychological symptoms contribute to contextual and external factors affecting client premature termination and treatment duration (Farrand, Booth, Gilbert, & Lankshear, 2009; Lock, Couturier, Bryson, & Agras, 2006).

Because disordered eating behaviors are frequently associated with premature termination and treatment resistance (Carter et al., 2012; Delinsky et al., 2010; Swift & Greenberg, 2012), reasons for the Eating Concerns scale's significant negative correlation with client initiated termination and positive correlation with treatment duration, respectively, are difficult to explain. The CCAPS-70 Eating Concerns items such as "I eat too much," "I think about food more than I would like to," and "I feel out of control when I eat," assessed behaviors and cognition more typical of binge eating and bulimia than of restricting or anorexia. Grucza,

Przybeck, and Cloninger (2007) reported that participants demonstrating significant binge eating behaviors also experienced substantially more severe comorbid psychological symptoms, including a history of suicide attempts, generalized anxiety, and depression, than individuals with normative eating patterns. An additional explanation is that if a client with eating disorders did not terminate relatively promptly in this sample, she/he then tended to be a client seen for very many sessions.

Despite the relationship of substance abuse with client premature termination in research (Farrand, Booth, Gilbert, & Lankshear, 2009; Kelly, Epstein, & McCrady, 2004), our results did not support this expected association. The CCAPS-70 Substance Use scale was determined to be the least effective CCAPS scale in discriminating between college counseling center clients and nonclinical college student sample (McAleavey et. al., 2012). The authors of the study propose that because alcohol use tends to be prevalent among college students (Blanco et. al., 2008), because the CCAPS Substance Use scale is most sensitive in measuring impairment levels above the mean, and because it lacks acuity with scores just below the scale mean, CCAPS Substance Use scores are likely to be a poor indicator of most problematic alcohol use. It is interesting to note that the PAI Alcohol Use scale was also unsuccessful in predicting termination reason in this investigation, and that it bears negative correlations with all four significant PAI predictors of client initiated termination.

The combined psychometric properties of the PAI's validity scales, interpersonal scales, treatment consideration scales, and total number of items likely account for the PAI's predictive ability relative to that of the CCAPS-70 in this study. Because the PAI was designed to capture variations and complex profiles of psychopathology, it is reasonable to expect that it will encapsulate more variables relating to problematic treatment processes. A sizable number of the

PAI scales that significantly predicted client initiated termination or treatment duration in this study (PAI Borderline Features, PAI Suicidal Ideation, and PAI Negative Impression Management) are also reported by Morey (1991) to signal the presence of multiple and severe symptoms or indicate marked defensiveness and unwillingness to acknowledge minor personal flaws (PAI Positive Impression Management).

Other significant CCAPS-70 and/or PAI scales scores reflecting interpersonal guardedness (CCAPS-70 Hostility) and secondary gain through exaggerated impairment (PAI Borderline Features) may reflect effects of unsatisfactory treatment alliances, which in turn have been associated with subsequent disengagement from the therapeutic process (Derisley & Reynolds, 2000; Hopko, Robertson, & Coleman, 2008; Farrand, Booth, Gilbert, & Lankshear, 2009; Lock, Couturier, Bryson, & Agras, 2006). Variables such as PAI Inconsistency, which perhaps suggest a careless self-report style, along with momentary and/or superficial engagement in services, may be consistent with previous findings that therapy clients often do not return for services or discontinue treatment early following lengthy intake procedures, more time spent on a waitlist (Carter et al., 2012; Epstein, Kelly, & McCrady, 2004), and longer than expected treatment duration (Reis & Brown, 2006).

Limitations

Limitations of this study include its restricted access to treatment and termination reason data that may elucidate relevant details of participants' treatment attrition and completion. In other words, because many termination reasons listed within Titanium software's menu are broad enough to cover a wide range of actual termination circumstances, it is likely that important aspects of premature termination are not captured in this coding. Unlike previous investigations using college counseling center samples from multiple institutions, this study's

data were obtained from only one counseling center. Further, demographic variables, including but not limited to race and ethnicity, socioeconomic status, sex and gender identity, sexual orientation, and nationality were not examined as correlates or predictors in this study. These factors present inherent limitations to the generalizability of our findings.

Implications for Theory, Research, and Practice

Despite its established relevance to the burgeoning needs of university counseling centers, developers of the CCAPS have cited the relative dearth of studies assessing the scope of its clinical applicability (Locke et al., 2011; McAleavey et al., 2012). Specifically, CCAPS items (e.g., intended critical indicators of threats to self and others) should be further investigated alongside the CCAPS scales. Time constraints associated with service provision in university counseling centers may be lessened with the identification and use of a few items that effectively and quickly provide relevant clinical information. Bearing these needs, previous research, and the results of this study in mind, continued examination of the CCAPS' appropriateness and accuracy as an indicator of significant change, both during therapy and at completion, is particularly important.

Future research on the CCAPS, premature termination, and college student mental health should make use of diverse samples obtained across institutional settings. Because few studies regarding the CCAPS' validity have focused primarily on effects of sociocultural identity such as race, ethnicity, and/or gender, such research is needed to explore its degree of clinical applicability between multiple demographic groups. Comparisons of CCAPS scale means, critical item endorsement, and overall distress level by race and gender have detected small yet noteworthy effects, and it is vital that the potential impact of group differences on relevant aspects of treatment utilization and outcomes be addressed. In particular, the 2012 Center for

Collegiate Mental Health Annual Report indicated that Nonwhite students demonstrated greater mean scores for the CCAPS Hostility, Depression, and Academic Distress scales than did White students. Higher CCAPS Alcohol Use, Eating Concerns, Social Anxiety, and Generalized Anxiety scores were reported among White participants compared to Nonwhite participants. Further clarification regarding sex differences in CCAPS scale elevations is also needed to inform the continued development and use of the CCAPS.

Prior research on the CCAPS' factor structure and construct validity has reported the need for an effective yet brief measure of coping styles and resilience among college counseling center clients. The current study's findings also suggest that the development of a CCAPS response validity measure could further expound upon the influence of social desirability and impression management on subscale scores and their correlates. Finally, research should also address the somewhat subjective and wide-ranging definitions of premature termination used in the current literature. It is unlikely that client initiated/premature termination is a unitary construct, but is instead an interaction of an assortment of issues.

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Vita

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