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**Factor analysis and Concurrent Validity
of a University Counseling Center
Presenting Problems Checklist**

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Abstract

A commonly used 42-item Presenting Problems Checklist was analyzed for its psychometric properties. The researchers examined the checklist to determine its adequacy for clinical and research purposes. Results indicate that the scale can reliably assess five factors and that it correlated with a commonly used measure of symptomatology, indicating concurrent validity.

Factor Analysis and Concurrent Validity of a University Counseling Center Presenting Problems Checklist

Therapists in college counseling centers encounter clients with a wide range of issues and problems. These presenting concerns not only encompass many of the same issues that clients at community mental health centers present with, but also problems specific to college life and early adulthood. Because of this, several authors have pointed out the need for university counseling centers to become multidimensional in their approach to treatment (Miller & Rice, 1993; Bertocci, Hirsch, Sommer, & Williams, 1992).

Many counseling centers turn to assessment tools in order to best uncover what the multifaceted needs of their clients are, particularly presenting problems or presenting symptoms checklists at intake. These checklists are often developed by clinicians who have expertise within the college counseling center setting, and are very well versed in the needs and issues of the client population (Miller & Rice, 1993). These presenting problem scales are often in self-report format, which greatly eases administration, diagnostic decisions, and treatment planning (Zalaquett & McManus, 1996). Previous researchers have indicated that the use of these presenting problems scales and checklists do indeed speed up the intake and diagnostic process (Lambert, Shapiro, & Bergin, 1986). Although these scales aid in diagnosis, diagnosticians are assuming that clients' perceptions of their problems are at least as important to etiology and maintenance of distress as the problems themselves when they use these measures (Ollendick & Greene, 1990; Zalaquett & McManus, 1996). Often they can give the clinician a sense of what the client is experiencing by examining individual items and general trends.

Despite the advantages of using self-report measures during initial contact, several disadvantages of such scales exist as well. As noted above, many self-report problem checklists are not empirically derived but are usually rationally derived by counselors familiar with the population to be tested. These measures may be inefficient, wasting both the time of the clinician as well as the client (Miller & Rice, 1993). This may be especially problematic given the increased accountability procedures brought on by managed care models in college counseling centers (Kadera, Lambert, & Andrews, 1996). Some studies have demonstrated different treatment outcomes for different types of presenting problems, pointing to an even greater need for further research, particularly outcome research (Chambless & Steketee, 1999; Taylor, Fedoroff, Koch, Thordarson,

Fecteau, & Nicki, 2001). Such presenting problems scales are not useful, however, if they do not assist therapists in distinguishing symptom groups, and not helpful for evaluative purposes if they are psychometrically questionable (Reise, Waller & Comrey, 2000).

The present study evaluated a 42-item Presenting Problems Checklist used in a research consortium involving over 50 counseling centers across the country. Administrators and evaluators in these counseling centers have raised several concerns that no reliability and validity data had been published on this checklist. Some of the concerns were: (a) whether the factor structure of this checklist is adequate for clinical and research purposes; (b) what the validity of the checklist is; and (c) if there are any non-informative items that could be dropped to shorten it.

A factor analysis was used “to extract as many latent variables (factors) as necessary to explain the correlations among the items” (Reise, Waller & Comrey, p. 294). These factors are assumed to be the underlying causes for the intercorrelation between items. In this way, clinicians and researchers in the centers using this measure may have a better idea about what groupings of problems clients present with, how they affect outcome, and whether or not this measure is appropriate for counseling centers. An exploratory factor analysis (EFA) was chosen over a principal components analysis (PCA) for two reasons. First, other research has shown that principle components analyses may yield component correlations that are negatively biased, and overestimate factor loadings (Reise, Waller, & Comrey, 2000; Borgotta, Kercher & Stull, 1986; Widaman, 1993). Second, PCA is often used for the purposes of scale reduction, not factor exploration (Reise, Waller, & Comrey, 2000). This study seeks not only to uncover what the underlying factor structure is, but also to examine carefully those items that do not load on any factor to determine their utility in the resulting scale. Lastly, this study examines the validity of this scale by correlating it with a commonly used outcome measure.

METHODS

Sample

In this study, 10,663 files from three samples were examined. The first sample consisted of 3049 help-seeking clients surveyed in 1991-92. The second sample consisted of 3131 non-helping-seeking students surveyed in 1994-95. The third sample consisted of 4483 help-seeking students surveyed in 1997-98. The number of participating centers varied from study to study, but the mean number was 42. There were 5830 (66%) females

and 3042 (34%) males; 1791 clients did not report gender. Ethnicity reported was 495 (5%) African American, 424 (5%) Asian American, 752 (8%) Hispanic American, 33 (0.4%) Alaska Native/American Indian, 7011 (77%) White and 373 (4%) Foreign/International; 1575 clients did not report ethnicity. The reported mean age was 23. Classification was 498 (13%) freshmen, 649 (18%) sophomores, 809 (22%) juniors, 927 (25%) seniors, 762 (21%) graduate students and 61 (2%) special students; 6957 students did not report classification.

Instrument

The Presenting Problems Checklist is a 42-item measure developed by staff at the University of Texas at Austin Counseling and Mental Health Center based on a review of 12 presenting problem checklists submitted by various counseling centers. Items were rationally selected with the goal of constructing a list of problems that was comprehensive and not redundant. The checklist was completed as part of the intake procedure at the counseling centers for clinical subjects, and completed at various survey sites for the sample of non-help-seeking participants. Clients responded to the items using the stem, "How much are you currently distressed by...." A Likert scale of 0 (representing "not at all") to 4 (representing "extremely") was employed.

The Outcome Questionnaire 45 (OQ45) was developed by Lambert, Lunnen, Umphress, Hansen, and Burlingame (1994) and is a measure of subjective distress. The 45 items are presented in a 5-point Likert (0-4) scale and summed to yield a total measure of distress. Three sub-scales measure symptom distress, social-role functioning, and interpersonal relationships but these tend to be fairly highly correlated and are not used in the present analyses (all subscales are correlated at least .74 with the total score in the present data). A high total score suggests that the participant is reporting a large number of symptoms of distress, difficulties in interpersonal relationships, social role functioning, and the overall quality of life. A sample question reads, "I feel hopeless about the future." Typically, a cutoff score of 63 is used to distinguish a clinical from a non-clinical population (Kadera, Lambert & Andrews 1996). Kadera, Lambert and Andrews (1996) report an internal consistency of .93 and a test-retest reliability of .84, and concurrent validity with similar instruments in some studies range from .53 to .88. Our analyses of the present data yielded a coefficient alpha of .94 for the total OQ45 score.

RESULTS

Factor Analysis

While previous researchers have often used principal components analysis in an attempt to reduce the number of items in a scale, the purpose of the present research was to identify the factors present in the checklist used in these samples. Therefore, an exploratory factor analysis was used rather than principal components analysis.

Based upon a criterion of eigenvalues greater than one, five factors were defined for the analysis, with 13.14% of the total variance accounted for by these five orthogonal factors. In all but one case, intercorrelations among the factors were low (.18 to .44) and therefore orthogonal rotation was performed using varimax. The correlation between factors 1 and 2 was relatively high (.51). Factor intercorrelations are presented in Table 1.

Table 1
Factor Intercorrelations

| | Factors | | | | |
|----------|---------|------|------|------|------|
| | 1 | 2 | 3 | 4 | 5 |
| Factor 1 | 1.00 | 0.51 | 0.18 | 0.38 | 0.31 |
| Factor 2 | 0.51 | 1.00 | 0.38 | 0.44 | 0.34 |
| Factor 3 | 0.18 | 0.38 | 1.00 | 0.23 | 0.11 |
| Factor 4 | 0.38 | 0.44 | 0.23 | 1.00 | 0.27 |
| Factor 5 | 0.31 | 0.34 | 0.11 | 0.27 | 1.00 |

The loading of each item on each factor, eigenvalue and percent of variance accounted for are presented in Table 2. Seven items loaded on more than one factor at .30 or greater, and these items were assigned to the factor with the highest loading. Six items did not load on any factor. Factors were then examined for a common theme underlying the items loading on each, and a name assigned to the factor accordingly.

Table 2
Factor Eigenvalues and the Variance Accounted for by Each

| | Factors | | | | |
|---|-----------------|----------------------------|--------------------|--------------------|------------|
| | 1 | 2 | 3 | 4 | 5 |
| Eigenvalues | 8.04 | 1.78 | 1.21 | 1.07 | 1.02 |
| Percent of variance explained by factor | 3.86 | 3.11 | 2.37 | 2.28 | 1.53 |
| Item* | Academic stress | Adjustment to college life | Questioning values | Emotional distress | Body image |
| 1. Academic Workload | 0.61 | 0.08 | -0.03 | 0.13 | 0.09 |
| 2. Adjustment to university | 0.30 | 0.41 | 0.04 | 0.07 | 0.06 |
| 3. Alcohol/drugs | 0.07 | 0.07 | 0.24 | 0.17 | 0.04 |
| 4. Anxiety, fears, Nervousness | 0.34 | 0.31 | 0.05 | 0.43 | 0.09 |
| 5. Assertiveness | 0.25 | 0.46 | 0.17 | 0.13 | 0.04 |
| 6. Breakup/loss of Relationship | -0.08 | -0.02 | 0.29 | 0.41 | -0.05 |
| 7. Concentration | 0.53 | 0.11 | 0.08 | 0.41 | 0.02 |
| 8. Confusion beliefs and values | 0.18 | 0.20 | 0.50 | 0.19 | -0.04 |
| 9. Dating concerns | 0.00 | 0.24 | 0.39 | 0.21 | 0.06 |
| 10. Death of Significant | 0.13 | 0.04 | 0.14 | 0.13 | 0.04 |
| 11. Decisions career/major | 0.50 | 0.18 | 0.23 | -0.15 | 0.00 |
| 12. Depression | 0.24 | 0.37 | 0.08 | 0.56 | 0.09 |

Table 2 (continued)

| Item* | Academic stress | Adjustment to college life | Questioning values | Emotional distress image | Body |
|---|-----------------|----------------------------|--------------------|--------------------------|------|
| 13. Developing independence from family | 0.23 | 0.33 | 0.28 | 0.05 | 0.08 |
| 14. Ethnic/racial Discrimination | 0.12 | 0.12 | 0.25 | -0.04 | 0.05 |
| 15. Binging/Vomiting | 0.06 | 0.06 | 0.09 | 0.02 | 0.73 |
| 15. Starvation/fasting | 0.05 | 0.08 | 0.10 | 0.14 | 0.65 |
| 16. Finances | 0.35 | 0.08 | 0.23 | 0.13 | 0.10 |
| 17. Homesickness | 0.16 | 0.31 | 0.04 | 0.10 | 0.08 |
| 18. Irritability/ anger | 0.20 | 0.27 | 0.21 | 0.40 | 0.07 |
| 19. Making friends | 0.07 | 0.68 | 0.14 | 0.11 | 0.02 |
| 20. Perfectionism | 0.26 | 0.37 | 0.12 | 0.15 | 0.22 |
| 21. Physical health Problems | 0.23 | 0.09 | 0.04 | 0.30 | 0.19 |
| 22. Problem Pregnancy | 0.04 | -0.04 | 0.16 | 0.01 | 0.01 |
| 23. Procrastination | 0.60 | 0.12 | 0.11 | 0.18 | 0.02 |
| 24. Rape | 0.03 | 0.03 | 0.29 | 0.06 | 0.10 |
| 25. Study skills Problems | 0.60 | 0.11 | 0.08 | 0.11 | 0.03 |
| 26. Relationship with family | 0.14 | 0.23 | 0.27 | 0.15 | 0.07 |

Table 2 (continued)

| Item* | Academic stress | Adjustment to college life | Questioning values | Emotional distress image | Body |
|--|-----------------|----------------------------|--------------------|--------------------------|-------|
| 27. Relationship with peer | 0.05 | 0.46 | 0.25 | 0.18 | 0.05 |
| 28. Relationship - with romantic partner | 0.08 | -0.00 | 0.36 | 0.38 | -0.06 |
| 29. Religious Spiritual concerns | 0.17 | 0.15 | 0.49 | 0.13 | -0.00 |
| 30. Self-esteem | 0.24 | 0.53 | 0.16 | 0.30 | 0.17 |
| 31. Sexual concerns | 0.03 | 0.17 | 0.54 | 0.11 | 0.03 |
| 32. Sexual orientation | -0.03 | 0.15 | 0.38 | 0.01 | 0.00 |
| 33. Sexually transmitted disease | 0.07 | 0.03 | 0.37 | 0.01 | 0.08 |
| 34. Shyness | 0.12 | 0.65 | 0.11 | 0.03 | 0.04 |
| 35. Sleeping problems | 0.26 | 0.13 | 0.05 | 0.40 | 0.14 |
| 36. Stress management | 0.47 | 0.24 | 0.03 | 0.44 | 0.12 |
| 37. Suicidal feelings | 0.12 | 0.27 | 0.19 | 0.40 | 0.11 |
| 38. Test/speech performance anxiety | 0.51 | 0.29 | 0.02 | 0.08 | 0.12 |
| 39. Time Management | 0.66 | 0.14 | 0.11 | 0.11 | 0.07 |
| 40. Uncertain about future | 0.52 | 0.23 | 0.30 | -0.06 | 0.02 |
| 41. Weight body image | 0.21 | 0.24 | 0.18 | 0.08 | 0.54 |

Note: *Some items were shortened to fit the available space.

Of the original 10,663 files, 5763 were not included in the factor analysis because forms contained confusing information in regard to questions about eating disorders that are divided into two parts (15a and 15b), or their was no response to other items. The sample size thus becomes 4900. However, items 15a and 15b, which can be indicators of eating disorders common in a college-age population, were determined to be of sufficient importance to this study that the smaller sample size was used so that these items would not be deleted.

Concurrent Validity Analysis

Internal consistency of the interpreted factors was determined using Cronbach's coefficient alpha. As can be seen from Table 3, coefficients ranged from .67 to .84. The only scale alpha that would be increased by deleting an item was Factor 5, which would change from .71 to .75 if one item were deleted.

Table 3
Factor Reliability and Alpha if Item Deleted

| Scale | Item-Total correlation | Alpha if item deleted | Alpha |
|-------------------------------|------------------------|-----------------------|-------|
| <u>Factor 1</u> | | | 0.84 |
| Academics/school work/grades | 0.55 | 0.82 | |
| Concentration | 0.54 | 0.82 | |
| Decisions about career/major | 0.46 | 0.83 | |
| Finances | 0.40 | 0.83 | |
| Procrastination/motivation | 0.57 | 0.82 | |
| Reading/study skills problems | 0.55 | 0.82 | |
| Stress management | 0.53 | 0.82 | |

Table 3 (continued)

| Scale | Item-Total correlation | Alpha if item deleted | Alpha |
|---|------------------------|-----------------------|-------|
| Test anxiety/speech anxiety/performance anxiety | 0.52 | 0.82 | |
| Time management | 0.64 | 0.81 | |
| Uncertain about future/life after college | 0.54 | 0.82 | |
| <u>Factor 2</u> | | | 0.79 |
| Adjustment to the university/college | 0.43 | 0.78 | |
| Assertiveness | 0.50 | 0.77 | |
| Developing Independence from your family | 0.43 | 0.78 | |
| Homesickness | 0.35 | 0.79 | |
| Making friends | 0.61 | 0.75 | |
| Perfectionism | 0.44 | 0.78 | |
| Relationship with friends/roommates/peers | 0.47 | 0.77 | |
| Self-esteem/self-confidence | 0.57 | 0.76 | |
| Shyness, being ill at ease with people | 0.54 | 0.76 | |

Table 3 (continued)

| Scale | Item-Total correlation | Alpha if item deleted | Alpha |
|---|------------------------|-----------------------|-------|
| <u>Factor 3</u> | | | 0.67 |
| Confusion about beliefs/values | 0.48 | 0.60 | |
| Dating concerns | 0.38 | 0.65 | |
| Religious/spiritual concerns | 0.44 | 0.62 | |
| Sexual concerns | 0.50 | 0.59 | |
| Sexual identity/orientation issues | 0.36 | 0.65 | |
| Sexually transmitted disease(s) | 0.28 | 0.67 | |
| <u>Factor 4</u> | | | 0.74 |
| Anxiety, fear worries, nervousness | 0.50 | 0.71 | |
| Breakup/loss of a relationship | 0.35 | 0.74 | |
| Depression | 0.60 | 0.68 | |
| Irritability, anger, hostility | 0.49 | 0.70 | |
| Physical health problems | 0.35 | 0.73 | |
| Relationship with romantic partner/spouse | 0.37 | 0.73 | |

Table 3 (continued)

| Scale | Item-Total correlation | Alpha if item deleted | Alpha |
|--|------------------------|-----------------------|-------|
| Sleeping problems | 0.43 | 0.72 | |
| Suicidal feelings/ thoughts | 0.45 | 0.72 | |
| <u>Factor 5</u> | | | 0.71 |
| Binging and vomiting/dieting/ using laxative, etc. | 0.64 | 0.51 | |
| Fasting/avoiding food | 0.54 | 0.63 | |
| Weight problems/ body image | 0.49 | 0.75 | |

Total Scale 0.90 Scores on the items comprising each factor were correlated with scores on first and last OQ45 using the second help-seeking sample collected in 1997-98. In all cases, the scores were more highly correlated with the score on the first OQ45 collected at intake (.31 – .75) than with the last OQ45 collected at the last session of therapy (.25 – .47). The correlation coefficients were transformed into z-scores to determine if the difference between them was significant (Cohen & Cohen, 1983). In all cases, the difference in the correlation coefficient between the Presenting Problems Checklist and the first and last session OQ45 scores were statistically significant. Correlations are listed in Table 4.

Table 4

**Differences between the correlations of the five factors
and the first and last OQ45 scores**

| | <u>Factors</u> | | | | |
|--------------|----------------|--------|--------|---------|-------|
| | 1 | 2 | 3 | 4 | 5 |
| OQ45 First | .60 | .57 | .37 | .75 | .31 |
| OQ45 Last | .43 | .40 | .27 | .47 | .25 |
| r Difference | .17 | .17 | .10 | .28 | .06 |
| z-Score | 8.41** | 8.41** | 4.95** | 13.86** | 2.97* |

* $p < .002$ ** $p < .000$

DISCUSSION

Like previous research, this scale suggests some possibilities for revision, particularly the potential exclusion of certain items (Miller & Rice, 1993; Zalaquett & McManus, 1996). These analyses yielded a factor structure for use in future research and clinical practice. The factor structure that emerged has five factors that were labeled as follows: (1) Academic Stress, (2) Adjustment to College Life, (3) Questioning Values, (4) Emotional Distress, and (5) Body Image.

Academic stress accounted for almost 4% of the variance. Adjustment to College Life accounted for 3.11%. Factor 3 and 4, Questioning Values and Emotional Distress, each accounted for just over 2% of the variance. Factor 5, Body Image, accounted for 1.5% of the variance. Together they account for 13.4% of the variance.

The relatively small amount of variance accounted for by the five factors should not be surprising or troublesome, given the conceptual nature of presenting problem checklists. Such measures are intended to be a comprehensive, and hopefully non-redundant, listing of possible counseling concerns which should be relatively independent of one another. At a clinical level, the counselor at intake wishes to obtain the widest yet

most specific array of potential presenting problems in order to accurately assess the client's situation and determine treatment focus. Thus, it should not be surprising that the checklist studied in this report, or any other, would have such low levels of accounted variance. Indeed, this might be expected. Nonetheless, there is some degree of factor structure that can help clinicians and researchers to synthesize the responses from a long list of items.

In addition, six items did not load on any of the five factors. Commonly, when items do not load on a factor, they are usually discarded in an effort to refine and reduce the scale. Several of these items, however, provide crucial information that a counselor would want to know during an intake, and should be considered for inclusion in the scale. The items that did not load on a factor, but provide crucial information are: Alcohol/Drugs, Death of Significant Other, Ethnic/Racial Discrimination, Problem Pregnancy, and Rape. The one item that did not load and would provide possibly redundant information is Relationship with Family, and could be deleted from the scale.

There is also adequate discrimination between factors. Although Factors 1 and 2, Academic Distress and Adjustment to College Life, intercorrelate moderately (0.51), the rest of the factors show good discrimination. Based on this information, it was decided to do an orthogonal rotation. In this situation the factors are rotated but are not allowed to correlate in the final solution, to allow the researchers to better determine the distinguishing characteristics of each factor.

The Cronbach alphas for these factors demonstrate that they show excellent internal consistency for a scale of this type. The total scale shows an alpha of .90, while each individual factor also shows high levels of reliability, .84, .79, .67, .74, and .71 for each of the respective factors. This demonstrates that for research purposes, these factors are internally consistent enough to yield useful data.

The correlation with the OQ45 demonstrates that the factors of the Presenting Problems Checklist are more strongly correlated with symptomatology at intake than at the last session. Because the OQ45 score changes over time (session to session, usually improving) the correlations between the OQ score and the Presenting Problem Checklist factor scores should (and do) decrease. This offers some evidence for the concurrent validity of this particular scale, and also demonstrates its utility in covering a wide variety of issues while still correlating with general distress level as measured by the OQ. The correlation between Factor 4 (Emotional Distress) and the OQ decreases the most

through the course of therapy, indicating that they may be measuring similar symptomatology that remits through treatment.

Unlike previous studies, which utilized a principal components analysis (PCA) when examining various problem checklists (Zalaquett & McManus, 1996; Miller & Rice, 1993), this study used an exploratory factor analysis (EFA) that is more appropriate for this type of scale (Reise, Waller, & Comrey, 2000). One goal for EFA is to determine if the measure contains the dimensions the researchers expected (West & Finch, 1997). One possibility for scale revision is that the checklist does not have a clear-cut factor that captures college-age clients concerns about career and major plans, a factor thought to be crucial with this population (Zalaquett & McManus, 1996).

These analyses do indicate, however, that this particular scale is not only useful for counselors as a guide for an intake interview, but also may be useful to researchers. One suggestion is that the Presenting Problem Checklist may be used not only at intake but at the end of the treatment to determine improvement on areas identified as distressing. Another possibility is that client outcome may be tracked by examining scores on the clusters of items representing each factor.

In summary, this particular study used a large and geographically diverse sample to determine the factor structure of a 42-item Presenting Problem Scale. Five factors were discovered that covered a breadth of concerns typical in college counseling centers. Most of the items that did not load on a factor (such as distress over rape) were considered too important for counselors to know at intake to be deleted from the scale. Although this scale does not provide clear diagnostic information, it does provide an adequate starting point for counselors to begin their own diagnostic assessments. Although this study was quite large in terms of numbers of subjects, further research using this particular scale could prove valuable for the purposes of validation and scale refinement.

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