

THESIS

THE EFFECTS OF CHILD LIFE SPECIALISTS' INTERVENTIONS ON THE DISTRESS OF
PEDIATRIC PATIENTS DURING LACERATION REPAIR

Submitted by

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ABSTRACT

THE EFFECTS OF CHILD LIFE SPECIALISTS' INTERVENTIONS ON THE DISTRESS OF PEDIATRIC PATIENTS DURING LACERATION REPAIR

Children who are treated for injuries in the emergency department (ED) have been shown to have an increase in anxiety and distress, poor pain control, and reported lower ratings of overall satisfaction. Child life specialists (CLSs) are trained to help minimize stress, promote coping, and use nonpharmacological methods for pain relief with pediatric patients in health care. Previous studies confirm the work of CLSs with patients in other units of the hospital, and are expected to have similar results in the ED setting.

In this study, I examined what type of effect CLSs had on pediatric patients self-reported pain, fear, and observed distress while receiving sutures for a laceration. The parent and patient's satisfaction with their experience also was measured. It was hypothesized that the involvement of a child life specialist during this procedure would decrease patients' self-reports of pain, fear, and observed distress, and increase self-reports of satisfaction. As well, exploratory analyses were conducted to determine whether patient self-reports of pain and fear are related to clinical observations of patient distress as well as biological markers of stress (i.e., cortisol).

Fifty-two pediatric patients with a laceration were studied in a level one ED trauma center of a free-standing children's hospital. Results indicated that patients who received child life services had better outcomes than those who did not. Specifically, fear and distress were shown to be significantly lower for these patients. Also, the parents of these patients were significantly more satisfied with the care received with CLS involvement. These results lend strong support for CLSs involvement with pediatric patients receiving a laceration repair.

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Introduction

Repairing a laceration is often a quick medical procedure, but for the pediatric patient it can be stressful, physically and emotionally, despite its brevity. On the inpatient unit, the negative effects of procedures on pediatric patients have been widely researched. In fact, the stress of having a procedure can continue long after the patient has been discharged from the hospital. For instance, hospitalized children who had more invasive procedures had more medical fears and more posttraumatic stress disorder symptoms 6 months after discharge than the children experiencing fewer invasive procedures (Rennick, Johnston, Dougherty, Platt, & Ritchie, 2002). Research on the effects of procedures on the inpatient unit is extrapolated to support the hypothesis that the potentially negative effect of inpatient procedures on patients and families may have similar effects in the outpatient setting, such as those procedures performed in the emergency department (ED).

Given these emotional consequences that can occur from even minor procedures, pediatric professionals are interested in how to minimize the associated trauma and promote coping for patients and family members. Coping is often defined in terms of how an individual manages stressful events through cognitive and behavioral responses (Lazarus & Folkman, 1984). LeRoy, et al. (2003, p. 2551) defined coping for the pediatric patient and family in the context of the health care setting and invasive procedures, as follows: "Coping refers to the set of cognitive, emotional and behavioral responses used to manage a stressful situation. Coping styles are seen in an individual's consistent use of particular strategies for managing stressors across contexts." A major focus of certified child life specialists (CCLSs) is to minimize stress and promote coping across the health care continuum from the inpatient unit, to the dental clinic, to the ED.

Emergency Department Admissions and Distress

The physical and emotional distress of having a laceration begins when the injury occurs, and can continue for patients if they are treated in the ED. Most children with a laceration arrive to the ED in considerable pain, and it is likely these patients will have more painful experiences throughout their length of stay. In fact, pediatric patients experience, on average, eight painful procedures during the first 6 hours of their visit to the hospital (Roskies, Bedard, Gauvreau-Guilbault, & Lafortune, 1975). For the patient in the ED, this can occur from medical staff physically assessing the lesion, cleansing the injured site, inserting a peripheral intravenous (IV) catheter, injecting an anesthetic, and suturing the wound. For the patient receiving a minor procedure, pain control is a basic need. Yet, studies have repeatedly shown deficiencies in ED pain control, particularly in procedures with children compared to adults (Alexander & Manno, 2003; Rupp & Delaney, 2004). Pharmacological pain management for procedural pain in the ED is notably lacking (Fein, Zempsky, Cravero, & The Committee on Pediatric Emergency Medicine and Section on Anesthesiology and Pain Medicine, 2012). Singer, Thode, and Hollander (2006) found that approximately one third of all patients, adult and pediatric alike, received analgesics during a laceration repair, indicating that there were pediatric patients who received no local anesthetic for pain relief during the actual repair of the laceration. There are several minor painful procedures regularly performed in the ED without pharmacological pain management, such as venipuncture, intravenous catheter placement, fingersticks, intramuscular or subcutaneous injections, urethral catheterization, nasogastric tube placement, abscess incision and drainage, and lumbar punctures (MacLean, Obispo, & Young, 2007). Anticipatory fear of having these types of procedures may contribute to the intensity of pain and resulting emotional distress (McGrath, 1993).

Pediatric patients' exposure to often unpredictable and severe procedure-related pain can be associated with negative emotional and psychological implications (Kazak & Kunin-Batson, 2001). Emotional upset due to medical procedures and surgeries during hospitalization was documented as early as the 1930s (e.g., Beverly, 1936; Forsyth, 1934). Vernon, Schulman, and Foley (1966) referred to emotional upset and constructs subsumed by this term (e.g., emotional distress, anxiety, fear) as psychological upset. This upset can include lower levels of self-esteem (Riffie, 1981), more medical fears (Rennick et al., 2002), greater levels of anxiety (Murphy-Taylor, 1999; Rape & Bush, 1994), behavioral problems (Margolis et al., 1998), fear of separation from parents (Rollins, Bolig, & Mahan, 2005), and poor patient compliance (Abuksis, 2001).

One can expect that the pediatric patient will face some type of physical and emotional distress during a visit to the ED. How pediatric patients, families, and health care staff manage the patient's physical and emotional stress can have a potentially strong influence on the degree of psychological upset they experience.

Children's Coping with Procedures

One significant source of distress for the ED pediatric patient is due to medical procedures. There are key elements to help pediatric patients prepare for and cope with difficult procedures. These elements include establishing trust with a member of the pediatric health care team, allowing for opportunities for emotional expression, and having a complete and age-appropriate understanding of the procedure (Koller, 2007).

The formation of a trusting relationship with an ED professional is significant for the pediatric patient coping with a potentially frightening and painful procedure. Trust offers patients and families the assurance that everything being done is in their best interest, and encourages

family involvement in the decision making by facilitating communication with staff. Developing trust involves listening, interacting in caring ways, supporting normal patterns of parent and family involvement, and respecting cultural values. With trust developed, therapeutic rapport can be used to assist patients in identifying and implementing coping strategies. Pediatric patients are more likely to use coping techniques when a staff member is present and supportive (Cohen et al., 2002). Trust with a hospital staff member is one of the essential components in helping a patient manage the hospital experience.

The second significant component for helping patients prepare for and cope with the health care experience is providing opportunities for self-expression. Pediatric patients experience a wide range of emotions in the hospital. The stress of being a patient in the pediatric ED can generate feelings of loss of autonomy, restriction of movement, fear of mutilation, loss of bodily control, and lack of trust (Brunnquell & Kohen, 1991). Pediatric patients and their families need a therapeutic milieu, cultivated by staff, that provides opportunities for these feelings to be shared, validated, and clarified (Wolfer, Gaynard, Goldberger, Laidley, & Thompson, 1988). When these concerns are addressed, the individual and family can better cope with the medical situation (Hallstrom, Runesson, & Elander, 2002; Stevenson, Bivins, O'Brien, & Gonzalez del Rey, 2005).

Providing pediatric patients with an age-appropriate explanation, in a minimally threatening manner, regarding encounters in the health care setting, the third key element, has long been recognized as crucial to reducing anxiety and promoting effective coping (Gursky, Kestler, & Lewis, 2010; Wolfer & Visintainer, 1975). For the patient visiting the ED for the first time, there are often new sights, sounds, and experiences related to the procedure that warrant an interpretation by the health care staff. This developmentally appropriate preparation - including

sensory and sequential information, realistic expectations of the procedure, and identifiable coping strategies - has been associated with reducing stress (Lewis, Walker, & Barnard, 2002). The use of minimally threatening language emphasizes the need for conveying honest and complete information, in the softest way appropriate (e.g., saying “small opening” instead of “cut”) to the pediatric patient. This includes avoiding explicit detail and information not experienced. Too much detail can possibly confuse or frighten children. The reduction of stress is a logical consequence for patients who are prepared emotionally and psychologically for an upcoming procedure. Preparing pediatric patients empowers them to have a sense of control and choice during the experience, helping them to cope more effectively (Goldberger, Gaynard, & Wolfer, 1990; Snyder, 2004).

Pediatric emotional upset in response to hospitalization is an ongoing focus of research because professionals have come to realize that anxiety can be exacerbated by the initial health care experience, and continue with post-discharge negative sequelae that have a long-term impact on future health care experiences. Researchers have also come to realize that anxiety can be ameliorated by trained pediatric staff. Beckemeyer and Bahr (1980) suggested that pediatric patients are often emotionally upset during laceration repairs because the wound is being attended to, not the child. They suggest that if the ED staff would address the child’s physical pain and emotional upset, then the child would cope better. In response to the concern of staff not having the time and training for meeting the spectrum of psychosocial needs of children and families in the health care setting, the profession of child life specialist has evolved. Emergency staff who fit this description of caring for the emotional and psychosocial aspects of the pediatric patient and their family are called child life specialists.

Child Life Specialists and Coping with Distress

The Child Life Council, the professional organization for child life specialists, acknowledges the unique role CCLSs have in the health care setting. They define the role of CCLSs as follows:

Child life specialists are experts in child development, who promote effective coping through play, preparation, education, and self-expression activities. They provide emotional support for families, and encourage optimum development of children facing a broad range of challenging experiences, particularly those related to healthcare and hospitalization. Understanding that a child's wellbeing depends on the support of the family, child life specialists provide information, support and guidance to parents, siblings, and other family members. They also play a vital role in educating caregivers, administrators, and the general public about the needs of children under stress. (Child Life Council, 2010. What is a Child Life Specialist? Retrieved on July 5, 2010, from <http://www.childlife.org/files/AboutChildLife.pdf>.)

American Academy of Pediatrics (2006) released a revised policy statement concerning the value of child life services in the health care setting. This statement affirmed the role of child life in helping pediatric patients and families prepare for and cope with the health care experience, and recognized CCLSs as essential members of the pediatric health care team. "The child life specialist focuses on the strengths and sense of well-being of children while promoting their optimal development and minimizing the adverse effects of children's experiences in health care or other potentially stressful settings (p. 1757). This policy statement also acknowledged CCLSs as providing, among many valuable services, the key elements needed to help patients prepare for and cope with medical procedures.

Certified child life specialists offer a pediatric ED a unique clinical staff position to solely address the psychosocial and developmental needs of pediatric patients and their families. The educational course work, theory base, and clinical training of ED CCLS allow for distinct assessments with interventions looking to maximize coping, minimize stress, and promote development. There is no other clinical position that solely provides this necessary service.

Nurses in the ED appreciate the expertise of CCLSs, feeling “frustrated because they did not have the time and were not trained to adequately prepare children for procedures” (Christian & Thomas, 1998, p. 359). Directors of EDs recognize that having CCLSs in their ED can boost patient and family satisfaction, which justifies the use of CCLS services as an adjunct for behavioral pain control by staff (Petrack, 2004). In a study of the ED environment and waiting behaviors of pediatric patients, Alcock, Berthiaume, and Clarke (1984) found that children receiving CCLSs services reported less fear than the control group, and parents reported a significantly higher degree of satisfaction with the care received in the ED when a CCLS worked with their child. Similar results were found in more recent studies in the ED, confirming the impact this profession has on helping patients cope with receiving a laceration repair (Gursky et al., 2010), and parents reporting a higher degree of satisfaction (Madhok, Milner, Finkelstein, & Teele, 2006).

Certified child life specialists recognize that pain has sensory, emotional, and behavioral components, and that cognitive-behavioral interventions are beneficial during procedures where anxiety due to anticipatory pain plays a key role (Sinha, Christopher, Fenn, & Reeves, 2006). These cognitive-behavioral interventions are used by CCLSs when assisting pediatric patients who are coping with painful procedures (Bandstra et al., 2008), and are effective in helping reduce patients’ perception of pain (Uman, Chambers, McGrath, & Kisely, 2006; Young, 2005). Interventions used by CCLSs have been shown to reduce distress and promote coping for pediatric patients in health care settings, including day surgery (Brewer, Gleditsch, Syblik, Tietjens, & Vacik, 2006), the radiology department (McGee, 2003), surgery and medical procedures (Farrell et al., 2012; Wolfer et al., 1988), and for procedures in the emergency department such as venipuncture (Cavender, Goff, Hollon, & Guzzetta, 2004; Stevenson et al.,

2005) and laceration repairs (Madhok et al., 2006; Sinha et al., 2006). Specialty training allows CCLSs to support pediatric patients to manage their pain and reduce stress in the health care environment, attending to the elements that help pediatric patients cope with painful and potentially traumatic procedures.

Facilitating coping behaviors with patients and families is intrinsic to the services provided by CCLSs. The work of Gaynard et al. (1990) provides a framework for helping children select, rehearse, and effectively implement behaviors designed to reduce distress and increase cooperation. A planned coping strategy can help reduce potential distress. The plan includes offering choices to encourage children to play an active role in choosing helpful coping behaviors, and giving children a greater sense of control over their bodies and their situation. Reinforcing existing beneficial behaviors and finding more effective behaviors helps to identify what has worked in the past, and what could be effective now. Rehearsing selected coping behaviors reinforces the likelihood that the behavior will be used, and is helpful in identifying family roles in facilitating patient coping during the procedure. Support during procedures is often needed to help the children use their coping behaviors more effectively. This support includes providing information about the progress of the procedure, reminding patients and families of helpful coping behaviors they had selected, reassuring children in their coping efforts, and possibly playing a specific role in the child's coping process. These strategies help reduce distress and increase cooperation during potentially stressful procedures.

Elements of a Child Life Specialist's Preparation

The skills that help pediatric patients and families to cope with potentially difficult and painful procedures, such as suturing, are developed in the training of CCLSs. These skills include knowledge about and advocating for adequate pain management, developing therapeutic

rapport with patients and families, facilitating opportunities for self-expression (i.e., identifies and validates the patient's feelings), provides opportunities for the patient to share her/his needs and concerns, and allows outlets for emotional expression (e.g., expressive play opportunities) concerning medical procedures, and engaging family members and patients in psychological preparation for patients and families regarding upcoming procedures. Certified child life specialists use these skills to minimize physical and emotional distress and promote coping for pediatric patients and their families in the health care setting (American Academy of Pediatrics, 2006; Child Life Council, 2010).

Pain management. It is evident that there is a relationship between anxiety and perceived pain in children (Koppal, Ardash, Uday, & Anikumar, 2011). Understanding that pain control is an essential component of effective coping with anxiety in pediatric patients (Young, 2005), CCLSs liaise with the medical staff on behalf of the patient by assessing and advocating for adequate pain management during procedures (Bandstra et al., 2008). Hatfield, Messner, and Lingg (2006) identified several barriers to adequate pharmacologic pain intervention in the ED, including communication challenges, the physical environment, and clinician expertise. Communication challenges were due to age-related communication styles and abilities, which affected accurate interpretation of subjective information about a patient's pain level. Certified child life specialists are trained in child development, allowing them to help staff accurately interpret developmental cues and age-appropriate fears for a precise assessment of pain levels. CCLSs are taught to access information from very young children through indirect methods (i.e., play, art), and by developing quick rapport with the entire age range of children and teens. Environmental barriers included the lack of sufficient time for parents to accurately assess and interpret their child's degree of pain. Even in the fast-paced environment of the pediatric ED,

CCLSs are adept at making quick assessments because of their extensive child and family development education. They also are strong advocates for age-appropriate pharmacological pain relief for the patient. Other recognized interventions for procedural pain and distress include the behavioral pain interventions discussed below.

Therapeutic rapport. Developing a level of therapeutic rapport with the child and family is another key component needed when helping pediatric patients prepare for and cope with medical procedures. Therapeutic rapport is a relationship with the specific purpose of reaching a therapeutic goal – helping to prepare and support pediatric patients and their families for procedures such as a laceration repair. A key element in this relationship includes building trust. Building trust with families is the beginning step to communicate effectively with the child and family about an upcoming health care event (Breemhaar, Borne, & Mullen, 1996). Trust encapsulates all that is healthy in a relationship such as respect, safety, and unconditional positive regard. Therapeutic rapport is crucial for the staff member preparing a pediatric patient undergoing a laceration repair. When therapeutic rapport is established, the child is more likely to perceive the preparer as nonthreatening; to listen to the information presented; and to share concerns, fears, and misconceptions (McCue, 2009; Oremland, 2000). Establishing rapport acts as a catalyst to enhance the other elements used when preparing pediatric patients for a health care procedure.

Self-expression. The third significant component used in preparing patients with lacerations in a pediatric ED is providing opportunities for self-expression. Pediatric patients experience a wide range of emotions when faced with a medical procedure. Normal childhood fears when getting a laceration repair include the fear of body mutilation and integrity, loss of bodily control, pain, separation from parent, and lack of trust of medical staff (Brunnquell &

Kohen, 1991). Pediatric patients and their families need a therapeutic milieu, cultivated by staff, that provides opportunities for these feelings to be shared, validated, and clarified in age-appropriate ways (Gaynard et al., 1990). As children and families are allowed to communicate needs and concerns, CCLSs have been trained to help provide resources to validate and address those issues expressed (Gaynard, Goldberger, & Laidley, 1991). When these concerns are addressed, the individual and family can better cope with the medical situation (Hallstrom, Runesson, & Elander, 2002).

In a medical environment that supports freedom of expression and concern for the pediatric patient, CCLSs can validate the emotions expressed. Validating feelings gives a clear message to the pediatric patient concerning several issues. It acknowledges that their concerns and fears are being heard and taken into account (Gaynard et al., 1990). By validating their feelings, it normalizes their emotions by letting the patient know that there are many others who have felt the same way, and that they are not alone. When the pediatric patient's feelings are shared and validated, CCLSs are also able to uncover hidden fears and address concerns specific to the child. Helping children to recognize stressors is a key step in managing their anxiety (Wolfer & Visintainer, 1975; Wolfer et al., 1988). Normal fears can be anticipated, but stressors unique to the child and family must be discovered in a trusting environment. Identifying these stressors and discovering coping strategies form a robust dyad to help minimize children's stress and promote coping.

The child life specialist's training in child development qualifies him or her to provide accurate, developmentally appropriate information regarding a laceration repair, the third component in an effective preparation (American Academy of Pediatrics Task Force on Pain in Infants, Children, and Adolescents, 2001; Young, 2005). Providing age-appropriate information

to a child and family can improve coping, reduce anxiety, and promote a sense of mastery by allowing them to anticipate the sequence of events for the procedure, be aware of sensory information regarding those events, understand the need for each step, and address misconceptions (Goldberger, Gaynard, & Wolfer, 1990). Medical staff do not typically have the time or expertise to provide the psychological preparation a pediatric patient needs before a procedure. One study reported over 30 years ago that it was common for no information or misleading information to be given about the medical events that were to take place (Roskies, et al., 1975). Today, medical staff are often focused on the necessary physical preparations (e.g., blood pressure, history and physical, pre-procedure assessment) for a procedure, leaving the majority of the responsibility of psychologically preparing the child to the parent (Ellerton & Merriam, 1994). After an injury to their children, parents themselves may be distressed and emotionally unavailable to their children, thus unable to appropriately support their children (Mangini, Confessore, Girard, & Spadola, 1998). Emergency department CCLSs are trained to support the psychosocial, emotional, and developmental needs of patients and families (Hasenfuss & Franceschi, 2003).

Further preparation for patients and families involve opportunities to play with and explore medical equipment that will be used in their care. Manipulating real medical equipment allows children to prepare for, familiarize, and desensitize themselves to potentially frightening and unfamiliar medical equipment (Jesse & Gaynard, 2009). These differing modes of disseminating information by CCLSs allow children to cope better with and have less anxiety related to procedures by knowing what to expect (Goldberger, Mohl, & Thompson, 2009). The benefits of preparation extend to medical staff as well, because the child or teen is more compliant with staff

during the procedure, and the parents remain calm and supportive (Kachoyeanos & Friedhoff, 1993).

These validated components of preparation are crucial to helping pediatric patients and families manage a laceration repair in the ED. Advocating for adequate pain relief, providing nonpharmacological pain relief interventions, building therapeutic rapport, allowing for opportunities of self-expression, and age-appropriate psychological preparation are key strategies used by CCLSs for minimizing stress and promoting coping.

Research Questions and Hypotheses

The purpose of this study is to investigate the effect of a CCLS intervention on the distress of children undergoing a laceration repair in the pediatric ED. The following hypotheses will be examined. First, the impact of child life care on patients receiving a laceration repair results in decreased self-reported pain and fear as well as observed behavioral distress. Second, CCLS involvement with patients receiving a laceration repair results in parents and patients reporting higher levels of satisfaction with their health care experience, compared to routine care with an ED provider in attendance. Exploratory analyses will be conducted to determine whether patient self-reports of pain and fear are related to clinical observations of patient distress as well as biological markers of stress (i.e., cortisol). Such information is helpful in documenting the validity of various means to measure stress associated with laceration repairs (Blount, & Loiselle, 2009; Hunt, et al., 2007; Windich-Biermeier, Sjoberg, Dale, Eshelman, & Guzzetta, 2007).

Method

Participants

Children's Medical Center Dallas (CMCD), a large, urban, tertiary care children's hospital, is a Level 1 pediatric trauma center with a census in 2009 of approximately 116,000 patients. Children between 6 and 18 years of age visiting the Emergency Department (ED) for laceration repair between 11 am and midnight were eligible for this study. Fifty-two patients who presented to the CMCD ED with a simple laceration were approached about the study. Emergency Department providers (e.g., physicians, physician assistants, nurse practitioners) asked families if they were interested in participating in the research project. All families and patients approached agreed to enroll in the study. Parental informed consents and child assents (pediatric patients 10 years or older signed consents and HIPAA forms) were obtained prior to the start of the study.

The 52 pediatric patients and their parent(s) were randomly assigned to a child life ($n = 26$) or standard care ($n = 26$) group. A power analysis was conducted ($p = .05$ and a desired power of .80) and indicated that a sample of 50 participants would be sufficient to detect a small effect size of .35.

The pediatric patients ranged in age between 6 and 16 years (M age = 9.80); 67% were male. In terms of ethnicity, 71% percent of the participants were Hispanic, 19% African American, and 10% Caucasian. The typical patient population of the CMCD ED patients in 2009 was 26% African American, 41% Caucasian, 31% Hispanic, and 2% other.

Screen for Eligibility

Children were enrolled if they sustained an uncomplicated laceration, less than 5 cm in length, that could be repaired using basic suture repair techniques. Children presenting with

multiple lacerations, having received sutures previously, or a laceration associated with other traumatic injuries were excluded. Patients who had previous experience with child life were excluded, as well as nonEnglish-speaking patients without an available interpreter, and patients with an altered level of consciousness due to a concussion or sedation. Patients who were unable to understand or fully participate in the informed consent process or study protocol, for whatever reason, also were ineligible for this study. Other exclusion criteria related to cortisol levels included patients who had been on oral medication 30 days prior to collection, and those patients diagnosed with personality and/or mood disorders (Luby et al., 2003). Standard practice at this ED for laceration repairs is for patients to receive a topical anesthetic, locally injected anesthetic, or both.

Measures

Observational Scale of Behavioral Distress-revised (OSBD-r). Procedure-related distress was measured by trained observers using the OSBD-r (Jay & Elliot, 1986). This instrument consists of eight categories of behavior (i.e., cry, scream, physical restraint, verbal resistance, seeks emotional support, information seeking, verbal pain, flail), with each category checked as *present* or *absent* during 15-second intervals over four phases of the procedure (see Appendix B).

Phase 1 consisted of the first three minutes (12 intervals), observed in the treatment room prior to start of the procedure. This provided a measure of anticipatory distress.

Phase 2 involved the first 45 seconds (3 intervals) of cleansing of the laceration by the physician and possible local anesthetic injection. If Phase 2 consisted of less than 3 intervals, then whatever number of intervals occurred were scored.

Phase 3 began when the physician completely removed the suture needle from its casing, and

continued for the next two minutes (8 intervals).

Phase 4, consisting of 90 seconds (6 intervals), began when the physician indicated that the suturing was completed. This phase provided a measure of post-procedure recovery.

Internal consistency reliability of the OSBD-r has been reported to be .72, and interrater reliability ranges from 80% to 84% (Elliot, Jay, & Woody, 1987; Jay, Ozolins, Elliott, & Caldwell, 1983). The validity of the instrument is supported by significant correlations between OSBD total scores and a wide range of validity measures including children's trait anxiety scores ($r = .63$; Jay et al., 1983), children's self-rated experienced pain levels during procedures ($r = .52$; Jay & Elliott, 1984), and fear ratings of children ($r = .38$; Jay & Elliott, 1986). In this study, the OSBD-r total scores for each phase were consistent across time, median $r = .66$.

Eight behaviors from the OSBD-r were rated at 15-second intervals during specified times in each phase. The OSBD-r yields four weighted mean interval *Phase scores* and a *Total Distress Score*. Scoring for the procedure (see Appendix D) is as follows: (1) Frequencies (F) of each behavior category are added for specified number of intervals within each phase. (2) Number of intervals scored (I) are noted for each phase. (3) Each behavioral category frequency score is then divided by the number of intervals scored in each phase, yielding *unweighted mean interval category scores* (F/I). (4) Each mean interval category score is multiplied by its assigned intensity weight (see Jay & Elliot, 1986), yielding a *weighted mean interval category score* (F/I x weight). (5) The weighted mean interval category scores are summed across categories, within each phase, yielding four *weighted phase scores*. (6) The four weighted phase scores are summed, yielding a *Total Distress Score*.

FACES Pain Scale. Patients' self-reported pain was measured using a Likert-type, 6-point visual analog scale called the FACES scale (Wong & Baker, 1988). This pain scale is

currently being used in the ED, beginning in triage. The faces on the scale range from very happy (0 or *no hurt*) to very sad (5 or *hurts worse*). Wong and Baker (1988) reported reliability and validity of the FACES scale for children 3 to 18 years of age. Test–retest reliability evidence indicates a relatively high stability over 15 minutes ($r = .90$; Keck et al., 1996) and 8 hours ($r = .84$; Gharaibeh & Abu-Saad, 2002) immediately post-procedure in children 3–18 years old. This measure also has a high Cronbach’s $\alpha = .93$. In terms of concurrent validity, strong positive correlations have been demonstrated between the FACES Pain Scale and other well-established self-report measures ($r = .74-.78$) such as the Pieces of Hurt tool and a visual analogue scale (Gharaibeh & Abu-Saad; Robertson, 1993; Stein, 1995; West et al., 1994;). The FACES Pain Scale is able to detect changes in children’s pain intensity following procedural pain (Gharaibeh & Abu-Saad; Keck et al., 1996; Kendall, Reeves, & Latter, 2001; Robert et al., 2003; Stein). Pain was assessed when the patient entered the treatment room by asking, “How much pain are you feeling right now?” During post-procedural recovery, patients were asked to point to the face that described “how much pain you felt while getting stitches.”

Glasses Fear Scale. The Glasses Fear Scale (GFS), a variation of a visual analog scale, was used to measure self-reported fear. The GFS is a valid and reliable tool for measuring self-reports of subjective experiences such as pain and fear (Aiken, 1959; Gift, 1989). The Glasses Fear Scale consists of six cylinders or “glasses.” The first cylinder is empty and represents no fear (*not scared at all*). The other five cylinders are filled with increasing amounts of “fear.” The completely filled cylinder is the worst or most fear (*most scared*). Each cylinder was assigned a numerical value from 0 to 5. Patients were asked to choose the glass that best described how scared (fearful) they were after being consented, and at discharge. Cavendar et al. (2004) found support for the construct validity of the scale in a distraction study of patients in a

pediatric ED undergoing venipunctures. Wong and Baker (1988) reported an acceptable level of test-retest reliability ($r > .70$), and concurrent validity of the Glasses Fear Scale in 3 to 18 year olds.

Salivary cortisol. Pediatric patients were asked to spit into a sterile cup. The saliva was assayed for cortisol, a steroid associated with increased adrenocortical response and stress (Delahanty, Nugent, Christopher, & Walsh, 2005; Gunnar & Nelson, 1994). There is an estimated lapse of 15 to 30 minutes between a stress event and the release of increased plasma cortisol; an additional 2-minute lapse occurs before cortisol increases in saliva (Hanrahan, McCarthy, Kleiber, Lutgendorf, & Tsalikian, 2006). Saliva samples were collected upon admittance to this study for a baseline cortisol level, and again prior to discharge, to increase the amount of time between the start of the procedure (stress event) and postprocedural saliva collection. Obtaining saliva for analysis involves the use of a Salivette, a two-inch cotton dental roll that comes packaged in a plastic test-tube like container. Participants were asked to mouth the Salivette for approximately one minute, and then place Salivette back into plastic container to be sent to the lab. Time lag was measured between the collection of the baseline and posttest assays, in order to determine whether changes in cortisol level could be due to the passage of time. To control for alterations in salivary cortisol related to food and drinks, study participants were asked to refrain from eating or drinking for 30 minutes prior to sample collection. A patient who had eaten 30 minutes prior to sampling was asked to rinse his or her mouth and to wait 3 to 5 minutes (long enough to re-establish the natural oral environment and a salivary pH of 6.4 to 7.4) before providing a sample (Hanrahan et al.).

The salivary samples collected were sent to the hospital's lab and frozen until sent to ARUP laboratories. Once there, centrifuging of the Salivette released the saliva for analysis.

Salivary cortisol was placed on a plate coated with antibodies. Unknowns and cortisol standards compete with cortisol linked to a horseradish peroxidase for the antibody binding sites. After incubation, unbound components are washed away. Optical density at 450 nm is read on a standard plate reader (ARUP Laboratories, 2006).

Psychosocial Procedural Intervention Checklist (PPIC). This 24-item checklist (see Appendix A) was developed for this study as a manipulation check. The PPIC assesses best practice elements used when providing psychosocial support for patients and families during a painful procedure. The elements were identified in literature and reviewed by experts in child life best practices, who suggested changes to items to improve their clarity and specificity. The purpose of including this checklist was to help identify possible variations in healthcare practice that would account for any significant differences between the two groups on the dependent variables. The list of key elements includes working with pediatric patients and families in building *Therapeutic Rapport*, providing age-appropriate *Psychological Preparation*, offering opportunities for *Emotional Expression*, and advocating for adequate *Pain Relief*. The observer rated each element as absent (0) or provided (1). *Pain Relief* was rated in light of nonpharmacological pain management provided during Phases 2 and 3. Ratings included nonpharmacological pain relief not provided (0) or provided (1).

The observer looked for identifiable exemplars of each key element that are based on best practices. Therapeutic rapport includes characteristics such that a patient perceives the preparer as nonthreatening; listens to the information presented; and normalizes concerns, fears, and misconceptions. Psychological preparation includes providing age-appropriate information, sequential information of events for the procedure and sensory information regarding those events, clarifies to enhance understanding (e.g., What questions do you have about this?), and

addresses misconceptions. Emotional expression identifies and validates the patient's feelings, provides opportunities for the patient to share needs and concerns, and allows age appropriate outlets for emotional expression (e.g., play). Exemplars for behavioral pain relief include positioning for comfort, visual distraction, auditory distraction, deep breathing exercises, tactile stimulation, counting/singing, verbal interaction, and/or attending to the procedure. Scores on the four PPIC scales were highly correlated, $r = .72$ to $.86$. Internal reliability was found to be high for all 24 items, Cronbach's $\alpha = .91$.

Satisfaction with Child Healthcare Survey. This instrument was developed by Chesney, Lindeke, Johnson, Jukkala, and Lynch (2005). The Satisfaction with Child Healthcare Survey has 12 Likert-scale items addressing relationships in the health care setting, pain and discomfort, communication issues, and willingness to tell others that the facility is a good place to come when a child is ill. Parent and child versions have slight variations in wording (i.e., "Were they nice to your child?" on the parent questionnaire versus "Were they nice to you?" on the child questionnaire). The Cronbach's α for the parent scale was $.86$ and $.84$ for the patient version, with parent and child scores significantly correlated ($r = .29$; Lindeke, Fulkerson, Chesney, Johnson, & Savik, 2009). Caregivers and patients rated their satisfaction with the laceration repair upon its completion by rating their level of satisfaction on a scale from 1 to 5. Each scale number is placed next to a small graphic demonstrating a facial expression ranging from sad (1) to happy (5). Each number also includes a simple word or phrase descriptor (1 = *No*; 2 = *Not usually*; 3 = *Kind of*; 4 = *Usually*; and 5 = *Yes*). There are three open-ended questions at the end of the patient and parent survey. Parents and patients were given the option to comment on these questions or leave them blank.

For this ED study, the inpatient version of the Satisfaction with Child Health Care Survey was minimally modified by changing the wording on items relating specifically to hospital care to wording that was applicable to the ED setting (e.g., “Did the people who work in the ED talk to you/your child?” rather than, “Did the people who work in the hospital talk to you/your child?”).

Training. Consent for videotaping patients receiving a laceration repair was obtained. This video was used in training the observers to administer and score the OSBD-r and the PPIC. A total of four observers, including the principal investigator (PI), were provided with approximately 1 hour of training on observational coding of pediatric procedural distress along with a review of the behavioral categories and operational definitions (see Appendix C). Coders reviewed six videotaped pediatric laceration repairs, discussed discrepancies, determined decision rules, and clarified behavioral definitions. The coders had an 80% or above agreement in coding. Two of the observers were certified child life specialists who held leadership positions in the child life department, the PI is an RN in the ED department and a certified child life specialist, and the fourth observer was a medical student with no previous experience with the profession of child life. The medical student was available during the summer months between school semesters. During the data collection phase, the two observers who are certified child life specialists were unavailable. Only one researcher was present at each laceration repair because of the limited number of available observers, so interrater reliability could not be determined. However, a comparison of the means obtained by the two different observers did not differ significantly.

Procedure

Patients arriving to the ED were enrolled in the study when consent was signed, and an observer and CCLS were available. The observer would watch the “Waiting Room” census on the computer for patients checking into the ED with a laceration. Patients who fit the criterion for age were approached by the ED provider once they were in a room, and the family was asked if they minded being approached by the observer about the research study. After consent was signed, a block randomization schedule was used for selecting patients for the intervention and control groups. The control group received standard care from provider, with the intervention group receiving additional psychosocial services from a child life specialist. Before the study began, it was anticipated that nurses would be the focus of the PPIC assessments in the control condition. However, nurses were not in the room during laceration repairs, so the PPIC assessments focused on the ED provider who performed laceration repairs: the physician ($n = 8$), Pediatric Nurse Practitioner ($n = 12$), or Physician’s Assistant ($n = 32$). The time period for capturing data for the PPIC was during Phases 1 – 4 of the OSBD-r.

Soon after being consented, both groups were asked for a salivary cortisol sample and the Glasses Fear Scale and FACES Pain Scale were administered. At the end of Phase 4 and after the ED Provider had left the room, another salivary cortisol sample was taken using the Salivette, the fear and pain posttests were administered, and the Satisfaction with Child Healthcare Survey was given to the caregiver and patient to complete.

One CCLS (not the author) employed in the ED was involved with the intervention group. Evidence-based practice constituted the child life interventions provided to patients and families, and is described as follows (Stephens, Barkey, & Hall, 1999; Wolfer et al., 1988). When a patient was selected into the intervention group, the CCLS obtained verbal consent from

the parent and child to enter the room and interact with the family. The CCLS provided to families appropriate features characterized in the *Elements of a Child Life Specialist's Preparation* section discussed earlier, to ready patients and families for the procedure.

When the ED provider was nearing time to begin the laceration repair, the observer called the CCLS if not already present. There were no delays to starting the laceration repair due to the unavailability of the CCLS. Once the procedure began, the CCLS continued to support the patient's and family's particular coping style. Based on the assessment of the CCLS, coping techniques included any of the following: visual distraction, auditory distraction, deep breathing exercises, tactile stimulation, counting/singing, verbal interaction, or attending to the procedure. Parental presence and involvement were supported, with parents given a choice of a supportive role during their child's procedure, when desired and appropriate. The child life intervention was not standardized across patients, but instead was consistent with best practice in the child life profession. The CCLS was free to choose techniques that were appropriate for the individual patient's level of development and coping, as well as the parent's needs. The CCLS supported the patient and family until the sutures were placed and the patient was back to baseline emotionally.

The observer then scored the Psychosocial Procedural Intervention Checklist while the patient and family filled out the Satisfaction with Child Health Care Survey. The PPIC was scored based on interventions provided by the ED provider in the control group, and the CCLS in the intervention group.

Preliminary Analyses

Given that the PPIC is a new measure, there needed to be a determination as to whether the distribution of PPIC scores met the assumptions for parametric tests or whether odds ratios

needed to be used for behaviors that were present or absent. Each of the PPIC scales approximated a normal distribution, with adequate variation and acceptable skewness, so recoding into “present” versus “absent” was unnecessary. Given that the four PPIC scales were highly correlated, a MANOVA was computed.

In order to determine whether child age needed to be covaried in the analyses, bivariate correlations were computed between patient age and the dependent variables. The only significant correlation between age and a dependent variable involved Distress Total on the OSBD-r, $r = -.275$, $p = .05$. Thus, age was covaried in analyses involving Distress Total. Longer time lags between initiation and completion of the procedure may be related to greater changes in stress as indicated by the measures of fear, pain, and cortisol. However, none of the correlations between time lag and changes on the dependent variables were significant, $r = -.14$ to $.24$, $p > .09$, so time lag was not covaried in the analyses.

To examine the concurrent validity of the dependent variables, bivariate correlations were computed among the patient-reported measures of pain and fear, observations of distress, and salivary cortisol. The results provided limited evidence of concurrent validity (see Table 1). Specifically, on pretest measures there was one significant correlation related to concurrent validity: between patient-reported Glasses Fear Scale and FACES Pain Scale. Posttest measures on these scales exhibited more concurrent validity. It was expected that all measures would be significantly correlated with each other, although the self-reports were likely to be more strongly intercorrelated. Given that the correlations among the measures of distress were not high, especially at pretest, univariate ANOVAs rather than MANOVA will be used to test the hypothesized group differences.

Results

Impact on Children's Pain, Fear, and Observed Distress

The first hypothesis was that CCLS involvement with pediatric patients receiving a laceration repair results in decreased self-report ratings of pain and fear, as well as observed behavioral distress, compared with a treatment-as-usual group. For each dependent variable, repeated-measures ANOVAs were computed, with time as the within-subjects factor and group as the between-subjects factor. On the Glasses Fear Scale, a significant main effect of time was observed, with patients in both groups decreasing in self-reported fear, $F(1,50) = 105.12, p < .0001$. This main effect was qualified by a significant Group by Time interaction effect, $F(1,50) = 6.09, p = .017$, which represents a medium effect size of $\eta_p^2 = .109$. As shown in Table 2, this interaction effect is due to the child life group showing a greater decrease in fear as compared to the control group, thus supporting the hypothesis.

Table 1

Correlations among Patient-Reported and Observed Measures of Patient Distress, and Satisfaction with Care

Variable	2.	3.	4.	5.	6.	7.	8.	9.
1. Glasses Fear Scale Time1	.33**	-.02	.16	.29*	-.01	-.06	.14	.03
2. FACES Pain Scale Time1		.18^	.04	.08	.07	.00	.02	.14
3. Cortisol Time1			.02	-.06	.00	.57**	.05	.11
4. OSBD-r Distress Total				.43**	.20^	.16	-.15	-.46***
5. Glasses Fear Scale Time2					.62***	.21^	-.16	-.47***
6. FACES Pain Scale Time2						.24*	-.30*	-.37**
7. Cortisol Time2							-.15	.00
8. Patient Satisfaction								.07
9. Parent Satisfaction								

^ $p < .10$ * $p < .05$ ** $p < .01$ *** $p < .001$

The FACES pain scale showed a significant main effect of time, with both groups decreasing in self-reported pain, $F(1,50) = 28.63, p < .0001$ (see Table 2). The Group by Time interaction effect was not significant, $F(1,50) = 1.21$. Therefore, the hypothesis that patients receiving a laceration repair would report less pain when a CCLS is present was not supported.

Table 2
Pretest and Posttest Mean (SD) Fear, Pain, Cortisol, and Distress Scores, by Group

Variable	Child Life Group		Control Group	
	Pretest	Posttest	Pretest	Posttest
Glasses Fear Scale	3.15 (1.38)	.58 (.86)	2.69 (1.44)	1.12 (1.31)
FACES Pain Scale	2.08 (1.38)	.50 (.99)	2.12 (1.53)	1.08 (1.20)
Cortisol	.45 (.60)	.17 (.17)	.40 (.42)	.22 (.19)
OSBD-r Distress Total		1.29 (2.72)		3.34 (4.83)

On the OSBD-r Distress Total, a t test showed that the overall mean for the child life group was significantly lower than the control group mean, $t(50) = 1.89, p = .032$ (see Table 2). The means for each OSBD-r phase (see Figure 1) show that differences on the overall distress score are due to large differences in the first three phases, which involved preparation and suturing, but those differences disappeared by Phase 4 (post-procedure recovery). A repeated measures ANOVA was computed with group as the between-subjects effect and phase as the within-subjects effect. Neither main effect was significant, but the Group by Time interaction effect was significant, $F(1,50) = 3.36, p = .026$. Large group differences were observed in phase 1 (Cohen's $d = .64$), which measured anticipatory anxiety, and in phase 3 (Cohen's $d = .70$), which was when the laceration was being sutured.

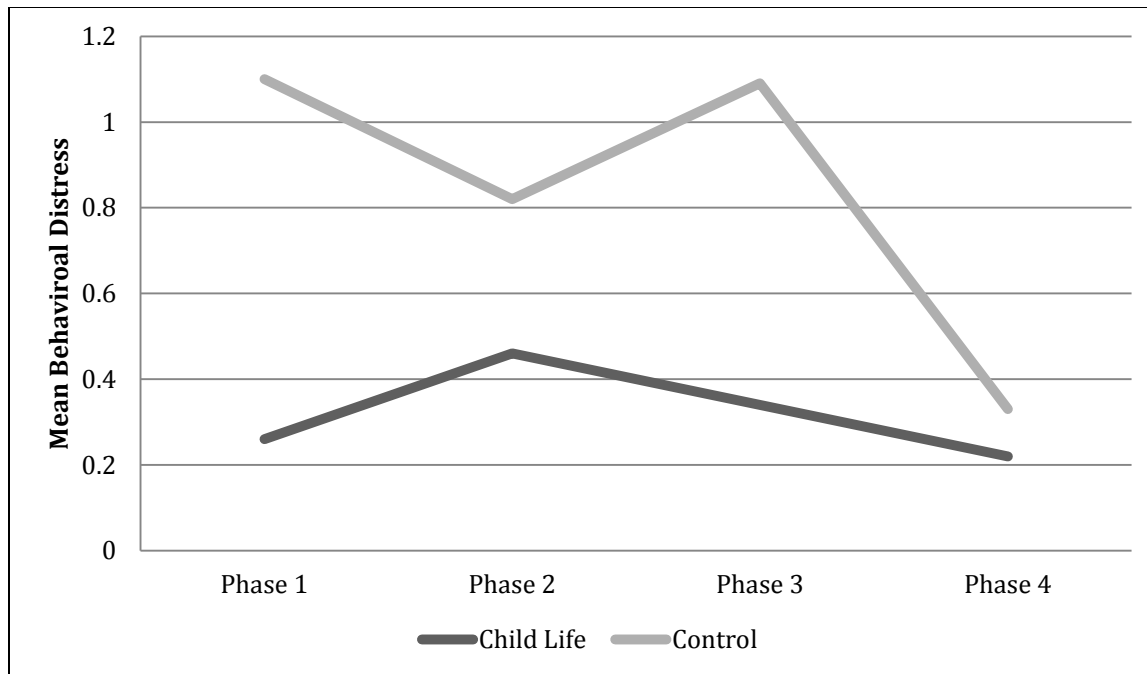


Figure 1. Group differences in behavioral distress, by phase of procedure to repair laceration.

Group differences in salivary cortisol levels were not hypothesized, but were examined with a 2 (Group) by 2 (Time) repeated measures ANOVA. Data were missing for two participants. The ANOVA showed a significant main effect of Time, with both groups decreasing in cortisol levels, $F(1,48) = 14.00, p < .0001$. There was no Group by Time interaction effect shown.

Impact on Patient and Parent Satisfaction

The second hypothesis was that parents and patients with CCLS involvement would report higher levels of satisfaction with their health care experience compared with the control group. Independent t tests were used to test this hypothesis. Results indicated that parents in the group receiving child life services were significantly more satisfied with their health care experience ($M_s = 4.96$ vs. 4.85), $t(29.2) = 1.97, p = .029$ one-tailed. This difference represents a medium effect size, $d = .55$. On the patients' self-reports of the satisfaction with their healthcare, there

was a trend for children in the child life group to report greater satisfaction with their experience ($M_s = 4.85$ vs. 4.68), $t(50) = 1.58$, $p = .06$. This difference represents a small to medium effect size, $d = .44$. It should be noted that the distributions of satisfaction ratings were highly skewed resulting in a ceiling effect. Various transformations of these values were tried, but the results did not change.

Significant correlations between patient-reported distress variables at posttest and patient or parent satisfaction reports were observed (see Table 1). Pediatric patients' rating of their satisfaction with the health care experience was, as expected, strongly correlated with the pain scale at posttest but did not significantly correlate with the fear scale. Parent satisfaction was significantly correlated with posttest scores on the Glasses Fear Scale, the FACES Pain scale, and the OSBD-r Distress total score (see Table 1). These inverse relationships were expected given that as the patient's distress decreases, parent satisfaction increases. However, most parents in both groups were satisfied with the care received.

Post hoc analyses were conducted in order to ascertain whether differences in practice may be associated with parent and patient satisfaction with the care they received. First, differences between the two groups on the PPIC were examined, which measured therapeutic rapport, psychological preparation, facilitating emotion expression, and advocating for pain relief. MANOVA was used to test for group differences because the PPIC scales were strongly intercorrelated. The omnibus F test was significant, $F(4,47) = 72.38$, $p < .0001$, with the child life group being significantly higher than the control group (see Table 3); this represents a large effect size of $\eta_p^2 = .86$. A MANOVA was used to examine differences by domain. There was a statistically significant group difference $F(4, 47) = 72.377$, $p < .0005$; Wilk's $\Lambda = .14$. The follow-up Roy-Bargman step-down tests were significant for each of the PPIC scales; all effect

sizes were very large, $\eta_p^2 = .546$ to $.814$. To put these differences in context, the odds of a child life specialist using one of the therapeutic rapport techniques was 100% versus 81% for a provider in the control group, $\phi = .326$, $p = .02$.

Variations in use of psychosocial intervention techniques, as measured by the PPIC total score, were significantly related to parent-reported satisfaction with healthcare, $r = .36$, $p = .005$, but were not significantly related to patient-reported satisfaction, $r = .22$, $p = .06$. As expected, given the group differences on the OSBD-r measure of distress, the more psychosocial techniques were used, the lower children's distress was on the OSBD-r total score, $r = -.25$, $p = .036$.

Table 3
Mean (SD) PPIC Scores on Rapport, Preparation, Expression, and Pain, by Group

PPIC Scale	Child Life Group	Control Group
Therapeutic Rapport	4.15 (.73)	1.46 (.86)
Psychological Preparation	4.27 (1.00)	1.08 (1.23)
Emotional Expression	2.19 (.94)	.50 (.51)
Advocating Pain Relief	3.65 (.85)	.77 (.51)

Discussion

The findings support the hypothesis that pediatric patients getting sutures to repair a laceration are significantly less fearful when a certified child life specialist is involved in the procedure. This supports previous research that pediatric patients often are fearful in the ED (Brunnquell, & Kohen, 1991), and those who have a child life specialist involved in their care report significantly less fear (Alcock et al., 1984). Clinical guidelines for all pediatric Emergency Medical Systems emphasize training in stress management and emotional support, and these guidelines acknowledge the unique role child life specialists have as a specially trained provider of these methods for reducing fear and anxiety in the ED (Zempsky, Cravero, & The Committee on Pediatric Emergency Medicine and Section on Anesthesiology and Pain Medicine, 2004). These methods used by child life specialists, specifically psychological preparation, typically help pediatric patients to be significantly less anxious before a procedure, more cooperative during the procedure, and require less pain medication (Mahajan et al., 1998).

Based on previous research examining the significant effects that nonpharmacological management strategies have on pain (Uman et al., 2006), it was hypothesized that CCLS interventions with these commonly used strategies would lower patient-reported pain scores. Although pain scores decreased with time, there was not a differential effect of having a CCLS involved in providing care. Another pediatric ED study showed no statistically significant difference in self-reported pain between the CCLS and treatment-as-usual groups, which is consistent with the present study's results, but patient pain as assessed by the parent and child life specialist was significantly less (Cavender et al., 2004). Another study looked at laceration repairs in a pediatric ED and found children younger than 10 years had significantly lower pain scores when the CCLS used nonpharmacological methods of pain relief (Sinha et al., 2006).

Nonpharmacological pain management strategies are widely used in the child life profession (Bandstra et al., 2008), and there are other studies showing the use of some of these strategies to be effective in reducing pain (Coldwell et al., 2002; Khan & Weisman, 2007; Kuttner, 1989; Uman et al., 2006) as well as increasing parent satisfaction (Sparks, Setlik, & Luhman, 2007). One possible explanation for why the child life interventions in the current study did not have a significant effect on pain could be because the outcome for pain is specific to the procedure. Having a simple laceration from a nontraumatic event leaves only surface sutures to be placed on a typically linear cut. Complicated lacerations often require deep sutures for tissue repair. One would anticipate a complicated laceration repair or more painful procedure to potentially show greater effects of a child life specialist's interventions.

Children with greater anxiety regarding a pending painful procedure evince greater distress (Hubert et al., 1988), and anticipation of a potentially painful laceration repair can cause children and their parents to be more vulnerable to anxiety (Sinha et al., 2006). Pediatric patients receiving child life services in this study had significantly less overall distress during their laceration repair, as measured by the OSBD-r. Similar results with patients receiving child life services have been found with other studies measuring distress during laceration repairs (Gursky et al., 2010), when measuring anxiety for laceration repairs (Sinha et al., 2006), and distress and anxiety with angiocatheter insertion in the ED (Stevenson et al., 2005). As with other studies (e.g., Gursky et al., 2010), greater differences were seen in preprocedural and procedural distress scores than in the postprocedure or recovery segment. The decline in postprocedural differences could be because the perceived threat of getting sutures has abated.

The second hypothesis tested was that patient and parent satisfaction scores would be higher when a CCLS was involved in the procedure. This postulate was based on previous

research showing that ED CCLS involvement increases patient satisfaction scores (Gursky et al., 2010; Madhok et al., 2006). As expected, the parents in the treatment group were significantly more satisfied with their health care experience than the parents who received no intervention from a CCLS, although it should be noted that parents in the treatment-as-usual group did have high levels of satisfaction. The healthcare provider's assessment and treatment of anxiety and pain are important for overall ratings of satisfaction (Magaret, Clark, Warden, Magnusson, & Hedges, 2002), and parent satisfaction was strongly correlated with posttest scores related to fear and pain of the patient, and also to total distress scores. The greater use of psychosocial procedural interventions, not necessarily the laceration repair, may be the primary explanation for variations in parent satisfaction. Significant differences were found between ED providers' use of psychosocial interventions noted on the PPIC, and the CCLS's use of those interventions. Given that type of care was manipulated as the independent variable, one could conclude that greater use of psychosocial care is the ultimate cause of reductions in distress, which in turn was strongly associated with parent-reported satisfaction.

A trend was seen with the pediatric patients in the treatment group reporting greater satisfaction with their experience. As expected, the patients' rating of their satisfaction was strongly correlated with their rating of postprocedural pain. Other research has shown that the resolution of pain in the pediatric ED is associated with increased self-reports of patient satisfaction (Magaret, 2002), and a significant increase in patient satisfaction scores with CCLS involvement (Alcock, Feldman, Godman, McGrath, & Park, 1985; Gursky et al., 2010; Madhok et al., 2006). Thus, child life services can be justified in part because patients and families who rate their ED experience as more satisfying are more likely to adhere to discharge instructions, which enhances patient outcomes (Hostutler, Taft, & Snyder, 1999), and patients are more likely

to have received adequate pain control (Chan, Russell, & Robak, 1998; Magaret, Clark, Warden, Magnusson, & Hedges, 2002). Emergency departments are more likely to have satisfied patients and families recommend their ED to others (Johnson, Castillo, Harley, & Guss, 2012), and staff report increased satisfaction with interactions with patients and families (Dahlquist et al., 2002; Magaret et al., 2002).

In this study, patient salivary cortisol samples were taken as biological markers for stress during a visit to the ED. Pediatric cortisol levels have been shown to be affected by acute psychological stress (El-Sheikh, Erath, Buckhalt, Granger, & Mize, 2008), as well as pain in children (Kidd et al, 2000). Previous studies have examined other biological markers (e.g., heart rate, blood pressure, respiratory rates) that could indicate stress when they fall outside of normal limits (Dufton, Dunn, Slosky, & Compas, 2011). To my knowledge, no studies have yet been published that measured cortisol levels related to interventions provided by a CCLS. In this study, no significant relations were observed between cortisol levels and the other measures of distress, indicating that the biological marker and behavioral indices of distress tap into different constructs. However, there was a downward trend in the cortisol levels of both groups. One study ($n = 24$) did look at a psychological preparation given by a medical doctor and showed statistical significant decreases in cortisol levels between patients in the ED and admission units (Edwinson, Arnbjornsson, & Ekman, 1988). This study examined several stress hormones (i.e., ACTH, cortisol, and β -endorphin) for analyses. Perhaps a greater collection of hormones lends to greater sensitivity in tracking stress as reported by the patient or by observation.

Limitations

This study has several limitations. First, the main observer for this study is a certified child life specialist with experience as president of the Child Life Council. Observers without

prior knowledge of child life might have scored the OSBD-r and PPIC differently, either because of different biases or limited experience in healthcare. However, a medical student, with no previous knowledge of the child life profession, was able to observe 13% of the patients during the study, and no differences between observers were found. Also, the observers' reports were correlated with patient self-reports, especially at posttest, suggesting that true variance was being measured. Had this study blinded the observers to the purpose of the study, bias would have been further minimized. Another limitation is that the staff who sutured the lacerations have worked closely with child life specialists in past laceration repairs. This relationship has likely had a positive influence on how staff interact with patients. Even so, the differences in psychosocial care, as measured by the PPIC, between the child life specialist and the medical staff are striking. In addition, the Psychosocial Procedural Intervention Checklist has not been used previously in studies to account for child life services provided. Although the PPIC has strong preliminary evidence for its reliability and validity, further research on its psychometric properties is warranted.

This study adds to the growing body of research focusing on certified child life specialists and their contribution to pediatric patients and their families in the health care system. Pediatric patients who are given a psychological preparation by a CCLS and supported in potentially stressful procedure have increased knowledge about the event, appraise the event as significantly less threatening, and report significantly less anxiety and distress (e.g., Claar, Walker, & Smith, 2002; Khan & Weisman, 2007). The importance of minimizing pediatric patients' fears and distress in health care cannot be overstated. Children treated in the ED "may experience psychological distress with potentially serious consequences for their physical and mental health" (Horowitz, Kassam-Adams, & Bergstein, 2001, p. 491). Children's fears from their

health care experience can have long-term effects if not dealt with adequately. Invasive procedures with inpatient children, like those pediatric patients receive in the ED, have been shown to increase medical fears and posttraumatic stress disorder symptoms 6 months after discharge more so than the children experiencing fewer invasive procedures (Rennick, Johnston, Dougherty, Platt, & Ritchie, 2002). The work of CCLS's to identify and accurately assess the psychosocial needs of pediatric patients is clearly important for improving their health outcomes. The findings from this study suggest that CCLSs should be considered a necessary part of the medical team treating a pediatric patient for a laceration repair. Their involvement positively affects patients' fear and distress, and increases family satisfaction with the care they received. As research on the benefits of the child life profession for pediatric patients accumulates, this will bolster support for more CCLSs in the ED, a unit that has, historically, been poorly staffed by professionals who are well-prepared to alleviate children's distress (Krebel, Clayton, & Graham, 1996).

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Appendix A

Psychosocial Procedural Intervention Checklist

Eugene Johnson, MS, RN, CCLS

Indicate with a tick mark if the healthcare provider exhibited the exemplar at any point during the procedure.

Therapeutic Rapport

- ☐ Interacts with patient/family with genuinity, mutuality, and without judgment in an age-appropriate manner
- ☐ Supports family relationships in process of care (e.g., supports family involvement, learns about unique characteristics of child and family, respectful of cultural values)
- ☐ Gains trust and develops age-appropriate rapport with patient and family members
- ☐ Uses positive guidance and listening skills to support patient and family members
- ☐ Is sensitive to verbal and nonverbal messages/cues from patient and family member(s)
- ☐ TOTAL TR

Psychological Preparation and Support

- ☐ Provides age-appropriate information about sequence of events for the procedure
- ☐ Provides age-appropriate sensory information and duration regarding those events
- ☐ Clarifies understanding (e.g., Do you understand what I am going to do? What questions do you have about what we talked about?)
- ☐ Address misconceptions
- ☐ Coping strategies identified/rehearsed (directly or indirectly)
- ☐ Minimally threatening, age-appropriate language used
- ☐ Gives opportunities to explore medical equipment used in procedure
- ☐ Uses teaching aids during preparation (e.g., photos, medical equipment)
- ☐ TOTAL PPS

Facilitates Emotional Expression

- ☐ Explores/addresses feelings and validates/normalizes expressed feelings in age-appropriate manner
- ☐ Patient shares needs and concerns
- ☐ Opportunities provided for age-appropriate emotional expression (e.g., dramatic play, hospital-related board games, familiarization play)
- ☐ Postprocedural debriefing regarding patient's and family's evaluation of procedure
- TOTAL FEE

Pain Relief

Cognitive/behavioral pain management measures:

- ☐ Positioning for comfort
- ☐ Visual distraction (e.g., iPad, books, toy, movie)
- ☐ Auditory distraction (e.g., music, toy that makes sound)
- ☐ Deep breathing exercises
- ☐ Tactile stimulation Counting/singing
- ☐ Verbal interaction/distraction
- ☐ Attending to the procedure (e.g., keeping the patient abreast of the procedure regarding sensory information and sequence of events)
- TOTAL PR
- TOTAL PPIC

Appendix B

STUDY PACKET

1. Obtain in/exclusion criteria (medical information from provider):
 - a. Simple laceration <5 cm, requires sutures ☐
 - b. Age 6-16 ☐
 - c. Does not have multiple injuries ☐
 - d. No previous sutures ☐
 - e. Does not require procedural sedation ☐
 - f. No previous experience with CLSS ☐
 - g. No communication barrier/altered consciousness ☐
 - h. Have not taken oral steroid in past 30 days ☐
 - i. Not diagnosed with personality/mood disorder ☐
2. ☐ Informed Consent/HIPAA obtained
3. ☐ Make patient NPO at this time.
4. Randomization ID# _____

☐ Treatment – Call CCLS

☐ Placebo – No CCLS
5. Date of birth ____/____/____ (month/day/year)
6. Date of procedure ____/____/____ (month/day/year)
7. Gender: ☐ Male ☐ Female
8. Ethnicity: ☐ Caucasian ☐ A-A ☐ Hispanic ☐ Asian ☐ Other
9. Oral steroids 30 days prior to saliva collection?
☐ Yes, **exclude from study** ☐ No
10. Patient diagnosed with personality and/or mood disorders?
☐ Yes, **exclude from study** ☐ No
11. Patient received a laceration repair previously?
☐ Yes, **exclude from study** ☐ No

12. Patient has other significant injuries (e.g., broken bones) besides laceration?

☐ Yes, **exclude from study** ☐ No

13. Has pt had anything to eat or drink in the last 30 minutes? Candy or gum included?

☐ Yes—Have patient rinse mouth vigorously with water, make patient NPO for 30 minutes before collecting Salivary Cortisol Sample.

→ Patient rinsed mouth at ____:____ (24 hour military time)

→ **Sample A** collected > 30 minutes later at ____:____ (24 hour military time)

☐ If not – **Collect** Salivary Cortisol **Sample A**

14. ☐ **Collect Sample A**: The Salivette looks like a 2-in. cotton dental roll and is packaged in a plastic test-tube-like container. Participants are instructed to gently chew or mouth the Salivette for approximately one minute, keeping Salivette from between the cheek and gums.

☐ Have nurse print lab label to apply to sample tube

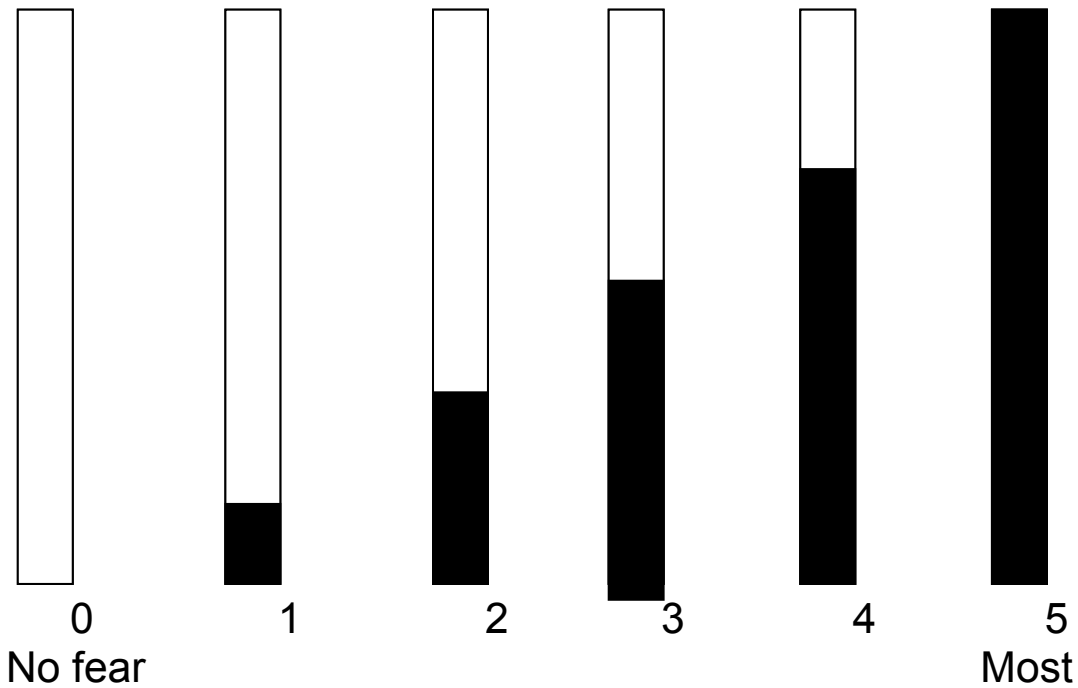
☐ Assign the Attending for the verbal order as Pam Okada, MD

☐ TIME OF 1ST COLLECTION ____:____ (24 hour military time)

☐ Nurse sends collection tube to lab

PRE-PROCEDURE

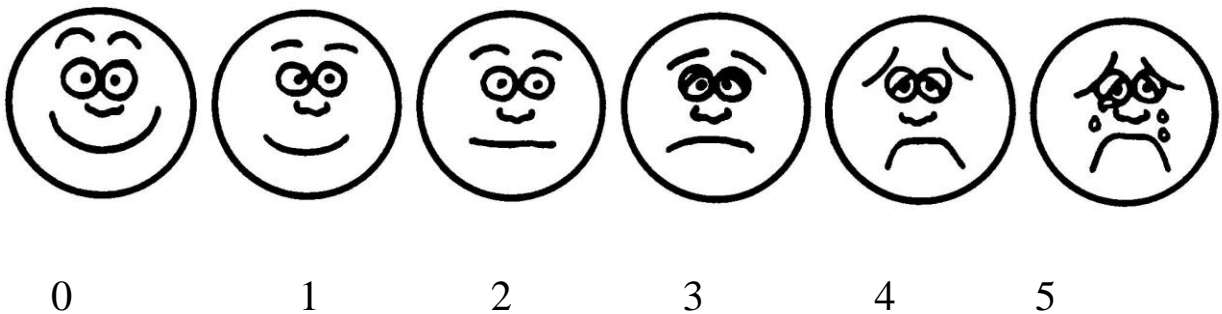
Randomization ID# ____



*Patients will be asked to choose the glass that best describes how scared (fearful) they are during their visit to the ED.

Pre- procedure: How scared are you right now?

Circle fear chart number: 0 1 2 3 4 5



Pre-procedure: How much pain are you feeling right now?

Circle pain chart number: 0 1 2 3 4 5

OSBD-r CODE SHEET

Randomization ID# _____

*Circle corresponding box if observed
seconds

*Each row is equal to 15

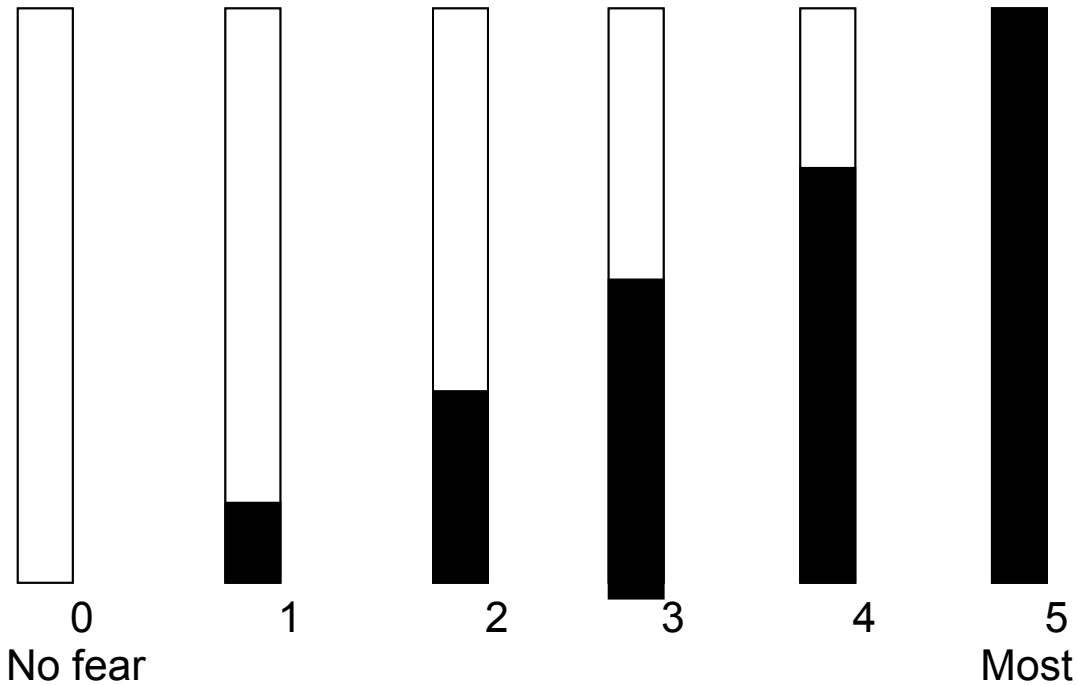
	Info seeking	Cry	Scream	Restrain	Verbal resistance	Emotional Support	Verbal	Flail
PHASE 1 *3 minutes before first suture is thrown	1 IS	1 C	1 S	1 R	1 VR	1 ES	1 V	1 F
	2 IS	2 C	2 S	2 R	2 VR	2 ES	2 V	2 F
	3 IS	3 C	3 S	3 R	3 VR	3 ES	3 V	3 F
	4 IS	4 C	4 S	4 R	4 VR	4 ES	4 V	4 F
	5 IS	5 C	5 S	5 R	5 VR	5 ES	5 V	5 F
	6 IS	6 C	6 S	6 R	6 VR	6 ES	6 V	6 F
	7 IS	7 C	7 S	7 R	7 VR	7 ES	7 V	7 F
	8 IS	8 C	8 S	8 R	8 VR	8 ES	8 V	8 F
	9 IS	9 C	9 S	9 R	9 VR	9 ES	9 V	9 F
	10 IS	10 C	10 S	10 R	10 VR	10 ES	10 V	10 F
	11 IS	11 C	11 S	11 R	11 VR	11 ES	11 V	11 F
	12 IS	12 C	12 S	12 R	12 VR	12 ES	12 V	<u>12 F</u>
PHASE 2 *Begin with cleaning/injection	13 IS	13 C	13 S	13 R	13 VR	13 ES	13 V	13 F
	14 IS	14 C	14 S	14 R	14 VR	14 ES	14 V	14 F
	15 IS	15 C	15 S	15 R	15 VR	15 ES	15 V	<u>15 F</u>
	16 IS	16 C	16 S	16 R	16 VR	16 ES	16 V	16 F
	17 IS	17 C	17 S	17 R	17 VR	17 ES	17 V	17 F
PHASE 3 *2 m 15 sec Begin with 1 st suture removed	18 IS	18 C	18 S	18 R	18 VR	18 ES	18 V	18 F
	19 IS	19 C	19 S	19 R	19 VR	19 ES	19 V	19 F
	20 IS	20 C	20 S	20 R	20 VR	20 ES	20 V	20 F
	21 IS	21 C	21 S	21 R	21 VR	21 ES	21 V	21 F
	22 IS	22 C	22 S	22 R	22 VR	22 ES	22 V	22 F

from foil	23 IS	23 C	23 S	23 R	23 VR	23 ES	23 V	23 F
	24 IS	24 C	24 S	24 R	24 VR	24 ES	24 V	<u>24 F</u>
PHASE 4 *1½ minutes Right after last suture is trimmed	25 IS	25 C	25 S	25 R	25 VR	25 ES	25 V	25 F
	26 IS	26 C	26 S	26 R	26 VR	26 ES	26 V	26 F
	27 IS	27 C	27 S	27 R	27 VR	27 ES	27 V	27 F
	28 IS	28 C	28 S	28 R	28 VR	28 ES	28 V	28 F
	29 IS	29 C	29 S	29 R	29 VR	29 ES	29 V	29 F
	30 IS	30 C	30 S	30 R	30 VR	30 ES	30 V	30 F

POST-PROCEDURE

*Assess right after patient has finished with procedure

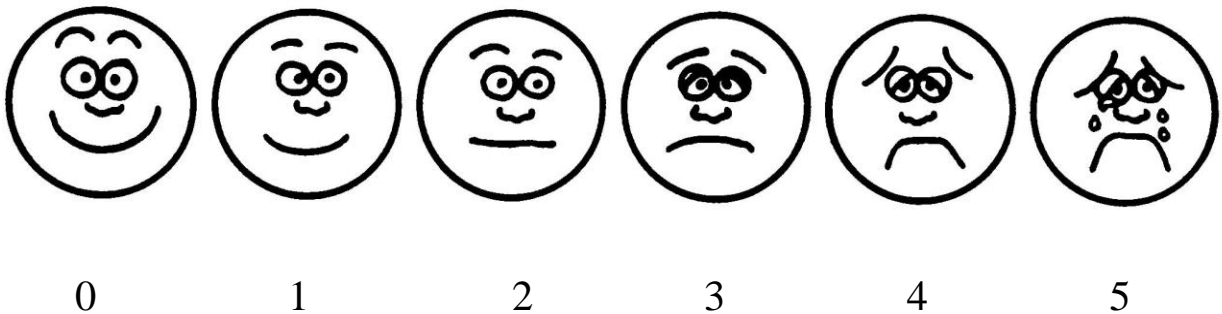
Randomization ID# ____



*Patients will be asked to choose the glass that best describes how scared (fearful) they are during their visit to the ED.

Post- procedure: How scared are you right now?

Circle fear chart number: 0 1 2 3 4 5



Post-procedure: How much pain are you feeling right now?





























































Circle pain chart number: 0 1 2 3 4 5

PATIENT SATISFACTION SURVEY

Randomization ID# _____

- Here are some questions about being in the Emergency Department. Please put a mark or a colored dot on the face that best answers each question.

How old are you? _____ Are you a ☐ girl or ☐ boy

	No	Not usually	Kind of	Usually	Yes
1. Were the people who work at the hospital nice to you?					
2. Were they nice to your family?					
3. Did you feel safe here?					
4. Did you like how they took care of you?					
5. Did they listen when you tried to tell them something?					
6. Did they tell you what they were going to do before they did it?					
7. Did the people who work in the hospital talk to you?					
8. When you were hurting, did they help you feel better?					
9. Would you tell your friends this is a good place to come if they are sick?					
10. Did they help you feel better?					
11. Did they let you make choices?					
12. Did they give you a chance to play?					
What is the best part of the hospital experience?					
What is the worst part of the hospital experience?					

<p>Suggestions to improve the hospital experience. What would make your stay in the ED better?</p>	
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CAREGIVER SATISFACTION SURVEY

Randomization ID# _____

- Here are some questions about being in the Emergency Department. Please mark the number that best answers each question.

	No	Not usually	Kind of	Usually	Yes
1. Were they nice to your child?	1	2	3	4	5
2. Were they nice to your family?	1	2	3	4	5
3. Did your child feel safe here?	1	2	3	4	5
4. Did you like how they took care of your child?	1	2	3	4	5
5. Did they listen when your child tried to tell them something?	1	2	3	4	5
6. Did they tell your child what they were going to do before they did it?	1	2	3	4	5
7. Did the people who work in the hospital talk to your child?	1	2	3	4	5
8. When your child was hurting, did they help your child feel better?	1	2	3	4	5
9. Would you tell your friends this is a good place to come if their child is sick?	1	2	3	4	5
10. Did they help your child feel better?	1	2	3	4	5
11. Did they let your child make choices?	1	2	3	4	5
12. Did they give your child a chance to play?	1	2	3	4	5
What is the best part of the hospital experience?					
What is the worst part of the hospital experience?					
Suggestions to improve the hospital experience					

Appendix C

The Observation Scale of Behavioral Distress

Behavioral Definitions

Information Seeking (IS)

Definition: Any Questions regarding medical procedures
Examples: “When will you stop?”
“Is the needle in?”
“Is the drip coming?”
Nonexamples: “Will I get a toy?”

Cry (C)

Definition: Crying sounds and/or onset of tears—usually nonintelligible but can be double coded with verbal categories.
Examples: Sobbing
Screaming up face—obvious onset of tears
Boohooohoo
Crying sounds
Tears (code as long as still flowing and/or sounds)
Nonexamples: Sniffling
Heavy breathing

Scream (S)

Definition: Loud vocal expression at high pitch/intensity, usually nonintelligible, but can be double coded with verbal categories. High pitch distinguishes this category from “Cry.”
Examples: Sharp, shrill, harsh, high tones
Shrieks
Nonexamples: Loud yelling but at low pitch

Restraint (R)

Definition: Child must be physically held down by staff member or parent with noticeable pressure and/or child must be exerting force, resistance in response to restraint attempts by staff. Sometimes it is not clear if the child is exercising pressure back due to tightness of restraint (i.e., child cannot move). In such cases where restraint is obvious and child’s resistance is not clear, code Restraint.

Verbal Resistance (VR)

Definition: Any verbal expression of delay, termination, or resistance.
Rule: Must be intelligible.

Examples:	“I want to go...”	“Stop”
	“I want to go to the bathroom.”	“No more”
	“No, No, No”	“Don’t”
	“I don’t like this”	“Let me rest”
	“Let me loose”	“Take needle out”
	“Take me hom”	“I don’t want it”
	“Don’t hurt me”	

Emotional Support (ES)

Definition:	Verbal or nonverbal <u>solicitation</u> of hugs, hand holding, physical or verbal comfort by child.
Rules:	Code <u>initiation</u> only for physical behaviors. “Hold me” “I love you” “Momma” & “Daddy” “Momma please” “Help me” Grabbing at others. Reaching out to be held (Do not code “Mommy” if part of statement is appropriate for another code, e.g., “Mommy, get me out of here” = Verbal Resistance, not emotional support

Verbal Pain (P)

Definition:	Any words, phrases, or statements which refer to pain, damage or being hurt, or discomfort.
Rules:	Must be intelligible. May be in <u>any tense</u> . Can be anticipatory as well as actual. Has to be a statement, <u>not a question</u> . This category is distinguished from “Cry” by coding discrete intelligible <u>words</u> as pain (Owh, ouch) and non-word crying sounds as “Cry.” Only exception is that groans without crying are coded as Verbal Pain (Ahhh).
Examples:	“That hurt” “Owwh” “It stings” “Owwhee” “You are pinching me” “Oh!” “You are killing me”
Nonexamples:	Pounding fists Kicking legs repeatedly and randomly Throwing arms out repeatedly and randomly Flapping arms on self or otherwise Child’s back moving back and forth repeatedly during procedure.

Flail (F)

Definition:	Random gross movements of arms and legs or whole body. Flail often occurs in response to restraint. (Out-of-control behavior)
Rule:	Must be random.

Examples:

Pounding fists

Kicking legs repeatedly and randomly

Throwing arms out repeatedly and randomly

Flapping arms on self or otherwise

Child's back moving back and forth repeatedly during procedure.

Appendix D

SCORING SHEET

Scored by _____ Name _____ Randomization ID# _____

<u>Behavioral Category</u>	IS	Cry	SCR	R	VR	ES	VP	F
<u>Weight</u>	1.5	2.5	4	4	2.5	2	3	4
Phase I								
Frequency (F)								
# of Intervals Scored (I)								
Mean Intervals Scored (I)								
Weighted Mean Interval Score (X weight)								
Total								

Phase II								
Frequency (F)								
# of Intervals Scored (I)								
Mean Intervals Scored (I)								
Weighted Mean Interval Score (X weight)								
Total								

Phase III								
Frequency (F)								
# of Intervals Scored (I)								
Mean Intervals Scored (I)								
Weighted Mean Interval Score (X weight)								
Total								

Phase III								
Frequency (F)								
# of Intervals Scored (I)								
Mean Intervals Scored (I)								
Weighted Mean Interval Score (X weight)								
Total								

Total Unweighted Mean								
Category Scores (Across Phases)	IS	Cry	SCR	R	VR	ES	VP	F