

**Child Adult Medical Procedure Interaction Scale (CAMPIS)  
Child Adult Medical Procedure Interaction Scale-Revised (CAMPIS-R)**

**a. Name of measure**

Child Adult Medical Procedure Interaction Scale (CAMPIS)  
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**b. Central references**

Blount, R. L., Corbin, S. M., Sturges, J. W., Wolfe, V. V., Prater, J. M., & James, L. D. (1989). The relationship between adults behavior and child coping and distress during BMA/LP procedures: A sequential analysis. *Behavior Therapy, 20*, 585-601.

- First study to use the CAMPIS.

Blount, R. L., Sturges, J. W., & Powers, S. W. (1990). Analysis of child and adult behavioral variations by phase of medical procedure. *Behavior Therapy, 21*, 33-48.

- First study to use the CAMPIS-R.

Blount, R. L., Landolf-Fritsche, B., Powers, S. W., & Sturges, J. W., (1991). Differences between high and low coping children and between parent and staff behaviors during painful medical procedures. *Journal of Pediatric Psychology, 16*, 795-809.

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- Validity study with the CAMPIS-R.

Blount, R. L., Bunke, V. L., Cohen, L. L., & Forbes, C. J. (2001). The Child-Adult Medical Procedure Interaction Scale-Short Form (CAMPIS-SF): Validation of a rating scale for children's and adults' behaviors during painful medical procedures. *Journal of Pain and Symptom Management, 22*, 591-599.

- Validity study with the CAMPIS-SF, a rating scale version of the CAMPIS-R observational measure.

Other references:

Blount, R. L., Bachanas, P. J., Powers, S. W., Cotter, M. C., Franklin, A., Chaplin, W., Mayfield, J., Henderson, M., & Blount, S. D. (1992). Training children to cope and parents to coach them during routine immunizations: Effects on child, parent and staff behaviors. *Behavior Therapy, 23*, 689-705.

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Cohen, L. L., Blount, R. L., Cohen, R. J., McClellan, C. B., Bernard, R. S., & Ball, C. M. (2001). Children's expectations and memories of acute distress: The short- and long-term efficacy of pain management interventions. *Journal of Pediatric Psychology*, 26, 367-374.

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### **c. Purpose of measure**

The primary purpose for developing the CAMPIS/CAMPIS-R was to assess important child and adult behaviors that occur in the medical treatment room that can influence children's distress. These behaviors include children's coping behaviors, other child behaviors, and the behaviors of parents and medical staff. These important variables are assessed before, during, and after medical treatments. Use of the CAMPIS/CAMPIS-R can facilitate a more comprehensive assessment of the impact of the medical staffs', parents', and children's interactions that occur in the treatment room.

The CAMPIS is a 35 code system. Based on the results of the study by Blount et al. (1989), the 35 codes were grouped into six codes: child coping, child distress, child neutral, adult coping promoting, adult distress promoting, and adult neutral behaviors. The six code CAMPIS-R was first used in the study by Blount et al. (1990). With both the CAMPIS and CAMPIS-R, each person's behavior is coded individually.

### **d. Age-range, population**

- The CAMPIS/CAMPIS-R has been used in studies with children and adolescents undergoing various medical procedures. It was originally used with children undergoing bone marrow aspirations (BMAs) and lumbar punctures (LPs). Since then it has been used with children undergoing immunizations (Blount et al., 1992,) voiding cystourethrogram procedures (Zelikovsky et al., 2000), physical therapy regimens (Miller et al., 2000), and cold pressor exposure (Chambers et al., 2002). The adult codes have also been used in studies with children ranging from 6 month old infants (Sweet & McGrath, 1998) to 13 year old adolescents. The child codes have been used with children ranging from 2-13 years of age. In each case, the

same basic pattern of interactions has been found, supporting the generalizability of results.

- A description of the procedures and samples of some of the studies with which the CAMPIS/CAMPIS-R has been used follows:

	Type of sample	Age range (mean)	Sample size	Gender (% girls)	Country of study	Ethnicity
Blount et al., (1989)	Pediatric patients with leukemia undergoing BMAs and LPs	5-13 years ( $M = 9.75$ years)	23	39%	U.S.	
Blount et al., (1992)	Preschool children undergoing immunization injections.	3-7 years ( $M = 5$ years)	60	47%	U.S.	57% African-American, 43% Caucasian
Dahlquist et al., (1995)	Children with leukemia undergoing BMAs and LPs.	5-13 yrs ( $M = 8.1$ yrs)	51	43%	U.S.	
Cohen et al. (1997)	Healthy preschool children receiving immunization injections at a health department	4-6 yrs ( $M = 4.4$ yrs)	92	48%	U.S.	68% Caucasian, 24% Caucasian, 8% Hispanic.
Blount et al., (1997)	Healthy preschool children receiving immunization injections at a health department	4-7 yrs ( $M = 6.2$ yrs)	77	53%	U.S.	87% Caucasian, 12% African American, 1% Other.
Sweet & McGrath (1998)	Infants undergoing immunization injections.	5-19 month old infants and their parents and the staff	60	62%	Canada	88.5% Caucasian. 98% of the mothers were Caucasian.
Cohen et al., (1999)	4 <sup>th</sup> grade African-American children undergoing immunizations.	8.8-11.0 yrs ( $M = 9.9$ )	39	59%	U.S.	100% African-American
Miller et al., (2001)	Children undergoing painful physical therapy tx. regimens.	2.6 - 9.1 years ( $M = 4.5$ years)	32	34%	U.S.	44% Caucasian, 28% Hispanic, 22% African-American
Chambers et al., (2002)	Healthy children exposed to an analogue cold pressor pain induction task.	8-12 years ( $M = 9.4$ years)	120	50%	U.S.	69% Caucasian, 11% Asian, 2.5% Indo-Canadian, 1% First Nations, 4.2% Asian/Caucasian.
Salmon & Pereira, (2002)	Children undergoing voiding cystourethrogram.	2-7 years ( $M = 3.8$ years)	32	53%	Australia	75% European descent, 12.5% Middle Eastern descent, 9.4% Asian descent, 3.1% Pacific Island descent.

**e. Format (e.g., paper-and-pencil, physiological), administration, and scoring of measure**

- This is an observational measure that uses a paper-and-pencil format.
- The CAMPIS is a 35 code scale with operational definitions and examples of each code category. Based on the results of the sequential analytic study by Blount et al. (1989) the 35 CAMPIS codes were combined into six codes. The CAMPIS-R/CAMPIS codes are: Child Coping (Making Coping Statement, Nonprocedural-Related Talk by the Child, Audible Deep Breathing, Humor by the Child), Child Distress (Crying, Screaming, Verbal Resistance, Request Emotional Support, Verbal Fear, Verbal Pain, Verbal Emotion, Information Seeking), Child Neutral (Child Informs About Status, Request Relief From Nonprocedural Discomfort, Assertive Procedural Verbalization, Child's General Condition Related Talk); Adult Coping Promoting (Humor Directed to Child, Nonprocedural-Related Talk to Child, Command to Engage in Coping Strategy), Adult Distress Promoting (Criticism, Reassuring Comment, Giving Control to the Child, Apology, Empathy), and Adult Neutral Behaviors (Humor Directed to Adults, Nonprocedural-Related Talk to Adults, Procedure-Related Talk to Adults, Command to Engage in Procedural Activity, Notice of Procedure to Come, Behavioral Commands to the Child, Checking Child's Status, Child's General Condition Related Talk, Child's General Status Comments, Commands for Managing Child's Behavior, Praise).
- The CAMPIS distress codes were adapted from the OSBD (Elliott, Jay, & Woody, 1987). However, the weights and interval scoring format were dropped.
- In the original investigations by Blount et al. (1989) and Blount et al. (1990), a total of 9 different phases of the medical procedure were used. Those have subsequently been collapsed into 3 in most investigations: up to 3 minutes before the injection, during the injection, and from the needle removal until 2 minutes later.
- Both rates and proportions of behaviors have been used as the metric in different investigations. In the validity study by Blount et al. (1997), the proportion of behaviors was used. Proportions are determined by dividing the number of instances of the behavior category of interest by the total of all coded behaviors for that individual. For example, the proportion of child distress would be the total number of coded child distress behaviors divided by the total number of child distress plus child coping plus child neutral behaviors. Rate has served as the metric in other investigations. Rate simply refers to the total number of instances of the behavioral code divided by the number of minutes for that session or phase of interest.
- In addition to rates and proportions, the CAMPIS has been used in sequential analytic investigations (Blount et al., 1989; 1991). In these studies, conditional probabilities were determined for each of the 35 codes, so that antecedents and consequences of various behaviors could be determined.
- The CAMPIS-SF (Blount et al., 2001) is a rating scale version of the CAMPIS-R. Although it is easier to use, it also gives less detailed information.
- When using the CAMPIS, medical sessions are often videotaped for coding later. In addition, sessions are often transcribed to increase the reliability and validity of the data. Coding is usually done first using the CAMPIS. CAMPIS codes are then converted into the six code CAMPIS-R.
- Detailed method sections demonstrate the flexibility with which the CAMPIS, or select parts of the scale, has been used to meet different needs in investigations.
- Although the CAMPIS was originally designed for use with vocal interactions, it has also been adapted to code motoric behavioral content, such as playing with toys, watching a TV monitor, using a party blower for distraction, a parent directing a visual child's focus by using gestures or turning a child's head toward a distracting stimulus, holding a child to restrain the child, etc.

**f. Address for manual and measure**

- The codebook and manual for the CAMPIS/CAMPIS-R, as well as the CAMPIS-SF and the codebook that accompanies it, are available as e-mail attachments from the first author.

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**g. Validity and reliability information**

- Validity was supported in the study by Blount et al. (1997). The Child Coping scales correlated in the expected directions with the OSBD, the Behavioral Approach-Avoidance and Distress Scale (BAADS) distress scores (Hubert, Jay, Saulton, & Hayes (1988), and with parent, child, and staff reports of child fear and pain. In addition, the validity of the Child Coping and Child Distress scales have been correlated in the expected directions with parents' ratings of their ability to help their children, with staffs' ratings of child cooperation, and with BAADS Approach scores.
- The validity of the parent and staff coping promoting and distress promoting scales were also supported by correlations in the expected directions. These results support the convergent and construct validity of the coping, distress, coping promoting, and distress promoting scales.
- The CAMPIS-R has been shown to be responsive to intervention effects in coping skills treatment outcome research. Therapeutic effects have been demonstrated by changes in CAMPIS-R distress, coping, distress promoting, and coping promoting scales following intervention (e.g., Blount et al., 1992; Blount, Powers, Cotter, Swan, & Free, 1994; Cohen et al., 1999; Cohen et al., 1997; Powers et al., 1993).
- The results of the assessment studies with children with cancer (Blount et al. 1989; 1990; 1991) have been replicated with children with various disorders undergoing a variety of medical treatments. The results of the assessment studies have also been tested in experimental treatment outcome research, and confirm the validity of the assessment research findings.
- Inter-rater reliability has been assessed using Cohen's kappa. Values ranged from .65 to .92 (Blount et al., 1997). According to guidelines proposed by Fleiss (1981), these values represent good to excellent agreement.

**h. Primary findings**

- In studies of children, parents, and medical staff who have not been trained in coping skills, child coping behavior seldom occurs unless repeatedly prompted by parents and/or medical personnel. Children whose parents or medical staff coached them to use coping behaviors, as well as children who used more coping behaviors

during their medical procedure, displayed less distress during the medical treatments. This demonstrates the utility of the child coping and adult coping promoting behaviors.

- Child coping is much more likely following prompts from adults for them to cope than following any other adult behaviors.
- The patterns of child coping and adults' coping promoting behaviors have been shown to vary with the phase of the medical procedure. During the anticipatory phase, prior to any painful physical stimulation, adults tended to distract children by talking about nonprocedural topics, using toy play, or using humor. During the painful phases, adults coached children to use more active coping behaviors, such as deep breathing.
- Pre-procedural distress is highly correlated with distress during the actual injection. The implication is to promote coping prior to the most difficult parts of the medical procedure.
- Child distress seems to be more likely when parents and/or medical personnel are either overly reassuring, empathic, or apologetic; when they give too much control to the child over the start of the medical procedure; or when they criticize the child. Reassurance, empathy, and apologies seem to focus the child's attention on his or her own distress and/or on the impending painful medical procedure. Reassurance has been experimentally manipulated and shown to be distress promoting in two studies (Chambers et al., 2002; Manimalia et al., 2000). This was not shown in another study (Gonzalez, Routh, & Armstrong, 1993), although there were a number of procedural differences and other issues in that investigation.
- Adults have been shown to take their cues from each other and from the child. This finding has been utilized in treatment outcome research. Training either a parent (Blount et al., 1992) or a nurse (Cohen et al., 1997) to coach the child results in the other adult, who was not trained in coping promoting behavior, joining in and also coaching the child.
- The results from the CAMPIS/CAMPIS-R assessment studies have led directly to the design of therapeutic interventions to help children cope prior to and during medical treatments. An article (Blount, Bunke, & Zaff, 2000) and chapter (Blount et al., 2000) by the same authors describes how the CAMPIS has directly informed the design of therapeutic interventions.
- At least 53% of the variance in child coping and 38% of the variance in child distress can be explained by parent and medial staff behaviors (Frank et al., 1995). This amount would probably be higher in children who had been trained in coping behaviors and parents and staff who had effectively been trained to coach the children.

#### **i. Other comments**

- The CAMPIS/CAMPIS-R is unique in that it is one of the few scales that assesses child coping, child distress, other child behaviors, and parent and staff behaviors that occur during the medical treatment.
- The CAMPIS/CAMPIS-R allows an examination of the effects of behavioral interactions associated with medical stressors.
- The CAMPIS/CAMPIS-R is intended to be used flexibly.
- Because of its comprehensiveness, the CAMPIS/CAMPIS-R takes time to use. To increase expediency, researchers and clinicians may wish to focus on the most important behaviors for their purpose. Examples of these include child coping, child

distress, and the most commonly occurring adult behaviors that relate to these constructs (e.g., reassurance, and coping promoting behaviors)

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**Scale Criteria:** “Well-established assessment”

- I: There are at least 2 peer-reviewed articles by different investigatory teams.
- II: There is a codebook and manual available. Also, the method sections of articles demonstrate the different ways the scale can be used.
- III: Statistics are presented indicating good validity and reliability in at least 2 peer-reviewed articles by the authors, and in publications by other teams of researchers.

**Scale Criteria (old):** “Well-established assessment that leads to treatment”

- I: The measure has been presented in numerous peer-reviewed articles.
- II: The measure and manual can be requested via e-mail.
- III: Validity data are adequate.
- IV: The CAMPIS/CAMPIS-R results from assessment studies can lead directly to the design of treatment interventions.