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THE PERCEPTION OF PAIN IN OTHERS: HOW GENDER, RACE, AND AGE INFLUENCE PAIN EXPECTATIONS

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Abstract

Sex, race/ethnic, and age differences in pain have been reported in clinical and experimental research. Gender role expectations have partly explained the variability in sex differences in pain, and the Gender Role Expectations of Pain questionnaire (GREP) was developed to measure sex-related stereotypic attributions about pain. It is hypothesized that similar expectations exist for age and race-related pain decisions. This study investigated new measures of race/ethnic- and age-related stereotypic attributions of pain sensitivity and willingness to report pain, and examined the psychometric properties of a modified GREP. Participants completed the Race/Ethnicity Expectations of Pain questionnaire, Age Expectations of Pain questionnaire, and modified GREP. Results revealed a 3-factor solution to the race/ethnicity questionnaire and a 2-factor solution to the age questionnaire, consistent with theoretical construction of the items. Results revealed a 4-factor solution to the modified GREP that differed from the original GREP and theoretical construction of the items. Participants' pain-related stereotypic attributions differed across racial/ethnic, age, and gender groups. These findings provide psychometric support for the measures examined herein and suggest that stereotypic attributions of pain in others differ across demographic categories. Future work can refine the measures and examine whether select demographic variables influence pain perception, assessment, and/or treatment.

Keywords

Gender; Race; Age; Pain; Expectations

Introduction

The perception of pain in others is an important component of pain assessment and treatment. Clinical and experimental research indicates that pain is perceived, assessed, and treated differently depending on a person's sex, race/ethnicity, and age. Compared to men, women report more pain and have a lower pain threshold and tolerance to experimental pain

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stimuli.^(8, 9, 19, 21, 28) Research also has found that physicians and nurses prescribe less pain medications to women than men.^(2, 5, 7, 15, 27)

Research further suggests that physicians may underestimate the pain severity minority patients.^(1, 4) In one study, physicians underestimated the pain severity of 74% African-American patients and 64% of Hispanic patients.⁽¹⁾ Racial and ethnic biases have been found in pain perception, assessment, and treatment across multiple clinical settings and pain conditions.⁽¹⁰⁾

Age differences in pain perception are less consistent. Some studies indicate older adults are more sensitive to experimental pain than young adults, whereas others suggest a decrease in sensitivity with age.^{(14), (20)} Pain is commonly under-recognized/undertreated in older adults compared to younger adults.⁽¹³⁾ One contributor to this problem is that healthcare providers often do not routinely screen for pain in elderly patients.⁽³⁾ In fact, one study found only 40% of elderly patients were screened for pain conditions.⁽³⁾

Although the extant literature has identified sex, race/ethnicity, and age differences in pain assessment and treatment, less is known about the mechanisms underlying these differences. One potentially contributing factor is the stereotypic expectations of pain in others. The Gender Role Expectation of Pain Questionnaire (GREP) is a standardized measure that examines sex-related stereotypic attributions of pain sensitivity, pain endurance, and willingness to report pain. Studies using the GREP have found both men and women view women as more willing to report pain, less able to endure pain, and more sensitive to pain than men.^(6, 22, 29) Although the GREP has been used primarily in experimental studies involving healthy subjects and undergraduate students, it may also be used in more clinically-relevant research to elucidate, for example, mechanism underlying sex differences in healthcare providers' pain management decisions.

The GREP has been established as a standardized measure that assesses the sex-related stereotypic attributions of pain in others. We are not aware of any similar measures related to race/ethnicity or age. Standardized measures are needed to enhance our understanding of how demographic factors such as sex, race/ethnicity, and age influence expectations of pain in others. Such measures may also enhance our understanding of demographic-based biases in clinical pain management, and inform future education efforts aimed at reducing these biases.

The purpose of this study is to develop questionnaires capable of assessing both race/ethnicity- and age-related stereotypic attributions of pain sensitivity and willingness to report pain. This study will also examine an updated version of the GREP that has been modified to allow for the rank ordering of "typical" referent groups based on participants' responses (see Methods section).

The results of this study were presented at the 2011 American Pain Society conference in a poster presentation.⁽²³⁾

Methods

Participants

Participants included 111 students recruited on the campus of the University of Florida. The sample consisted of 64 women and 46 men, and included 66 Caucasians, 5 African-Americans, 24 Asians, 3 Hispanics/Latinos, 1 American Indian/Alaskan Native, and 12 Others. The average age was 22.80 years, with an age range of 18–68 years. The first 73 participants completed the measures twice in order to assess the test-retest reliability for the

three measures. There were 14 days in between the first and second time the 73 participants filled out the three questionnaires. Participants who completed the measures once and twice were compensated \$15 and \$30, respectively.

Procedure

This study was approved by the University of Florida Institutional Review Board. The study used a web-based delivery model. After giving consent electronically, participants completed a demographic questionnaire, a modified version of the GREP, a Race/Ethnicity Expectations of Pain questionnaire, and an Age Expectations of Pain Questionnaire. At the completion of the study, the participants viewed a debriefing form that explained the aims of the study.

Measures

Pain endurance was not included in the Race/Ethnicity or Age Expectations of Pain questionnaires because previous GREP findings have indicated that pain endurance has found limited statistically significant findings. However, pain endurance was included in the modified GREP in order to keep the old and modified GREP parallel.

Race/Ethnicity Expectations of Pain—The Race/Ethnicity Expectations of Pain questionnaire is comprised of 10 visual analogue scales (VASs) ranging from 0 (not at all sensitive or not at all willing) to 100 (most sensitive imaginable or most willing imaginable) that assess a respondent's view of the typical White, typical Black, typical Hispanic, and typical Asian person with respect to pain sensitivity and willingness to report pain. The questionnaire also assesses the respondent's personal attribution of his or her own pain sensitivity and willingness to report pain. Table 1 displays the descriptive statistics for the individual items comprising this questionnaire. The cronbach's alpha for this measure is $\alpha = .7$.

Age Expectations of Pain—The Age Expectations of Pain questionnaire is comprised of 5 VASs ranging from 0 (not at all sensitive or not at all willing) to 100 (most sensitive imaginable or most willing imaginable) that assess a respondent's view of the typical young adult, middle-aged adult, and older adult with respect to pain sensitivity and willingness to report pain. The questionnaire also assesses the respondent's personal attribution of his or her own pain sensitivity and willingness to report pain. Six additional questions were included to determine what age the participants considered to correspond to a young adult, a middle-aged adult, and an older adult. Participants rated the minimum age of a young adult as 17.84 years ($SD=2.12$) and the maximum age as 27.96 years ($SD=6.45$). Participants rated the minimum age of a middle-aged adult as 30.14 years ($SD=6.40$) and the maximum age as 45.80 years ($SD=11.12$). Participants rated the minimum age of an older adult as 47.41 years ($SD=11.01$) and the maximum age as 75.70 years ($SD=24.69$). Table 2 displays descriptive statistics for the individual items comprising this questionnaire. The cronbach's alpha for this measure is $\alpha = .75$.

GREP—The GREP has been modified from its original version to more closely parallel the Race/Ethnicity Expectation questionnaire and the Age Expectation questionnaire. This modification also resulted in more simplified questions on the GREP (Robinson et al, 2001). The GREP has been modified by removing the comparison statements in the questionnaire, e.g. "compared to the typical woman, the typical man's sensitivity to pain is." Instead, the question now asks, "what is the typical man's sensitivity to pain." The modified GREP enables researchers to order the participants' responses to determine who participants think is most able to endure pain, most sensitive to pain, and most willing to report pain, and who is least. The modified GREP is comprised of 9 VASs ranging from 0 (not at all sensitive, no

endurance at all, or not at all willing) to 100 (most sensitive imaginable, most endurance imaginable, or most willing imaginable) that assess a respondent's view of the typical man and women with respect to pain sensitivity, pain endurance, and willingness to report pain. The GREP also assesses the respondent's personal attribution of his or her own pain sensitivity, pain endurance, and willingness to report pain relative to the typical man and woman. Table 3 shows the descriptive statistics for the individual items comprising this questionnaire. The cronbach's alpha for this measure is $\alpha = .6$.

Statistical Analyses

All analyses were performed using SPSS for Windows (Version 17). Descriptive statistics were conducted to summarize the demographic and background characteristics of the sample, which are presented above. Principal axis factor analyses were conducted to assess the underlying factor structures of the questionnaires and to assess their relationship to the theoretical constructs of the questionnaires. Correlation coefficients were computed to examine the test-retest reliability of the race/ethnicity and age questionnaires. Dependent t-tests were conducted to examine differences in participants' responses across the "typical" referent groups. Repeated measures ANOVAs were conducted to examine sex differences in participants' responses to the 3 questionnaires; that is, to determine whether responses to the questionnaires differed between male and female participants. Although 73 participants completed the study twice, the Dependent t-tests and Repeated Measures ANOVAs used data from time one only.

Results

Factor Analysis

A principal axis factor analysis with a promax rotation was performed on the race, age, and modified GREP questionnaires. An item was retained if its primary loading was greater than .40 and its largest secondary loading was at least .20 less than the primary loading.

For the race questionnaire, when the items related to participants own sensitivity to pain and willingness to report pain were included, the analysis failed to converge. When these items were excluded, the results indicated three factors with eigenvalues greater than 1, which accounted for 65.64% of the total variance. Six of the eight items loaded onto the three factors. The factors were labeled as follows with eigenvalues in parentheses: (1) Black Sensitivity and Willingness to Report Pain (2.56), (2) Asian Sensitivity and Willingness to Report Pain (1.57), and (3) White Sensitivity and Willingness to Report Pain (1.12). The questions regarding Hispanic persons may not have converged because this ethnic category can include both White and Black individuals.⁽²⁶⁾ Table 4 presents the factor loadings for the individual items. This factor structure is consistent with the theoretical constructs we intended to measure with this questionnaire and validates its rational derivation. Specifically, we expected the questions to load on to the factors by race/ethnicity.

Similar to the race questionnaire above, the factor analysis of the age questionnaire failed to converge when items related to participants' own sensitivity to pain and willingness to report pain were included. When these items were excluded, principal axis factoring of the age questionnaire returned two factors with eigenvalues greater than 1, which accounted for 67.07% of the total variance. Four of the six variables loaded onto the two factors. The factors were labeled as follows with eigenvalues in parentheses: (1) Young Adult Sensitivity and Willingness to Report Pain (2.50) and (2) Older Adult Sensitivity and Willingness to Report Pain (1.52). Items referring to middle-age adults did not form a distinct factor, suggesting that our measurement of the age construct does not have sufficient precision for more than two categories of age. Table 5 presents the factor loadings for the individual items

comprising each factor. This factor structure is consistent with the theoretical constructs we intended to measure and provides validation for the rationally derived scale. Specifically, we expected the questions to load on to the factors by age category.

Principal axis factoring of the modified GREP returned four factors with eigenvalues greater than 1, which accounted for 74.34% of the total variance. All of the items loaded onto the four factors. The factors were labeled as follows with eigenvalues in parentheses: (1) Participants' Sensitivity and Willingness to Report Pain (2.43), (2) Participants' and Woman's Pain Endurance (2.2), (3) Men's Pain Endurance and Woman's Sensitivity and Willingness to Report Pain (1.06), and (4) Men's Sensitivity and Willingness to Report Pain (1.02). Items related to participants' sensitivity to pain and willingness to report pain were included in this analysis in order to be consistent with the original GREP, and because their inclusion did not prevent the factor analysis from converging. Table 6 presents the factor loadings for the individual items. Of note, this factor structure is not entirely consistent with the theoretical constructs we intended to measure when creating this questionnaire (see Discussion). Specifically, we expected the modified GREP factor analysis to be similar to the original GREP's factor analysis.

Reliability Analyses

The race/ethnicity, age, and modified GREP questionnaires all showed fair to good test-retest reliability. Correlations between individual items from the first and second administrations ranged from .606 to .834 (all p s < .01) for race questions, .461 to .689 (all p s < .001) for age questions, and .462 to .781 (all p s < .001) for gender questions. The test-retest correlations for each item of the race, age, and modified GREP questionnaires are listed in Table 7.

Race Differences

Sensitivity to Pain—With respect to sensitivity to pain, there were significant differences between participants' assessments by race. Participants reported that the typical Asian is more sensitive to pain than both the typical Black person, $t(109) = 2.09$, $p = .04$, Cohen's $d = .26$, and the typical Hispanic person, $t(109) = 2.10$, $p = .04$, Cohen's $d = .21$. Participants also indicated that the typical White person is more sensitive to pain than both the typical Black person, $t(109) = 3.54$, $p = .00$, Cohen's $d = .49$, and typical Hispanic person, $t(109) = 3.74$, $p = .00$, Cohen's $d = .47$. Interestingly, the typical White person was reported to be more sensitive to pain than the participant, $t(109) = 3.33$, $p = .00$, Cohen's $d = .40$.

No significant interactions were found between participant sex and responses to the race questions.

Willingness to Report Pain—Results indicated significant differences by race in the perceived willingness to report pain. The typical White person was reported to be more willing to report pain than the typical Asian person, $t(109) = 6.03$, $p = .00$, Cohen's $d = .76$. The typical White person was more willing to report pain than the typical Black person, $t(109) = 5.45$, $p = .00$, Cohen's $d = .71$. Finally, the typical White person was reported to be more willing to report pain than the participant, $t(109) = 4.8$, $p = .00$, Cohen's $d = .70$.

There was a significant interaction between the sex of the participant and the perception of the willingness to report pain by race, $F(1,109) = 5.95$, $p > .05$, partial $\eta^2 = .025$. Post hoc analyses indicated that, compared to male participants, female participants rated the typical Hispanic person as more willing to report pain, $t(109) = 2.03$, $p = .045$, Cohen's $d = .40$. Similarly, compared to male participants, female participants rated themselves as more willing to report pain, $t(109) = 3.07$, $p = .003$, Cohen's $d = .60$.

Age Differences

Sensitivity to Pain—The typical older adult was perceived as being more sensitive to pain than the typical middle-aged adult, $t(109) = 5.64, p < .001$, Cohen's $d = .59$, and the participant was more sensitive to pain than the typical middle-aged adult, $t(109) = 3.77, p = .00$, Cohen's $d = .37$. Participants also indicated that the typical older adult is more sensitive to pain than both the typical younger adult, $t(109) = 3.24, p = .00$, Cohen's $d = .43$, and the participant, $t(109) = 7.18, p = .00$, Cohen's $d = .83$. Finally, the typical younger adult was perceived as more sensitive to pain than the participant, $t(109) = 3.86, p = .00$, Cohen's $d = .36$. These results indicate that respondents perceive themselves to be above average in terms of pain sensitivity.

No significant interactions were found between participant sex and responses to the age questions pertaining to pain sensitivity.

Willingness to Report Pain—The typical older adult was perceived to be more willing to report pain than the typical middle-aged, $t(109) = 5.71, p < .001$, Cohen's $d = .64$. The typical older adult was perceived as more willing to report pain than both the typical younger adult, $t(109) = 3.22, p < .001$, Cohen's $d = .49$, and the participant, $t(109) = 5.20, p < .001$, Cohen's $d = .66$.

Results did not indicate a significant interaction between the sex of the participant and responses to the age questions regarding willingness to report pain.

Sex Differences

Endurance to Pain—The typical woman was reported as having more pain endurance than the participants own pain endurance, $t(109) = -2.27, p = .03$, Cohen's $d = .21$.

Results indicated a significant interaction between the sex of the participant and the perception of the pain endurance of typical men and women, $F(2,108) = 5.624, p < .05$, partial $\eta^2 = .057$. Post hoc analyses indicated that, compared to male participants, female participants rated the typical woman as more able to endure pain, $t(109) = 3.75, p < .001$, Cohen's $d = .72$.

Sensitivity to Pain—The typical woman was rated as being more sensitive to pain than the typical man, $t(109) = 7.19, p < .001$, Cohen's $d = 1.0$. Also, the typical woman was rated as being more sensitive to pain than the participant, $t(109) = 8.35, p < .001$, Cohen's $d = .89$.

Results indicated a significant interaction between participant sex and ratings of pain sensitivity, $F(2,108) = 9.28, p < .05$, partial $\eta^2 = .079$. Post hoc analyses indicated that female participants viewed themselves as more sensitive to pain than did male participants, $t(109) = 3.11, p = .002$, Cohen's $d = .61$.

Willingness to Report Pain—Participants perceived different rates of willingness to report pain for typical men and women. The typical woman was viewed as more willing to report pain than both the typical man, $t(109) = 10.72, p = .00$, Cohen's $d = 1.5$, and the participant, $t(109) = 3.02, p = .00$, Cohen's $d = .39$. Participants also indicated that the typical woman is more willing to report pain than themselves, $t(109) = 9.42, p = .00$, Cohen's $d = 1.05$.

A significant interaction was found between participant sex and the perception of men's and women's willingness to report pain, $F(2,108) = 12.974, p < .05$, partial $\eta^2 = .106$. Post hoc analyses indicated that, compared to female participants, male participants perceived both the typical woman, $t(109) = -2.61, p = .010$, Cohen's $d = .51$, and the typical man, $t(109) =$

-2.04, $p = .04$, Cohen's $d = .39$, to be more willing to report pain. Also, compared to male participants, female participants viewed themselves as more willing to report pain, $t(109) = 3.371$, $p = .001$, Cohen's $d = .66$.

Discussion

The perception of pain in others is an important aspect of clinical pain management. Several recent studies suggest that demographic factors like race/ethnicity, age, and gender may influence how an individual perceives the pain experience of another.^(1-3, 16) However, the reasons for these demographic influences remain largely unclear. Although far from definitive, results from the current study suggest that undergraduate participants in this study did use stereotypic pain-related attributions. This study is the first attempt in evaluating whether the new race/ethnicity, age, and gender pain expectation questionnaires can detect differences in pain expectations. It will be important to use the new questionnaires with healthcare trainees and healthcare professionals in order to determine whether they use stereotypic pain-related attributions, and how that may affect aspects of clinical pain management.

We found support for the validity and reliability of two novel questionnaires designed to measure expectations regarding sensitivity to pain and willingness to report pain based on race and age. Factor analysis of the Race Expectations for Pain measure revealed 3 factors: (1) Black pain sensitivity and willingness to report pain, (2) Asian pain sensitivity and willingness to report pain, and (3) White pain sensitivity and willingness to report pain. Factor analysis of the age expectations for pain measure revealed 2 factors: (1) Young adult pain sensitivity and willingness to report pain, and (2) Older adult pain sensitivity and willingness to report pain. These measures demonstrated fair-to-good test-retest reliability. If these psychometric properties are confirmed in subsequent work, the two measures examined herein may prove useful in future clinical studies aimed at elucidating the mechanisms underlying the well-documented race and age biases in pain care.^(1, 3)

Regarding race/ethnicity expectations for pain, the typical white person was viewed as being the most sensitive to pain, followed in order by the typical Asian person, the typical Hispanic person, the participant, and the typical Black person. For willingness to report pain, the typical White person was rated as more willing to report pain than the typical Asian person, the typical Black person, and the participant him/herself. Although these rank orderings are based only on the absolute mean values – that is, not all of the race differences were statistically significant – it is interesting to note that these findings are at odds with previous studies indicating that, compared to White participants, Hispanic and Black participants have lower tolerance to actual pain stimuli.⁽¹⁰⁾ It appears then that the race- and age-related pain expectations of the average person do not necessarily align with the actual pain responding of individuals in those demographic groups. These findings may help explain some of the variability in how medical providers provide pain medication to minority patients compared to White patients.^(1, 4, 10)

Analyses of age-related expectations of pain indicated that participants rated the typical Older Adult as more pain sensitive and willing to report pain than both the typical Middle-Aged adult and the typical Young Adult. Participants also rated the typical Older Adult as more willing to report pain than themselves. These results are counter to previous findings in which older adults are less likely to report pain than younger adults.⁽¹⁷⁾ This discrepancy between the average person's age-related pain expectations and the actual pain responding of individuals in different age groups could prove useful in studies examining the assessment and treatment of pain in older adults to help explain variability in these practices.

The current study also examined the reliability and validity of a modified version of the GREP that allows for the rank ordering of “typical” referent groups based on participants’ responses. Factor analysis of this modified GREP revealed 4 factors that accounted for 74% of the total variance: (1) Participant's sensitivity and willingness to report pain, (2) Participant's and Woman's pain endurance, (3) Men's pain endurance and Woman's sensitivity and willingness to report pain, and (4) Men's sensitivity and willingness to report pain. This factor structure differed from the original GREP, which consists of 5 factors (sensitivity to pain, willingness to report pain, self-report of sensitivity to pain, self-report of endurance for pain, stereotypic endurance for pain). The original GREP had participants compare “the typical man to the typical woman” and the “typical woman to the typical man” for sensitivity, endurance, and willingness to report pain. Since the questions in the original GREPs were comparative (bidirectional) in nature, the correlations between the questions were very high. Now, however, the questions are asked without a comparison statement, e.g., “the typical man’s sensitive to pain is.” Since the comparison groups, men and women, are no longer being compared to each other, the correlations between the questions are lower. We predict that the factor structure of the modified GREP is not the same as the original GREP for this reason. The test-retest reliability as well as the internal consistency of the modified GREP was fair-to-good. Taken together, these findings suggest that, although the modified GREP appears to be a reliable and valid measure of sex-related stereotypic attributions about pain, further refinement may be needed to optimize its psychometric properties, and the original GREP may be preferred until further work is completed on the modified version.

In the current study, we found that the typical man was perceived to be less pain sensitive, less willing to report pain, and have more pain endurance than the typical woman. Both male and female study participants endorsed these expectations. These findings are consistent with previous investigations using the original GREP, and provide preliminary support for the modified and briefer version of the GREP used in this study. It is interesting to note that these findings have remained consistent over the past decade despite the narrowing gap between the gender roles in many arenas (e.g. athletics, work status, income).^(18, 25) It appears that these sex-related stereotypic attributions about pain are relatively entrenched and may require direct intervention in order to be modified.

There were limitations to the current investigation. The study sample was primarily young and relatively homogenous with regard to race/ethnicity. Future investigations with more heterogeneous samples are warranted. Relatedly, the sample was composed of individuals who are not involved in the pain care of actual patients. Future investigations should include healthcare professionals who regularly treat pain in others in order to determine the clinical implications of the constructs examined herein. The test-retest reliability of the race/ethnicity and age measures varied considerably. Further refinement of these measures should be conducted to ensure the constructs of interest can be consistently assessed. Further assessment of the validity of the modified GREP is also warranted to determine its optimal factor structure

There are a number of potential clinical implications of the current study. It seems reasonable to speculate that medical providers will demonstrate similar differences in pain expectations based on patients’ demographic characteristics, and that these differences influence their pain assessment and treatment decisions. Our previous work using virtual human technology and analog patient vignettes supports the notion that health professionals use Race, Sex, and Age cues to make decisions about pain.^(11, 12, 24) These new measures may allow for a better understanding of why these potential demographic influences play a part in decision-making about pain. If future work supports this speculation, there is an

opportunity to intervene directly with providers and perhaps reduce biases and improve pain care.

Perspective

The findings suggest that one's expectations of the pain experience of another person are influenced by the stereotypes one has about different genders, races, and ages. The three pain expectation measures investigated in the current study could be used in future work examining biases in pain assessment and treatment.

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Table 1
Descriptive statistics for the Race/Ethnicity Expectations of Pain Questionnaire

| Domain | Individual Items | Total Sample (N = 111) | | Sex | | | |
|-------------|---|---------------------------|------|---------------|------|-----------------|------|
| | | Mean | SD | Male (N = 47) | | Female (N = 64) | |
| | | | | Mean | SD | Mean | SD |
| Sensitivity | 1. What is the typical Asian person's sensitivity to pain | 51.5 | 19.5 | 49.8 | 20.2 | 52.8 | 19.1 |
| | 2. What is the typical Black person's sensitivity to pain | 46.3 | 20.6 | 44.9 | 20.0 | 47.3 | 21.0 |
| | 3. What is the typical Hispanic person's sensitivity to pain | 47.8 | 15.4 | 47.4 | 16.2 | 48.1 | 15.0 |
| | 4. What is the typical White person's sensitivity to pain | 55.8 | 18.1 | 53.6 | 16.8 | 57.3 | 18.9 |
| | 5. Your sensitivity to pain is | 47.8 | 21.6 | 44.2 | 18.9 | 50.4 | 23.2 |
| Willingness | 6. What is the typical Asian person's willingness to report pain | 43.3 | 26.7 | 44.8 | 26.1 | 42.2 | 27.3 |
| | 7. What is the typical Black person's willingness to report pain | 44.3 | 27.2 | 43.3 | 25.9 | 45.0 | 28.2 |
| | 8. What is the typical Hispanic person's willingness to report pain | 44.7 | 22.2 | 39.8 | 19.1 | 48.3 | 23.7 |
| | 9. What is the typical White person's willingness to report pain | 61.8 | 21.5 | 62.9 | 19.7 | 60.9 | 22.9 |
| | 10. Your willingness to report pain is | 45.7 | 24.6 | 37.6 | 19.4 | 51.6 | 26.5 |

Note: items are rated on 0–100 VASs.

Table 2

Descriptive statistics for the Age Expectations of Pain Questionnaire

| | Total Sample (N = 111) | | Sex | | | |
|---|---------------------------|------|---------------|------|-----------------|-------|
| | Mean | SD | Male (N = 47) | | Female (N = 64) | |
| | | | Mean | SD | Mean | SD |
| Individual Items | | | | | | |
| Sensitivity | | | | | | |
| 1. What is the typical young adult's sensitivity to pain | 51.5 | 23.8 | 50.1 | 22.8 | 52.5 | 24.6 |
| 2. What is the typical middle-aged adult's sensitivity to pain | 50.2 | 15.3 | 48.2 | 15.5 | 51.7 | 15.1 |
| 3. What is the typical older adult's sensitivity to pain | 61.5 | 22.5 | 54.5 | 21.3 | 66.6 | 22.15 |
| 4. Your sensitivity to pain is | 43.4 | 20.9 | 40.1 | 19.4 | 45.8 | 21.8 |
| Willingness | | | | | | |
| 5. What is the typical young adult's willingness to report pain | 48.5 | 24.5 | 48.1 | 23.6 | 48.8 | 25.3 |
| 6. What is the typical middle-aged adult's willingness to report pain | 47.1 | 16.4 | 45.3 | 17.1 | 48.4 | 15.8 |
| 7. What is the typical older adult's willingness to report pain | 60.5 | 24.7 | 58.1 | 25.2 | 62.2 | 24.4 |
| 8. Your willingness to report pain is | 44.4 | 24.3 | 36.2 | 20.3 | 50.4 | 25.4 |

Note: items are rated on 0–100 VASs.

Table 3
Descriptive statistics for the Modified Gender Role Expectations of Pain Questionnaire

| | Total Sample (N = 111) | | Sex | | | |
|-------------|---------------------------|------|---------------|------|-----------------|------|
| | Mean | SD | Male (N = 47) | | Female (N = 64) | |
| | | | Mean | SD | Mean | SD |
| | Individual Items | | | | | |
| Sensitivity | 64.7 | 20.1 | 68.8 | 20.4 | 61.8 | 19.5 |
| | 46.2 | 16.9 | 42.9 | 16.1 | 48.6 | 17.1 |
| | 46.0 | 21.9 | 38.8 | 16.8 | 51.4 | 23.7 |
| Endurance | 55.6 | 25.0 | 45.8 | 22.6 | 62.8 | 24.3 |
| | 60.8 | 17.0 | 61.3 | 14.1 | 60.4 | 19.0 |
| | 60.3 | 20.2 | 58.2 | 19.7 | 61.9 | 20.6 |
| Willingness | 69.9 | 20.3 | 75.6 | 17.9 | 65.7 | 21.0 |
| | 39.4 | 19.2 | 43.7 | 18.3 | 36.3 | 19.4 |
| | 47.5 | 22.3 | 39.5 | 18.4 | 53.3 | 23.2 |

Note: items are rated on 0–100 VASs.

Table 4

Factor Structure of the Race/Ethnicity Expectations of Pain Questionnaire

| Item Number | Factors | | |
|---|---|--|---|
| | I Black Sensitivity and Willingness to Report Pain | II Asian Sensitivity and Willingness to Report Pain | III White Sensitivity and Willingness to Report Pain |
| 1. What is the typical Asian person's sensitivity to pain | -.080 | .854 | .034 |
| 2. What is the typical Black person's sensitivity to pain | .709 | .049 | -.142 |
| 3. What is the typical Hispanic person's sensitivity to pain | .313 | .458 | -.052 |
| 4. What is the typical White person's sensitivity to pain | -.028 | .104 | .488 |
| 6. What is the typical Asian person's willingness to report pain | -.036 | .459 | .065 |
| 7. What is the typical Black person's willingness to report pain | .885 | -.145 | .105 |
| 8. What is the typical Hispanic person's willingness to report pain | .357 | .277 | .055 |
| 9. What is the typical White person's willingness to report pain | .018 | -.099 | .923 |

Table 5

Factor Structure of the Age Expectations of Pain Questionnaire

| Item Number | Factors | |
|--|--|---|
| | I Young Adult Sensitivity and Willingness to Report Pain | II Older Adult Sensitivity and Willingness to Report Pain |
| 1.What is the typical young adult's sensitivity to pain | .783 | -.113 |
| 2.What is the typical middle-aged adult's sensitivity to pain | .542 | .473 |
| 3.What is the typical older adult's sensitivity to pain | -.013 | .541 |
| 5.What is the typical young adult's willingness to report pain | .652 | -.222 |
| 6.What is the typical middle-aged adult's willingness to report pain | .446 | .445 |
| 7. What is the typical older adult's willingness to report pain | -.360 | .853 |

Table 6

Factor Structure of the Modified GREP

| Item Number | I Participants' Sensitivity and Willingness to Report Pain | II Participants' and Woman's Pain Endurance | III Men's Pain Endurance and Woman's Sensitivity and Willingness to Report Pain | IV Men's Sensitivity and Willingness to Report Pain |
|---|--|--|---|---|
| 1.The typical woman's sensitivity to pain is | .216 | -.156 | .463 | .114 |
| 2.The typical man's sensitivity to pain is | .076 | .322 | -.045 | .608 |
| 3. Your sensitivity to pain is | .918 | -.038 | .098 | .059 |
| 4.The typical woman's pain endurance is | .220 | .765 | -.310 | -.123 |
| 5.The typical man's pain endurance is | .043 | .103 | .459 | -.025 |
| 6.Your pain endurance is | -.224 | .823 | .333 | .048 |
| 7.The typical woman's willingness to report pain is | .100 | .155 | .632 | -.173 |
| 8.The typical man's willingness to report pain is | -.034 | -.095 | -.065 | .538 |
| 9.Your willingness to report pain is | .803 | -.020 | .120 | -.066 |

Table 7

Test-Retest Correlations for Race/Ethnicity⁺, Age⁺⁺, and Gender⁺⁺⁺ Items (Pearson Product Moment Correlations) (N=73)

| Questionnaire | Q1 | Q2 | Q3 | Q4 | Q5 | Q6 | Q7 | Q8 | Q9 | Q10 |
|---------------|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Race | r .68 | .79 | .59 | .67 | .83 | .63 | .74 | .64 | .61 | .79 |
| Age | r .57 | .53 | .52 | .69 | .46 | .52 | .56 | .57 | N/A | N/A |
| Gender | r .66 | .57 | .78 | .73 | .46 | .70 | .51 | .08 | .70 | N/A |

All of the results were significant at $p < .001$

⁺ Refer to Table 1.

⁺⁺ Refer to Table 2.

⁺⁺⁺ Refer to Table 3.