Hospital Emergency Rooms and Children’s Health Care Attitudes

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Objective: To assess attitudes of children requiring hospital emergency room (ER) treatment for trauma injuries 5 years afterward to evaluate the long-term effect of treatment distress. For comparison, health care attitudes of a large random sample of children were assessed.

Method: Children (N = 139, 7–19 years old) recruited from the ER completed a health care attitude questionnaire. Comparable schoolchildren (N = 1,300) completed the same questionnaire, with the addition of a few questions asking about hospital contact. The ER-recruited group was part of a 5-year follow-up study, and at the time of initial recruitment, their parents had rated their children’s degree of distress at both the time of injury and of ER treatment on a 6-point scale.

Results: For the ER-recruited sample, the degree of distress during ER treatment did not seem to have long-term effects on children’s attitudes. For the random sample, contact with the ER, especially for a trauma injury, was related to children liking the ER more.

Conclusions: Although other research has shown that aversive medical experiences may negatively affect children’s attitudes, these findings suggest that the nature of the medical contact is important in how children interpret medically induced pain, which is related to their attitudes.

Key words: hospital emergency rooms; attitudes; Children’s Health Care Attitudes Questionnaire (CHCAQ); treatment distress.

The attitudes that children develop toward health care may have long-lasting effects on their subsequent behavior related to health care. In particular, experiences involving considerable pain and distress may foster negative attitudes toward and subsequent avoidance of the health care system. In this study, the health care attitudes of children who required hospital emergency room (ER) treatment because of trauma injury were assessed 5 years later to evaluate whether their degree of distress during treatment was related to their health care attitudes several years later. For comparison, the health care attitudes of a large random sample of children were assessed, some of whom had also had experiences with the hospital ER.

Research from both the dental and medical domains points to potential long-term effects from aversive health care experiences. Dental research has repeatedly shown that children who have had painful experiences at the dentist are more likely to become anxious about dental procedures (e.g., Davey, 1989; Liddell, 1990). In turn, individuals who are more anxious about the dentist are more likely
to have irregular dental visits or in fact avoid the dentist, even though such behavior may lead to more serious later dental problems (e.g., Vassend, 1993). Furthermore, there seems to be a bidirectional relationship between dental pain and dental anxiety (Woolgrave & Cumberbatch, 1986). Higher amounts of dental pain and aversive dental experience seem to increase dental anxiety, and in turn, high dental anxiety increases subsequent perceptions of dental pain.

It has often been assumed that a similar relationship between aversive experience and later attitudes occurs in the nondental health care domain. Such negative attitudes fostered by early aversive medical experiences can be detrimental to the individual in at least two ways. First, children who have been highly distressed by early experiences might find future medical events aversive and try to avoid them, thus influencing their likelihood of seeking necessary medical help in later life. Second, children who have been highly distressed by earlier medical experiences might react to later medical procedures with greater fear and perceived pain.

Some research supports the assumption that aversive medical experiences in childhood lead to subsequent negative attitudes toward medical situations. For example, traumatic medical experiences in childhood have been found to be associated with subsequent avoidance of doctors (Melamed, Robbins, & Fernandez, 1982; Quinton & Rutter, 1976), and children with previous negative medical experiences were more behaviorally distressed during throat cultures (Dahlquist et al., 1986). The nursing literature also abounds with discussions of children’s avoidance of the nurse who uses the hypodermic needle (Bush & Holmbeck, 1987). Pate, Blount, Cohen, and Smith (1996), when exploring the predictors of adult functioning in medical situations, found that medical fear and avoidance of medical care were partly predicted by experience of medical fear as a child, and furthermore, the medical pain of these individuals as adults was also predicted by their experience with pain during childhood. (Pate et al. asked young adults to rate their childhood medical experiences. It is not possible to tell whether childhood experience influenced adult attitudes or adult attitudes influenced recollection of childhood experience.) Other investigators have also suggested that children’s attitudes toward specific aspects of health care may play a significant role in influencing children’s approach or avoidance of medical events (Gochman, 1985; Jay, 1988).

Few studies explicitly investigate the factors that lead to negative health care attitudes in children, partly because there had been no good psychometric measure of such attitudes until that developed by Joseph Bush and Grayson Holmbeck (Bachanas & Roberts, 1995). They developed the Children’s Health Care Attitudes Questionnaire (CHCAQ), which measures children’s attitudes toward health care personnel, procedures, and settings along three dimensions: like-dislike, approach-avoidance, and attributed effectiveness-ineffectiveness (Bush & Holmbeck, 1987). The CHCAQ includes a pain scale that asks children to assess the painfulness of 17 stimuli (such as getting an injection). Studies that have used the CHCAQ have shown that a number of factors contribute to children’s health care attitudes. Gender and age both play a role (Bachanas & Roberts, 1995; Bush & Holmbeck, 1987; Hackworth & McMahon, 1991), with boys tending to be more positive than girls, including liking health care entities more, being less avoidant, and rating various procedures as less painful. However, these studies have also had mixed findings about age changes, with children showing both more positive and more negative attitudes with age. Other factors that seem to play a role include mothers’ health care attitudes and children’s perceived health locus of control, which mediates their attitudes as well as their pain ratings (Bachanas & Roberts, 1995; Hackworth & McMahon, 1991).

Children’s attitudes toward health care have also been related to their behavior. Bachanas and Roberts (1995) found that children whose attitudes showed more avoidance and who rated health care entities as less effective demonstrated more distress when their finger was pricked for blood samples. That is, children’s attitudes prior to a medical procedure predicted the children’s subsequent behavior a few minutes later. Of more relevance to this study, prior experience with the health care system also affected children’s attitudes (Hackworth & McMahon, 1991). Children who had immediate family members who suffered from chronic or major illness had more negative attitudes toward health care than did other children, and in particular they expressed more avoidance. However, this study included only 55 children, ranging in age from 6 to 15 years, and there was no information about how recent the illnesses had been, over how long a time they had been extended, nor the extent of the children’s direct exposure to the ill family member’s physician visits or medical treatment.
A potentially important yet unexplored issue is the nature of the child’s medical experiences. This may influence the attitudes that children develop as well as their subsequent behavior. For example, children who have experienced long-term major health problems or chronic illness may develop quite different attitudes toward health care entities (personnel, procedures, and institutions) than children who have experienced only short-term and less serious health problems (Hackworth & McMahon, 1991). Both of these groups in turn may have different attitudes than children who simply visit the physician for well-child check-ups, even though such check-ups include inoculations and blood samples. For example, children who have experienced with chronic illness seem to have greater medical fears (Aho & Erickson, 1985), as well as more negative attitudes toward medical entities (Hackworth & McMahon, 1991), but this may not be true for children who have other sorts of aversive experiences with the medical system.

One medical setting in which children are often extremely distressed is the hospital ER. Children are brought to the ER because of injury or illness needing immediate medical assessment and treatment. Children sometimes display considerable distress during treatment in the ER (Peterson & Bell, 1996); thus, this experience is a negative, aversive event. The question is whether these negative experiences lead to the development of negative attitudes. This question has not yet been answered, even though it could have important implications for the treatment of children in the ER. For example, if high levels of distress in the ER during treatment result in the development of substantial negative attitudes toward health care components, it would be important to work even harder to find ways of decreasing such distress or alternatively to find ways of helping children cope with the aftermath of such distress.

This study relates children’s current health care attitudes to their previous medical experience, and in particular their experience with hospital ERs for two groups of children. The first group included children who had been recruited from the ER of a children’s hospital 5 years earlier for another study (Peterson, 1999; Peterson & Bell, 1996). All children had been taken there for treatment of a trauma injury, mostly broken bones or lacerations requiring suturing, and shortly afterward their parents (who had been present during treatment) had been asked to rate their child’s degree of distress during medical treatment. The second group was a large random sample of school-age children asked whether they had ever had experience with a hospital, in particular, the ER. Both groups of children filled out a health care attitude questionnaire. For the second group, we could assess, in a representative sample, whether the presence or absence of prior experience with hospitals or ERs affected children’s health care attitudes. For the first group, all of whom had had prior experience with ERs, we could assess whether the degree of distress exhibited by the children during ER treatment was related to their attitudes toward health care 5 years later.

Our hypotheses are as follows. First, contact with the ER, which is normally aversive, will be associated with negative attitudes. We hypothesized that those children in the random sample who had received hospital treatment would have more negative attitudes toward the health care system than those who had not had such contact with hospitals. Second, the more stressful the contact, the more negative their attitudes toward the health care system. In terms of the sample of children who had been recruited from the ER, we hypothesized that children who were more distressed during ER treatment would have more negative attitudes than children who were less distressed during ER treatment.

**Method**

**Trauma Group**

A total of 139 children (77 boys and 62 girls) had been recruited from the ER of the only children’s hospital in Newfoundland, Canada, 5 years earlier. Their current mean age was 12.50 years ($SD = 3.44$, range = 7–19). They were mostly white, from mixed socioeconomic backgrounds, and lived in one of two nearby cities or in the surrounding communities. The children had experienced trauma injuries that included broken bones, lacerations requiring suturing, dog bites, second degree burns, and crushed fingers requiring drainage. At the time of injury, children were between 2 and 13 years of age, and at the time of this study, they were between 7 and 19 years old.

At the time of initial recruitment, all families of injured children who were of the appropriate ages were approached in the ER and asked to be part of a long-term study of children’s memory for trauma injuries. The majority of approached families (85%) agreed to participate. No incentives were offered for
participation. They were then visited at home, and both parents and children were interviewed about their recall of the injury and subsequent treatment, and then children were reinterviewed after 6 months, 1 year, and 2 years. The study was described and signed consent was obtained at initial recruitment and at home visits, as approved by the Memorial University of Newfoundland Faculty of Science Human Research Ethics Committee and the Faculty of Medicine Human Investigation Committee. (See Peterson, 1999, and Peterson & Bell, 1996, for reports on children’s memory of these events.) At the time of the initial interview, parents were also asked to rate their child’s degree of distress at both the time of injury and at the time of ER treatment. The rating scale ranged from 1 (not stressed at all, not upset) to 6 (highly distressed, extremely upset). Five years after recruitment in the ER, families were contacted again and revisited. Children were asked to fill out a questionnaire about health care attitudes and were interviewed once again about their recall of target events, although the memory data are not included in this report. (See Peterson & Whalen, 2001.)

Random Sample

Sampling was done based on age and geographic distribution. The current age of the trauma group was used, not their age at the time of the trauma (mean age of sample = 10.71, SD = 2.96, range = 6–19.) The geographic distribution of the trauma group children was used to establish the sampling frame, which was the list of schools and grades in the three regions (St. John’s, Mt. Pearl, and surrounding communities). Stratified multistage sampling was used to first select schools in a region and then to select half of the grades within a school. When the research assistant visited a selected school, she determined how many classes were in each of the selected grades. She then randomly selected (via random numbers) the appropriate classes to be included.

After the random sample was selected and ethical approval obtained from the Faculty of Science Human Research Ethics Committee, permission to conduct the research was obtained from the school board. School principals were then contacted and a meeting arranged to select the classes in the schools. Permission requests that described the study were sent home with children in the selected classes. Public service announcements about the survey were made in the media, and parents were encouraged to ask their children for the permission slips. This led to an excellent rate of response from the schools and from the parents. Only 2 schools of the original 35 sampled did not allow the survey. These were replaced with two other schools randomly selected from the remaining pool. There were rarely more than one or two students in any class who did not return the signed permission slip. A total of 1,300 schoolchildren (610 boys and 690 girls) participated.

No information about religion, socioeconomic status (SES), or ethnic origin was collected from the children for several reasons. First, it is not clear that young children could accurately report their family’s SES. In terms of ethnic origin, 97% of the population in the catchment area is classed by Statistics Canada as “nonimmigrant.” The entire visible minority population in the area is only 1.38% of the population (1996 Census–Population statistics for St. John’s Metropolitan Area). Finally, whereas in the United States variables such as access to medical care, health insurance, income, race, or religious affiliation might be related to sampling biases, in Canada in general, and in Newfoundland in particular, this is not likely. As there is no direct cost for health care in Canada, all families, regardless of SES, have access to the same health care. Further, the Janeway Hospital is the only children’s hospital in the region. Thus, any child within 150 miles of the hospital suffering trauma injury would be sent to Janeway, whether he or she presented at a physician’s office or at the ER of another hospital.

As demographic information was not collected from the children, we could only compare the random sample to the trauma group on the basis of the sampling frame, geographic distribution. A chi square test indicated that more children came from St. John’s and fewer from the surrounding communities than expected based on the trauma group, ($\chi^2[2] = 49.14, p < .001$). However, a second chi-square test indicated that the random sample did not differ significantly from expectation based on the proportions in the population from which the sample was drawn ($\chi^2[2] = 2.74, p > .05$).

Questionnaire

Two modified versions of the CHCAQ developed by Bush and Holmbeck (1987) were used to assess chil-
The second version of the questionnaire was administered to young people between the ages of 11 and 19 years of age. This version was identical to version 1 except for the removal of the pictures and graphic symbols in the like-dislike, attributed effectiveness-ineffectiveness, and approach-avoidance questions.

**Questionnaire Analysis**

As noted, questions about attitudes toward the health system could be divided into three sections: liking, efficacy, and approach questions. Scoring on the liking and efficacy questions was reversed so that a high score indicated more liking and more effectiveness. (Liking scores were reversed so that direction was consistent with the other questions. However, we realize that none of the children likely really felt positively about the health activity, such as having an operation.) A high approach score meant that if he or she needed the procedure the child would not try to avoid it. We first examined the reliability of the questions in each group. The Cronbach's alpha reliability for the liking items was .72, for efficacy items .83, and for approach items also .83. (The alpha for the entire scale was .48, indicating that the items were not all measuring the same construct.) As the reliability indicated that the items in each set were measuring a similar construct, we summed the items together within each group to create six variables that we labeled C(contact)-liking, C-efficacy, C-approach, NC(noncontact)-liking, NC-efficacy, and NC-approach.
Results

In this section we will first look at the differences between the trauma group and random samples. We will then look at how contact with the health system affects all children’s attitudes toward the system. Finally, in the trauma group, we will look at the impact of the amount of stress on children’s attitudes.

Comparison of Trauma Group and Random Sample

There was no difference in the mean age in the two groups, whether they had been operated on, or whether they had to stay in the hospital overnight. The lack of difference between the two groups on operations and overnight stays suggests that the trauma group is not made up of children who are predisposed to ailments for which hospitalization is required.

Children in the trauma group were much more likely to report having gone to the ER for injury (84%) than were children in the random sample (50.3%), $\chi^2(1) = 59.75, p < .01$. As the trauma group was selected because they had been at the ER for injury, this finding might be considered as validating children’s understanding of the questions. However, since all of the trauma children had been to the ER for an injury, it appears that a few of them did not understand the question or did not recall the visit.

A $z$ test was used to compare the attitudes of children in the trauma group with those of children in the random sample. The only variables on which the two differed was liking for the ER ($z = 2.34$) and liking for an operation ($z = 2.82$). Children in the trauma group liked the ER less (random = 2.81, trauma = 2.56), and liked having an operation less (operation: random = 2.01, trauma = 1.72) than did children in the random sample. The difference in liking for the ER is still significant if we limit the comparison to children in the random sample who had contact with the ER ($M = 2.89, z = 2.77$). Given the lack of demographic differences between the two samples, we combined them to look at the impact of contact with the health system on health care attitudes. Because there were differences in liking scores between the two samples, we included sample as an independent variable for liking for the ER and for an operation.

**Table 1. Summary of Stepwise Regression Analysis for Variables Predicting Liking for the Emergency Room**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Standardized $\beta$</th>
<th>$R^2$</th>
<th>$R^2$ change</th>
<th>$F$ change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>.253</td>
<td>.064</td>
<td>.064</td>
<td>69.46**</td>
</tr>
<tr>
<td>Pain</td>
<td>.154</td>
<td>.087</td>
<td>.023</td>
<td>24.97**</td>
</tr>
<tr>
<td>Sex</td>
<td>.075</td>
<td>.092</td>
<td>.005</td>
<td>5.89*</td>
</tr>
<tr>
<td>Sample</td>
<td>.059</td>
<td>.095</td>
<td>.003</td>
<td>3.90*</td>
</tr>
<tr>
<td>Been to ER for injury</td>
<td>.065</td>
<td>.099</td>
<td>.004</td>
<td>4.56*</td>
</tr>
</tbody>
</table>

*Sample refers to the random sample vs. trauma group.  
$^*p < .05$.  
$^{**}p < .001$.

Effect of Contact on Attitudes Toward the Health System

Our first hypothesis was that children who had contact with the hospital would have more negative attitudes toward the health system than would children who had not had hospital contact. We used stepwise multiple regression to assess the relative contribution of the independent variables (contact with hospital, person variables such as age, gender, pain sensitivity, and sample) to the dependent variables (liking for ER and operation, efficacy of ER and operations, approach to ER and operations, and NC-liking, NC-efficacy, and NC-approach). Responses to questions about hospital contact were used to divide the random sample into two groups, children who had contact with the ER and those who had not. Children who had contact with the ER were divided into those who had contact for an injury and those who had contact for illness.

**Liking.** The only nonpersonality variables contributing significantly to the variance of liking for the ER were effect of having been to the ER for an injury and the sample. Having been to the ER for an injury was significant, $F(1, 1,011) = 4.56, p < .033$, and accounted for .4% of the variance (see Table I). Those who had contact with the ER for an injury liked it more ($M = 3.16$) than those who have not had such contact ($M = 3.34$, $t[1,043] = -2.22, p < .03$). Although this is not a major contributor to the variance, its importance is in the direction it takes. Contrary to our first hypothesis, contact with the ER led to more rather than less liking. Sample also contributed significantly, $F(1, 1,012) = 3.91, p < .05$, and accounted for .3% of the variance. As noted, children in the trauma group liked the ER less than did children in the random sample, regardless of whether the children in the random sample had contact with the ER.
Having had an operation had a significant effect, $F(1, 1,394) = 64.55, p < .001$, and accounted for 4.4% of the variance in liking for operations (see Table II). This was followed by pain sensitivity, $F(1, 1,393) = 51.29, p < .001$, and accounted for 3.4% of the variance in liking for operations. Those who had an operation like it more ($M = 1.32$) than do those who have not ($M = 0.79, t(893) = 7.86, p < .001$). Similarly, those who are more sensitive to pain are less likely to like having an operation ($r (1,418) = -.20, p < .001$). Sample also accounted for a significant amount of the variance, $F(1, 1,390) = 7.59, p < .01$, with children in the random sample ($M = 3.99$) liking an operation more than children in the trauma group ($M = 4.22, t(1,430) = -2.77, p < .03$).

Age was significant, $F(1, 1,366) = 104.08, p < .001$, and accounted for 7.1% of the variance in liking for other aspects of the health care system (see Table III). This was followed by pain sensitivity, $F(1, 1,365) = 102.88, p < .001$, and accounted for 6.5% of the variance in liking for other aspects of the health care system. Older children were less likely to like having contact with other aspects of the health care system ($r (1,395) = -.27, p < .001$). Those who are more sensitive to pain are less likely to like to have contact with other aspects of the health care system ($r (1,390) = -.18, p < .001$). Ever having been to the ER for an injury also contributed significantly $F(1, 1,364) = 5.67, p < .05$, and accounted for 4% of the variance. (A similar analysis was done with stress at injury and at treatment added to the group of independent variables [using only the trauma group]. The only dependent variable to which stress [at treatment] was a significant contributor was liking for an operation, $F(1, 115) = 4.18, p < .05$, to which it contributed 3.5% of the variance.)

Efficacy. Ratings of efficacy are not influenced by either contact with the health care system or personal variables. None of the independent variables was significant. All of the independent variables together only accounted for a small percentage of the variance in efficacy ratings for going to the ER when injured (0.9%), for going to the ER when ill (0.1%), and less than 0.1% of the variance for efficacy ratings for an operation. The independent variables accounted for a similarly small efficacy rating for other aspects of the health system (3%).

Approach. The effect of pain sensitivity was significant, $F(1,1,398) = 29.74, p < .001$, and accounted for 2.0% of the variance in willingness to go to the ER if necessary. (See Table IV.) This was followed by having been to the ER for an illness, $F(1, 1,397) = 20.67, p < .001$, and accounted for 1.4% of the variance in willingness to approach the ER. Those who were more sensitive to pain were less willing to go to the ER, $r (1,422) = -.14, p < .001$. Those who had been to the ER for an illness were more willing to go to the ER ($M = 1.09$) than were those who had not been to the ER for an illness ($M = .90, t(1,421) = 2.96, p < .005$). Again, contrary to our hypothesis, contact with the health system led to more positive, rather than more negative attitudes. Ever having been to the ER for an injury also contributed significantly $F(1, 1,396) = 6.40, p < .05$, and accounted for 8.3% of the variance.

### Table II. Summary of Stepwise Regression Analysis for Variables Predicting Liking for an Operation

<table>
<thead>
<tr>
<th>Variable</th>
<th>Standardized β</th>
<th>$R^2$ change</th>
<th>$F$ change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ever had an operation</td>
<td>.210</td>
<td>.044</td>
<td>64.55**</td>
</tr>
<tr>
<td>Pain</td>
<td>.185</td>
<td>.034</td>
<td>51.29**</td>
</tr>
<tr>
<td>Age</td>
<td>.158</td>
<td>.023</td>
<td>35.82**</td>
</tr>
<tr>
<td>Ever stay in hospital overnight</td>
<td>.084</td>
<td>.006</td>
<td>8.63*</td>
</tr>
<tr>
<td>Sample</td>
<td>.070</td>
<td>.005</td>
<td>7.59*</td>
</tr>
<tr>
<td>Been to ER for injury</td>
<td>.070</td>
<td>.004</td>
<td>7.16*</td>
</tr>
</tbody>
</table>

*Sample refers to the random sample vs. trauma group.

*p < .01.

**p < .001.

### Table III. Summary of Stepwise Regression Analysis for Variables Predicting Liking for Other Aspects of the Health Care System

<table>
<thead>
<tr>
<th>Variable</th>
<th>Standardized β</th>
<th>$R^2$ change</th>
<th>$F$ change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>.266</td>
<td>.071</td>
<td>102.88**</td>
</tr>
<tr>
<td>Pain</td>
<td>.264</td>
<td>.065</td>
<td>102.88**</td>
</tr>
<tr>
<td>Been to ER for injury</td>
<td>.060</td>
<td>.003</td>
<td>5.67*</td>
</tr>
</tbody>
</table>

*p < .05.

**p < .001.

### Table IV. Summary of Stepwise Regression Analysis for Variables Predicting Willingness to Go to the Emergency Room, If Had to

<table>
<thead>
<tr>
<th>Variable</th>
<th>Standardized β</th>
<th>$R^2$ change</th>
<th>$F$ change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain</td>
<td>-.144</td>
<td>.020</td>
<td>29.74**</td>
</tr>
<tr>
<td>Been to ER for illness</td>
<td>-.120</td>
<td>.013</td>
<td>20.67**</td>
</tr>
<tr>
<td>Been to ER for injury</td>
<td>-.068</td>
<td>.005</td>
<td>6.40*</td>
</tr>
</tbody>
</table>

*p < .05.

**p < .001.
The effect of pain sensitivity was significant, \( F(1, 1,393) = 51.40, p < .001 \), and accounted for 3.6% of the variance in willingness to undergo an operation if needed (see Table V). This was followed by having had to stay overnight in the hospital, \( F(1, 1,392) = 19.85, p < .001 \), and accounted for 1.9% of the variance in willingness to undergo an operation if needed. Children who were more sensitive to pain were less willing to undergo an operation \( (r [1,417] = -.18, p < .001) \). Children who had stayed overnight in the hospital were more willing to have an operation \( (M = 2.94) \) than were those who had not stayed overnight in the hospital \( (M = 2.58, t[1,085] = 4.63, p < .001) \). Finally, having had an operation was significant, \( F(1, 1,391) = 6.47, p < .05 \), and accounted for .5% of the variance. Children who had an operation were more willing to have an operation if needed \( (M = 2.95) \) than were children who had never had an operation \( (M = 2.58, t[1,425] = 4.77, p < .001) \). Again, contrary to what might be expected, contact led to more, not less willingness to approach the system if necessary.

The effect of pain sensitivity was significant, \( F(1, 1,381) = 57.63, p < .001 \), and accounted for 4.0% of the variance in willingness to approach other aspects of the health care system (see Table VI). This was followed by age, \( F(1, 1,380) = 27.45, p < .001 \), which accounted for 1.9% of the variance in willingness to approach other aspects of the health care system. Children who were more sensitive to pain were less willing to approach other aspects of the health care system \( (r [1,404] = -.20, p < .001) \). Similarly, older children are less willing to approach other aspects of the health care system \( (r [1,408] = -.07, p < .01) \).

**Liking and Approach.** A reasonable assumption is that willingness to approach the health care system would be related to liking for a particular aspect of the system. This is true for children’s attitudes toward the ER in the random sample, but it is not for those in the trauma group. In the random sample, the more a child liked the ER, the more willing he or she is to approach the ER \( (r [916] = .38, p < .001) \). However, in the trauma group the relationship between liking for the ER and approach was not significant \( (r [127] = .04, p > .10) \).

On the other hand, liking and approach to having an operation were related in both groups. The more a child in the random sample liked an operation, the more he or she is willing to have an operation if one is needed \( (r [1,286] = .45, p < .001) \).

### Table V. Summary of Stepwise Regression Analysis for Variables Predicting Willingness to Have an Operation, If Needed

<table>
<thead>
<tr>
<th>Variable</th>
<th>Standardized β</th>
<th>( R^2 )</th>
<th>( R^2 ) change</th>
<th>( F ) change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain</td>
<td>-.189</td>
<td>.036</td>
<td>.036</td>
<td>51.40**</td>
</tr>
<tr>
<td>Ever stay in hospital</td>
<td>-.178</td>
<td>.054</td>
<td>.005</td>
<td>6.47*</td>
</tr>
</tbody>
</table>

\*p < .05.  
**p < .01.

### Table VI. Summary of Stepwise Regression Analysis for Variables Predicting Willingness to Approach Other Aspects of the Health Care System, If Needed

<table>
<thead>
<tr>
<th>Variable</th>
<th>Standardized β</th>
<th>( R^2 )</th>
<th>( R^2 ) change</th>
<th>( F ) change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain</td>
<td>-.200</td>
<td>.040</td>
<td>.040</td>
<td>57.63*</td>
</tr>
<tr>
<td>Age</td>
<td>-.142</td>
<td>.059</td>
<td>.019</td>
<td>27.45*</td>
</tr>
</tbody>
</table>

\*p < .001.

This was also true of children in the trauma group \( (r [138] = .30, p < .001) \).

### Stress and Health Care Attitudes

Stress measures at time of injury and at time of treatment were only available for children in the trauma group. There was no difference in the stress parents reported for males and females at the time of injury \( (t[133] = .55, p > .10) \). The relationship between age and stress at time of injury was not significant \( (r [135] = -.13, p > .10) \). Stress at time of treatment was related to age \( (r [134] = -.44, p < .01) \), and to pain sensitivity \( (r [120] = .29, p < .01) \). Age and pain sensitivity were also correlated \( (r [124] = -.13, p < .01) \). However, the relationship between stress at time of treatment and pain sensitivity became marginal \( (r_{pamul} [117] = .16, p < .10) \), when age was partialled out of the correlation. Thus, younger children exhibited more stress at time of treatment than did older children, but stress was not directly related to pain sensitivity.

Our hypothesis was that the more stressful the contact, the more negative children’s attitudes would be toward the health care system. To evaluate the effect of children’s degree of distress at the time of both injury and ER treatment, we correlated the two stress measures with liking, efficacy, and approach. Surprisingly, neither stress at time of injury

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**Note:** The tables are not fully rendered due to limitations in plain text representation, but the content is transcribed accurately. The formulas and statistical tests are noted where applicable.
nor stress at time of ER treatment was significantly related to liking, efficacy, or approach. In other words, children who had been highly distressed at the time of their injury or subsequent ER treatment did not have more negative attitudes toward health care entities than did children who had experienced lower or minimal amounts of distress. Children's distress in the ER (or at the injury-causing accident that brought them to the ER) appeared to have no measurable long-term effect on their health care attitudes at all. Thus, our second hypothesis was not supported either; there was no indication that greater distress led to more negative attitudes toward the health care system.

**Discussion**

Our hypotheses were that contact with the ER, which is normally aversive, would be associated with later negative attitudes by children toward health care entities. And the more stressful the contact, the more negative their attitudes would be. To our surprise, neither hypothesis was supported. For the random sample, we found that contact with the ER was associated with children liking the ER more, not less. Although the children in the trauma group liked the ER less than did those in the random sample, the degree of distress that children experienced in the ER while being treated for an injury did not appear to be related to their attitudes toward the ER 5 years later.

Considerable earlier research has found an association between aversive encounters with the health care system and negative attitudes, especially in the dental domain. For example, children who experience more distress in the dentist’s office are more likely to dislike dentists, and these attitudes subsequently influence their behavior toward dentists and dental procedures and increases the likelihood of subsequent dental avoidance (Davey, 1989; Liddell, 1990; Vassend, 1993). As another example, children with chronic illness who have multiple medical visits to treat or manage the illness also have more negative attitudes toward medical entities (Hackworth & McMahon, 1991). Other researchers have also noted associations between aversive medical experience and subsequent negative attitudes (e.g., Melamed et al., 1982; Pate et al., 1996; Quinton & Rutter, 1976).

How can we account for our different results for the children in the random sample? We believe our results suggest that the precise nature of a child's contact with the health care system is an important factor, not simply whether that contact was aversive or not. One can assume that aversive contact was the norm for children from the random sample who had had to be treated at the ER, but as a group they liked the ER more than did those children who had not had such contact.

Part of the explanation of why our results for this sample are so different may reside in the relationship of the pain-inducing ER event to the entire sequence of events that children experience. When children are taken to the ER for a trauma injury, they have already been injured. They have already experienced the sudden pain and fear that accompanies bone fractures, lacerations, burns, crushed fingers, and dog bites. Thus, when they arrive in the ER, they are already distressed. There, they are repeatedly told by parents and medical personnel that their injury will be treated and that they will be better after this treatment. Even though the treatment may temporarily hurt, nonetheless all children were treated as outpatients and sent home, and they all probably felt much better soon after their treatment. In other words, the sequence of events was that children experienced sudden pain first as a result of an injury, went to the hospital ER because of that pain and the injury (where they often experienced additional pain during treatment), but as a result of this visit, the pain was soon alleviated. In contrast, children who experience dental pain usually feel good prior to their dental visit, and the pain is often caused by the dentist’s procedures. So children often leave feeling worse than when they arrived. Similarly, although they often do not feel well prior to visiting the physician or hospital, children with chronic illness generally do not experience a dramatic improvement after treatment. Type of contact and sequence of children’s feeling-states are both variables that should be explored in future research.

Liking for the health care system is related to children’s willingness to approach it. For children in the random sample, liking for the ER was related to willingness to go to the ER if needed. There was no relationship for children in the trauma group. On the other hand, when asked about operations, a topic about which they had not been interviewed over the 5 years, their liking was related to willingness to approach in both the trauma and the random sample.
In a number of ways, our findings support prior research, which has suggested that the relationship between children’s experience with the medical system and their subsequent attitudes is complex (Bachanas & Roberts, 1995; Bush & Holmbeck, 1987; Hackworth & McMahon, 1991). First, although attitudes of like/dislike were influenced by contact with the ER, attitudes of approach/avoidance were influenced instead by personal variables such as pain sensitivity. In terms of efficacy, none of our variables influenced children’s attitudes. Second, the lack of a relationship between the distress of children in the trauma group during their ER visit and their subsequent attitudes toward the ER suggests that one cannot simply consider the amount of distress experienced by children in a medical/dental setting. Rather, the larger event within which the medical/dental pain occurs is important. Third, attitudes are related to points of contact or the context of contact with the medical system. Thus, children’s attitudes about the ER were associated with having had contact with the ER, but this did not generalize to attitudes about medical personnel or procedures in other medical settings. Fourth, similar to the findings of Bachanas and Roberts (1995), Bush and Holmbeck (1987), and Hackworth and McMahon (1991), we found that personal variables such as the age of the child and pain sensitivity played a significant role (although gender did not).

This study has a number of limitations. First, the effect sizes for almost all comparisons are small, which tempers the clinical utility of the findings. Also, a child-completed questionnaire is the only outcome measure of the children’s health care attitudes. It would be important to extend this type of research to include measures of children’s behavior when undergoing medical examination or treatment and even children’s willingness to go to the doctor or the hospital. The number of visits by the children to the hospital was not controlled. It is not known whether children in the trauma group visited the ER again in the intervening 5 years since their initial recruitment, or how many times (and for what) they visited the ER. Furthermore, the only measure of distress is a rating scale provided by the parent. For the random sample, there is no demographic information, information on the frequency of hospital visits, the nature of those visits, or how long ago they occurred. All of these factors may play a role. For example, in the absence of demographic information, we cannot tell if there were substantive differences between the trauma group and the random sample.

The different circumstances in which the two groups responded to the questionnaire might have influenced findings, as one group filled it out at home whereas the other group filled it out in the classroom. In addition, a number of alternative explanations may help account for why the ER-recruited children’s distress in the ER had no apparent measurable long-term effect on attitudes. Five years is a long time delay, and any effect may have dissipated over this length of time or may have been superceded by more recent ER experiences. Or the measures we used may not have adequately assessed the constructs of interest. It is also possible that children did not recall how much distress they had experienced 5 years earlier during ER treatment, although children seemed to accurately recall whether they had cried.

An important future direction for research is to explore the relationship between memory and attitudes. When interviewed, the trauma group of children clearly had extensive and largely accurate recall about their injury and hospital treatment 5 years earlier (Peterson & Whalen, 2001). However, children did differ in the extensiveness and accuracy of their recall, and memory variables may be important contributors to subsequent attitudes. Research exploring the relationship between memory and attitudes is currently underway in our laboratory. Similarly, the effect of parental reminders about the ER visit should also be examined, as these types of reminders may cue memories, in either a positive or negative direction.

This research has clinical implications. Most important, contact with the health care system that effectively alleviates child distress seems to be associated with more positive attitudes toward the health care system. Especially for children in the random sample, the effective treatment of the painful injuries that had necessitated ER treatment was associated with children liking the ER more, despite the distress caused by treatment in the ER. Perhaps clinicians would profit by considering ways in which children’s contact with the health care system could be perceived as effective by children. In summary, the nature of children’s contact with the health care system, not just whether it was painful or aversive, may be an important variable influencing children’s health care attitudes.
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References


