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Utilization of the Massachusetts Youth Screening Instrument-2 (MAYSI-2) with a Southern, African American Adolescent Male Population

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The Massachusetts Youth Screening Instrument-2 (MAYSI-2) is a widely accepted instrument for screening adolescents in detention facilities for mental health problems. However, African Americans often experience mental illness differently from other racial groups. The purpose of this study is to examine the usefulness of the MAYSI-2 with Southern African American adolescents. Results indicate that the MAYSI-2 factor structure as originally conceived does not accurately represent mental illness as experienced by this group. Instead, findings suggest that African American adolescents do indeed experience mental illness in a way different from youth for whom the MAYSI-2 was designed. Furthermore, the MAYS-2's ability to detect psychotic illness in this group is called into question by these findings.

The Massachusetts Youth Screening Instrument-2 (MAYSI-2) is a widely accepted instrument for screening adolescents in detention facilities for mental health problems. African Americans, however, suffer from diagnostic and treatment disparities in the provision of mental health services (Atdjian & Vega, 2005). Therefore, accurate screening is essential for the provision of services and diagnosis in this population. Furthermore, in areas with high poverty like the Southern United States, the need for increased accuracy is

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essential to understanding the health problems of disempowered populations (Chow, Jaffee, & Snowden, 2003). The purpose of this study is to assess the MAYSI-2 for use with African American adolescent males. We report on the factor structure of the MAYSI-2 among African American adolescent males in the Southern United States.

REVIEW OF THE LITERATURE

As the most frequently used assessment instrument currently available for adolescents in the juvenile justice system, the MAYSI-2 has been the subject of a great deal of analysis and scrutiny. Regardless, there have been few studies assessing the overall validity and reliability of this instrument (Archer, Simonds-Bisbee, Spiegel, Handel, & Elkins, 2010). Many of the studies have suggested that MAYSI-2 variables might have different implications across different populations, perhaps because of differences in at least some of the MAYSI-2 domains across different demographic groups. Close inspection of these differences suggests a need for further research into the MAYSI-2 and the reliability of its use with specific populations.

Description of the MAYSI-2

The MAYSI-2 was developed as a refinement of the original MAYSI, which was published in 1998 (Grisso, Barnum, Fletcher, Cauffman, & Peuschold, 2001). In the development of the second version, the authors used factor analytic procedures to assess the 52-item inventory to identify different scales. This process resulted in the identification of seven factors, six of which are applicable to males and females with the other (Thought Disturbance) applicable only to boys. An eighth factor that had been identified in the factor analysis yielded unusable results and was therefore discarded in the final version. It was intended to detect the possibility of mental health concerns across a broad array of diagnoses, although the instrument itself is not designed to make those diagnoses; instead, the MAYSI-2 asks questions that point toward potential difficulties that are related to seven factors: (a) alcohol/drug use, (b) anger/irritability, (c) depression/anxiety, (d) somatic complaints, (e) suicidal ideation, (f) thought disturbances (males only), and (g) traumatic experience(s). The developers intended to create a self-report instrument that was brief, usable by people who are not mental health professionals, easy to read, inexpensive, and applicable to diverse youths in detention (Grisso, Barnum, Fletcher, Cauffman, & Peuschold, 2001).

Previous MAYSI-2 Studies

Recent work by Archer and colleagues (2010) into the overall reliability and validity of the MAYSI-2 yielded promising results. In their study of

almost 1,200 juvenile offenders in Virginia, the authors found evidence that strongly supports the continued use of the MAYSI-2 in light of its reliability and validity. Their results suggest differences particularly between males and females and between African Americans and Whites (Archer et al., 2010). These findings corroborate an earlier study (Cauffman, 2006) in which the researcher used the Rasch model to measure differential item functioning among all of the MAYSI-2 domains across specific comparison groups. This study was strongly suggestive of racial disparities across the Alcohol/Drug Use, Angry/Irritable, Depressed/Anxious, Somatic Complaints, Suicidal Ideation, Thought Disturbance, and Traumatic Experiences subscales and concurrent gender disparities across the Alcohol/Drug Use, Angry/Irritable, and Somatic Complaints subscales. In a much larger study ($n = 18{,}607$), Cauffman (2004) had already found differences across race and gender subgroups.

A study by McCoy (2011) suggests that African Americans were less likely than participants who were selected from other demographic groups to score above the threshold on the MAYSI-2 subscales for Alcohol/Drug Use and Somatic Complaints. Although the sample was small and localized, the nature of the statistical analysis provides a glimpse into some possible areas for further exploration of the MAYSI-2 (e.g., racial discrepancies related to particular subscales or cultural/ethnic interpretations of particular items or groups of items) and is confirmatory of the earlier work of Cauffman and Archer and colleagues.

Other researchers' findings, however, point in a different direction. In 2008, Vincent and colleagues conducted a meta-analysis of a large number ($n = 70{,}423$) of cases from across the United States to examine differences in MAYSI-2 diagnostic results across gender and ethnic (White/Black, White/Hispanic, and Hispanic/Black) subsets. Although this meta-analysis was unable to control for certain intervening factors (e.g., implementation fidelity, interview setting, and practitioner skill), the size of the population yielded a large, heterogeneous sample. Although this study pointed toward some discrepancies in gender and ethnic results, these differences were small (Vincent, Grisso, Terry, & Banks, 2008). These contrary findings could be the result of the minimizing effect that a large, multicultural, multiethnic study of this type has. This comprehensive meta-analysis suggests that although the MAYSI-2 clearly has relevance to juveniles, there is a need to assess its usefulness for specific population subsets.

Disparities in Mental Health Assessment and Treatment for African Americans

Research suggests that racial and ethnic minorities have unique strengths and challenges that impact their mental health and its subsequent assessment. For some African American youth in particular, the pervasiveness of

racism and poverty appear to combine to influence feelings of hopelessness, depression, anger, frustration, and distress (Langhinrichsen-Rohling, Friend, & Powell, 2009). The experience and interpretation of pain as a symptom seems to impact African Americans differently from other racial groups, with African Americans reporting higher levels of anxiety about pain and also being less likely to seek medical treatment for its symptoms (Portenoy, Ugarte, Fuller, & Haas, 2004). Although suicidal completion is higher for Whites than African Americans (although rates of completion for African Americans is on the rise), African Americans may experience similar levels of suicidal ideation but may be less likely to report it to a mental health professional, especially if the professional is White (Morrison and Downey, 2000). Culturally competent assessment is important. Many of these areas mentioned are domains captured by the MAYSI-2.

Assessment instruments for mental health and behavioral issues have been riddled with bias toward racial and ethnic minorities. Perhaps most notably are the discrepancies between rates of psychosis for African American and Caucasian patients. Prior to the 1970s, African American mannerisms (such as louder speaking styles and language), and mistrust of White clinicians were misinterpreted as psychotic symptoms and paranoia and were documented as discrepancies in prevalence of psychosis (Jarvis, 2008; Strakowski, Shelton, & Kolbrenner, 1993). When compared to clinicians in the United Kingdom, American clinicians were found to have more variability in diagnosing psychosis and were found to overdiagnose Black patients compared to their British peers (Jarvis, 2008). This suggests a pervasive racial bias and cultural incompetence, present in both clinicians and their assessment instruments. That these disparities and biases have been pervasive across mental health diagnoses and have been well-documented underscores the importance of documenting and working to eliminate any racial bias in the MAYSI-2, an assessment tool that is used extensively with African American youth.

Domain Studies

The need to assess the MAYSI-2 for use with specific populations is supported by the examination of work done in the specific domains that the instrument is designed to illuminate. Researchers from a broad array of disciplines have identified differences among specific populations for several of these factors. In 2010, Caldwell and colleagues published findings that highlight discrepancies among the prevalence of substance abuse issues and mental health diagnoses across ethnic/racial subgroups. Using the Rosenberg Self-Esteem Scale and the Adolescent Psychopathology Scale–Short Form, the research team found statistically significant differences in the prevalence of depression among Caucasian, African American, and Hispanic adolescents ($n = 438$) who were in the juvenile justice system in various jurisdictions in

the Western United States. Substance abuse issues also were different among those same divisions and across a wide array of controlled substances (Caldwell, Silver, & Strada, 2010).

A significant body of research conducted on the MAYSI-2 has suggested differences in responses and efficacy among different population subsets, and in particular among MAYSI-2 domains. The concurrent research in the mental health and substance abuse fields suggests differences in the prevalence of or detection of a variety of mental health and substance abuse issues among different population groups. The need for further exploration of the discrepancies in outcomes and the validity and reliability of the instrument and its results among specific demographic groups is heightened by the rate at which the MAYSI-2 is currently in use.

METHODS

Instrumentation

The MAYSI-2 is a standardized, 52-item; true–false screening instrument for youth of ages 12–17 entering the juvenile justice system, in order to identify potential mental health problems in need of immediate attention. The MAYSI-2 provides information that alerts staff to the potential for the following mental and behavioral problems: Alcohol/Drug Use, Angry-Irritable, Depressed-Anxious, Somatic Complaints, Suicide Ideation, Thought Disturbance, and Traumatic Experiences. The MAYSI-2 is not a diagnostic instrument. It serves as a "triage" tool for decisions about the possible need for immediate intervention, at a time (e.g., within 24–48 h. after admission to secure facilities) when little other information about a youth is available. It does not take the place of more comprehensive assessments that are needed for decisions about long-range placement or treatment planning.

Sampling

For this study, the MAYSI-2 was administered to 119 detained African American juvenile males, between the ages of 13 and 18. The average age of the sample was 16.2 years. The sample came primarily from a Southern area of the United States. Data for this study were collected using a convenience sampling technique. Data collection took place at a single juvenile detention facility in central Alabama. In accordance with the MAYSI guidelines, data were collected during the first 24 hr of detention. Of the sample, 37.6% were detained for nonviolent offenses (e.g., theft, violation of probation, possession of a controlled substance) and 62.4% were being detained for violent offenses (e.g., rape, assault, weapons charge).

TABLE 1 Subscale Reliability (Chronbach's Alpha): Current Study Compared to Massachusetts and California Samples of MAYSI-2 Among African-American Males

Subscale	α	Massachusetts	California
Alcohol/Drug Abuse	0.842	0.84	0.85
Angry/Irritable	0.797	0.82	0.83
Depressed-Anxious	0.726	0.72	0.66
Somatic Complaints	0.754	0.71	0.68
Suicide Ideation	0.749	0.77	0.83
Thought Disturbance	0.513	0.54	0.61
Traumatic Experiences	0.573	0.63	0.51

Notes. Massachusetts Youth Screening Instrument-2.

RESULTS

The first step was to assess the internal consistency of the existing MAYSI-2 subscales for this sample. This was done for each of the seven MAYSI-2 subscales; results are reported along with the scale norms for African American males developed in Massachusetts and California (Grisso et al., 2001) in Table 1.

Five of the seven subscales reported achieved high reliability. However, the reliability of the Thought Disturbance subscale (α=.513) and Traumatic Experiences subscale (α=.573) were low, similar to the MAYSI-2.

The second step was to assess the factor structure of the MAYSI-2 with this sample. First, a principal components factor analysis was conducted. The results revealed 15 components with an Eigenvalue greater than one. However, the scree plot (Cattell, 1966) suggested that three or four distinct components would be most appropriate. Next, examination of a three-factor and a four-factor solution was conducted using principal components factor analysis with a Varimax orthogonal rotation. A three-factor model seemed to fit the data best; it is provided in Table 2. Table 3 provides the rotated three-factor solution for each question asked during administration of the MAYSI-2 during data collection.

TABLE 2 Results of Principle Components Factor Analysis for Three Factors

Factor #	Eigenvalue	% Variance	Name
1	7.169	15.932	Physical/Emotional Symptoms
2	3.653	8.117	Substance Use
3	3.001	6.669	Isolation and Suicidality
45 items			30.717% variance explained

TABLE 3 Rotated 3-Factor Solution

MAYSI-2 Questions	Factor 1	Factor 2	Factor 3
Have you lost your temper easily, or had a "short fuse"?	0.533	0.232	–0.104
Have nervous or worried feelings kept you from doing the things you want to do?	0.513	0.048	0.039
Have you had a lot of problems concentrating or paying attention?	0.251	0.313	–0.030
Have you been easily upset?	0.327	0.231	0.092
Have you thought a lot about getting back at someone you have been angry at?	0.210	0.421	–0.238
Have you been jumpy or hyper?	0.245	0.358	0.078
Have you seen things other people say are not really there?	0.158	–0.063	0.483
Have you done anything you wish you hadn't when you were drunk or high?	0.183	0.394	0.021
Have you wished you were dead?	–0.012	0.152	0.763
Have you had too many bad moods?	0.651	0.077	0.014
Have you had nightmares that are bad enough to make you afraid to go to sleep?	0.215	–0.040	0.504
Have you felt like life was not worth living?	0.060	0.180	0.271
Have you felt lonely too much of the time?	0.121	–0.072	0.600
Have you felt like hurting yourself?	–0.066	0.206	0.723
Have your parents of friends thought you drink too much?	–0.026	0.357	–0.147
Have you heard voices other people can't hear?	0.302	0.002	0.443
Has it seemed like some part of your body always hurts you?	0.302	0.095	0.197
Have you felt like killing yourself?	–0.040	0.155	0.639
Have you gotten in trouble when you've been high or have been drinking?	0.013	0.636	0.155
If yes, is this fighting?	0.007	0.614	0.074
Have other people been able to control your brain or thoughts?	0.172	0.241	0.300
Have you had a feeling, that things don't seem real, like you're in a dream?	0.460	0.209	0.161
When you have felt nervous or anxious:			
have you felt shaky?	0.606	–0.107	0.189
has your heart beat very fast?	0.444	–0.014	0.035
have you felt short of breath?	0.524	–0.113	–0.144
have your hands felt clammy?	0.485	0.027	0.192
has your stomach been upset?	0.470	–0.083	0.158
Have you been able to make other people do things just by thinking about it?	0.166	0.227	0.033
Have you used alcohol or drugs to help you feel better?	–0.034	0.792	0.074
Have you felt you don't have fun with your friends anymore?	0.283	–0.012	0.235
Have you felt angry a lot?	0.607	0.153	0.037
Have you been drunk or high at school?	–0.094	0.725	0.081
Have you gotten frustrated easily?	0.598	0.077	0.086
Have you used alcohol and drugs at the same time?	–0.054	0.674	0.183

(*Continued*)

TABLE 3 Continued

MAYSI-2 Questions	Factor 1	Factor 2	Factor 3
Has it been hard for you to feel close to people outside your family?	0.309	0.195	0.213
When you have been mad, have you stayed mad for a long time?	0.361	0.512	0.138
Have you had bad headaches?	0.287	0.174	0.177
Have you hurt or broken something on purpose, just because you were mad?	0.549	0.165	0.065
Have you been so drunk or high that you couldn't remember what happened?	−0.039	0.620	0.124
Have people talked about you a lot when you're not there?	0.472	0.128	0.216
Have you given up hope for your life?	0.154	−0.099	0.633
Have you ever in your whole life, had something bad or terrifying happen to you?	0.442	0.203	0.003
Have you ever been badly hurt, or been in danger of getting badly hurt or killed?	0.227	0.415	−0.079
Have you had a lot of bad thoughts or dreams about a bad or scary event that happened to you?	0.448	0.115	0.219
Have you ever seen someone severely injured or killed (in-person)?	0.235	0.461	0.020

Notes. Massachusetts Youth Screening Instrument-2.

Factor 1

The first factor includes items about both physical and emotional symptoms. Factor 1 is a reliable measure with an alpha of .836 (20 items). The MAYSI-2 subscales Angry/Irritable, Depressed-Anxious, and Somatic Complaints measure these phenomena separately. Each item in the MAYSI-2 loading ≥. 30 is noted in Table 4 along with the factor loadings. Only items loading ≥. 30 on factors extracted are listed.

Factor 2

The second factor includes items about substance use. Factor 2 is a reliable measure with an alpha of .809 (15 items). The MAYSI-2 subscale of Alcohol/Drug Abuse also measures substance use.

TABLE 4 Item Loading

Factor #	Name	Items (loading ≥ .30)
1	Physical/Emotional Symptoms	2, 3, 6, 13, 21, 26, 27, 28, 29, 30, 31, 35, 39, 41, 44, 46, 48, 51
2	Substance Use	4, 7, 8, 10, 19, 19, 23, 24, 33, 37, 40, 42, 45, 49, 52
3	Isolation and Suicidality	9, 11, 14, 17, 18, 20, 22, 25, 47

Factor 3

The third factor includes items measuring isolation and suicidality. Factor 3 is a reliable measure with an alpha of .744 (10 items). The MAYSI-2 subscales Depressed-Anxious and Suicide Ideation also measure these phenomena separately.

Psychosis

Although all three factors were found to measure a distinct group of phenomena, items measuring psychosis and related behaviors were found to load across all three factors and could not be placed into any single factor. These items are most commonly measured by the MAYSI-2 Thought Disturbance and Traumatic Experiences subscales.

DISCUSSION

The three-factor solution extracted in the present study and the original seven-factor structure developed for use with the MAYSI-2 appear to loosely parallel one another. Factor 1 with the current sample manifests as both physical and emotional symptoms, rather than as more distinct groupings of symptoms. This may be due to the somatic nature of how many African Americans experience mental illness. A previous study found that African Americans tend to experience physical symptoms along with emotional symptoms more often than Caucasians (Kirmayer & Young, 1998). Some research suggests that African Americans are also underdiagnosed for affective disorders such as depression (Baker & Bell, 1999). The concurrence of physical and emotional symptoms may be contributing to underdiagnosis or misdiagnosis. The Factor 1 results seem to indicate that, in this sample, African American juveniles did not distinguish between physical and emotional symptoms. Factor 2 closely parallels the Alcohol/Drug Use factor found in the MAYSI-2 with very few differences. Factor 3 manifests as symptoms of isolation and suicidal ideation. Previous studies have demonstrated the role of isolation in contributing to mental illness (Crisp, Gelder, Rix, Meltzer, & Rowlands, 2000; Link, Struening, Rahav, Phelan, & Nuttbrock, 1997) and suicidal behavior (Berman & Moody, 2004; Trout, 1980). Because mental illness is heavily stigmatized in the African American community (Corrigan & Watson, 2002), social supports may not be readily available for those at risk of suicide. Furthermore, suicidal risk is the greatest among young, African American males with psychiatric disorders and antisocial personalities (Gibbs, 1997), like those often found in juvenile detention facilities. The three identified factors all measure the occurrence of mental illness, consistent with the intent of the MAYSI-2. The collection of items in the

three-factor solution differs, however, in that the three factors do not represent distinct domains as they are characterized in the mental health literature and in the original MAYSI-2 subscales. Instead they represent a colloquial way of thinking about everyday problems such as symptoms of illness, substance use, and isolation and suicide. Put differently, the MAYSI-2 is composed in a way that is easily understood by a mental health professional, while the three-factor structure of the present study represents a more informal way of thinking about mental illness, perhaps representing how mental illness is perceived by an African American adolescent.

Although a three-factor solution was reached, MAYSI-2 items describing psychosis loaded on each factor. Therefore, no single factor exists to account for psychotic behavior. In addition, the MAYSI-2 subscales describing this behavior (Thought Disturbance and Traumatic Experiences) had unexpectedly low reliability scores. Consequently, these items do not appear to measure psychotic behavior in this sample of African American adolescent males. The lack of a reliable measure of psychotic behavior either by the original MAYSI-2 subscales intended to do so or by extracting one by using principal component factor analysis on the MAYSI-2 items suggests a need for instrument development in this area.

Multiple studies have demonstrated that African Americans are more likely to be diagnosed with psychotic illness than Caucasians (Strakowski, McElroy, Keck, & West, 1996; Wang, Demler, & Kessler, 2002). Psychotic illnesses include *DSM-IV* defined diagnoses such as schizophrenia and bipolar disorder. A psychotic diagnosis, whether correct or incorrect, is potentially damaging because of society's negative perception of people with these illnesses. One study demonstrated racial disparities among these diagnoses that impact treatment outcomes and length of stay once hospitalized (Anglin & Malaspina, 2008). Furthermore, the accuracy with which these diagnoses are applied may be the result of cultural bias and misunderstanding (Whaley & Hall, 2008), rather than real illness. To complicate matters further, people who are homeless, incarcerated, or living in foster care are more likely to develop mental illness; African Americans are more likely to be homeless, be in prison, and to be foster children compared to other racial groups in the United States (NAMI, 2004), thus increasing their risk of being diagnosed with a mental illness.

The use of the MAYSI-2 to assess African American adolescent males in the juvenile justice system in the Southern United States may be problematic, especially as it relates to psychotic illness. It appears that there are potential problems with accurately assessing this group for psychotic behavior and the problems that could lead to misdiagnosis. In a population that is already subject to multiple risk factors for mental illness and with members more likely than Caucasian counterparts to be diagnosed with schizophrenia (Neighbors, Jackson, Campbell & Williams, 1989; Snowdon & Cheung, 1990; West et al., 2006), accurate assessment is essential. Furthermore, it appears

that this population would be best served with a three-factor instrument, though some accommodation would need to be made for psychotic illness.

CONCLUSION

Although conclusions from the current study should be viewed with caution because of the sampling method, they should not be discounted. The MAYSI-2 is a widely accepted instrument. Still, it is evident that its ability to measure psychotic illness in this sample may not be adequate, especially given the serious disparities in mental health diagnosis and treatment faced by African Americans. Further research on the effectiveness of the MAYSI-2 with this population is warranted, particularly as it pertains to the measurement of psychotic behavior. Further study may reveal differing results. A crucial step beyond testing the MAYSI-2 will be independent examination of psychotic behavior in this population. Although the researchers did not examine the prevalence of mental illness among the population under study, this must not be discounted as a potential cause for the variance seen here. Further examination of how mental illness is experienced among young, Southern African Americans is called for.

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