Alexithymia and Pain in Three Chronic Pain Samples: Comparing Caucasians and African Americans

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A B S T R A C T

Objective. African Americans often report greater pain than do Caucasians, but the factors responsible for this discrepancy are not known. We examined whether alexithymia—the trait of difficulty identifying and describing one’s feelings and lacking introspection—may contribute to this ethnic group difference. We tested whether the mean level of alexithymia is higher, and whether alexithymia and pain are more highly correlated, among African Americans than among Caucasians in patients with chronic pain disorders.

Design. Three cross-sectional, correlational studies were conducted on three separate samples of patients with chronic pain. Analyses examined the full sample and then Caucasians and African Americans separately.

Setting and Patients. Patients were recruited primarily from treatment settings. Samples were patients with rheumatoid arthritis (N = 155), migraine headaches (N = 160), or systemic lupus erythematosus (N = 123), and each sample included only Caucasians or African Americans.

Measures. The Toronto Alexithymia Scale-20 assessed global alexithymia and three alexithymia facets. Pain severity, functional disability, or symptoms were also measured on each sample.

Results. Similar findings occurred across all three samples. African Americans had only slightly higher mean alexithymia levels than did Caucasians, and this was partly accounted for by socioeconomic differences between groups. More importantly, alexithymia correlated only weakly with pain or symptom severity for each full sample, but the two ethnic groups showed different patterns. Alexithymia correlated positively with pain severity among African Americans, but was uncorrelated with pain among Caucasians, even after covarying for various socioeconomic variables.

Conclusions. Alexithymia is more correlated with pain severity among African Americans with chronic pain disorders than among Caucasians, potentially contributing to the higher pain reports among African Americans.

Key Words. African Americans; Alexithymia; Emotion; Ethnicity; Pain

Introduction

African Americans often report higher levels of experimental, acute clinical, and chronic pain than do Caucasians [1–11]. Socioeconomic factors appear to contribute to these ethnic differences [12–16], and psychological or personality factors also may play a role, although research on the latter has been sparse. For example, African Americans with chronic pain describe their pain somewhat differently [17,18] and show different personality profiles [19] than do Caucasians. Attri-
butions for pain and pain-coping strategies also vary across ethnic groups and may contribute to differential pain reports [20].

Alexithymia

Stressful events and how people regulate the subsequent negative emotions are important to health [21–23]. The term “alexithymia” was coined to refer to a difficulty or deficit in emotional regulation [24]. Literally meaning “lacking words for feelings,” alexithymia is a multidimensional personality trait with three facets: 1) difficulty identifying one’s feelings and differentiating feelings or emotions from physical sensations; 2) difficulty describing or communicating one’s feelings to others; and 3) a tendency or preference to engage in externally oriented thinking rather than psychological introspection [25].

Alexithymia is a relatively stable trait that is related to the personality dimensions of introversion, neuroticism, and low openness [26]. A person’s relative alexithymia level remains consistent over time, although there may be some change in absolute scores, which can be influenced by fluctuating state conditions [27,28]. Some authors have differentiated primary alexithymia (developing very early in life and possibly genetically or neurologically based) from secondary alexithymia (developing after trauma or serious illness) [29], but both of these alexithymia types are thought to be fairly stable over long periods of time [30].

Alexithymia, Pain, and Ethnicity

Alexithymia interferes with the adaptive regulation of the negative emotions that result from stressors or psychological conflict. As a result, people with alexithymia have been found to experience chronic sympathetic hyperarousal, an excessive focus on their body, uncomfortable physical sensations, and an increased likelihood of complaining about their bodies [25,31]. By one or more of these mechanisms, alexithymia is thought to be a risk factor for chronic pain, disability, and related health problems.

Uncontrolled studies suggest that alexithymia is increased in several chronic pain populations [32,33] and controlled studies have confirmed increased alexithymia among patients with psychogenic pain disorder [34], rheumatoid arthritis [35], inflammatory bowel disease [36], temporomandibular joint pain [37], and heterogeneous pain complaints [38]. However, there are substantial individual differences in both alexithymia levels and pain severity among people with chronic pain, and in theory, the degree of alexithymia should correlate positively with the severity of the pain. However, the evidence for this relationship is mixed. Three studies of healthy people found that alexithymia correlated positively with acute pain severity during laboratory or clinical procedures [39–41], whereas several studies of patients with chronic pain found that alexithymia was unrelated to pain severity [32,33] or was related to the affective but not sensory dimension of pain [42].

Ethnicity may help account for this inconsistent relationship between alexithymia and pain severity. Alexithymia may vary across ethnic groups due to differences in the cultural value of attending to and expressing feelings and differences in socioeconomic factors such as education and income [43,44]. Although few direct cross-cultural studies have been conducted, alexithymia is higher among certain ethnic groups, such as Chinese-speaking college students compared with native English-speaking students [43], and Asian American and Malaysian students compared with Caucasian students [45], although one study found no alexithymia differences between African American and Caucasian college students [46]. Finally, we know of only one study that correlated alexithymia with health as a function of ethnicity. Alexithymia was more highly, positively correlated with physical symptoms in Asians than in Caucasians [45], which the authors interpreted as due to greater somatization of emotions among Asians.

Goals of This Study

This study examined whether alexithymia contributes to the increased reports of pain severity and disability among African Americans compared with Caucasians. Because replication across multiple samples is key to determining the reliability of research findings, we studied three separate samples of patients with chronic pain disorders—rheumatoid arthritis, migraine headache, and systemic lupus erythematosus. Pain and disability in each of these disorders are influenced by stress and emotional regulation [47–52], suggesting that alexithymia is a possible risk factor. In each sample, we assessed both global alexithymia and scores on three facets noted above, because research suggests that the facets may relate differently to health measures [53,54].

Within each sample, we conducted two sets of analyses to test whether alexithymia is a differen-
tial risk factor for pain among African Americans. First, we examined mean alexithymia levels to determine whether African Americans are more alexithymic than Caucasians. Second, we examined the magnitude of the correlation between alexithymia and pain severity or disability within each ethnic group to determine whether alexithymia predicts pain and disability more strongly for African Americans than Caucasians. These analyses covaried socioeconomic factors that differed between ethnic groups (e.g., education or income) or that correlated with alexithymia (e.g., age).

Sample 1: Rheumatoid Arthritis

Methods

Subjects and Procedures
This sample consisted of 155 patients (90 Caucasians and 65 African Americans) meeting 1987 American College of Rheumatology criteria for nonjuvenile rheumatoid arthritis. Patients averaged 55.0 years of age (range 20–74), and 87.7% were female. Patients were in treatment at several public and private rheumatology clinics and agreed to participate in a clinical trial on the effects of a psychological intervention. Patients provided written consent and completed the Toronto Alexithymia Scale-20 (TAS-20) and measures of pain severity and physical disability at study intake (before intervention).

Measures

Alexithymia
Patients completed the widely used TAS-20 [55], which provides a global (total) score and scores on three facets: 1) difficulty identifying feelings (DIF; seven items; e.g., “I am often confused about what emotion I am feeling”); difficulty describing feelings (DDF; five items; e.g., “I find it hard to describe how I feel about people”); and 2) externally oriented thinking (EOT; eight items; e.g., “I prefer to just let things happen rather than to understand why they turned out that way”). Items were rated from 1 (strongly disagree) to 5 (strongly agree) and totaled; higher totals indicate greater alexithymia. A TAS-20 total score of 61 or greater indicates clinically elevated alexithymia [25]. The TAS-20 has good test–retest reliability [55], suggesting the stability of alexithymia scores, and the construct validity of the TAS-20 has been demonstrated in numerous studies [25]. Importantly, cross-cultural research has shown that the factorial validity of the TAS-20 is consistent across many different languages and cultures, suggesting that alexithymia is a universal trait that transcends cultural differences [56]. The total score and two of the facets (DIF and DDF) also show cross-cultural reliability (internal consistency), although the EOT facet is not internally consistent in some cultures. In this sample of rheumatoid arthritis patients, the internal consistency (Cronbach’s alpha) for the TAS-20 total and the DIF, DDF, and EOT facets were 0.84, 0.84, 0.70, and 0.62, respectively, for Caucasians, and 0.80, 0.86, 0.60, and 0.32 for African Americans.

Pain Severity
Patients rated their “most pain,” “least pain,” and “average pain” during the last week as well as their current pain on a visual analog scale that ranged from 0 (no pain) to 100 (pain as bad as it could be). These four ratings were highly correlated and were averaged to create a composite pain severity score. These ratings scales have been recommended as demonstrating high clinical utility and validity [57].

Physical Disability
This was assessed with the physical functioning composite of six subscales (mobility, walking/bending, hand/finger function, arm functioning, household tasks, and self-care) of the Arthritis Impact Measurement Scales-2 (AIMS2), which assess various domains of health during the past month in people with rheumatic disease [58]. The AIMS2 has good reliability and has been recommended for use by the American College of Rheumatology.

Results

Comparison of Ethnic Groups on Alexithymia and Health Status Measures

Table 1 presents demographic, alexithymia, and health status data for the full sample of rheumatoid arthritis patients and for the two ethnic groups separately. African Americans were similar in age, but had a slightly higher percentage of females, less education, and substantially less income than did Caucasians. African Americans were marginally more alexithymic on the total TAS-20 score (although not different on the percentage of alexithymic patients), and significantly more alexithymic on the DIF facet. African Americans had significantly higher scores on both pain severity and physical disability than did Caucasians. Analyses of covariance that controlled for age, gender, income, and education found that the eth-
nicity differences in alexithymia scales were completely eliminated (all $P > 0.23$), but that the differences in pain severity ($P = 0.07$) and physical disability ($P < 0.001$) remained.

Correlations Between Alexithymia and Health Status Measures
Table 2 shows the correlations between alexithymia and health measures for the full sample as well as Caucasians and African Americans separately. Zero-order correlations are presented left of the slash, and partial correlations (controlling for age, gender, income, and education) are to the right of the slash. For the full sample, the TAS-20 total and both the DIF and DDF facets were positively related to both pain severity and physical disability. The two ethnic groups showed different patterns of correlations for the health measures, however. Most noteworthy is that TAS-20 total and DIF facet were positively correlated with pain severity for African Americans but not for Caucasians; these differences remained in partial correlations. A similar pattern can be seen for physical disability, where the TAS-20, DIF, and DDF scales were correlated with disability for the African Americans but not for the Caucasians, although these ethnicity differences in the disability correlations were eliminated after controlling for demographic variables.

Sample 2: Migraine Headaches

Methods

Subjects and Procedures
This sample consisted of 160 adults (135 Caucasians and 25 African Americans) diagnosed with migraine headache according to International Headache Society criteria. The sample averaged 31.8 years of age (range 18–66) and was 84.4% female. Subjects were recruited from two sources:

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Table 1  Demographic, alexithymia, and health status data for patients with rheumatoid arthritis

<table>
<thead>
<tr>
<th>Variable</th>
<th>Full Sample (N = 155)</th>
<th>Caucasians (N = 90)</th>
<th>African Americans (N = 65)</th>
<th>$P$ Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (year)</td>
<td>55.0 (11.3)</td>
<td>54.9 (10.4)</td>
<td>55.0 (12.5)</td>
<td>0.96</td>
</tr>
<tr>
<td>Education</td>
<td>13.4 (2.7)</td>
<td>13.7 (2.4)</td>
<td>13.1 (3.0)</td>
<td>0.15</td>
</tr>
<tr>
<td>Female, n (%)</td>
<td>136 (87.7%)</td>
<td>76 (84.4%)</td>
<td>60 (92.3%)</td>
<td>0.21</td>
</tr>
<tr>
<td>Income ($, thousands)</td>
<td>44.7 (34.0)</td>
<td>56.3 (36.6)</td>
<td>28.7 (21.2)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>TAS-20 total</td>
<td>51 (10.4)</td>
<td>49.9 (10.3)</td>
<td>53.0 (10.2)</td>
<td>0.06</td>
</tr>
<tr>
<td>DIF</td>
<td>18.4 (5.8)</td>
<td>17.6 (5.4)</td>
<td>19.5 (6.3)</td>
<td>0.046</td>
</tr>
<tr>
<td>DDF</td>
<td>12.8 (3.6)</td>
<td>12.6 (5.4)</td>
<td>13.1 (3.7)</td>
<td>0.43</td>
</tr>
<tr>
<td>EOT</td>
<td>20.0 (3.9)</td>
<td>19.7 (3.5)</td>
<td>20.5 (3.5)</td>
<td>0.18</td>
</tr>
<tr>
<td>Alexithymic, n (%)</td>
<td>30 (19.4%)</td>
<td>15 (16.7%)</td>
<td>15 (23.1%)</td>
<td>0.32</td>
</tr>
<tr>
<td>Pain severity</td>
<td>41.7 (17.3)</td>
<td>38.2 (17.2)</td>
<td>46.6 (16.3)</td>
<td>0.002</td>
</tr>
<tr>
<td>Physical disability</td>
<td>2.2 (0.7)</td>
<td>1.9 (0.5)</td>
<td>2.6 (0.7)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Data presented are mean (SD) unless otherwise noted.

$P$ values are from $t$-tests comparing Caucasians and African Americans, except for percentage female and percentage alexithymic (chi-square).

Table 2  Zero-order and partial correlations between alexithymia scales and health status measures for patients with rheumatoid arthritis

<table>
<thead>
<tr>
<th>Measure</th>
<th>TAS-20 Scale</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sample</td>
<td>Total</td>
<td>DIF</td>
<td>DDF</td>
</tr>
<tr>
<td>Pain severity</td>
<td>Full sample</td>
<td>0.24***/0.17**</td>
<td>0.29****/0.23***</td>
<td>0.15*/0.08</td>
</tr>
<tr>
<td></td>
<td>Caucasians</td>
<td>0.12/0.10</td>
<td>0.20****/0.18</td>
<td>0.11/0.10</td>
</tr>
<tr>
<td></td>
<td>African Americans</td>
<td>0.34*/0.27**</td>
<td>0.35***/0.34***</td>
<td>0.17/0.06</td>
</tr>
<tr>
<td>Physical disability</td>
<td>Full sample</td>
<td>0.23*/0.10</td>
<td>0.27****/0.16</td>
<td>0.19**/0.09</td>
</tr>
<tr>
<td></td>
<td>Caucasians</td>
<td>0.12/0.06</td>
<td>0.17/0.11</td>
<td>0.14/0.12</td>
</tr>
<tr>
<td></td>
<td>African Americans</td>
<td>0.26*/0.08</td>
<td>0.28*/0.17</td>
<td>0.21*/0.04</td>
</tr>
</tbody>
</table>

* $P < 0.10$; ** $P < 0.05$; *** $P < 0.01$; **** $P < 0.001$.

Full sample: N = 155; Caucasians: N = 90; African Americans: N = 65.

DIF = difficulty identifying feelings; DDF = difficulty describing feelings; EOT = externally oriented thinking.

Correlations to the left of the slash are zero-order correlations, and those to the right are partial correlations, controlling for age, gender, income, and education.
88 were patients at a neurology headache clinic participating in a longitudinal study of adherence, and 72 were adult students at a public university who were recruited to participate in a behavioral intervention. All subjects gave written consent to participate, and they completed the TAS-20 and measures of headache frequency and disability at clinic intake (patients) or when coming to the laboratory prior to the intervention (students). In addition, the students completed a measure of pain severity that the clinic patients did not complete.

Measures

TAS-20
In this sample, alphas for the TAS-20 and the DIF, DDF, and EOT facets were 0.84, 0.84, 0.76, and 0.62 for Caucasians, and 0.83, 0.77, 0.84, and 0.84 for African Americans.

Headache Days
Participants reported the number of days during the past month that they had a migraine headache.

Headache Disability
Headache disability was assessed with the Headache Disability Inventory, a 25-item scale that assesses both functional and emotional disability resulting from headaches [59,60]. Disability items are rated “yes” (4 points), “sometimes” (2 points), or “no” (0 points), and points are totaled; higher scores indicate greater disability.

Headache Severity
The 72 students completed the short form of the McGill Pain Questionnaire (SF-MPQ [61]), which contains 15 pain-related adjectives that are rated from 0 (none) to 3 (severe) regarding typical headache pain during the last month.

Results

Comparison of Ethnic Groups on Alexithymia and Health Status Measures
Table 3 presents demographic, alexithymia, and pain data for the full sample of migraine patients and for the two ethnic groups separately. The African Americans were younger and had a slightly higher percentage of females; education levels were similar. (Income was not assessed in these migraine samples.) Regarding alexithymia, the two ethnic groups were similar on the total score, but African Americans scored significantly higher than Caucasians on the DDF facet. African Americans had significantly more headache days, and marginally greater disability than did Caucasians. Covariance analyses controlling for age, gender, and education showed that group differences in DDF and headache days remained significant, and headache disability became significantly greater in the African Americans than Caucasians ($P = 0.02$).

Correlations Between Alexithymia and Health Status Measures
Table 4 shows the zero-order and partial correlations (controlling for age, gender, and education) between alexithymia and pain measures for the full sample and for Caucasians and African Americans separately. For the full sample, there was only one significant correlation: DIF was positively related to disability. However, the two ethnic groups showed different patterns of correlations. Most noteworthy is that TAS-20 total and DDF and EOT were positively correlated with headache days for African Americans, but these correlations were slightly negative for Caucasians. (The

Table 3  Demographic, alexithymia, and health status data for patients with migraine headache

<table>
<thead>
<tr>
<th>Variable</th>
<th>Full Sample (N = 160)</th>
<th>Caucasians (N = 135)</th>
<th>African Americans (N = 25)</th>
<th>$P$ Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>31.8 (13.3)</td>
<td>32.6 (13.5)</td>
<td>27.4 (11.2)</td>
<td>0.08</td>
</tr>
<tr>
<td>Education</td>
<td>14.0 (1.6)</td>
<td>14.0 (1.7)</td>
<td>13.8 (1.1)</td>
<td>0.59</td>
</tr>
<tr>
<td>Female, n (%)</td>
<td>135 (84.4%)</td>
<td>112 (83.0%)</td>
<td>23 (92.0%)</td>
<td>0.25</td>
</tr>
<tr>
<td>TAS-20 total</td>
<td>46.3 (10.8)</td>
<td>46.2 (10.6)</td>
<td>46.6 (12.1)</td>
<td>0.85</td>
</tr>
<tr>
<td>DIF</td>
<td>15.9 (5.6)</td>
<td>16.0 (5.6)</td>
<td>15.7 (5.8)</td>
<td>0.83</td>
</tr>
<tr>
<td>DDF</td>
<td>11.9 (4.1)</td>
<td>11.6 (3.8)</td>
<td>13.4 (5.1)</td>
<td>0.04</td>
</tr>
<tr>
<td>EOT</td>
<td>18.5 (4.6)</td>
<td>18.6 (4.2)</td>
<td>17.6 (6.3)</td>
<td>0.30</td>
</tr>
<tr>
<td>Alexithymic, n (%)</td>
<td>13 (8.1%)</td>
<td>11 (8.1%)</td>
<td>2 (8.0%)</td>
<td>0.98</td>
</tr>
<tr>
<td>Headache days</td>
<td>10.6 (8.9)</td>
<td>9.8 (8.5)</td>
<td>14.5 (9.8)</td>
<td>0.01</td>
</tr>
<tr>
<td>Headache disability</td>
<td>46.8 (22.1)</td>
<td>45.4 (22.2)</td>
<td>54.4 (20.1)</td>
<td>0.06</td>
</tr>
<tr>
<td>Headache severity</td>
<td>16.8 (6.8)</td>
<td>16.2 (6.5)</td>
<td>19.0 (7.5)</td>
<td>0.13</td>
</tr>
</tbody>
</table>

Data presented are mean (SD) unless otherwise noted.

$P$ values are from $t$-tests comparing Caucasians and African Americans, except for percentage female and percentage alexithymic (chi-square).

Headache severity available only on 72 participants (55 Caucasians, 17 African Americans).
smaller number of African American migraine patients prevented some of their correlations from reaching traditional statistical significance, but they were nearly moderate in magnitude, and the discrepancy from the Caucasians is clear.) An even clearer ethnic difference is seen for headache severity, for which the TAS-20 total and DIF and EOT had moderate magnitude, positive correlations for African Americans, but correlations close to zero for Caucasians. Finally, headache disability showed a different pattern, with the DIF facet correlating positively with disability for Caucasians, but this subscale was uncorrelated with disability for African Americans.

Sample 3: Systemic Lupus Erythematosus

Methods

Subjects and Procedures
This sample consisted of 123 women (54 Caucasians and 69 African Americans) who met American College of Rheumatology criteria for systemic lupus. They were recruited from two rheumatology clinics as part of a longitudinal study of adherence, and patients provided written consent to participate. The sample averaged 42.0 years of age (range 19–80).

Measures

TAS-20
In this sample, alphas for the TAS-20 and the DIF, DDF, and EOT facet were 0.87, 0.84, 0.79, and 0.69 for Caucasians, and 0.80, 0.83, 0.64, and 0.34 for African Americans.

Lupus Symptoms

Lupus manifestations are systemic and quite variable, so researchers typically assess composites of symptoms and signs. In this study, patients were interviewed and reported whether or not they experienced each of 16 symptoms or signs during the past month. Symptoms and signs were taken from available protocols for assessing lupus [62] and included joint pain, joint stiffness, joint swelling, facial rash, mouth ulcers, skin ulcers, hair loss, fever, chills, fatigue, and weight loss. The total number of symptoms/signs endorsed (0–16) was analyzed. The validity of this measure has been shown in a previous study [63].

Results

Comparison of Ethnic Groups on Alexithymia and Health Status Measures
Table 5 presents demographic, alexithymia, and symptom data for the full sample of lupus patients and for the two ethnic groups separately. The two groups were similar on age, but African Americans had slightly less education and substantially lower income than did Caucasians. African Americans scored marginally higher than did Caucasians only on the EOT facet, but after controlling for age, education, and income, the ethnicity difference in EOT scores fell to nonsignificance (P = 0.13). The two groups did not differ on lupus symptom severity.

Table 6 shows the zero-order and partial correlations (controlling for age, education, and income) between alexithymia scales and lupus symptoms for the full sample and for Caucasians.
and African Americans separately. For the full sample, alexithymia was correlated significantly but rather weakly with lupus symptoms. Clear differences emerged, however, for the two ethnic groups. For Caucasians, there was no correlation between alexithymia scores and lupus symptoms. For African Americans, however, the correlations were positive and substantial, not only for the TAS-20 total score, but for the DIF and DDF facets, and these correlations remained significant after controlling for age, education, and income.

Discussion

Is alexithymia a risk factor for the elevated pain and disability reports of African American patients with chronic pain, compared with Caucasians? Across three samples of chronic pain patients, we found only limited evidence that alexithymia is higher among African Americans than among Caucasians. In rheumatoid arthritis patients, total alexithymia and the facets of difficulty identifying feelings and difficulty describing feelings were higher in African Americans than in Caucasians, but these differences were eliminated after controlling for demographic differences. Among patients with lupus, externally oriented thinking tended to be higher in African Americans, but not after controlling for income differences. Among people with migraine headaches, difficulty describing feelings was higher in African Americans than in Caucasians, independent of demographic differences. In African Americans, scores only slightly higher on alexithymia than Caucasians, but this difference is due partly to socioeconomic differences between ethnic groups. This suggests that the greater pain reports of African Americans do not result from different mean levels of alexithymia.

A more provocative finding from all three samples is that alexithymia is more strongly related to pain severity, frequency, and symptoms among African Americans than among Caucasians, suggesting that alexithymia is a stronger correlate—and possibly risk factor—for elevated pain reports among African Americans. The TAS-20 total score was consistently related to greater pain among African Americans, and each of the three facets contributed to this effect in at least one of the samples. The consistency of the alexithymia relationship across the three samples suggests that it is robust and not due to some arbitrary factor.

### Table 5
Demographic, alexithymia, and health status data for patients with lupus

<table>
<thead>
<tr>
<th>Variable</th>
<th>Full Sample (N = 123)</th>
<th>Caucasians (N = 54)</th>
<th>African Americans (N = 69)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>42.0 (11.3)</td>
<td>41.2 (10.5)</td>
<td>42.6 (11.9)</td>
<td>0.47</td>
</tr>
<tr>
<td>Education</td>
<td>13.1 (2.3)</td>
<td>13.4 (2.2)</td>
<td>12.9 (2.4)</td>
<td>0.20</td>
</tr>
<tr>
<td>Income ($) (thousands)</td>
<td>39.7 (35.8)</td>
<td>56.0 (37.3)</td>
<td>26.8 (28.6)</td>
<td>-0.001</td>
</tr>
<tr>
<td>TAS-20 total</td>
<td>52.6 (10.6)</td>
<td>51.4 (10.9)</td>
<td>53.6 (10.3)</td>
<td>0.25</td>
</tr>
<tr>
<td>DIF</td>
<td>18.9 (5.9)</td>
<td>18.7 (5.6)</td>
<td>19.0 (6.1)</td>
<td>0.75</td>
</tr>
<tr>
<td>DDF</td>
<td>13.2 (3.7)</td>
<td>12.9 (3.7)</td>
<td>13.5 (3.7)</td>
<td>0.37</td>
</tr>
<tr>
<td>EOT</td>
<td>20.5 (4.1)</td>
<td>19.8 (4.1)</td>
<td>21.0 (4.0)</td>
<td>0.09</td>
</tr>
<tr>
<td>Alexithymic n (%)</td>
<td>31 (25.2%)</td>
<td>13 (24.1%)</td>
<td>18 (26.1%)</td>
<td>0.80</td>
</tr>
<tr>
<td>Lupus symptoms</td>
<td>5.6 (2.6)</td>
<td>5.8 (2.6)</td>
<td>5.5 (2.6)</td>
<td>0.47</td>
</tr>
</tbody>
</table>

Data presented are mean (SD) unless otherwise noted. P values are from t-tests comparing Caucasians and African Americans, except for percentage female and percentage alexithymic (chi-square).

### Table 6
Zero-order and partial correlations between alexithymia scales and symptoms for women with systemic lupus erythematosus

<table>
<thead>
<tr>
<th>Measure</th>
<th>TAS-20 scale</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sample</td>
<td>Total</td>
<td>DIF</td>
<td>DDF</td>
</tr>
<tr>
<td>Lupus symptoms</td>
<td>Full sample</td>
<td>0.17**</td>
<td>0.17**</td>
<td>0.14/0.17</td>
</tr>
<tr>
<td></td>
<td>Caucasians</td>
<td>0.06/-0.01</td>
<td>0.01/-0.03</td>
<td>0.05/-0.03</td>
</tr>
<tr>
<td></td>
<td>African Americans</td>
<td>0.43**/0.40****</td>
<td>0.42**/0.39****</td>
<td>0.35**/0.34**</td>
</tr>
</tbody>
</table>

* P < 0.10; ** P < 0.05; *** P < 0.01; **** P < 0.001.

Full sample: N = 123; Caucasians: N = 54; African Americans: N = 69.

DIF = difficulty identifying feelings; DDF = difficulty describing feelings; EOT = externally oriented thinking.

Correlations to the left of the slash are zero-order correlations, and those to the right are partial correlations, controlling for age, education, and income.
associated with one sample or one outcome measure. We offer three possible interpretations for this pattern of correlations.

First, elevated alexithymia indicates reduced emotional awareness and expression, which could, in theory, support somatization or somatosensory amplification, leading to increased pain and symptoms. This interpretation is consistent with that offered by Le et al. [45], who found a higher correlation between alexithymia and physical symptoms among Asians than among Caucasians. Le et al. attributed somatization to cultural norms among Asians that discourage emotional awareness and expression in favor of somatic expression of feelings. However, it is not clear that this same cultural norm holds among African Americans, and an alternative process may occur in this group.

Traumatic events such as abuse and violence are positively correlated with pain severity, particularly in women [64], and alexithymia also is elevated among people who have been traumatized [65,66]. Furthermore, African Americans with chronic pain are more likely than Caucasians to have post-traumatic stress disorder [67]. Thus, it is possible that increased life stress leads to a greater link between pain and alexithymia among African Americans than among Caucasians.

A third interpretation of the relationship between alexithymia and pain in African Americans involves communication patterns rather than somatization. The report of pain may be a culturally validated and medically reinforced alternative to directly expressing negative emotions among African Americans in healthcare settings. African American patients score higher than Caucasian patients on “social desirability,” or the tendency to present oneself in a favorable light, and this response style appears to mask reports of negative emotions among African Americans [68]. Notably, social desirability correlates positively with pain severity and self-reported disability, while correlating inversely with negative emotions [69]. If the alexithymia scale is capturing this tendency to suppress or inhibit the communication of negative emotions, then together, these findings may explain why alexithymia is more highly correlated with pain among African Americans than Caucasians.

In contrast to the consistent finding that alexithymia is positively related to pain and symptoms among African Americans but not Caucasians, we found no evidence that this pattern applied to physical disability. Among rheumatoid arthritis patients, alexithymia correlated at about the same, relatively low magnitude with physical disability for both ethnic groups, and among those with migraine headaches, difficulty identifying feelings was more highly correlated with disability among Caucasians than among African Americans. Thus, consistent with other observations [70], alexithymia is more related to subjective variables, such as pain, than to behavioral variables, such as physical functioning.

Limitations of the Research
The samples were largely or exclusively female; thus, we do not know whether the ethnic differences in how alexithymia correlates with pain apply to males, particularly African American males. Also, we studied only African Americans and Caucasians, largely because these populations are well represented in our urban area. Research is needed on alexithymia and pain in other ethnic groups to determine whether the findings are limited to African Americans, or are more generally related to minority status, cultural norms about emotional expression, or socioeconomic conditions. In addition, although the TAS-20 is the leading alexithymia measure, it has limitations. Although the full scale and the difficulty identifying and difficulty describing feelings facets showed adequate reliability in both ethnic groups, the externally oriented thinking facet was not internally consistent in two of the three African American samples. This facet’s lack of reliability in some populations has been noted in cross-cultural research [56], and may be one reason that it was unrelated to pain measures in our rheumatoid arthritis and lupus samples. It should also be noted that mean alexithymia scores were relatively low, and the samples did not include large numbers of clinically alexithymic people, which could have attenuated the magnitude of the obtained relationships between alexithymia and pain measures. Finally, the validity of all psychological measures may vary across ethnic groups, and more research on this alexithymia scale needs to be conducted with African American samples.

Other limitations pertain to the interpretation of the relationship between alexithymia and pain. This study’s cross-sectional correlations obviate the conclusion that alexithymia causes increased pain in African Americans. Other interpretations are possible. It is conceivable that long-standing and severe pain or health problems cause secondary alexithymia [29]. Also, some “third variables” are likely correlated with both alexithymia and pain and may account for the obtained relation-
ships. Although we controlled for several demographic third variables, thus ruling them out as confounds, other variables (e.g., verbal ability or mood) may account for the correlations. In particular, provider behavior appears to differ among ethnic groups, and differential treatment may lead to increased pain among African Americans. Unfortunately, we did not assess provider or treatment variables to evaluate their possible influence on the observed relationships. Finally, pain reports are multidetermined, and no single factor, including alexithymia, fully accounts for the increased pain of a group. Alexithymia is probably one of many factors related to elevated pain severity among African Americans, and other variables may be more important than alexithymia.

Implications of the Research
These findings have several research and clinical implications. First, previous studies’ findings of small or nonexistent relationships between alexithymia and pain severity may be due to the particular ethnic group studied or due to variance in ethnicity left unexamined in those samples. Our data suggest that the relationship is larger in some groups than in others, and future research on alexithymia and pain should examine ethnic subgroups and other moderators. Second, this study suggests that variations in emotional awareness and expression may be more important to pain reports for African Americans than for Caucasians. We hope that this finding opens a new line of investigation into the psychological causes of ethnic differences in pain reports. Third, if further research demonstrates that pain is elevated in African Americans due, in part, to inhibited expression of negative emotion, then practitioners might consider whether supporting or encouraging African Americans to express their thoughts and feelings more openly results in reduced pain reports. Finally, although little research has been conducted on the treatment of alexithymia, several clinicians have generated intervention approaches aimed at improving emotional awareness and expression, and they have suggested that this leads to improve somatic health [25,71,72]. If the role of alexithymia in chronic pain is greater among African Americans, then these alexithymia interventions may be most profitably targeted to this group.

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