



Psychometric Evaluation of the Beck Depression Inventory-Second Edition Across Ethnicities

Preston L. Visser¹, B.S., Jameson K. Hirsch¹, Ph.D., & Elizabeth L. Jeglic², Ph.D.

East Tennessee State University, Department of Psychology¹

John Jay College of Criminal Justice, City University of New York, Department of Psychology²



ABSTRACT

- We examined the psychometric properties of the Beck Depression Inventory – 2nd Edition in a diverse college sample.
- Internal consistency and convergent and divergent validity were adequate to excellent across ethnicities.
- Exploratory factor analyses suggested a two factor solution, with differences in item loadings across ethnicities.

INTRODUCTION

- Depression is a prevalent psychological disorder with negative cognitive, emotional, and physical effects; however, many people with major depressive disorder are never diagnosed (Bland, 1997).
- The role of ethnicity in depression is complex, affecting both etiology and presentation of depressive symptomatology (Kirmayer, 2001).
- The Beck Depression Inventory- Second Edition (BDI-II) is a brief self-report assessment of the presence and severity of depressive symptoms, consistent with DSM-IV criteria (Beck, 1996); however, it is unclear if ethnicity affects the validity and/or factorial structure of the instrument.
- The most common factor analytic findings indicate a two-factor solution (cognitive and somatic), or a three factor solution (negative attitude, performance difficulty, and somatic elements) (Carmody, 2005).
- We examined internal consistency, convergent and divergent validity, and factor structure among Black, Hispanic, and White college students from an urban Northeastern university.

Please address all correspondence to:
Jameson K. Hirsch, Ph.D., Department
of Psychology, East Tennessee State
University, Johnson City, TN 37614;
Phone (423) 439-4463; Email:
hirsch@etsu.edu

METHODS

Participants:

- Undergraduates (N = 339); 69% Female
- 27% Black, 47% Hispanic, 20% White; 6% Asian
- Mean Age 19.66 (SD=3.27)

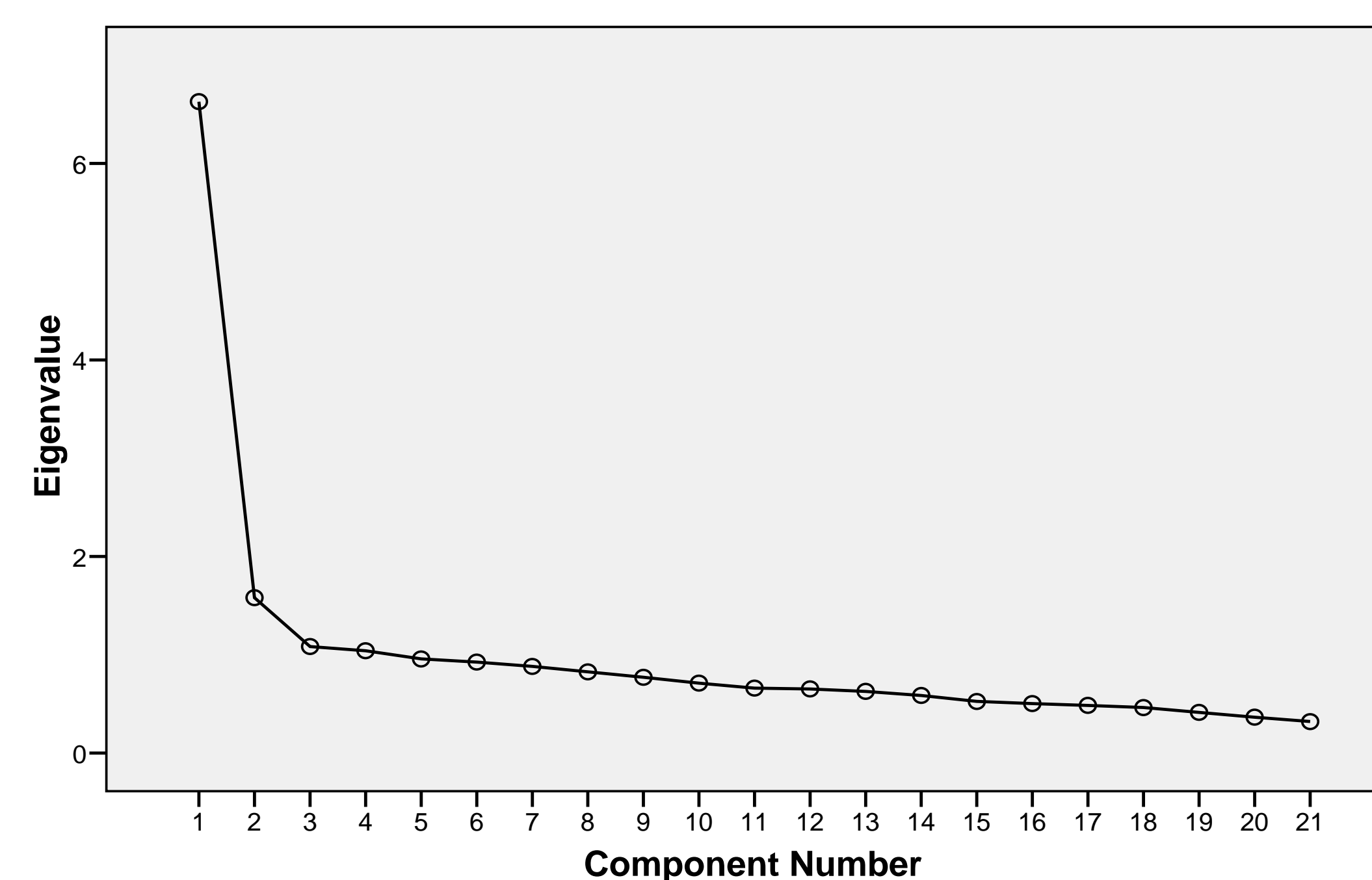
Measures:

- Beck Anxiety Inventory (BAI)
- Beck Depression Inventory–2nd Ed. (BDI-II)
- Beck Hopelessness Scale (BHS)
- Goals Scale (Trait Hope)
- Life Orientation Test-Revised (LOT-R)

Analyses:

- Bivariate Correlations, Scale Reliability Analyses, Exploratory Factor Analyses — Maximum Likelihood

Scree Plot for the Entire Sample



Factor Loadings

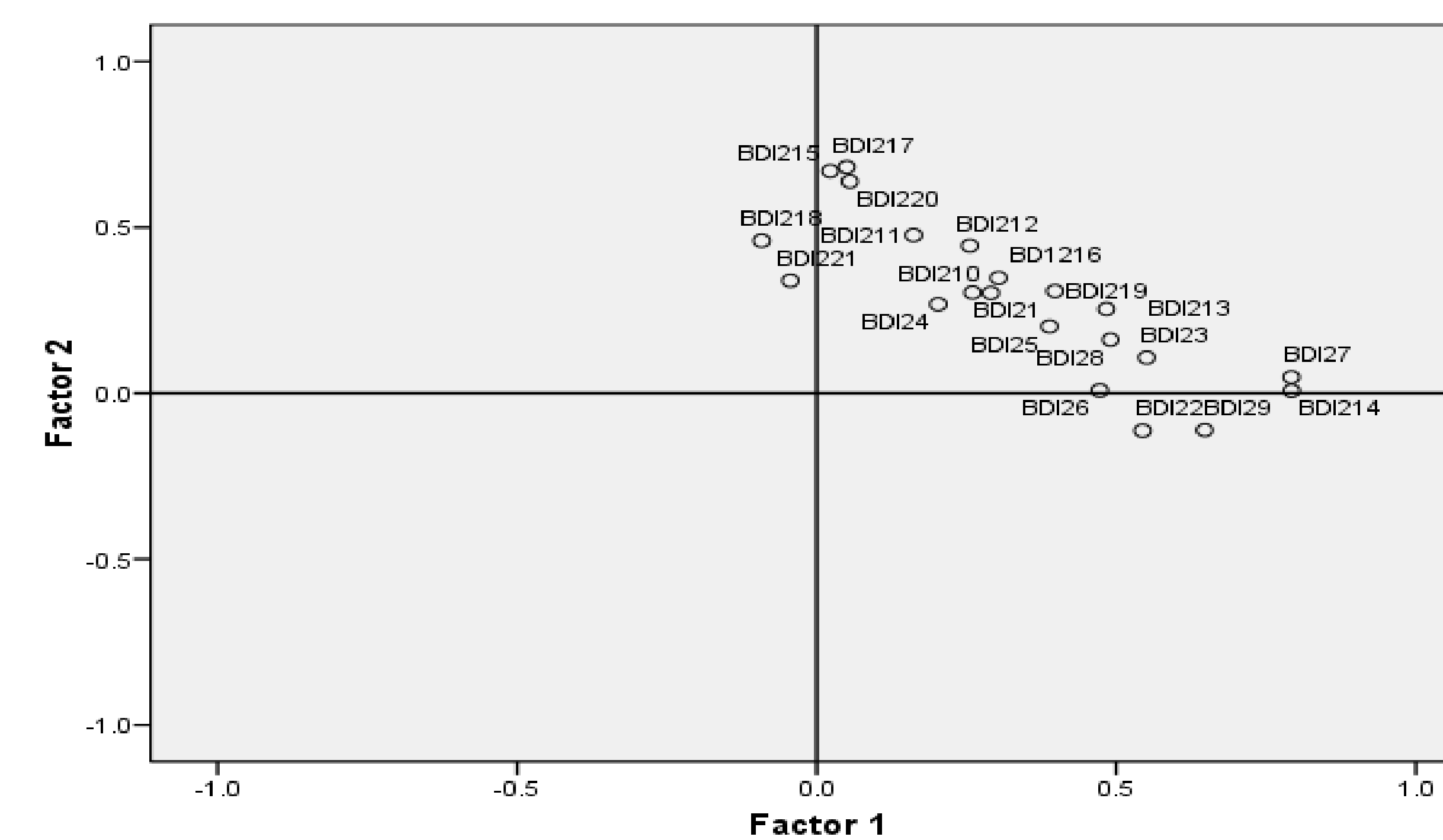
	Entire Sample		Blacks		Hispanics		Whites	
	1	2	1	2	1	2	1	2
Sadness	.47	.12		.62	.26	.30	.49	-.34
Pessimism	.57			.64	.54	-.11	.65	
Past Failure	.58		.14	.54	.55	.11	.59	.11
Loss of Pleasure	.37	.15	.51	.19	.20	.27	.42	-.13
Guilty Feelings	.40	.12		.49	.39	.20	.32	-.30
Punishment Feelings	.57	-.10	-.21	.69	.47		.49	
Self Dislike	.77		.36	.49	.79		.83	
Self Criticalness	.54			.59	.49	.16	.47	
Suicidal Thoughts	.55			.48	.65	-.11	.47	-.29
Crying	.31	.23	.28	.21	.29	.30	.42	
Agitation	.17	.40	.63		.16	.48	.14	-.31
Loss of Interest	.32	.29	.46	.12	.26	.44	.32	
Indecisiveness	.46	.18	.36	.32	.48	.25	.60	
Worthlessness	.78		.21	.50	.79		.78	
Loss of Energy		.74	.69	-.11		.67		-.55
Change in Sleep		.52	.49		.30	.35		-.60
Irritability	.23	.45	.65	.19		.68	.15	-.32
Change in Appetite		.48	.54	.15		.46		-.46
Concentration Difficulty	.34	.29	.13	.44	.40	.31	.14	-.39
Tiredness or Fatigue		.78	.54	.16		.64	-.17	-.95
Loss of Interest in Sex		.30	.65	-.16		.34	.15	

Note. Values less than .10 were suppressed

Results

- Mean BDI-II Total Score (all participants) = 12.76 (*SD*= 8.53).
- For the entire sample, internal consistency was good ($\alpha=.88$) as well as for each ethnic group individually ($\alpha=.86-.93$).
- Convergent validity was supported by strong positive correlations between the BDI-II and the BHS ($r=.62$, entire sample; r range=.45-.70) and between the BDI-II and BAI ($r=.60$, entire sample; r range=.58-.76).
- Divergent validity was supported by strong negative correlations between the BDI-II and Hope scale ($r=-.50$ for entire sample; r range= -.31 to -.60) and between the BDI-II and LOT-R ($r=-.58$ for entire sample; r range= -.45 to -.69).

Factor Plot in Rotated Factor Space for Hispanic Participants



Factor Analysis

- Data Screening Techniques:
 - Bartlett's Test of Sphericity - all groups were significant, ($p=.00$).
 - Kaiser-Meyer-Olkin - Good to superb, indicating increased common variance.

Results

- Entire Sample:
 - 4 eigenvalues > 1, 37.8.% of the variance
 - Scree Test - 2 factors (cognitive-affective & somatic), 33.1% variance
 - Alpha=.86 (14 items) & .76 (7 items)
- Blacks:
 - 6 eigenvalues > 1, 42.1, 52.4% variance
 - Scree Test - 2 factors, 36.1% variance
 - Alpha=.84 (11 items), .83 (10 items)
- Hispanics
 - 5 eigenvalues > 1, 45.8% variance
 - Scree Test - 2 factors, 35.4% variance
 - Alpha=.841 (10 items), .82 (11 items)
- Whites
 - 7 eigenvalues > 1, 55.9% variance
 - Scree Test - 2 factors, 32.1% variance
 - Alpha=.843 (14 items), .74 (7 items)

DISCUSSION

- We found the BDI-II to be internally consistent in the entire sample, and stratified analyses revealed similar results for each of the ethnic groups.
- Moderate to strong convergent (anxiety, hopelessness) and divergent (hope, optimism) validity was found. Strength of associations differed by ethnicity, indicating potential ethnic variation in etiology and/or manifestation of depressive symptoms.
- Exploratory factor analysis for the entire sample indicated a 2 factor solution (cognitive-affective and somatic) similar to that found by other research (Beck et al., 1996; Chang, 2005).
- In ethnically stratified factor analyses, component loadings also suggest a 2-factor solution for Whites, Blacks and Hispanics, with some interethnic differences in item loading.
- Limitations include small sample size for stratified analyses; however, the KMO statistic indicated acceptability of our data. Our diverse ethnic sample is a strength, but use of college students may limit generalizability – community and clinical research is needed.
- Our findings suggest that the BDI-II is a valid measure of depressive symptoms across ethnic groups; however, factor analytic solutions imply that ethnic differences in the presentation of depressive symptoms may exist, which may have important implications for assessment and treatment of depression.