Stereotyping and Nurses’ Recommendations for Treating Pain in Hospitalized Children

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Abstract: The purpose of this study was to examine whether nurses’ recommendations for managing children’s pain were influenced by stereotypes based on children’s personal attributes. Three vignettes, in which hospitalized children’s sex, race, and attractiveness were experimentally manipulated, were mailed to a national random sample of 700 pediatric nurses; 334 nurses responded. Responses to vignette questions indicated little evidence of stereotyping. Nurses perceived similar levels of pain and recommended similar pain treatments, regardless of sex, race, and attractiveness. Nurses, on average, perceived children’s pain at levels consistent with the children’s self-reports and recommended assertive analgesic and non-pharmacologic pain management strategies. The results appear consistent with prevailing views on providing adequate pain treatment for children.

The treatment of children’s pain has been a focus for the nursing community for the past 30 years, beginning with Eland and Anderson’s seminal 1977 study showing that children’s pain was not being effectively treated (Eland, & Anderson, 1977). In the intervening years, great progress has been made in a number of areas, including the development of reliable pain assessment tools (e.g., Merkel & Malviya, 2000), more pain management education for nurses (e.g., Treadwell, Franck, & Vichinsky, 2002) advances in the use of pain medications (Maikler, 1998; Zisk, 2003); and the expanded use of non-pharmacologic strategies for managing pain (Jacob & Puntillo, 1999; Polkki, Vehvilainen-Julkunen, & Pietila, 2001). These trends presumably reflect the growing recognition among members of the health care community that untreated pain in children leads to negative consequences for the children and drains health care resources (e.g., Howard, 2003; Zisk). Although descriptive findings from our own research suggest possible improvements in nurses’ assessments and treatment of children’s pain (Griffin,
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Polit, & Byrne, 2006), there remain many questions about factors that influence nurses’ pain management decisions. Among these are whether stereotypes about children (e.g., sex, race, attractiveness) play a role in nurses’ pain assessments and recommended actions. The purpose of this study was to address this question.

Despite apparent progress, many investigators report that nurses are not managing children’s pain treatment optimally. For example, Vincent and Denyes (2004) found that 55% of pediatric nurses thought children over-reported their pain. Investigators also report that nurses do not consistently use assessment tools (Jacob & Puntillo, 1999), do not always administer the appropriate dose of analgesics (Boughton et al., 1998), or fail to use non-pharmacologic strategies (Pederson & Harbaugh, 1995). There is, however, little information on factors affecting pediatric nurses’ pain management decisions, and virtually no information on whether stereotypes play a role.

The theoretical framework for this study was Implicit Personality Theory, developed by Bruner and Tagiuri (1954), which posits that individuals infer judgments about other people in a consistent manner—judgments based on their expectations and the anticipations of others. Stereotyping is an unconscious process that most people use to organize their thinking and to help them make decisions. The first part of stereotyping is to form perceptions or judgments of people based on their attributes, like sex, age, race, and attractiveness. The second part is to unconsciously allow these perceptions or judgments to influence one’s social behavior or decision-making (Ashmore & Del Boca, 1979). Nurses might form unconscious stereotypical judgments based on patients’ personal attributes. In turn, these judgments could, according to the theory, influence the nurse’s perceptions and actions, for example, their perceptions of children’s pain levels and their subsequent pain management decisions.

Unfortunately, much of what is known about stereotyping and pain management concerns adults; few studies have been done regarding children’s pain. Although the evidence with regard to stereotyped reactions to adults in pain is mixed, the bulk of the evidence suggests that nurses and other health care workers alter their pain treatment in some cases based on such patient characteristics as sex, race, and attractiveness.

Several investigators have found evidence of a sex stereotype in treating adult patients in pain—more specifically that male patients are treated more aggressively for their pain than female patients. For example, there is evidence that males were treated in a more timely manner than women (McDonald, 1994), were given more analgesics, (e.g., Calderone, 1990; McDonald & Bridge, 1991), received more attention from nurses (McDonald & Bridge), and were treated more extensively for acute postoperative or cancer pain (Green, Wheeler, & LaPorte, 2003). Some investigators, however, have found no evidence of sex stereotype in treating adults in pain (e.g., Weisse, Sorum, & Dominguez, 2003; Weisse, Sorum, Sanders, & Syt, 2001). Discrepancies in the literature are likely to reflect methodologic differences (e.g., sample size, methods of operationalizing sex stereotypes), as well as differences in clinically relevant factors (e.g., types and severity of pain).

In a classic study of sex stereotyping involving children (ages 1 day to 14 years, with a mean of 5.2 years), Beyer, De Good, Ashley, and Russell (1983), retrospectively examined prescriptions for analgesics and analgesics medication administration to children following cardiac surgery. Their results indicated that significantly more codeine was prescribed for boys, while the girls were prescribed more acetaminophen.

Researchers also have studied the effect of racial stereotypes on the treatment of adult pain, and the evidence is similarly mixed. Most often, researchers have found that minority group members receive pain medication less frequently, are administered lower doses, and spend less time with nurses than White patients (e.g., Cleeland, Gonin, Baez, Loehr, & Pandya, 1997; McDonald, 1994; Tamayo-Sarver, Hinze, Cydulka, & Baker, 2003; Todd, Deaton, D’Adamo, & Goe, 2000). In other studies, however, a relationship was not found between the patients’ race and clinicians’ treatment of their pain (Fuentes, Kohn, & Neighbor, 2002; Karpman, DelMar, & Bay, 1997). Similarly, the results of four studies that included children (Davitz & Davitz, 1981; Holm, Cohen, Dudas, Medema, & Allen, 1989; Karpman et al.; Yen, Kim, Stremski, & Gorelick, 2003) revealed that the children’s race and sex did not influence their pain treatment.

Social psychological theorists suggest that when people first meet one another, physical attractiveness is a dominant force in the formation of their perceptions of each other (Albada, Knapp, & Theune, 2002). Many investigators have found evidence of stereotyping based on people’s appearance, including evidence that degree of attractiveness affects perceptions of, and behaviors toward, young children by parents (e.g., Harrell, 2005; Kelley, Vannostrand, Shiflett, & Chan, 1996), teachers (e.g., Kenealy, Frude, & Shaw, 1991;
Nichols, 1996), and strangers (e.g., Karraker & Stern, 1990). Few researchers, however, have examined the relationship between patients’ attractiveness and the quality of health care treatment—perhaps because, as noted by a nurse researcher who studied the effect of nursing home residents’ attractiveness on quality of care, the very idea of such stereotyping is “repulsive in nature” (Campbell, 2005, p. 108). With regard to pediatric care, Bordieri, Solodky, and Mikos (1985) found that, when asked about attractive and unattractive children who were allegedly involved in a disturbance in a hospital, nurses were more likely to rate the unattractive child as having emotional problems. In the area of pain treatment, findings from two studies suggest that unattractive adult patients are perceived as having more pain and are treated more aggressively than attractive patients (H. D. Hadjistavropoulos, Ross, & von Baeyer, 1990; T. Hadjistavropoulos, McMurtry, & Craig, 1996). Little is known, however, about the effect of stereotyping based on attractiveness on nurses’ treatment of children’s pain.

In summary, there is a paucity of research regarding the ways that stereotyping related to children’s personal attributes could affect nurses’ pain management decisions and, ultimately, children’s outcomes. Given the growing interest in the optimal treatment of children in pain, and evidence that pain management is often not optimal, the issue of the role that stereotyping might play merits further scrutiny.

The purpose of this study was to examine the extent to which pediatric nurses’ perceptions about the pain levels of hospitalized children, and the nurses’ recommendations for treating pain, were influenced by the child’s personal attributes (sex, race, attractiveness), with other characteristics of the child (e.g., age, self-reported pain, medical condition, and, medical treatment) held constant. The research question was: Are nurses’ pain perceptions and recommended pain treatments affected by the sex, race, and physical appearance of hospitalized school-aged children?

It was hypothesized that, all else being equal, nurses would perceive higher levels of pain and recommend more pain treatment to: (a) boys rather than girls; (b) White children rather than African-American children; and (c) unattractive rather than attractive children.

**METHOD**

**Design and Sample**

Data were collected in a cross-sectional survey mailed to a national sample of pediatric nurses. A true experimental design was used to randomly assign eight questionnaire packets, each of which included three case reports of a hospitalized child, to the study sample. Another section of the questionnaire, not discussed here, included questions about the respondents’ characteristics; the results, unrelated to stereotyping, are being reported in a different paper published elsewhere (Griffin et al., 2006).

The American Nurses Association was unable to provide a list of nurses with a pediatric specialty, and so an alternative source of recruiting a national sample was used. The accessible population comprised 9,000 pediatric nurses who subscribed to pediatric journals or who purchased pediatric books, and whose names and addresses were available through the Marketing Services of Boston Company.

We assumed a small-to-moderate effect size for stereotyping effects in this study, based on earlier research (Calderone, 1990; McDonald, 1994), which was similar except that they studied adults and did not use attractiveness as a variable. The estimated sample size needed (with an effect size of .35, power of .80, and alpha of .05) was 272 nurses. Because response rates to mailed surveys tend to be low, even when efforts are made to enhance them, we projected a response rate of 40%. Questionnaire packets were mailed to a sample of 700 RNs randomly selected from a list of 900 pediatric nurses in January 2005. The Marketing Company of Boston used a randomization function to choose 900 names from their database of 9,000 pediatric nurses. The list of the resulting 900 potential sample members was arrayed in zip code order, and a systematic random sample (every other person on the list), starting at a randomly determined name, was used for the study.

A modified Dillman (2000) approach, including repeated mailings, was used to enhance response rates. Correcting for known ineligibles and address changes, the final sample was 663 nurses presumed to be eligible, of whom 334 responded, a response rate of 50%.

**Sample Characteristics**

The pediatric nurses who responded to the survey tended to be well-educated White females (all but two were women with considerable nursing experience). The majority had a minimum of a bachelor’s degree (70%), and one third had advanced degrees. Few of the nurses were not currently working in nursing, and most were
employed as pediatric nurses. A sizeable minority of these nurses were nurse practitioners, mostly in pediatric care. Most reported having received pain management training within the prior 2 years and having had personal experience with intense or prolonged pain (Table 1).

Non-response bias could not be evaluated directly by comparing respondents to non-respondents because we did not have demographic information for non-respondents. However, we compared our respondents to a representative sample of nurses from the National Sample Survey of Registered Nurses (United States Department of Health & Human Services [DHHS, 2000]). Our sample was similar to pediatric nurses nationally in terms of race/ethnicity and sex, but the pediatric nurses in our sample were better educated: only 3% of the pediatric nurses in the DHHS survey, compared to 34% in our survey, had a master’s degree or higher. Our sample also over-represented nurse practitioners; only 2% of pediatric nurses nationally are nurse practitioners.

The Survey Packets

The survey asked questions about the respondents’ background (e.g., sex, race/ethnicity, age, years of experience).

Vignettes. The survey packets included three vignettes describing a hospitalized child between the ages of 9 and 11 who was in pain. For each vignette, the nurses were asked several questions about perceived pain levels and recommendations for the child’s pain treatment. Each vignette included a description of the child’s medical condition and treatment; a color photograph of the child; key characteristics beyond those discernible in the photograph, such as age and weight; medications that the child had already received; the child’s rating of pain; and a physician’s orders for analgesic medication (PRN, or, as needed), which gave the nurses some discretion in managing pain. A pediatrician specializing in pain management reviewed the vignettes to ensure clinical validity of the orders. The child’s pain rating was represented by a circle drawn around one of the six children’s faces on the FACES Scale, which has been used widely in research and clinical situations (Wong & Baker, 2000). The children in the vignettes were characterized as being in moderate to extreme pain.

Table 2 summarizes key features of the vignettes. The independent variables (child’s sex, race, and attractiveness) were systematically varied, but all other characteristics were held constant within each vignette. A total of eight different questionnaire packets were assembled that crossed the three independent variables ($2 \times 2 \times 2$). Thus, a respondent who got, for example, a boy for vignette A could get either a White or an African-American child for vignette B, and either an attractive or unattractive child for vignette C. The eight different packets were randomly assigned to the 700 nurses in the sample by picking a name from a random point in the list of the 700 as a starting point, and then sequentially assigning packets one through eight until all names on the list were designated to a packet.

Children’s degree of attractiveness was measured with a separate sample of White and

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Table 1. Demographic Characteristics of Nurses in the Sample (N = 334)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>N</th>
<th>Percent or Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Race/ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White non-Hispanic</td>
<td>301</td>
<td>90.7%</td>
</tr>
<tr>
<td>Non-white</td>
<td>31</td>
<td>9.5%</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diploma and associates degree</td>
<td>96</td>
<td>29.7%</td>
</tr>
<tr>
<td>Bachelor’s degree</td>
<td>120</td>
<td>36.5%</td>
</tr>
<tr>
<td>Master’s degree or higher</td>
<td>113</td>
<td>33.8%</td>
</tr>
<tr>
<td>Age: Mean (SD)</td>
<td>334</td>
<td>48.0 (8.2)</td>
</tr>
<tr>
<td>Years of clinical experience: Mean (SD)</td>
<td>334</td>
<td>22.7 (9.5)</td>
</tr>
<tr>
<td>Employment status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pediatric nursing</td>
<td>205</td>
<td>61.7%</td>
</tr>
<tr>
<td>Other nursing specialty</td>
<td>103</td>
<td>31.0%</td>
</tr>
<tr>
<td>Not working in nursing</td>
<td>24</td>
<td>7.2%</td>
</tr>
<tr>
<td>Other characteristics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nurse practitioner</td>
<td>106</td>
<td>31.8%</td>
</tr>
<tr>
<td>Recent pain education</td>
<td>207</td>
<td>62.0%</td>
</tr>
<tr>
<td>Personal experience with intense pain</td>
<td>230</td>
<td>69.3%</td>
</tr>
<tr>
<td></td>
<td>Vignette A</td>
<td>Vignette B</td>
</tr>
<tr>
<td>----------------</td>
<td>------------------------------------</td>
<td>-------------------------------------------------</td>
</tr>
<tr>
<td><strong>Medical diagnosis</strong></td>
<td>Acute appendicitis</td>
<td>Compound fracture of right fibula</td>
</tr>
<tr>
<td><strong>Medical treatment</strong></td>
<td>Open appendectomy, 12 hours earlier</td>
<td>Surgical alignment (open reduction), 8 hours earlier</td>
</tr>
<tr>
<td><strong>Pain treatment</strong></td>
<td>Morphine sulfate 3 mg IV every 4 hours, first 24 hours</td>
<td>Fentanyl patch 25 mcg every 72 hours; morphine sulfate .05 mg/kg IV 3 hours earlier</td>
</tr>
<tr>
<td><strong>PRN order</strong></td>
<td>Morphine sulfate .05–.1 mg/kg every 3–4 hours</td>
<td>Morphine .05–.1 mg/kg every 3–4 hours</td>
</tr>
<tr>
<td><strong>Pain level</strong></td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>33.1 kg</td>
<td>35.5 kg</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td>Boy or girl</td>
<td>Boy</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td>White</td>
<td>White or African-American</td>
</tr>
<tr>
<td><strong>Attractiveness</strong></td>
<td>Average</td>
<td>Average</td>
</tr>
</tbody>
</table>

Respondents were given a vignette of a boy/girl, White/African-American, and attractive/unattractive child at random.

IV-intravenous.
African-American adults (N = 10), who rated the attractiveness of 30 children on a scale from 0 to 10 based on color photographs. The ratings, averaged across raters, were used to select children of average attractiveness for vignettes A and B (the means were in the 5–6 range). The White child with the highest mean attractiveness rating (9.4) was selected for vignette C, and she was paired with the lowest-rated White female child, to hold sex and race constant (mean of 4.0).

Nurses completing the questionnaires were not told the underlying purpose of the study, and nurses who received, for example, the boy for vignette A, were not aware that others were getting a vignette that was identical in every way except for sex.

Outcome measures. Questions that followed each vignette were used to create the outcome variables:

1. Perception of child’s pain: Nurses rated their perception of the child’s pain on a 100 mm visual analog scale with labeled anchor points: No Pain at All at one end, and Pain as Bad as Could Be at the other. Marks on the line were measured to the nearest millimeter. Higher values indicated perceptions of greater pain.

2. Medication dose: Nurses chose a dose of medication that they would give to each child at the time described in the vignette and 3 hours later, when the pain was described as unchanged. At both medication occasions, nurses were asked to select from four possible doses: no medication, .05 mg/kg, .075 mg/kg, or .1 mg/kg. A total dose was computed, combining answers to the two questions. The range of possible doses was from .0 mg/kg (i.e., no medication at either opportunity) to .2 mg/kg (i.e., the maximum dose at both opportunities).

3. Non-pharmacologic methods: Nurses were asked which of 12 specified types of non-pharmacologic methods of pain relief they would use. The 12 methods were as follows: encouraging deep or slow breathing; using toys for distraction; encouraging music listening; using TV/videos or electronic games; encouraging children to read to themselves; using guided imagery; applying hot or cold packs; giving massages; patting or stroking; reading books to the child; rocking or swaddling; and sitting with the child. The order of presentation of these methods was randomized. Respondents were also given the opportunity to write in another non-pharmacologic strategy. In the analyses, the number of methods checked was construed as an indicator of the range and breadth of techniques respondents would use.

Procedures

The cover letter accompanying the survey provided assurances of anonymity and voluntary participation. In appreciation for their cooperation, respondents were entered into a raffle drawing for a $200 gift certificate. Respondents were instructed to return a raffle entry via a postcard with their identifying information. Postcards were returned separately from the questionnaires, to allow for the anonymous return of the survey. The study was approved by the University Medical Center Institutional Review Board.

Data Analysis

Data analysis included descriptive statistics and analysis of covariance to test the study hypotheses, using child characteristics as the independent variables and background characteristics of the nurses as covariates. Prior research has suggested that nurses’ characteristics (e.g., their education and clinical experience) are related to their pain management decisions (e.g., Polkki et al., 2001; Vincent & Denyes, 2004). Although we found no evidence of that in this study (Griffin et al., 2006), we used nurses’ personal and professional characteristics—including their recent receipt of pain education—as covariates in our hypothesis tests to improve the precision of estimates of stereotyping. Simple t-tests resulted in the same conclusions. Effect size values (η²) also were computed to estimate the magnitude of stereotyping effects. η² is an index of the proportion of variability in outcomes explained by the independent variable—in this case, the manipulated child characteristics. As a rule of thumb, Cohen (1988) defined effect sizes as small, moderate, and large for values of η² of .01, .06, and .14, respectively.

RESULTS

Effectiveness of Randomization

Response rates varied somewhat across the eight questionnaire packets, but differences were not statistically significant. We also tested whether nurses’ characteristics varied in relation to the packet of vignettes they received. Packet assignment was not significantly related to any of the nurses’ characteristics, suggesting randomization was successful.
Descriptive Findings on Pain Treatment

The nurses’ ratings of the children’s pain levels were, on average, consistent with the children’s own pain ratings. The nurses’ mean ratings for vignettes A, B, and C were 78.1, 79.9, and 94.4, respectively, consistent with the children’s ratings of 5, 5, and 6 on a 6-point scale. With regard to pain medication, for all three vignettes, the nurses’ recommended doses matched the full possible range, with some nurses reporting they would administer no medication at either opportunity, but many more recommending the maximum allowed per the PRN order, 0.2 mg/kg. Despite differences in both perceived and actual pain levels across the three vignettes, nurses said they would administer similar doses of medication to the three children: total doses averaged .16, .17, and .17 mg/kg for vignettes A, B, and C, respectively.

Finally, for all three vignettes, the number of non-pharmacologic methods ranged from 0 (i.e., none of the listed methods) to 13 (i.e., all of the listed methods plus a write-in). The average number was similar for child A and B, but higher for child C, who was in greatest pain.

Hypothesis Tests

Table 3 summarizes the ANCOVA results for Vignette A, in which the child’s sex was varied. Our hypothesis regarding differential outcomes for boys and girls was not supported for any pain measure included in the survey, and effect sizes were miniscule for all outcomes (≤ .001). Nurses perceived the girl and boy to be experiencing nearly identical levels of pain (means of 78.2 and 78.1, respectively). Nurses also said that they would administer similar doses of pain medication to the girl and boy at each medication opportunity, and the same total dosage for the two periods combined (mean of .16 mg/kg). Finally, the nurses indicated they would use a comparable number of non-pharmacologic methods of pain relief, with a mean of 4.74 for the girl and 4.82 for the boy.

The results for the second hypothesis, which concerned racial stereotyping, are shown in Table 4. As with sex, differences on the pain treatment outcomes for the White and African-American child were modest and non-significant, and effect sizes were trivial. Nurses perceived the boy in Vignette B to be in a similar amount of pain, regardless of his race (means of 78.9 and 80.8 for the African-American and White child, respectively). Nurses also recommended a similar amount of pain medication, with a mean of .17 mg/kg in both cases over the two possible administrations. Finally, the nurses indicated they would use a similar range of non-pharmacologic methods of pain treatment for the child, with a mean of 5.15 methods for the African-American boy and 4.78 methods for the White boy.

Table 5 shows the findings for the third hypothesis, which focused on differential treatment of children based on their physical attractiveness (Vignette C). For most of the pain outcomes, the differences were not significant. However, consistent with our hypotheses, nurses perceived the unattractive girl to be in slightly but significantly more pain (M = 95.5) than the
attractive girl ($M = 93.4$). Despite this perception, nurses did not indicate that they would treat the child differently on the basis of her appearance. Comparable doses of pain medication were recommended across the two medication opportunities (means of $0.174$ and $0.176$ mg/kg for the attractive and unattractive child, respectively). The number of non-pharmacologic methods also was similar, with a mean of $5.68$ different types for the attractive child and $5.60$ types for the unattractive child. Across all outcomes, effect sizes were small.

Although there was no evidence of stereotyping with regard to the number of non-pharmacologic methods nurses said they would use, further analysis revealed that there were a few sex and race differences with regard to particular methods. As shown in the two columns of Table 6, significantly more nurses said they would use television, videos, or electronic games as a distraction with the boy in Vignette A rather than with the girl. By contrast, they were significantly more likely to say they would encourage the girls rather than the boys to read to themselves. Nurses also were significantly more likely to report they would rock or swaddle the girls rather than the boys.

We explored the robustness of these findings of differential strategies based on sex by examining patterns across vignettes. The last two columns of Table 6 present the percentage of nurses who said they would use the three methods for the boy in Vignette B, collapsed across race, and the girl in Vignette C, collapsed across attractiveness. The

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Table 4. ANCOVA Results for Vignette B: Racial Stereotyping

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>African-American ($n = 162$)</th>
<th>White ($n = 166$)</th>
<th>ANCOVA</th>
<th>Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurses’ perceived level of child’s pain</td>
<td>$M$ $SD$</td>
<td>$M$ $SD$</td>
<td>$F$ (Main Effect) $p$ ($\eta^2$)</td>
<td></td>
</tr>
<tr>
<td>Total amount of recommended pain medication (mg/kg)</td>
<td>$0.17$ $0.04$</td>
<td>$0.17$ $0.04$</td>
<td>$0.02$ $.88$ $.001$</td>
<td></td>
</tr>
<tr>
<td>Amount of first dose of medication (mg/kg)</td>
<td>$0.08$ $0.02$</td>
<td>$0.08$ $0.02$</td>
<td>$0.01$ $.99$ $.001$</td>
<td></td>
</tr>
<tr>
<td>Amount of second dose of medication (mg/kg)</td>
<td>$0.09$ $0.02$</td>
<td>$0.08$ $0.02$</td>
<td>$0.01$ $.97$ $.001$</td>
<td></td>
</tr>
<tr>
<td>Total number recommended non-pharmacologic methods</td>
<td>$5.15$ $2.57$</td>
<td>$4.78$ $2.56$</td>
<td>$1.89$ $.17$ $.005$</td>
<td></td>
</tr>
</tbody>
</table>

*The results of analysis of covariance for the independent variable of race, controlling for nurse characteristics (nurses’ education, clinical experience, nurse practitioner status). Means shown in table are unadjusted for covariates.

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Table 5. ANCOVA Results for Vignette C: Physical Attractiveness Stereotyping

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Attractive ($n = 170$)</th>
<th>Unattractive ($n = 164$)</th>
<th>ANCOVA</th>
<th>Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurses’ perceived level of child’s pain</td>
<td>$M$ $SD$</td>
<td>$M$ $SD$</td>
<td>$F$ (Main Effect) $p$ ($\eta^2$)</td>
<td></td>
</tr>
<tr>
<td>Total amount of recommended pain medication (mg/kg)</td>
<td>$93.4$ $10.8$</td>
<td>$95.5$ $7.8$</td>
<td>$5.03$ $.03$ $.006$</td>
<td></td>
</tr>
<tr>
<td>Amount of first dose of medication (mg/kg)</td>
<td>$0.17$ $0.04$</td>
<td>$0.17$ $0.04$</td>
<td>$.56$ $.45$ $.002$</td>
<td></td>
</tr>
<tr>
<td>Amount of second dose of medication (mg/kg)</td>
<td>$0.08$ $0.02$</td>
<td>$0.08$ $0.02$</td>
<td>$.61$ $.41$ $.002$</td>
<td></td>
</tr>
<tr>
<td>Total number recommended non-pharmacologic methods</td>
<td>$5.68$ $2.68$</td>
<td>$5.60$ $2.97$</td>
<td>$.06$ $.79$ $.001$</td>
<td></td>
</tr>
</tbody>
</table>

*The results of analysis of covariance for the independent variable of child attractiveness, controlling for nurse characteristics (nurses’ education, clinical experience, nurse practitioner status). Means shown in table are unadjusted for covariates.

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observed sex difference with regard to the use of television or video games appears to be robust: regardless of pain levels, age, and medical circumstances, it appears that nurses would more often use television or video games to distract boys (over 70% for both male vignettes) than girls (62% for both female vignettes). There was also consistency with regard to rocking and swaddling: 14–16% of the nurses said they would rock or swaddle the girls in Vignettes A and C, compared to 6–7% for the boys in Vignettes A and B. By contrast, nurses said they would use reading with about the same frequency for the boy in Vignette B as for the girls in Vignettes A and C (21–25%) but recommended its use much less frequently for the boy in Vignette A (13%).

There was also some evidence of stereotyping with regard to the choice of particular non-pharmacologic strategies based on race (not shown in tables). Nurses were significantly more likely to report they would use toys to distract the African-American boy (46.3%) than the White boy $\chi^2 (1, N = 328) = 13.23, p = .001$. They also indicated that they would be more likely to read books to the African-American boy (47.0%) than to the White boy $\chi^2 (1, N = 328) = 12.21, p = .001$. For all other non-pharmacologic strategies, nurses indicated that they would treat boys similarly. Unfortunately, we were unable to explore the robustness of race differences in other vignettes, because there was only 1 African-American subject and 5 White subjects in the 6 (3 × 2) vignettes, whereas there were 3 boys and 3 girls in the 6 vignettes. Thus, within the vignettes in this survey, the child’s race was inextricably correlated with sex and age.

There were no significant differences with respect to the use of any particular non-pharmacologic method for the attractive or plain child in Vignette C.

### DISCUSSION

Contrary to our hypotheses, we found no evidence that nurses’ perceptions or clinical recommendations were affected by stereotypes based on children’s sex, race, or physical attractiveness. In this study, a random sample of nurse respondents to a national survey perceived levels of pain consistent with the children’s own pain ratings and reported that they would provide, on average, close to the maximum doses of medication from standing range orders. The nurses also reported they would use several non-pharmacologic comfort measures for school aged children experiencing moderate to severe pain in acute care scenarios.

While the results were contrary to our expectations, they are consistent with the increasing and extensive clinical focus on providing adequate pain assessment and treatment for children and the directives to overturn the historical trend of undermedicating children in distress. The clinical emphasis on adequately treating children’s pain has been steady, forceful, and consensual across disciplines. This emphasis may have facilitated a commitment to pediatric pain management that is evident in this national sample of nurses.

Overall, the nurses’ responses suggest using a holistic approach to pain management by providing positive comfort (not merely neutralizing discomfort) through multiple strategies (Kolcabak & DiMarco, 2005). It cannot be determined if these nurses would persist in implementing these decisions in the presence of barriers in actual clinical settings, but their intent is in accord with professional policy statements. Aggressive use of both pharmacologic and non-pharmacologic methods has been explicitly endorsed in the Association of Pediatric Oncology Nurses position paper addressing pain relief as a primary goal.
for children with cancer (Hooke, Hellsten, Statser, & Forte, 2002). Dual strategies also are being recommended to assist all children experiencing brief painful procedures (Doellman, 2003).

**Relationship to Implicit Personality Theory**

In the language of the theory of Implicit Personality (Bruner & Tagiuri, 1954), the nurse respondents did not demonstrate preformed expectations about pain management that differed on the bases of child sex, race, or level of attractiveness. Child attractiveness did influence the nurses’ perception of pain levels, but their recommended actions did not differ for the more or less attractive child. In keeping with the two stages theorized to bring stereotypes to consciousness (Ashmore & Del Boca, 1979), the nurses’ assessment of pain may have been swayed by a stereotyped view of child attractiveness, but they were able to make unbiased pain management behavioral decisions. This suggests that any stereotyping factors associated with attractiveness in the past may now have been raised to conscious awareness, a vital step in reducing stereotyping influences on actual behavior.

**Study Strengths and Limitations**

Our conclusions—that nurses might be more aware of pain management strategies for children than has been reported in prior research and that their judgments are not affected by stereotypes—are strengthened by the rigor of our research design. In contrast with previous studies of pain management based on small convenience samples, this study benefited from both a true experimental design and a reasonably large sample that was randomly selected from a national list. The use of an experimental design ensured that the nurses making judgments about male children, for example, were comparable to those making judgments about female children, eliminating a major threat to internal validity. Non-significant results weaken inferences from hypothesis tests, but the extremely small effect sizes reinforce the interpretation that stereotyping was unlikely in this large sample of nurses.

Although it cannot be inferred from the present study that nurses would necessarily behave in reality as they reported they would in our survey (Hughes & Huby, 2002), the findings do suggest that nurses are aware of current guidelines about treating children’s pain, and that their judgments about appropriate courses of action to treat children’s pain are not biased by irrelevant (non-clinical) patient characteristics. The use of vignettes allowed us to hold constant all other characteristics of a child while varying the target attribute, providing a distinct advantage over clinical observation for studying stereotypes. Vignettes have frequently been used in studies of clinical decision-making and stereotyping (e.g., McDonald, 1994; Wilson & McSherry, 2006). In a prospective validation study of methods to measure quality in physician practice, vignettes consistently produced scores closer to the gold standard method of simulated patients and more reliably than chart abstraction (Peabody, Luck, Glassman, Dresselhaus, & Lee, 2000).

The study is limited by inclusion of vignettes that describe only school-age children, by clinical scenarios that are all either acute illness or exacerbation of chronic illness, and by taking place in acute care settings. Pain management research is needed for children of all ages experiencing pain in the full range of settings. These increasingly include palliative care units, hospices, and the home. The stereotyping variables we studied are the ones most commonly reported, but other sources of stereotyping such as age and developmental delay need to be considered.

Our sample had national geographic representation and was adequate in size to detect clinically relevant stereotypes, if they existed. Nevertheless, the analysis of sample bias did reveal that less well-educated pediatric nurses (those without a baccalaureate degree) were underrepresented in our sample. Stereotyped judgments might be more prevalent in nurses without college credentials, however, as reported in Griffin et al. (2006), we found that nurses’ education was unrelated to their perceptions of children’s pain or their pain treatment recommendations. Nurses without a baccalaureate degree were as likely as those with such a degree to rate children’s pain consistent with the children’s own ratings, and to recommend treatment strategies that included aggressive analgesic and non-pharmacologic approaches.

**Implications for Future Research and Clinical Practice**

While our findings provide new evidence for lack of stereotyping and pain management decisions that meet best practice standards, more study is
needed to confirm this promising direction. In spite of the difficulties already mentioned, future research is needed to determine what nurses actually do in clinical situations. Future research is needed to determine the extent of best practice, test supports for its maintenance, and identify effectiveness and feasibility for methods of non-pharmacologic comfort.

A small number of nurses in our study reported that they would provide no medication and no alternative comfort strategies for alleviating children’s pain. To the extent that any practicing pediatric nurse is withholding either medication or non-pharmacologic interventions from children in pain suggests that this practice continues to be a significant clinical problem. It is important that adequate education, peer expectations, systems supports, and policies be implemented to bring those behaviors into alignment with best current practice. These same strategies can continue to be utilized to maintain current positive behaviors and the highest standards of pain management.

REFERENCES


