The effects of short-term social support from dentists on the stress experienced by parents of pediatric dental patients

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Abstract

Parents of pediatric dental patients were observed in a university clinic waiting room as they were greeted by student dentists. Soon after the dentist left with the child, the parents completed a series of scales assessing their perceived social support from the dentist, their anxiety and distress levels, and their confidence in the dentist. Regression analysis indicated that perceived social support from the dentist was associated negatively with parental distress regarding the dental treatment ($\beta = .-45$, $P < .01$) and parental state anxiety ($\beta = .-37$, $P < .01$). In addition, social support was associated positively with parent's confidence in the dentist $\beta = .54$, $P < .01$). Possible mediational paths and clinical implications are discussed. (Pediatr Dent 13:333-38, 1991)

Introduction

A key factor in parents' satisfaction with their children's dentist is the quality of the dentist's relationship with the child (Jenny et al. 1973). Clearly the "bedside manner" of the dentist is a major factor affecting parents' reactions to their children's dental treatment. The present experiment examined the extent to which subtle interactions between the dentist and the parent-child dyad affected other parental responses aside from satisfaction — specifically, the stress experienced by parents when they bring their child for dental treatment.

In recent years it has become clear that social support can be a key source of stress reduction (Cobb 1976; Cohen and Syme 1985 for reviews). As such, social support has been found to affect a wide range of health outcomes, including pregnancy complications, (Nuckolls et al. 1972), cholesterol rate (Gore 1978), blood pressure (Cobb 1976), and mortality (House et al. 1988). Recent research suggests, in cases of chronic stress, many of these health-related outcomes may be mediated, at least in part, by the effect that social support has on immune function (Jemmott and Magloire 1988; Baron et al. 1990). Given this encouraging data, it seems sensible to examine the extent to which social support might prove useful as a stress reduction technique in dental settings.

Social support usually is conceptualized as comprising several components, including informational support, material aid, mutual love and esteem, feeling part of a social network, and feeling needed (Baron et al. 1990). For the most part, social support of this type is thought to derive from long-term positive relationships with friends and family. Indeed, the vast majority of social support studies examines this type of social support. There is reason to suspect, however, that short-

term social support from health professionals also may produce therapeutic outcomes. The affiliation research inspired by Schachter (1959) and his associates indicates that the short-term "mere presence" of (noninteracting) total strangers can reduce the aversiveness of various lab stressors (Amoroso and Walters 1969). Thus, it is clear that companionship need not derive from long-term friendship to have some therapeutic effect. As an example, Dunkel-Schetter (1984) found that social support from medical personnel was as effective as social support from friends and family in reducing stress among cancer patients. In a similar vein, Lynch et al. (1974) reported that when nurses held the hands of curarized, shock-trauma patients, the patients' heart rates decreased.

Based on these preliminary reports, the present research examined the extent to which variations in short-term social support from dentists were predictive of stress levels in the parents of pediatric dental patients. Bringing a young child in for dental treatment is likely to be stressful for most parents, given the general dental anxiety in the population (Milgrom et al. 1988). In the present case, this stress was expected to be even more pronounced. First, the dentists were student dentists rather than experienced professionals, and second, as students, they were not the patients' regular health care providers. The prediction was that stress levels would be lower among patient dyads who received stronger levels of support (i.e., information, reassurance, friendliness) from the student dentist. This, of course, is a common prediction. What makes it interesting in the present case is that temporal opportunities for social support were quite limited in the clinic situation. Thus, this prediction concerns the impact of extremely brief and constrained social support from a total stranger on

parental stress levels. Although 42 of the 51 patients had been to the clinic previously, in no case was the student dentist the same person who originally treated the child.

Materials and Methods

Research Participants

Parents of patients age 9 years or younger were recruited in the waiting room of the Pediatrics Clinic at The University of Iowa, College of Dentistry, where they were awaiting their children who were undergoing either an initial screening examination (N = 9) or a periodic checkup exam (N = 42). No patients were scheduled for restorations. Approximately 10% declined to participate in the study. Fifty-one parents agreed to participate (43 females, eight males). Children ranged in age from 2 to 9 years (mean = 5.72) with the majority (77%) being between the ages of 5 and 8. Parents waiting with another adult partner were excluded from the study. The dentists were all third-year dental students in their initial rotation in pediatric dentistry. While student dentists were aware that a team was distributing questionnaires in the waiting room, they were not informed about the purpose of the research until its completion.

Procedure

When student dentists entered the waiting room to greet patients and their parents, the brief interaction (M = 53.37 sec) was observed. The overall social support offered by the student dentists to the parent/child pairs was rated on a scale of 1–10 by an experimental coder who was seated some 8–10 ft away. Pilot research indicated this distance permitted the observer to hear the interaction clearly without being obtrusive. Examples of dental social support are as follows: dentist smiles, dentist adjusts vocabulary and tone of voice to age of child, dentist explains dental procedure to the dyad, dentist assures dyad that the procedure will be short.

Three separate raters were used in the study. A single rater was used for all sessions, except for 18 sessions in which two raters made judgments to assess interrater reliability. More specifically, interrater reliability on ratings of overall social support was tested by grouping these raters into three pairs of observers. Each pair observed a total subset of six cases together. Moderate levels of interrater reliability were found, and standardized itemized alpha for the three pairs are as follows: .84, .81, .69 (In addition to Mary Snydersmith, Molly Hartman, and Stephanie Lininger served as raters. Snydersmith conducted the majority of observations [N = 22] in those 33 sessions where only one rater was present; Hartman and Lininger each made ap-

proximately half of the remaining ratings. On sessions with two raters, Snydersmith's ratings were entered as the data of record when she was one of the scorers [N = 12]. In the remaining six reliability sessions, half of each observer's ratings were entered as the data of record [on an alternating basis]. Mean ratings of social support did not differ between the three raters.) Interactions between dentists and dyads also were timed, but since this measure was not associated strongly with other measures, it will not be discussed further.

After the interaction, the student dentists took the children from the waiting room into the examination room; parents were not allowed into the examination room. The observer allowed a 5-min reaction period so that the subjects could reflect on the nature of the situation. The observer then approached the parent and introduced herself as a researcher within the College of Dentistry who was examining reactions of parents of young children to their children's dental examinations. The observer explained that parents' interactions with the dentist had been observed, and then asked them if they were willing to allow this data to be used in the study and to answer some questions regarding their feelings toward the examination. Parents who agreed were asked to complete a booklet containing the key dependent variables after being assured of confidentiality.** After parents completed the questionnaire, the purposes of the study were explained in more detail, and the subjects were thanked for their time.

Measures

One set of questionnaire items (the perceived social support index) assessed parents' perceptions of social support from the dentist. These questions assessed how friendly, informative, and reassuring the dentist was in the waiting room as well as how supportive the dentist was overall, e.g. #1, When your child's dentist came out to meet you and your child, to what degree was he/she friendly (reassuring, supportive) (1 = not at all friendly, 10 = very friendly); e.g. #2, When your child's dentist came out to meet you and your child, how much information about the dental procedure did he/she provide (1 = no information; 10 = very much information). Given that these questions all relate to basic components of social support (Baron et al. 1990; Cutrona and Russell 1990), this set of four questions was summed

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**(Note that this procedure obtained informed consent from subjects only after they had been observed briefly. This departure from traditional informed consent procedure was approved by the Protection of Human Subjects Review Board — University of Iowa College of Dentistry [Committee B]. Institutional Review Board ID# = 02XB; Institutional Assurance Identification Number M1080.)

into an index. As a result, both parental perceptions and coder ratings could be used to assess social support. The summed index used here (and on the measures below) was preferred a priori to analysis of individual items since summed indices generally are more reliable and sensitive measures than those based on isolated questions (Cronbach 1970).

A second set of questions (the self report of parental stress) assessed how much stress the parent was experiencing. These questions were as follows: How comfortable are you with this visit to the dentist? How stressful is this event for you? At this moment, how willing would you be to bring your child back for treatment at this dental clinic? How stressful do you feel this event would be for the average parent? As above, these four questions were summed into an index and viewed as a single dependent variable.

A third set of questions (the parental estimate of child distress) asked the parent to estimate the stress experienced by their child: How frightened do you believe your child is of this dental exam? How stressful do you feel this procedure will be for your child? How much do you think your child will cooperate with a return visit to the dentist? How worried are you that your child will experience pain during the dental exam? How much would your child want to make a return visit to the dentist? These five questions were summed into an overall index. For all three sets of questions the response format ranged from 1 (not at all) to 10 (very).

Confidence in the dentist was assessed with a single item, "How much confidence do you have in the dentist" (1 = "no confidence"; 10 = "very much confidence"). Finally, parents completed 20 questions from the state subscale of the State-Trait Anxiety Inventory (STAI, Spielberger et al. 1976) (e.g., I am tense). This subscale measures respondents' momentary feelings of anxiety. The response scale for each question varies from 1 (not at all) to 4 (very much so). Since the STAI is the only standardized scale among those just described, the remaining four indices were pilot tested for clarity of instruction and lack of ambiguity on a pilot group of seven parents.

Results

It was predicted that parents receiving more dental short-term social support would experience less stress than those who received less social support. It also was predicted that parents receiving more social support would feel that their children were experiencing less stress than those parents receiving less social support. Although most studies have relied on either subject perceptions of support or archival ratings of support (i.e., organization membership, partner status), we used both observer and self-report ratings of dental short-term social support.

An initial analysis indicated that observer ratings of overall social support and the four-item index reflecting parents perceived (self-rated) social support were both correlated significantly with parents' confidence in their child's dentist (observer rating r = .33, $P < .01$; parents rating r = .54, $P < .01$). This raised the possibility that any relationship between social support and stress levels might be mediated by these perceptions of confidence. To test this causal model, the regression procedures suggested by Baron and Kenny (1986) were used to examine the data. Under this procedure, one can assume that an independent variable (e.g., social support) affects a dependent variable (e.g., parental stress) through a mediating process (confidence) if four conditions are met. In a first regression equation, one must show that the independent variable affects the mediator. In a second regression equation, the independent variable must, of course, be shown to be related to the dependent variable. A third regression equation regresses the dependent variable on both the mediator and the independent variable. In this final equation, the mediator must be shown to be related significantly to the dependent variable, and the relationship between the independent and dependent variable should be weaker in this third equation than it is in the second equation (given that the variance on the dependent variable due to the mediator is controlled) (Baron and Kenny 1986). If these conditions hold, one has some basis for inferring that the relationship between the independent and dependent variables is mediated at least partially by the "mediating" variable. Perfect mediation can be inferred if the independent variable has no effect (on the dependent variable) when the mediator is controlled! The unadjusted beta values relevant to these tests are shown in Tables 1 and 2 (see next page).

Parent-Perceived Social Support

In this three-step analysis, the four-item parent-perceived support index was found to predict parental confidence in the dentist (ß = .54, $P < .001$). Parent-perceived support also predicted self-reported parental stress when the effects of confidence were ignored in the equation (ß = -.45, $P < .002$). In the third equation, confidence was significantly related to self-reported stress (ß = -.61, $P < .001$). In addition, in this equation, parent-perceived support did not significantly predict self-reported parental stress (i.e., when the effects of parental confidence in the dentist were controlled) (ß = -.12, $P < .35$, see Table 2). In short, these data are congruent with the hypothesis that the stress-reducing effects of parent-perceived dental support are mediated

by confidence in the dentist.

Observer-Rated Social Support and Parental Stress

The three-step regression analyses used just above also were used to determine if confidence mediated the relationship between observer ratings of dental support and parental distress. This analysis revealed that observer-rated support marginally predicted parental confidence in the dentist (β = .27, P < .06). Observer ratings of overall support tended to predict self-reported parental stress when the effects of confidence were ignored (β = -.22, P < .12). In the third equation, confidence was associated significantly with self-reported stress (β = -.66, P < .001) and as above, observer-rated support did not significantly predict self-reported parental stress when the effects of parental confidence in the dentist were controlled, (β = -.07, P < .55, see Table 2). Although several tests here were only marginally significant, the data were generally congruent with the view that the stress-reducing effects of observer-perceived dental support were mediated by parental confidence in the dentist.

State Anxiety and Social Support

The Baron and Kenny (1986) analysis also was performed on the relationship between social support, parental confidence, and anxiety as measured by the State Trait Anxiety Index (STAI). As noted above, parent-perceived support predicted parental confidence in the dentist (β = .54, P < .001). In addition, parent-perceived support significantly predicted parental state anxiety when the effects of parental confidence in the dentist were ignored in the equation (β = -.37, P < .01). In the third equation, however, parental confidence in the dentist was not related significantly to STAI responses (β = -.15, P > .30). Moreover, in this third equation, although the relationship between parent-perceived support and STAI scores was weaker than it was in the second equation (where confidence was ignored as a predictor), the relationship still was marginally significant (β = -.30, P < .08). On balance, these data do not provide strong support for the notion that parental confidence in the dentist was mediating the relationship between parents' perceived social support and their STAI scores.

Observer-rated support was not related significantly to parental anxiety — as measured by the STAI (β = .11, P < .47).

Table 1. Relationship* between key variables

	Self-Reported Stress	STAI	Confidence in the Dentist
Perceived social support	-.45, P < .002[†]	-.37, P < .01[†]	.54, P < .001
Observer rated social support	-.22, P < .12[†]	.11, P = n.s.[†]	.27, P < .06
Confidence in the dentist	-.61, P < .001	-.15, P = n.s.	

* Expressed as unadjusted beta values.

† Those values reflecting the relationship between social support measures and stress (or anxiety), do not control for the possible mediating effects of confidence in the dentist.

Table 2. Relationship* between social support and stress measures controlling for the mediating effect of confidence

	Self-Reported Stress	STAI
Perceived social support	-.12, n.s.	-.30, P < .08
Observer rated social support	-.068, n.s.	.071, n.s.

* Expressed as unadjusted beta values.

Parental Estimates of Child Distress

Correlations between the various social support indices and the parents' estimate of their children's distress were low and nonsignificant.

Discussion

It was hypothesized that short-term social support from the student dentist would be associated with reduced parental stress during the children's dental examinations. The results of the study support the hypothesis (see Table 1). On both the STAI and on the five-item self-report of parental stress, high perceived social support was predictive of lower stress levels in parents. Similar outcomes tended to occur when observer-rated social support was used to assess social support — but admittedly, the data here were not as robust. These data are particularly noteworthy, given that none of the dentists in this study were acquainted previously with their pediatric patients or their parents, and the relatively lower stress levels of parents reporting high social support resulted from a constrained and brief interaction period (averaging less than a minute in length).

An additional feature of this study was the introduction of observer ratings of social support. Most studies examining social support have used either self-perception measures or simple archival or criterion measures, (e.g., marriage and church membership, Berkman and Syme 1979). It certainly is encouraging that the data patterns generally are similar when the analyses based on the observer ratings of social support are compared to those based on parent-perceived social support (see

Table 1), since relying on the latter alone leaves ambiguity regarding causal direction. That is, while a strong relationship between parent-perceived (i.e., self-reported) social support and parental stress may reflect the fact that high social support lowers stress, there also is the possibility of reverse causality. In other words, it might be argued that the obtained relationship between social support and distress is caused by parents inferring that they have low social support *because* they feel substantial distress. (This might occur, for example, if distress provokes feelings of pessimism and loneliness.)

A relationship between observer-rated social support and parental distress is less open to this criticism. While the data patterns in the "observer-rated" analyses are not as strong as those observed in the analyses based on parent-perceived social support, this is not all that surprising. Parents should have found it easier to recognize support being offered to them than would the coders, who were required to overhear the conversation surreptitiously from a polite distance of some 10 ft from the parent/patient dyad. (As this discussion implies, these two alternative measures of social support are correlated only to a modest degree. The correlation between parental self-ratings of social support and observer ratings of overall social support [averaged over coders] was .45 [$P < .05$]). As noted, most of the studies linking social support to health related indices employ self-report inventories of social support (Jemmott and Magloire 1988) rather than observer ratings. Of course, even given the observer rating data, in the absence of experimental manipulation and random assignment procedures, one must be quite cautious regarding inferences of causality but the consistent relationship between social support and our stress indices (i.e., self-reported stress and the STAI) certainly is congruent with the possibility that even brief social support from health care providers can prove beneficial.

A related caveat is that our unobtrusive, observational approach did not include an artificially created "baseline" condition where we could be sure no social support from the dentist was forthcoming (as would occur if the child were tersely called in from the waiting room by a staff person). Thus, it is quite possible that "low" social support in this study really did entail support well above such a "no support" baseline level. Indeed, this was the subjective impression of our raters. Thus, the term "low social support" should be viewed as a relative term, rather than an absolute indication of coldness or interpersonal callousness on the part of our student dentists. This caveat not withstanding, it remains true that relatively high social support from dentists was associated with lower parental reports of stress and state anxiety. As such, these data are quite congruent with primary hypothesis of the study.

Surprisingly, neither the observer ratings of social support nor parental self-ratings of social support were related significantly to parental estimates of their children's distress. One would expect that since social support was associated with confidence in the dentist, this confidence also would lead parents to predict a less traumatic clinic visit for their child, but such was not the case. It is conceivable that these data were affected by parents' defensive reluctance to acknowledge the possibility that the clinic visit might be stressful for their children, but we have no direct data on this possibility. Similarly, it also is possible that variations in dentists' social support affected the patients' reactions (as opposed to the parents' estimates), but given the young age of many subjects, it was not possible to obtain reliable questionnaire data on this point. These issues, then, will require additional research.

The data offer some support for the view that the relationship between social support and parents' self-reported stress is mediated at least in part by the effect that social support has on parental confidence in the health care provider. Both parent-perceived social support and observer-rated social support were related significantly to parental confidence (see Table 1). In addition, in both cases, confidence was related to self-reported stress, and the relationship between social support and self-reported stress was weakened when both confidence and social support were included as predictors in a regression equation (see Table 2). This data pattern is that expected when a third variable mediates a relationship between two other variables (Baron and Kenny 1986). This inference requires certain caveats, however. First, in this correlational design, it is possible that variation on the predicted variable (stress) affects the mediator and/or the independent variable instead of vice versa. In the absence of manipulative strategies (i.e., randomly providing social support to parents) this possibility cannot be eliminated (Baron and Kenny 1986). Second, the STAI data does not parallel the data for self-reported stress regarding the mediating role of confidence (see Table 2). It is true that the STAI is more a measure of general distress than is the parental self-report measure (which specifically targets the stress associated with the present dental situation). While this difference may account for the differential data patterns seen on the two measures, given that both indices assess closely related constructs, failure to find parallel outcomes raises questions regarding the mediating effect of confidence in these relationships. As a result, the data regarding the mediating role of confidence must be viewed as tentative. These caveats aside, the fact that variations in social support can affect parental confidence even when interaction is quite limited is an important empirical/pragmatic finding for health

care providers. The possibility that this confidence plays a mediating role in determining how stressful treatment is for the families of health care recipients also is important.

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