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Ethnic variations in the structure of borderline personality disorder symptomatology

Edward A. Selby, Thomas E. Joiner Jr. *

Florida State University, Tallahassee, FL 32306-1270, USA

Abstract

The goal of this study was to examine differences in the factor structure of borderline personality disorder symptoms among different ethnic groups. The authors obtained information regarding ethnic identity and endorsement of borderline personality disorder criteria for an ethnically diverse community sample of 1140 young adult subjects from south Florida. Using this information the authors conducted an exploratory factor analysis examining differences between Caucasian, Hispanic and African American groups. A principal-components factor analysis (PCA) with Varimax rotation for each ethnic group revealed a reasonably generalizable four-factor structure: affective dysregulation, cognitive disturbance, disturbed relatedness and behavioral dysregulation. The emergence of a four-factor structure across three separate, relatively large samples suggests that the factors obtained have merit. However, the loadings of some BPD symptoms, such as impulsivity, varied for each ethnic group. The results of this study indicate that ethnic variations in borderline personality disorder should be considered during assessment and treatment of this disorder. Also, future research should examine if this same factor structure holds for ethnic minorities with BPD diagnoses, examine ethnic differences in the etiology and maintenance of BPD symptomatology, and explore the effects that these differences might have in treatment settings.
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1. Introduction

Due to the polythetic nature of borderline personality disorder (BPD), the symptom presentations of patients can appear quite different. In addition to the various combinations of BPD symptoms, high rates of comorbidity with axis I disorders provide even more variation of BPD presentation (Oldham et al., 1995). Understanding the causes of variation in BPD symptom presentation is important not only for research purposes, but also for the diagnosis and treatment of this disorder in clinical settings. Although recent factor analytic studies have examined the factor structure of BPD criteria in both inpatient (Sanislow et al., 2000) and adolescent (Becker et al., 2006) samples, little to no research has been conducted on ethnic differences in the presentation of the disorder. An examination of the structure of BPD in varying ethnic groups would determine if there is a universal structure regardless of ethnicity, or if there are ethnic variations in diagnostic structure.

Although there have been few studies on ethnicity and BPD, some studies have examined the disorder in different ethnic groups. For example, Grilo et al. (2004) found that DSM-IV criteria for BPD were diagnostically efficient with a group of Hispanic subjects, and they also found that suicidal behavior was the best inclusion criterion and affective instability the best exclusionary criterion for a diagnosis. In another study Becker et al. (2005) examined the discriminant efficiency of BPD and antisocial personality disorder (ASPD) diagnostic criteria in a sample of substance abusing Hispanic men. They found that BPD criteria do not differentiate between BPD and ASPD, but ASPD criteria can

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* Corresponding author. Tel.: +1 850 6441454; fax: +1 850 644 7739.
E-mail address: joiner@psy.fsu.edu (T.E. Joiner Jr.).

differentiate the two disorders. Although these studies contribute important information to the BPD diagnosis as it relates to Hispanics, they do not address ethnic differences in the structure of BPD.

Previous factor analytic studies have made some progress understanding the structure of the BPD diagnosis. Furthermore, these studies have resulted in a variety of solutions. Fossatti et al. (1999), for example, conducted a confirmatory factor analysis on DSM-IV criteria in 564 inpatients and outpatients and concluded that borderline personality disorder is a unitary construct. Alternatively, Rosenberger and Miller (1983) conducted a factor analysis of DSM-III criteria for BPD in a sample of 106 college students and found a two factor solution: one for interpersonal and identity criteria, and one for the dysregulation of behavior and affective criteria. In another study Clarkin et al. (1993) conducted a factor analytic study on 75 inpatient women diagnosed with BPD according to DSM-III-R criteria and found a three factor solution with the first factor consisting of problematic interpersonal relationships and identity, the second factor consisting of affective qualities and suicidality, and the final factor consisting of impulsivity. Finally, Becker and colleagues (2006) conducted a factor analysis on 123 inpatient adolescents with DSM-III-R criteria. They arrived at a four-factor solution with the first factor consisting of suicidal behavior and emptiness/boredom, the second factor consisting of affective dysregulation and identity disturbance, the third factor consisting of unstable relationships and abandonment fears, and the fourth factor consisting of impulsiveness and identity disturbance. Each of these previous factor analytic studies has not only resulted in a different number of factors, but a symptom may load onto one factor in one study and a different factor in another study. These findings suggest that the underlying structure of the disorder remains at issue.

One structure that has shown particular merit comes from a study of DSM-III-R BPD criteria in 141 acutely ill inpatients; in this study Sanislow et al. (2000) suggested three factors: disturbed relatedness ("unstable relationships," "identity disturbance," and "emptiness and boredom"), behavioral dysregulation ("impulsiveness and "suicidal threats or gestures"), and affective dysregulation ("affective instability," "inappropriate anger," and "abandonment fears"). These factors were replicated in a second study with confirmatory factor analysis on 668 treatment-seeking subjects using DSM-IV-TR criteria (Sanislow et al., 2002). Yet, although this factor structure has been replicated, it may still be uniquely affected by treatment-seeking effects and comorbidity status.

There are a variety of issues that could result in different factor structure of BPD symptomatology, including inpatient versus outpatient samples, college samples, the developmental status of the sample (adolescent versus adult), gender, small sample size, and comorbidity status. Each of the previous factor analytic studies appears to have been influenced by one or more of these issues, with inpatient status, treatment-seeking, and comorbidity being among the most frequent. Furthermore, although many of the previous factor analytic studies had a certain percentage of minorities in their sample, none of these studies examined the effects of ethnicity on BPD symptom structure.

The examination of ethnic differences in BPD structure may provide important information as to why factor analytic studies have not revealed a common structure, as well as provide important information about ethnic differences in the disorder. Because of the important psychological and socio-cultural differences that are associated with different ethnic groups, some symptoms may be more tolerated in one ethnic group, whereas other symptoms may be viewed as more aberrant. For example, it has been suggested that cultural values may moderate the way that individuals regulate their emotions (Butler et al., 2007) and furthermore, cultures may encourage or discourage different emotional responses according to differing circumstances (Kitayama et al., 2000; Mequita, 2001). Additionally, given the prevalence of emotional symptoms in BPD and the important differences in ethnic/cultural experience and expression of emotion, the factor structure of BPD symptoms may be greatly influenced by ethnicity.

In the current study we examined borderline personality disorder symptomatology structure in a relatively large, ethnically diverse representative community sample to determine if self-reported ethnic identity contributed any heterogeneity to the underlying factor structure of the disorder symptomatology. Furthermore, the sample used in the current study was not affected by some of the issues present in previous studies such as small sample size, inpatient status, gender invariance, and college student sample. Also, because it is a community sample, comorbidity and treatment-seeking effects may not have been as prevalent.

2. Method

2.1. Participants

A representative community sample of 1140 (625 male, 515 female) subjects between the ages of 18 and 23 were interviewed in 2002 as part of a multi-wave, longitudinal study conducted in south Florida. This study built on a previous investigation based in the Miami-Dade public school system (Vega and Gil, 1998; Turner and Gil, 2002) and is one of the more diverse samples of young adults collected in recent years. This sample was purposely recruited to have much higher proportions of ethnic minorities with a final sample containing 28% ($N = 322$) non-Hispanic white (Caucasian) subjects, 46% ($N = 525$) Hispanic subjects and 26% ($N = 293$) African American subjects.

2.2. Procedure

All subjects completed face-to-face (70%) or phone interviews (30%), as a part of which they identified which ethnic category they consider themselves a member of,

and answered nine questions taken from the International Personality Disorder Examination (IPDE) screening questionnaire (Loranger et al., 1994) designed to measure borderline personality disorder symptoms. Subjects were asked to answer each of these questions with regard to how they feel about themselves on a 3-point Likert scale (1: very true, 2: somewhat true, and 3: not at all true). To ensure that the items used were valid measures of borderline personality disorder criteria we constructed a correlation table and calculated Cronbach's alpha coefficient for all of the items. Informed consent was obtained from all study participants after complete description of the study to the subjects. The institutional review board of Florida State University, Tallahassee, approved the procedures for consent and protecting the rights and welfare of the participants.

2.3. Data analytic strategy

Correlational analyses examined the relationship of the items to each other. The internal consistency of the item set was evaluated by Cronbach α coefficient (Cronbach, 1951). An exploratory factor analysis was conducted on the BPD criteria using principal-component analyses (PCA) with Varimax (orthogonal) rotation to enhance the interpretability of the factor solution. Standard criteria for the retention of factors were used as follows: (a) Kaiser's (1961) criterion to retain factors with eigenvalues of the unrotated solution greater than one, (b) a scree test (Cattell, 1966) and, (c) the examination of solutions with different extraction criteria to determine the point at which trivial or redundant factors emerge (Gorsuch, 1983).

To examine the similarity between the factors for each ethnic group, the factors were compared using the coefficient of congruence (r_c; originated by Burt, 1941; developed by Tucker, 1951 and Wrigley and Newhaus, 1955; described by Cattell, 1978, p. 252) and Cattell's (1949) salient variable similarity index (s, see Cattell and Baggaley, 1960; Cattell et al., 1969; Cohen, 1969), using 0.10 as the criterion for salient variables (as recommended by Cattell, 1978, p. 257]). Additionally, an oblique (Oblimin) rotation was conducted to determine how the factors correlated with each other within each ethnic group and to determine if allowing the factors to be correlated resulted in any structural changes. The magnitude of the within ethnic group factor correlations were compared to the corresponding correlations in the other ethnic groups using the Fisher r-to-z transformation.

3. Results

3.1. Descriptive information

The correlations between the items used in the factor analysis are listed in Table 1. Item one (I show my feelings for everyone to see) was removed from the factor analyses because it had very small ($r < 0.1$) correlations with the other items, few of which were significant. It also lacked face validity regarding DSM-IV-TR criteria. Similarly, item 4 (I have

Table 1
Inter-correlations among borderline personality disorder symptoms in a community sample

Correlations (r)								
Borderline personality disorder symptom	Giving into some of my urges gets me in trouble	I get into intense relationships that do not last	I often feel empty inside	I have never threatened suicide or Injured myself on purpose	I have tantrums or angry outbursts	I'm very moody	When I'm under stress things do not seem real	I go to extremes to keep people from leaving me
Impulsivity	–							
Chaotic relationships	0.275**	–						
Feelings of emptiness	0.219**	0.288**	–					
Suicidal and self-injurious behavior	–0.039	–0.039	–0.061	–				
Anger control difficulties	0.268**	0.222**	0.314**	–0.03	–			
Moodiness	0.202**	0.248**	0.330**	–0.048	0.456**	–		
Dissociation under stress	0.265**	0.235**	0.351**	–0.037	0.285**	0.289**	–	
Avoidance of abandonment	0.245**	0.281**	0.324**	–0.044	0.259**	0.222**	0.380**	–

Note: $N = 1140$.
** Correlation is significant at the 0.01 level (2-tailed).

never threatened suicide or injured myself on purpose) had only one significant correlation (with feelings of emptiness), which was small ($r < 0.1$). This item was left in the factor analyses, however, due to its face validity and conceptual importance to the BPD construct. After removing item one from the analysis, Cronbach's alpha was 0.66, which indicates some overall internal consistency, but furthermore suggests that full unidimensionality may not be present.

3.2. Symptom structure analyses

Factor analysis revealed a four-factor structure for each ethnic group, the results of which are presented in Table 2. Results using different methods (e.g., principal axis factor-ing) and rotation procedures (e.g., oblique) also yielded similar results. This factor structure accounted for approximately 70% of the variance for each group.

The affective dysregulation factor reflects difficulties in experiencing and regulating emotional reactions, and it consisted of the symptoms regarding moodiness and difficulties controlling anger for each group. This factor has emerged in previous factor analytic studies of BPD (Becker et al., 2006; Sanislow et al., 2000; Sanislow et al., 2002). Affective instability has been indicated as an important component of BPD (Koenigsberg et al., 2002), and difficulties in regulating intense affective experience has even been suggested as the primary cause of behavioral problems in the disorder (Linehan, 1993).

Table 2
Varimax solution with four-factors for the structure of borderline personality disorder symptomatology in a community sample of Caucasians, Hispanics and African Americans

Factor loadings

Caucasian

Borderline personality disorder symptom	Factor 1: affective dysregulation	Factor 2: cognitive disturbance	Factor 3: disturbed relatedness	Factor 4: behavioral dysregulation
Impulsiveness	0.461	**0.673**	−0.157	−0.069
Chaotic relationships	0.098	0.163	**0.814**	0.005
Feelings of emptiness	**0.497**	0.206	0.374	0.192
Anger control difficulties	**0.833**	0.15	−0.006	0.094
Moodiness	**0.643**	−0.081	0.48	−0.021
Dissociation under stress	0.191	**0.492**	0.293	0.425
Suicide and self-injury	0.062	−0.04	−0.025	**0.937**
Avoidance of abandonment	−0.048	**0.787**	0.242	−0.007
Total % variance accounted for	68.824			
Eigenvalue	2.536	1.031	0.948	0.83
% Of variance accounted for	31.7	12.89	11.86	10.38

Hispanic

Borderline personality disorder symptom	Factor 1: cognitive disturbance	Factor 2: affective dysregulation	Factor 3: disturbed relatedness	Factor 4: behavioral dysregulation
Impulsiveness	0.103	0.16	**0.807**	0.02
Chaotic relationships	0.22	0.102	**0.739**	0.027
Feelings of emptiness	**0.756**	0.237	−0.004	0.006
Anger control difficulties	0.171	**0.83**	0.152	−0.037
Moodiness	0.185	**0.838**	0.133	0.069
Dissociation under stress	**0.622**	0.214	0.263	−0.046
Suicide and self-injury	0.031	0.024	0.037	**0.995**
Avoidance of abandonment	**0.755**	0.021	0.212	0.08
Total % variance accounted for	69.24			
Eigenvalue	2.73	1.01	0.864	0.851
% Of variance accounted for	34.12	11.72	10.8	12.16

African American

Borderline personality disorder symptom	Factor 1: cognitive disturbance	Factor 2: affective dysregulation	Factor 3: disturbed relatedness	Factor 4: behavioral dysregulation
Impulsiveness	−0.086	**0.749**	0.308	0.112
Chaotic relationships	0.185	0.127	**0.908**	−0.053
Feelings of emptiness	**0.569**	0.305	0.408	0.034
Anger control difficulties	0.423	**0.671**	−0.02	−0.092
Moodiness	0.379	**0.615**	0.022	−0.069
Dissociation under stress	**0.8**	0.214	−0.026	−0.075
Suicide and self-Injury	0.013	−0.01	−0.033	**0.988**
Avoidance of abandonment	**0.773**	0.056	0.327	0.1
Total % variance accounted for	71.11			
Eigenvalue	2.962	1.023	0.854	0.851
% Of variance accounted for	37.02	12.79	10.67	10.63

Note: $N = 1140$.
Shaded areas represent the criteria that correspond to each factor.

The cognitive disturbance factor reflects troubles resulting from maladaptive cognitive experiences such as distorted cognitions and beliefs about the world, as well as dissociative phenomena. Efforts to avoid abandonment and dissociation under stress loaded onto this factor for all groups. Due to the role of cognitive distortions and processes that may contribute to fears of abandonment and dissociative experiences, cognitive disturbance is an appropriate name for this factor. The identification of a factor specific to cognitive difficulties in BPD symptomatology is a novel result among factor analytic studies (e.g., this factor did not emerge in the Sanislow et al. studies), though not a surprising one. BPD individuals have been found to have a number of cognitive difficulties including emotional memory problems (Korfine and Hooley, 2000; Judd and Ruff, 1993), which may contribute to dissociative experiences, and maladaptive world assumptions and beliefs (Arntz et al., 1999), which may contribute to fears of abandonment. A separate cognitive factor may not have emerged in the previous Sanislow et al. (2000, 2002) studies primarily, because of treatment-seeking effects. In a group that is highly clinically impaired, it is possible some symptoms become so highly correlated with other symptoms that they merge with other factors.

Two additional factors emerged for each group: disturbed relatedness and behavioral dysregulation. The disturbed relatedness factor reflects the troubles and chaos that most individuals with BPD symptomatology encounter in interpersonal relationships, and the item for interpersonal difficulties loaded onto this factor for each group. It is not surprising that disturbed relatedness emerged as a separate factor for each group, as this factor has been derived in other factor analytic studies of BPD (Sanislow et al., 2000; Sanislow et al., 2002). The findings of this factor analysis suggest that chaotic interpersonal relationships may be a unique problem in individuals with BPD, not a just result of other problems in BPD such as emotional, cognitive, or identity problems. The final factor, behavioral dysregulation, is perhaps the hallmark symptom of BPD, and in this study it consisted of the question on suicidal and self-injurious behavior.

In addition to the across-group similarity in structure noted above, there were some important between-group differences as well. For example, affective dysregulation was the primary factor for Caucasians with affective dysregulation accounting for approximately 32% of the variance. In comparison the primary factor for the Hispanic and African American groups was cognitive disturbance, accounting for approximately 34% and 37% of the variance, respectively.

Although the factors were the same across ethnic groups, the loading of some specific items varied between-groups. For example, in Caucasians feelings of emptiness contributed to the affective dysregulation factor; on the other hand feelings of emptiness contributed to the cognitive disturbance factor for the Hispanic and African American groups. Interestingly, feelings of emptiness

loaded onto the primary factor for each group. Perhaps the clearest difference between all groups was that one symptom, impulsivity, loaded onto a different factor for each group.

3.3. Ethnic symptom structure comparisons

To provide more information regarding factor similarity across the ethnic groups, each of the factors was compared with the corresponding factors from the other ethnic groups using the coefficient of congruence (r_c) and the salient variable similarity index (s), using 0.10 as the criterion for salient variables. Our use of two comparison indices is consistent with Cattell's (1978, p. 265) recommendations. The results of these calculations are displayed in Table 3. Values for r_c ranged from 0.981 to 0.520, and values for s ranged from 1.00 to 0.333. The affective dysregulation factor showed the most congruence among all three groups, and the cognitive disturbance factor was highly similar for the Caucasian/Hispanic and Hispanic/African American comparisons. The least congruent factor was the disturbed relatedness factor, with the Caucasian/Hispanic and Caucasian/African American comparisons having the lowest s and r_c values. Perfect correlations between the factors were not expected because of the inherent ethnic differences in the factor structure, and this may also explain some of the lower congruence coefficients. Overall, these values reflect that an overall four-factor structure for BPD symptoms may be supported, but that the symptoms that make up these four-factors vary somewhat between ethnic groups.

In order to examine the correlations between factors within each group an oblique rotation (Oblimin) was conducted on the BPD symptoms. There was no change in structure of the symptoms, and the within-group correlations between each factor are displayed in Table 4. Overall,

Table 3
Factor correlations between ethnic groups

	s	r_c
Affective dysregulation		
Caucasian/Hispanic	0.909	0.936
Caucasian/African American	0.909	0.948
Hispanic/African American	0.923	0.945
Cognitive disturbance		
Caucasian/Hispanic	0.909	0.766
Caucasian/African American	0.833	0.681
Hispanic/African American	1.000	0.860
Disturbed relatedness		
Caucasian/Hispanic	0.500	0.520
Caucasian/African American	0.400	0.770
Hispanic/African American	0.600	0.769
Behavioral dysregulation		
Caucasian/Hispanic	0.500	0.850
Caucasian/African American	0.333	0.831
Hispanic/African American	0.500	0.981

Note: s = salient variable similarity index; r_c = coefficient of congruence.

Table 4
Within-group factor correlations

	Factor correlations			
	1	2	3	4
Caucasian				
Affective dysregulation	–	–	–	–
Cognitive disturbance	0.271	–	–	–
Disturbed relatedness	0.186	0.134	–	
Behavioral dysregulation	0.153[*]	0.117	0.117	–
Hispanic				
Affective dysregulation	–	–	–	–
Cognitive disturbance	0.375	–	–	–
Disturbed relatedness	0.292	0.36[^,+]	–	
Behavioral dysregulation	0.013	0.052	0.056	–
African American	–	–	–	
Affective dysregulation	–	–	–	–
Cognitive disturbance	0.359	–	–	–
Disturbed relatedness	0.208	0.161	–	–
Behavioral dysregulation	0.038	0.075	0.086	–

Note: Correlations obtained through Oblimin rotation.
[*] Significantly larger than corresponding Hispanic correlation.
[+] Significantly larger than corresponding Caucasian correlation.
[^] Significantly larger than corresponding African American correlation.

the affective disturbance factor showed clear associations with both the cognitive disturbance and disturbed relatedness factors across the three ethnic groups. Also, the correlations between behavioral dysregulation and the other factors tended to be smaller than the correlations between other factors, especially for the Hispanic group. The correlation coefficients between the factors for each group were compared to the corresponding factor correlations in the other groups using the Fisher r-to-z transformation; they were tested for significance using a two-tailed significance test. These analyses revealed no significant differences in factor inter-correlations between the African American and Caucasian groups (a fact that further attests to some invariance in factor structure between these two groups). By contrast, correlations in the Hispanic group differed from those in the other groups, in two ways. First, the correlation between cognitive disturbance and disturbed relatedness was significantly larger for the Hispanic group than the corresponding correlation for both Caucasians ($z = 3.41$, $p < .001$) and African Americans ($z = 2.94$, $p = .003$). Second, the correlation between affective dysregulation and behavioral dysregulation was lower in the Hispanic group than in the other groups (though not significantly so for the Hispanic–African American comparison; for the Hispanic–Caucasian comparison, $z = 1.99$, $p = .047$).

4. Discussion

Through exploratory factor analysis, a four-factor solution was generated for each ethnic group, with each group having an affective dysregulation, cognitive dysregulation, disturbed relatedness, and behavioral dysregulation factor. A major contribution of this study was that four similar factors for BPD symptomatology emerged in three separate, relatively large samples – providing a form of internal replication of these factors across ethnic groups. For the most part, these factors also demonstrated similar, moderate correlations with each other across-groups, tentatively suggesting that there may be similar underlying processes contributing to each of these factors within each ethnic group.

The finding that the primary four-factor structure emerged in all groups is interesting, given that the psychological and socio-cultural influences associated with each ethnicity could have resulted in widely different symptom structures. Yet it is difficult to determine if the differences in factor structure between ethnic groups is due to either psychological or socio-cultural influences, or even a combination of the two. For example, there are some ethnographic accounts suggesting that, in Mexican culture, affect is more openly accepted and valued than in Caucasian culture (Carrillo, 1982). Because emotional expression may be more tolerated in Hispanic culture and more aberrant in Caucasian culture, this socio-cultural difference may be part of the reason why affective dysregulation was not the primary factor for the Hispanic group. This same hypothesis may also apply to the African American group. On the other hand, the cognitive disturbance factor may have been the primary factor for the Hispanic and African American groups because of the isolating effects that dissociation, feelings of emptiness, and fears of abandonment have on individuals from ethnic groups that place a higher value on group cohesion. For instance, Herman et al. (2007) found that lower family cohesion was uniquely associated with depressive symptoms in African American adolescents, as opposed to higher levels of family conflict being more associated with depressive symptoms in Caucasian adolescents. Thus, symptoms that interfere with group cohesion may be more problematic than affective dysregulation in Hispanic and African American individuals with features of BPD.

An additional difference between the groups was that the correlation between the affective dysregulation and behavioral dysregulation for Caucasians was significantly higher than the same correlations for the Hispanic and African American groups. This suggests that the relationship between affective and suicidal behavior in Caucasians may be stronger than in Hispanics or African Americans because of cultural differences in the way emotion is expressed and tolerated by others. Perhaps for Caucasian individuals with BPD suicidal behavior may be one form of communicating distressing emotional experience to others (e.g., a cry for help), who occasionally may respond in a positive and perhaps reinforcing way. In Hispanic and African Americans, suicidal behavior may not be as acceptable of a way of expressing emotion, and others may react in a way that is more undesirable to the BPD individual (perhaps by stigmatizing the individual).

One unique finding of this study was that the behavioral dysregulation factor had low correlations with the other three factors. This suggests that affective, cognitive, and

interpersonal problems may not be the only factors that contribute to the etiology and maintenance of suicidal and self-injurious behavior, as previous research has suggested (Bancroft et al., 1976; Brown et al., 2002). Rather, self-injurious behavior and suicide attempts may have a unique etiological cause: for instance, habituation to fear and pain. Joiner (2005) proposes that the fear-inducing aspects of self-injury and suicide are overcome through practice and gradual habituation to the painful and fear-inducing aspects of these behaviors. It may be that BPD individuals who engage in self-injurious behaviors and suicide attempts have increased experience with provocative life events and severely painful experiences prior to engaging in these self-injurious behaviors. For example, individuals who have been exposed to other provocative life events, such as physical and/or sexual abuse, were found to be at higher risk for suicide attempts than individuals who were emotionally abused or neglected (Joiner et al., 2007). This hypothesis may also explain why impulsivity did not load onto the behavioral dysregulation factor: other impulsive behaviors (such as impulsive shopping, eating, etc.) may not require previous habituation to fear and pain for an individual to engage in them.

Another interesting finding of this study was that impulsivity loaded onto a different factor for each group. Impulsivity may have loaded onto the cognitive disturbance factor for Caucasians because cognitive factors may be the primary cause of or may aggravate impulsive behavior in this group. For Hispanics, impulsivity loaded onto the disturbed relatedness factor, which may indicate that Hispanic individuals may have a tendency to respond to specific interpersonal problems, such as social rejection (Bagge et al., 2004) or a stressful family atmosphere (Trull et al., 2000), with impulsive behaviors. In the African American group difficulties controlling impulses contributed to the affective dysregulation factor, which may be because African American individuals may respond to upsetting emotions with non-suicidal impulsive behavior – perhaps to regulate affect. A possible explanation for the impulsivity item loading onto a different factor for each ethnic group is that the item, ''sometimes my urges get me into trouble'' was too vague for members of each ethnic group to have the same definition of ''trouble.'' This lack of specificity in the question could result in more ethnically bound concepts of ''trouble'' as opposed to the impulsive behaviors generally associated with BPD.

One limitation to this study is that a structured clinical interview was not used to assess borderline personality disorder criteria; instead, individuals were asked these questions during an interview, and they responded to the items using a three-point Likert scale. The items used in this factor analysis did exhibit adequate internal consistency and significant inter-correlations, and these items are consistent with DSM-IV-TR diagnostic criteria for BPD, however. Another limitation with this study is that it was not conducted on an inpatient or clinically diagnosed group, but rather a representative community sample of young adults. Individuals expressing more severe symptoms may express a different factor pattern than the one suggested in this study, and the factor structure obtained for each ethnic group may not be indicative of ethnic minorities with an actual diagnosis of BPD. A final limitation is that Hispanics born in America could not be separated into different Hispanic groups (Cuban, Puerto Rican, etc.) and compared, so the findings for the Hispanic group may not be generalizable to all Hispanic groups. However, a number of Hispanic individuals ($N = 190$) born outside America in various Hispanic countries also participated in this study. Examination of these individuals indicated a factor structure essentially the same as that of the overall Hispanic factor structure, suggesting generalizability of the factor structure to most Hispanic groups.

An additional limitation to this study is that items pertaining to identity disturbance would have been desirable to include in the analyses. Because this is a non-psychiatric sample and young adulthood (age 18–23) is a time when there are normal issues in the development of identity, it is difficult to determine how this symptom would have affected the factor structure. In previous studies (Sanislow et al., 2000, 2002) this symptom loaded onto the disturbed relatedness factor, but in other studies on inpatient adolescents with BPD (Becker et al., 2006) identity disturbance loaded with both affective dysregulation and impulsivity. A further consideration is the development of ethnic identity, which may have affected this symptom differently in the Hispanic and African American groups due to issues such as acculturative stress.

The greatest strength of this study is that it included a large, ethnically diverse community sample. Over 1100 subjects participated in this study, with a composition of approximately 26% Caucasian, 46% Hispanic, and 28% African American subjects. Samples such as these are difficult to obtain, especially in a community setting. Additionally, this is a representative sample, not contaminated, as many clinical samples are, by treatment-seeking. Also, because this sample is representative and includes similar percentages of gender, the factor structure is less likely to have been impacted by comorbidity and gender effects. The factor structure may have been influenced by the young age of the participants, however. A final strength and unique aspect of this study is that not only does it compare Hispanic and African American groups to a Caucasian group, but also to each other.

The results of this study have important implications for applied clinical settings and provide a potential framework for assessing and treating the symptomatology of Caucasian, Hispanic, or African American individuals with features of BPD. For example, when treating Caucasian patients with BPD features it may be particularly important to assess emotional symptoms, and tailor treatments to affective problems. For Hispanic or African American patients, it may be important to focus on the treatment of cognitive symptoms, as well as explore the effects of socio-cultural aspects of ethnicity on those symptoms. In

addition, certain symptoms may have unique factors contributing to them depending on ethnicity. For example, when treating an African American patient with features of BPD it may be helpful to approach the treatment of impulsive behaviors by working on different ways of regulating emotions or working on mindfulness skills (Linehan, 1993). On the other hand, for a Caucasian individual with BPD features treatment of impulsivity may benefit from teaching distress tolerance skills from DBT (Linehan, 1993), or other cognitive techniques. Treating impulsivity in Hispanic individuals with BPD features may benefit from a focus on interpersonal factors that contribute to impulsivity, perhaps by focusing on the interpersonal effectiveness component of DBT, for instance.

Contributors

Edward A. Selby conducted the literature review, performed the analyses, and wrote the manuscript for this study. Thomas E. Joiner, Jr. assisted in the preparation of this manuscript with numerous revisions and guidance on the direction of the manuscript. All authors have approved the final manuscript.

Conflicts of interest

There are no conflicts of interest to report.

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