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Comparing the Experiential and Psychosocial Dimensions of Chronic Pain in African Americans and Caucasians: Findings from a National Community Sample

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Abstract

Objectives—To ascertain whether non-Hispanic African American and Caucasian chronic pain sufferers differ or converge in their self-reports of pain experience and pain adjustment.

Research Design—A telephone survey of U.S. English-speaking adults selected via random-digit dialing procedures and constrained to locate persons with chronic pain within selected gender by age groupings.

Subjects—A national sample of 2,407 participants contained a total of 214 non-Hispanic African Americans. A sample of 214 non-Hispanic Caucasians was randomly selected from the larger set of 1,935 Caucasian participants to serve as a comparison group for the present study.

Measures—Participants provided responses to interviewer questions that assessed pain experience (severity, interference, and emotional burden) and psychosocial outcomes (coping, attitudes and beliefs, catastrophizing, social support and hindrance, pain's interference with daily life activities, treatment status, and medication taking).

Results—Although African American and Caucasian adults with chronic pain did not differ significantly in pain severity, interference, emotional burden, or current treatment status, multivariate analyses revealed differences in several domains of psychosocial functioning. Compared to Caucasians, African Americans reported greater pain-related interference with daily living, deficiencies in coping, and counterproductive attitudes and beliefs. African Americans also reported greater impatience and insensitivity from the most important person in their lives.

Conclusions—Psychosocial dimensions of chronic pain differed between community-residing African American and Caucasian adults surveyed as part of a national sample.

Keywords

Racial Differences; Chronic Pain; Pain Attitudes; Coping; Pain Context Model

Introduction

Fifty years ago, research on pain focused primarily on Caucasian samples. However, contemporary investigations of nociceptive experience have increasingly recognized the importance of race, ethnicity, education, geographic location, and related demographic

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characteristics for fully appreciating the determinants of patient pain adaptation and the factors that shape the course of professionally mediated pain treatment [1–4]. Although health care providers readily accept the responsibility, explicitly articulated via clinical-practice guidelines, to provide high quality pain assessment and treatment to all, they have become increasingly aware, in recent years, of the existence of *health disparities* or inequities in the provision of diagnostic and intervention services across racial and ethnic groups [5,6]. In general, racial/cultural disparities are seen as resulting from system-wide policy decisions, personal biases, and interpersonal communication problems arising in medical settings [5,7].

In addition to documenting disparities in service delivery at the systems level, investigators have likewise engaged in laboratory and clinical field research directed at assessing racial/ethnic differences in nociception, as well as clarifying mechanisms that may underlie measured discordances at both the sensory/experiential and behavioral adaptation levels [2,5]. For example, do members of different ethnic or racial groups demonstrate differential sensitivity or tolerance thresholds for induced acute pain? Do racial groups differ in the bodily loci of pain associated with different illnesses? Do racial groups differ in their use of pain coping strategies on a day-today or moment-to-moment basis? Uncovering answers to questions such as these represents a vital step in understanding and redressing the disparate pain trajectories that appear to characterize racial minorities within the medical system.

Although researchers tracking racial divergences in receipt of clinical services have sometimes made use of national samples [8], the use of national databases for the collection of information about pain perception and pain adaptation is rare. Rare also is the collection of pain-related information from community samples, in contrast to database samples selected from the medical records of hospital and clinic patients. A major purpose of the research reported in the present paper is to compare and contrast the chronic pain experiences and reactions of non-Hispanic African Americans and non-Hispanic Caucasians drawn via a random-digit dialing procedure, from a national sample of community-residing adults. Moreover, in contrast to the use of pain measurement tools that have been constructed by using local samples of patients, we employed a set of newly developed assessment instruments (to be described below) that were validated on a national sample.

Differences in Black and White

Diverse findings from studies employing a variety of methodologies currently suggest that African American and Caucasian adults experience acute noxious stimulation differently, with the African American samples typically revealing greater sensitivity to pain stimuli [2,9,10]. In a study comparing African Americans and Caucasians recruited from an interdisciplinary pain center, Edwards, Doleys, Fillingim, and Lowery [11] reported that African American patients showed relatively lower levels of ischemic pain tolerance (induced via a submaximal effort tourniquet technique). Moreover, the investigative team examined the links between patients’ reactions to the acute pain induction and their scores on a set of clinical pain measures. Pain tolerance varied inversely with perceived pain severity. Insofar as comparative differences on the clinical measures were concerned, the African American patients yielded higher scores for pain-related disability and pain severity.

The potential role of ethnic and racial differences in the processing of *chronic pain* is an important topic, but one that has received comparatively less attention than the study of differences in acute pain reactivity. In a wide-ranging analysis of 1,557 chronic patients, Riley, Wade, Myers, Sheffield, Papas, and Price [12] found that African Americans reported significantly higher levels of pain unpleasantness and pain-related emotionality (depression, anxiety, frustration, anger, and fear), but not pain intensity (all measured on a series of visual analog scales). Pain behavior ratings, obtained via interview, were also higher for African Americans in this study. These findings are consistent with data from other studies [9,10], suggesting that African American chronic pain patients process emotional information in a less effective manner as compared to Caucasians [5]. If African Americans process emotional data differently than do Caucasians, we would expect to find that they use coping strategies differentially as well [2]. Although limited to clinic-defined populations of persons with sickle cell disease [13,14], data from a systematic program of research suggest that African Americans show a preference for illness-and negativity-focused methods of managing their pain, even after controlling for disease severity and demographics. Evidence also exists that points to family-related characteristics, such as conflict and cohesion, in shaping the coping strategies of sickle cell sufferers [15]. Determining whether coping preferences differ between African Americans and Caucasians *selected from the general population* serves as a key rationale for the present study. The findings reported in this paper were intended not only to detail racial similarities and differences in chronic pain processing within a community sample, but also to do so in a reasonably comprehensive fashion. In seeking to accomplish our aims, we made use of the Pain Context Model [16,17]. This perspective asserts that pain (like many other essential constructs) is best understood from multiple, compatible levels of analysis. The most basic level is biomedical, and it encompasses the neurophysiology of pain. Despite its importance, the biomedical level (Context I) is not dealt with in the present report. Context II focuses upon the “focal–experiential” dimensions of pain, including its sensory–perceptual, affective, and functional components. As noted above, a sizeable literature has examined Context II components, largely via laboratory procedures. Context III gauges the impact of pain on the enterprise of living; and it involves the processing of chronic pain at the personal and social levels, and is typically accessed via questionnaire or interview. Context III has been termed the “psychosocial” or relational level [16,17]. Context III includes such dimensions as pain coping, pain attitudes, and the manner in which a patient’s social network responds to pain.

By means of two newly developed instruments informed by the Pain Context Model, the Profile of Chronic Pain: Screen (PCP:S) and the Profile of Chronic Pain: Extended Assessment (PCP:EA) (described in greater detail below) [18,19], we set out to examine similarities and differences in experiential and psychosocial aspects of chronic pain as reported by African Americans and Caucasians. We formulated no formal hypotheses, seeking rather to discover and describe the racial patterns characteristic of our nonclinic sample. The pain variables that we assessed have been the subject of prior research (some of which was cited above), but never, to our knowledge, through a combined package of Context II and III instruments with good psychometric properties administered via telephone interview to a large, representative sample of community-residing adults with chronic pain.

Methods

Sample

Subjects included two subsamples drawn from a nationwide, community sample of 2,407 individuals with chronic pain. The community sample, obtained through random-digit dialing (RDD),[1] was stratified by gender and according to three age groupings (25–44, 45–64, and 65–80 years). Each of the six age by gender groups consisted of approximately 400 subjects with chronic pain. Respondents were screened via telephone interview using PCP:S. To be eligible for participation, subjects were required to score at least one standard deviation above the mean on one or more of the three scales of the PCP:S. Subjects were also required to speak English. Of a total of 9,759 individuals who were screened for chronic pain, 3,050 were judged

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[1] The RDD process begins with the generation (by a survey sampling company) of a list of telephone numbers that are randomly drawn from across the United States so as to be representative of population distribution patterns. This original list is then cleaned to exclude nonworking, cellular, and nonresidential numbers. A working number was called a minimum of six times. Calls were made on all days of the week and throughout the day and evening. Calling patterns were adjusted to fit the time zone being called, so as to neither call too early in the morning nor too late in the evening.

eligible. Of those who were eligible, 2,407 chose to participate, producing an excellent response rate of 79% for a telephone survey. To examine possible selection biases, the 643 unwilling participants were compared to the 2,407 willing subjects. A multivariate analysis of variance (MANOVA) was conducted in which willingness to participate was the between-subjects factor and scores on the PCP:S were the dependent measures. The groups were found to differ significantly (Wilks' Lambda = 0.97; $F_{3,3046} = 31.85$, $P < 0.001$). However, the obtained difference was quite small, as reflected by the partial eta-squared of 0.03. A chi-square was conducted to examine whether willingness was related to racial category, using only the African American and Caucasian subjects. Race was significantly related to willingness ($\chi^2(1) = 12.23$, $P < 0.001$), with African Americans being somewhat more willing (87.3%) to participate than Caucasians (77.7%).[2]

Those who were eligible for participation on the basis of their scores on the PCP:S and who agreed to participate were administered the PCP:EA via telephone interview. The average duration of the interview was 34 minutes. Respondents were paid 30 dollars in return for their participation.[3]

The national sample of 2,407 included 214 non-Hispanic African Americans (89 males; 125 females) and 1,935 Caucasians (984 males, 951 females).

Our analytic plan called for a number of MANCOVA. However, unequal sample sizes can be problematic for MANCOVA, with the procedure becoming less robust to violations of assumptions (especially unequal group covariance matrices) as sample size discrepancies increase [20]. Therefore, a Caucasian *comparison group* of 214 (89 males, 125 females) participants was drawn at random from the larger sample of 1,935 Caucasians, with the constraint that the proportion of males and females be the same as that of the African American sample.

The Caucasian group was significantly older (mean age = 56 years) than the African American group (mean age = 51; $t(421) = 2.99$, $P < 0.01$). Educational attainment was significantly related to race ($\chi^2(3) = 17.92$, $P < 0.001$), with the Caucasian sample generally reporting higher levels of education. Marital status was also significantly related to race ($\chi^2(4) = 26.14$, $P < 0.001$). Fifty-eight percent of the Caucasian group was married, 15% single, 4% living together, 15% divorced, and 8% widowed. In contrast, 39% of the African American group was married, 32% single, 6% living together, 11% divorced, and 12% widowed.

Demographics

Respondents were asked to describe themselves as either 1) White, not of Hispanic origin, 2) Black, not of Hispanic origin, 3) American Indian or Alaskan Native, not of Hispanic origin, 4) Asian, not of Hispanic origin, 5) Native Hawaiian or Pacific Islander, not of Hispanic origin, 6) Hispanic, 7) Mixed, or 8) Other. Participants also provided information concerning age, gender, educational attainment, marital, and employment status.

Measures

All 2,407 participants completed both components of the PCP:S and PCP:EA [18,19]. The primary rationale for constructing a new instrument to assess constructs measured by existing tools is that we wished to develop a comprehensive, but comparatively brief, instrument with national norms for use in the general population. Because these two instruments are newly

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[2] Owing to the large discrepancies in sample size for the willing and unwilling subjects, a second set of analyses was conducted in which the unwilling group of 643 was compared to a random sample of 643 willing participants. The results were essentially the same as those reported using the full sample of willing subjects.

[3] The first 927 subjects were paid 40 dollars, but because of budget constraints, the remaining respondents were paid 30 dollars.

minted assessment devices, their psychometric properties are presented below in sufficient detail to allow readers to evaluate their utility for addressing the study questions.

The PCP:S consists of 15 items that reflect: a) *severity* of the individual's pain problem (e.g., "What was your *average* level of pain, on days when you had pain, during the past six months?"); b) *interference* with functioning (e.g., "How often over the past 6 months have you had to give up enjoyable activities because of your pain?"); and c) the *emotional burden* of pain (e.g., "How often has your pain caused you to feel sad or depressed?"). The PCP:S possesses good psychometric characteristics, with alpha coefficients ranging from 0.68 to 0.90 and retest coefficients ranging from 0.81 to 0.88. Correlations with social desirability response bias have been found to be nonsignificant and less than 0.15. Adequate evidence of validity has also been obtained by using multiple samples and methods. For example, the correlation between the PCP:S Severity scale and the Multidimensional Pain Inventory (MPI) [21] Severity scale is 0.61 ($P < 0.01$). The correlation between the PCP:S Pain Interference and the MPI Interference is 0.62 ($P < 0.01$). The PCP:S Emotional Burden scale has a correlation of 0.53 ($P < 0.01$) with the MPI Negative Mood scale. Correlations between the PCP:S Severity, Interference, and Emotional Burden scales and the Chronic Illness Problem Inventory total score [22] are 0.46, 0.81, and 0.81, respectively. The factor structure of the PCP:S has been established via confirmatory factor analyses (CFAs) in multiple samples, including a group of outpatients with chronic pain and two national samples of individuals with chronic pain [18]. The final CFA results from the second replication sample (N = 400) suggested a stable, good fit, with $\chi^2(85, N = 400) = 247.8$, $P < 0.001$, CFI = 0.959, SRMR = 0.013, and RMSEA = 0.069.[4]

Finally, national norms for the PCP:S for both genders and three age groups (25–44, 45–64, and 65–80 years) were derived from a separate sample of 2,449. The subscales of the PCP:S are similar in content to several existing screening instruments, such as the Multidimensional Pain Inventory screen and the Medical Outcomes Survey Pain Index (see Von Korff [24] for a review of screening indexes). However, the PCP:S is the only instrument of its type for which national age-and gender-based norms are available.

The PCP:EA consists of 95 items. Not all items and scales were used in the present analyses. Those that were used are here briefly described. First, respondents were asked to indicate whether over the previous 6 months they had regularly experienced pain in each of 14 areas of the body. Next, 13 scales of the PCP:EA were administered, providing information on 1) pain coping (15 items; the Guarding, Ignoring, Positive Self-Talk, and Task Persistence scales), 2) pain attitudes and beliefs (18 items; the Perceived Disability, Pain Control, Belief in a Medical Cure, and Pain-Induced Fear scales), 3) catastrophizing (4 items; the Catastrophizing scale), and 4) the positive and negative social responses of the most important person in the subject's social network (15 items; the Emotional and Tangible Support scales and the Insensitivity and Impatience scales). A series of single items provided additional information on level of functioning beyond that provided by the PCP:S, and included ratings of pain interference with daily functioning in 10 areas of living as well as the respondent's ability to work despite pain. Information was also provided about the respondent's recent treatment efforts (the use of prescription and over-the-counter pain medicines and current treatment by a health care professional).

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[4] The choice of fit indices follows recommendations by Hu and Bentler [23] that the CFI (comparative fit index) or RMSEA (root mean square error of approximation) be used in conjunction with the SRMR (standardized root mean square residual). A model is deemed to show adequate fit when a CFI index greater than 0.95 is observed with SRMR less than 0.08, *or* when RMSEA less than 0.08 is observed in conjunction with SRMR less than 0.08.

The average retest reliability for the 13 scales of the PCP:EA was 0.74. The average alpha coefficient was 0.77. Social desirability for the 13 scales was minimal. The average scale correlation with social desirability response was 0.13.

Space limitations preclude a full discussion of all the available validity data for the PCP:EA. However, examples of our ongoing validation effort, involving several national samples of individuals with chronic pain, are provided next. The PCP:EA Disability, Control, and Pain-Induced Fear scales were correlated 0.67 ($P < 0.01$), −0.44 ($P < 0.01$), and 0.57 ($P < 0.01$), respectively, with scores on the Pain Disability Index (PDI) [25]. Belief in a Medical Cure was found to relate positively to satisfaction with pain treatment ($r = 0.30$, $P < 0.01$) and to frequency of taking prescription medication ($r = 0.40$, $P < 0.01$) and inversely with use of over-the-counter pain medication ($r = -0.21$, $P < 0.01$). In addition, those respondents who could not work because of pain and those in treatment for pain differed significantly from their counterparts (those who *can* work and those *not* in treatment) in the use of PCP:EA-assessed coping strategies. The four coping scales accounted for 27% of the variance in a measure of level of interference of pain with a variety of daily tasks. Catastrophizing related positively to scores on the Center for Epidemiological Studies Depression Scale [26] ($r = 0.59$, $P < 0.01$) and to scores on the PDI ($r = 0.59$, $P < 0.01$). The two social support scales were correlated significantly with other measures of pain-based social support, yielding validity coefficients ranging from 0.35 to 0.67 (average = 0.48). The Insensitivity and Impatience scales were correlated 0.53 and 0.54, respectively, with the Punishing Responses scale of the MPI [21].

Separate confirmatory CFAs were conducted on 1) the four pain attitude scales, 2) the four pain coping scales, 3) the catastrophizing scale, and 4) the social response scales. The CFAs involved an initial set of single, and multifactor analyses followed by two replications in subsequent samples. Sample sizes for each of the development CFAs were approximately 400, and the final CFAs were based on approximately 600 subjects with chronic pain. All final CFAs yielded CFIs >0.95, RMSEAs ranging from 0.000 to 0.060, SRMRs ranging from 0.005 to 0.048, and significant factor loadings, suggesting excellent fit for all models.

Results

A large portion of the present data set was analyzed by means of a series of MANCOVAs. Prior to each MANCOVA, the data were examined for the presence of univariate and multivariate outliers. For each scale, z-scores were calculated within each racial group. A case was considered as a potential univariate outlier if the subject's z-score was three standard deviations above or below the mean of the subject's racial group. To identify possible multivariate outliers, Mahalanobis Distance scores were calculated among those sets of variables to be examined via MANCOVA. Cases with scores that exceeded the critical chi-square at the 0.001 level of significance were considered potential outliers. Finally, each MANCOVA was conducted with and without the relevant potential outliers. Only if a substantive change was observed (e.g., a significant effect was no longer significant) were the outliers excluded from the analysis. Unless otherwise stated, outliers were retained.

The Experiential Aspects of Chronic Pain

The African American and Caucasian groups both reported an average of approximately six areas of the body in which they experienced pain on a regular basis over the prior 6 months. The most frequently reported areas of pain included pain in the head, bones, joints, neck, back, hips, and muscles.

A series of 14 chi-square analyses were conducted to ascertain whether the two groups differed in the areas of the body in which they experienced pain (see Table 1). For a given area (e.g., head), a two by two chi-square using race and endorsement pattern (yes vs no) was conducted.

The results indicated that the two groups generally did not differ in the body areas in which they experienced pain, with the exception of significantly greater endorsement of pain in teeth or gums on the part of the African American group.

As noted previously, to be eligible for participation in the present study, respondents were required to score one standard deviation, or more, above the mean on *at least* one of the scales of the PCP:S. Many subjects exceeded this minimum criterion, scoring one standard deviation above the mean on two or on all three scales. The African American and Caucasian groups did not differ significantly in the number of scales of the PCP:S on which they scored one standard deviation, or more, above the mean ($\chi^2(2) = 0.85$, $P > 0.05$). Thirty-one percent of the Caucasian group scored one standard deviation above the mean on one scale of the PCP:S, 26% on two scales, and 43% on all three scales. Among the African American respondents, 27% scored one standard deviation above the mean on one scale of the PCP:S, 27% on two scales, and 46% on all three scales.

Table 2 displays means and standard deviations for the two racial groups on the three scales of the PCP:S. A MANCOVA was conducted in which possible differences in the PCP:S scores of the two racial groups were evaluated, with gender, age, and level of education as covariates. The results (Wilks' Lambda = 0.99, $F_{3,421} = 2.02$, $P > 0.05$) indicated that the groups did not differ significantly on the scales of the PCP:S.

Chronic Pain and Functioning

Several analyses addressed possible group differences in ability to function while living with chronic pain. First, the issue of employment was addressed. Approximately 30% of the Caucasians were employed full time, whereas 25% of the African Americans were employed full time. This difference was not significant ($\chi^2(1) = 1.18$, $P > 0.05$). Of greater interest was whether reduced employment status (working part time, or being disabled, retired, or unemployed) was related to chronic pain. Respondents who reported that they were working part time, were disabled, retired, or unemployed were asked whether their status was due to their pain (see Table 3). Of the 127 Caucasians who were asked this question, 50 (39.4%) reported that their employment status *was* due to their pain, and 77 (60.6%) reported that it *was not* due to their pain. Conversely, of the African Americans who were asked this question, 104 (70.7%) reported that their employment status *was* due to their pain, whereas 43 (29.3%) reported that it *was not* pain-related. Thus, race was significantly related to reduced employment due to pain ($\chi^2(1) = 27.25$, $P < 0.001$). To examine whether race was related to a reduction in *specific types of employment*, four separate chi-squares were conducted in which the relationship between race and reduced employment status due to pain was examined for part-time workers ($\chi^2(1) = 2.20$, $P > 0.05$), unemployed ($\chi^2(1) = 0.36$, $P > 0.05$), retired ($\chi^2(1) = 8.65$, $P < 0.01$), and disabled workers ($\chi^2(1) = 0.51$, $P > 0.05$). Hence, group differences in employment status due to pain appear to be confined to *retired individuals*, with significantly more African Americans (42%) than Caucasians (15%) reporting retirement due to pain.

A second focus was on whether the chronic pain groups differed in their ability to engage in activities of daily living. Participants rated the extent to which pain interfered with each of 10 areas of daily living (see Table 4 for means and standard deviations). A MANCOVA was conducted to examine possible group differences in functioning in these 10 areas, with age, gender, and level of education serving as covariates.[5] The significant omnibus test (Wilks' Lambda = 0.902, $F_{10,359} = 3.88$, $P < 0.001$) was followed by pairwise univariate tests. As shown in Table 4,

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[5] A comparison of the results of MANCOVA with and without six multivariate outliers revealed a slight substantive difference. Thus, because the outliers appeared to be exerting undue influence, the results of the MANCOVA in which the outliers were excluded is reported.

African Americans reported significantly more interference from pain in all activities except sleep.

Psychosocial Aspects of Chronic Pain

Coping—A MANCOVA was conducted (by using age, gender, and education as covariates) to evaluate possible group differences in coping (Guarding, Ignoring, Positive Self-Talk, and Task Persistence). The multivariate test was significant (Wilks' Lamba = 0.945, $F_{4,408} = 5.95$, $P < 0.001$) as were the univariate comparisons involving the Guarding and Task Persistence scales (see Table 5). African Americans reported significantly more guarding and less task persistence than did Caucasians.

Pain Attitudes and Beliefs—The two groups' scores on the pain attitudes and beliefs scales (Disability, Control, Belief in Medical Cure, and Pain-Induced Fear) were compared via MANCOVA, with age, gender, and level of education as covariates.[6] The omnibus multivariate test was significant (Wilks' Lambda = 0.972, $F_{4,402} = 2.93$, $P < 0.05$). All follow-up univariate tests were significant (see Table 5). As compared to Caucasians with chronic pain, African Americans reported significantly higher perceptions of disability, lower levels of control, greater belief in a medical cure, and more pain-induced fear.

Catastrophizing—An analysis of covariance (ANCOVA), with age, gender, and level of education as covariates, was performed to evaluate differences in the groups' tendencies to catastrophize. A shown in Table 5, the African American group reported significantly higher levels of catastrophizing, as compared to the Caucasian group ($F_{1,418} = 7.63$, $P < 0.01$).

Social Responses to Pain—Respondents identified the most important adult in their life and then rated the extent to which this person engaged in positive and negative social responses to pain. These data were evaluated by a MANCOVA, with age, gender, and educational level as covariates.[7] The groups differed significantly at the multivariate level (Wilks' Lambda = 0.928, $F_{4,383} = 7.44$, $P < 0.001$). Follow-up univariate comparisons (Table 5) revealed that the African American group reported significantly higher levels of emotional support and greater insensitivity and impatience from their most important person than did the Caucasian group.

Treatment Status and Use of Prescription and Over-the-Counter Pain Medications

Seventy-five percent of the Caucasian group and 73% of the African American group reported that they were currently receiving treatment from a health care professional for their pain problem. The slight difference in rate of treatment was non-significant ($\chi^2(1) = 0.30$, $P > 0.05$).

A MANCOVA was conducted to ascertain whether the two groups differed in the frequency of use of prescription and over-the-counter pain medications, with age, gender, and level of education as covariates. The significant omnibus test (Wilks' Lambda = 0.920, $F_{2,420} = 18.30$, $P < 0.001$) was followed by univariate analyses of group differences. As shown in Table 6, Caucasians reported a higher frequency of use of prescription pain medications, whereas African Americans reported a greater frequency of use of over-the-counter pain medications.

Discussion

The present findings can best be summarized with regard, first, to the experiential aspects of pain as assessed by the PCP:S, followed by the psychosocial dimensions as assessed by the PCP:EA.

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[6] Three multivariate outliers unduly influenced the MANCOVA, and thus they were excluded from the analysis.

[7] Ten outliers were associated with substantive changes in the results of the MANCOVA and were excluded from the analysis.

With respect to the constellation of psychological attributes that characterize an individual's experience of hurt, emotional burden, and functional interference, our data suggest that community-residing African American and Caucasian adults do not differ significantly. Severity is rated as somewhat high in both groups, whereas perceived interference and emotional burden are moderate for both.

Because much of what is known about chronic pain derives from clinic samples, and because community samples tend to resemble primary care populations [27], our findings hold important implications for understanding the pain adaptation process as it is manifest among the largest segment of pain sufferers—those *not* enrolled in specialized treatment programs. Although African Americans often show greater acute pain sensitivity in laboratory pain inductions, and although African American chronic pain patients in treatment have been known to report higher levels of pain associated with specific medical conditions (such as arthritis, low back pain, and AIDS) [1,2], our data suggest that the average African American patient in primary care is likely not to differ from his or her Caucasian peer at least with respect to the sensory–perceptual, functional performance, and emotional aspects of pain. The findings, based on patterns emerging on the PCP:S, imply that the sorts of racial disparities that have been noted in the past may be due less to race-related, genetic differences in endogenous pain modulation mechanisms and more to culturally and psychologically generated differences in the complex, unfolding process of living with (or adapting to) pain. Such an interpretation (which must be made cautiously in light of our need to replicate our findings and our reliance on retrospective reporting) is supported by our analyses of daily functioning and psychosocial adaptation (see Tables 4–6).

For example, although full-time employment was low in both racial groups (recall that fully one-third of our sample was over the age of 65 years), the ratio of African American to Caucasian respondents implicating pain as the cause of their unemployment was approximately 7 : 4. It would be useful to explore differences in specific occupational patterns by race that pertain to this finding. Is it the case that African Americans are more likely to hold certain types of jobs that may be more difficult to perform under conditions of chronic pain? Unfortunately, the present data do not include information concerning possible differential job requirements.

That African American pain sufferers see themselves as more functionally disabled relative to Caucasian respondents is reflected also in their ratings of pain's interference with 10 common activities of daily living (Table 4). African Americans rate themselves as significantly more impeded (to a moderate extent) on nine of the 10 activities. Previous research that has sought to delineate the racial and psychosocial predictors of long-term disability has been faulted because clinic patients (who comprise the majority of subjects providing data in this area) are not representative of pain sufferers generally, and might be especially motivated to exaggerate the extent of their problems in an effort to garner the attention of medical specialists. Our findings suggest that, among adults likely to present to primary care physicians, racial differences in perceived disability will continue to be displayed. Thus, African Americans not only see their general health in less positive terms than do non-Hispanic Caucasians [5], but they may also tend to see themselves as being somewhat less able to engage in the business of pursuing life goals in the context of their chronic pain problem.

Given the above results, it is puzzling that the two groups *did not* differ in the PCP:S ratings of interference. Although there is some overlap in the content of the PCP:S Interference scale and the ratings of 10 areas of daily functioning, the latter measure is more comprehensive and, as a consequence, may be more sensitive to everyday differences in task performance.

Because most people with persistent pain adjust well, it is critical that we seek to understand why some individuals fail to achieve normal levels of what can be called *hedonic adaptation* [28]. Adaptation refers to the processes by which the effects of a repeated stimulus are reduced; and "hedonic adaptation" refers to the processes that unfold when the stimulus is affectively charged (as is the case with pain). Our findings from the extended assessment battery of the Profile of Chronic Pain may help to further clarify the parameters of hedonic adaptation among African American and Caucasian adults with chronic pain.

For example, coping is a major mode of adaptation, and it appears that their dependence upon guarding and their reluctance to persist at daily tasks are two aspects of coping style that set community-residing African American adults apart from Caucasians. That the two groups do not differ in their use of positive self-talk or ignoring as coping strategies suggests that it may be through the motoric expression/inhibition of pain that African Americans are uniquely socialized. Clearly, observational research is needed to confirm this speculation.

African Americans differed significantly from Caucasians in all of the PCP:EA measures of beliefs and attitudes, with the former showing more pain-induced fear, greater perceived disability, more faith in a medical cure, and less perceived control over their pain problem. The pattern of "passivity" in dealing with pain that has been found among clinic samples of African Americans relative to Caucasians seems to be repeated in our community sample. Moreover, African Americans tended to catastrophize to a greater extent than did the Caucasians in our study. Thus, we might add "negativity" to the "passivity" descriptor in characterizing our African Americans participants. Of course, it remains for more sophisticated longitudinal field research to discover the origins of, and the maintaining, factors for these attitudinal differences.

Interpersonal exchange processes act as an important moderator of the adaptation process, with the role of social negativity (e.g., insensitivity, impatience) often overlooked in favor of social support assessment. Both social support and social negativity have been linked to important outcomes among chronic pain patients [29–32]. We found African Americans relative to Caucasians characterizing their "most important persons" as providing them not only with more emotional support, but also with more insensitivity and greater impatience. The receipt of such mixed interpersonal messages may be particularly difficult to reconcile and may ultimately undermine patients' attempts at adaptation.

Several potential factors that might have unduly influenced the present results were examined. The groups did not differ in the areas of the body in which they experienced pain, with the exception of greater endorsement of pain in the teeth and gums by African Americans. Thus, it is unlikely that the present results can be attributable to differences in *where* participants hurt. Neither is it likely that one group is overburdened by the *number* of areas in which pain is experienced as both groups reported an average of six painful areas. The groups did not differ in access to treatment. However, African Americans reported lower use of prescription pain medication and greater use of over-the-counter medications. Consequently, the role of type of medication use in psychosocial functioning may be an important issue for future study. Finally, although group differences in educational attainment were observed, the possible effects of this disparity were covaried out of our analyses.

Limitations and Conclusions

The racial differences obtained in the present study may reflect group variations in a number of relevant variables that were not explicitly assessed. That is, African Americans and Caucasians may have differed not only in their self-ascribed racial label but also in terms of income; occupation; access to, and quality of, health care; chronicity of their pain problem; culturally mediated beliefs and practices; and other factors. Unfortunately, we were unable to examine these potential confounding variables in the present study. Future pain research should not only explore the possible direct and mediating effects of such factors on pain experience and behavior, but also endeavor to differentiate race and ethnicity, ascertain the role of multiple ethnic identities, and engage in more longitudinal (life span developmental) research.

Selection bias is, of course, another inherent problem in almost all studies, whether laboratory, survey, or clinical. In the present study, a comparison of eligible subjects who were willing versus unwilling to participate indicated that the unwilling group was composed of people with slightly less severe pain problems. This difference was quite small, as reflected in the values of the partial eta-squared. A second possible source of bias is the apparent greater willingness to participate on the part of African Americans with chronic pain. However, this effect was likewise found to be negligible.

Other limitations of the present research include reliance on retrospective self-reports, lack of medical verification of participants' pain status, and possible coverage error due to restriction of the sampling frame to those who own telephones.[8] Despite these limitations, this national survey of chronic pain sufferers' experiential and psychosocial attributes provides a unique window into the process of "living with pain" among African American and Caucasian adults. If confirmed by other questionnaire and observational research, findings such as ours could be used to better design treatment and preventive programs targeted to the specific needs of the two largest racial groups in this country.

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[8] The majority of Americans have telephones. According to the Congressional Information Service [33], 95% of households possess a telephone.

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Table 1

Race and endorsement patterns for pain experienced in 14 areas of the body

	Caucasians		African Americans		
Body area	**Yes**	**No**	**Yes**	**No**	**Chi-square**
Head	105	109	110	103	0.28
Bones or joints	171	43	181	33	1.60
Face	38	176	41	173	0.14
Neck or throat	116	98	104	109	1.24
Shoulder or upper back	144	70	147	67	0.10
Lower back	164	50	159	55	0.32
Muscles	122	91	141	73	3.35
Stomach, abdomen, or digestive system	92	122	91	123	0.01
Genital or pelvic area	35	179	45	169	1.54
Chest, breast, or lungs	56	158	70	144	2.21
Skin	30	183	28	185	0.08
Teeth or gums	43	170	69	145	8.02**
Hip or hips	113	101	96	117	2.56
Other area	25	187	30	184	0.47

** $P < 0.01$.

Table 2

Group means and standard deviations for the scales of the Profile of Chronic Pain: Screen

Scale	Possible Range	Caucasians (N = 214) Mean (SD)	African Americans (N = 214) Mean (SD)
Pain Severity	0–30	23.49 (4.44)	23.33 (4.84)
Pain Interference	0–36	16.58 (9.58)	18.22 (9.59)
Emotional Burden of Pain	0–25	14.29 (6.84)	15.88 (6.79)

Pain Severity is assessed by four items, two employing a 0–9 scale and two employing a 0–6 scale. Pain Interference is measured with six items scored 0–6. Emotional Burden is measured with five items that employ a 0–5 response scale.

Table 3

Race and employment status due to pain

		Employment status				
Race	**Status due to pain?**	**Part-time**	**Disabled**	**Retired**	**Unemployed**	**Total**
Caucasian	Yes	7	27	10	6	50
	No	13	5	55	4	77
African American	Yes	12	59	14	19	104
	No	9	7	19	8	43

Table 4

Group means and standard deviations of ratings of Pain Interference with 10 activities of daily living

Activity	**Caucasians (N = 183) Mean (SD)**	**African Americans (N = 190) Mean (SD)**	**Univariate Significance**
Social life	2.23 (1.62)	2.77 (1.73)	$P < 0.05$
Sexuality	1.84 (1.86)	2.64 (1.95)	$P < 0.001$
Sleep	3.11 (1.65)	3.54 (1.56)	ns
Recreation	2.54 (1.66)	3.03 (1.77)	$P < 0.05$
Household chores	2.71 (1.64)	3.27 (1.73)	$P < 0.01$
Working at a paid job	2.16 (2.07)	3.45 (1.92)	$P < 0.001$
Self-care	0.84 (1.40)	1.53 (1.73)	$P < 0.001$
Parenting	1.14 (1.65)	1.89 (1.97)	$P < 0.001$
Routine physical activities (e.g., climbing stairs)	2.57 (1.79)	3.05 (1.78)	$P < 0.05$
Exercise	2.87 (1.71)	3.33 (1.69)	$P < 0.05$

Possible range was 0–5 (low to high interference) for ratings of all activities. The group sample sizes were reduced because of missing data and deletion of six outliers.

Table 5

Group means and standard deviations for coping, attitudes and beliefs, catastrophizing, and social responses to pain

Domain	**Scale**	**Possible Range**	**Caucasians Mean (SD)**	**African Americans Mean (SD)**	**Univariate Significance**
Coping	Guarding	0–15	6.53 (4.28)	8.45 (4.32)	$P < 0.001$
	Ignoring	0–20	13.98 (4.66)	13.45 (5.31)	ns
	Positive self-talk	0–20	15.06 (5.13)	15.11 (5.23)	ns
	Task persistence	0–20	13.86 (4.63)	12.55 (5.53)	$P < 0.01$
Attitudes	Disability perceptions	0–20	9.48 (5.40)	11.09 (6.19)	$P = 0.055$
	Pain control	0–20	18.67 (5.15)	17.59 (6.01)	$P < 0.05$
	Medical cure	0–25	13.61 (6.94)	15.27 (7.68)	$P < 0.05$
	Pain-induced fear	0–25	7.70 (6.78)	10.60 (7.95)	$P < 0.01$
Catastrophizing	Catastrophizing	0–20	7.09 (5.39)	9.53 (6.19)	$P < 0.01$
Social responses	Emotional support	0–15	12.28 (3.43)	13.10 (2.77)	$P < 0.05$
	Tangible support	0–20	13.79 (6.34)	14.76 (6.11)	ns
	Insensitivity	0–20	4.74 (5.58)	7.13 (6.43)	$P < 0.01$
	Impatience	0–20	5.08 (5.47)	6.63 (6.27)	$P = 0.057$

Group sample sizes varied from 197 to 211 for Caucasians and from 194 to 212 for African Americans because of missing data and, in some analyses, exclusion of outliers.

Table 6

Group means and standard deviations in the frequency of use of prescription and over-the-counter pain medications

Type of medication	Caucasians Mean (SD)	African Americans Mean (SD)	Univariate Significance
Prescription pain medication	3.14 (2.08)	2.46 (2.14)	$P < 0.001$
Over-the-counter pain medication	2.43 (2.00)	3.47 (2.04)	$P < 0.001$

N = 213. Possible range for both types of medication was 0–5.