

Does the Neonatal Facial Coding System differentiate between infants experiencing pain-related and non-pain-related distress?

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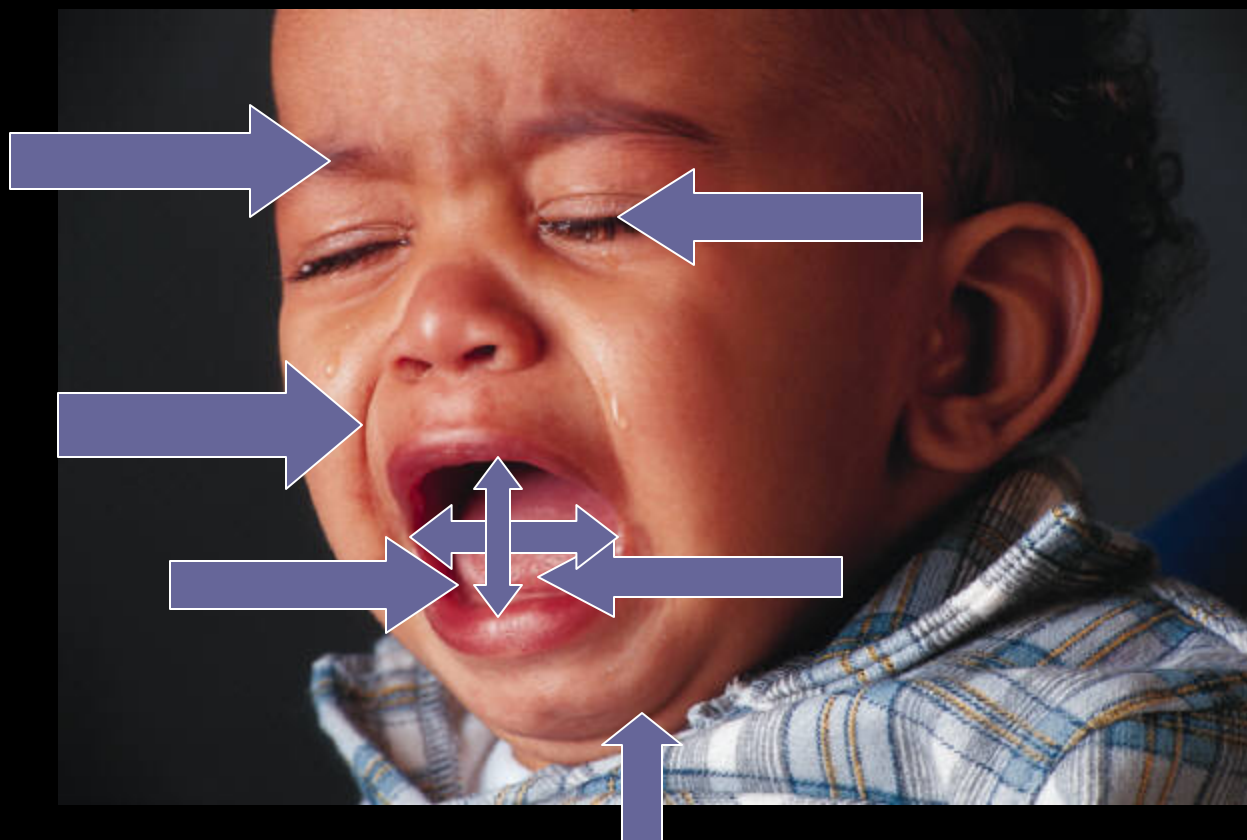
Ahola, S. & Pillai Riddell, R. R. (submitted). Does the Neonatal Facial Coding System differentiate between infants experiencing pain-related and non-pain-related distress?



Neonatal Facial Coding System (Grunau & Craig, 1987; Grunau, Johnston, & Craig, 1990)

- NFCS is widely accepted as a measure of infant pain-related distress in known pain specific contexts
- NFCS consists of 10 facial actions
- Each facial actions was coded on a scale of present (1) or absent (0) for 10 second period (5x2 second epochs)

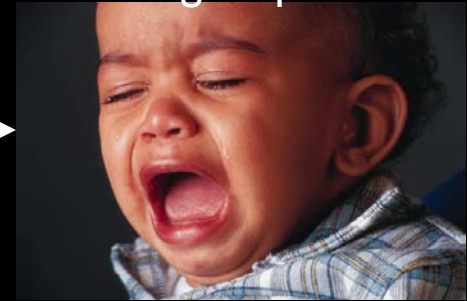
Neonatal Facial Coding System



Pre-needle
NFCS: distress
group



Post needle
NFCS: distress
group



Pre-needle
NFCS: **NO**
distress group

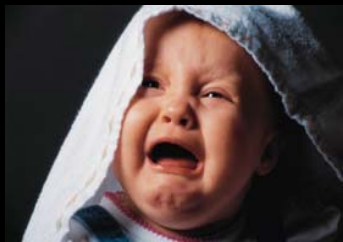


Post-needle
NFCS: **NO**
distress group

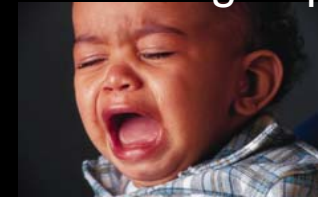


Why were some of the infants distressed pre-needle?

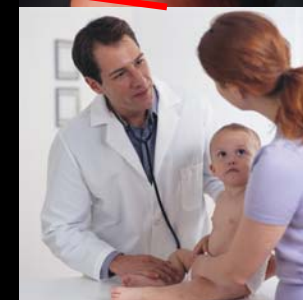
Pre-needle
NFCS:
distress group



Post-needle
NFCS:
distress group



distress group



distress group



Procedure

- Infants were recruited at pediatricians' clinics during routine immunizations
- Doctor's appointments were video recorded, including the immunization
 - From the minute they entered to the minute they left

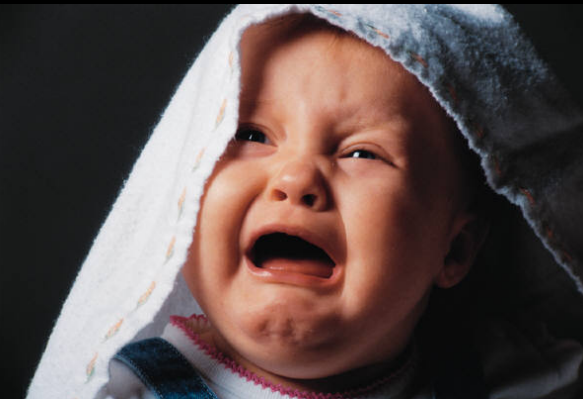
Plan of Analysis

- Data screening
 - Choice of statistics
 - Frequency of facial actions
 - Missing data replacement
 - Between clinic analyses

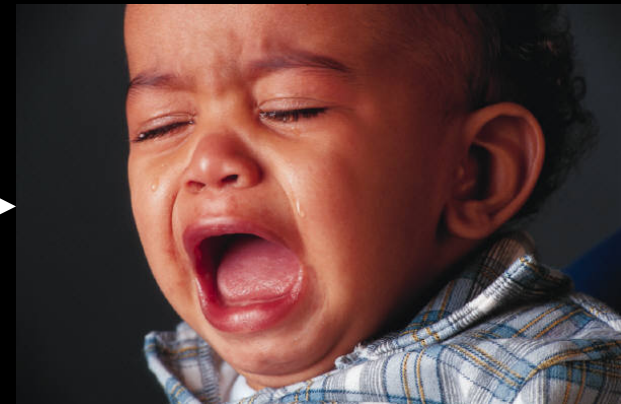


Analysis 1. Comparing pre- and post-needle NFCS scores of infants distressed prior to immunization (Wilcoxon matched-pairs tests)

Pre-needle
NFCS: distress
group

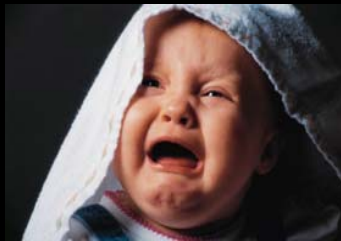


Post-needle
NFCS: distress
group

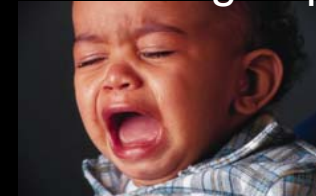


Analysis 2. Comparing post-needle NFCS scores of infants distressed and not distressed prior to immunization (Mann-Whitney U tests)

Pre-needle
NFCS:
distress group



Post-needle
NFCS:
distress group



Pre-needle
NFCS: **NO**
distress group



Post-needle
NFCS: **NO**
distress group



General Demographics

	<i>Infants Not Distressed Prior to Immunization</i>	<i>Infants Distressed Prior to Immunization</i>
Infant Age (months)	M = 9.98 SD = 4.83	M = 12.40 SD = 3.96
Infant Gender	Female = 14	Female = 14
Mother Age (years)	M = 33.57 SD = 5.16	M = 31.69 SD = 4.16
Hollingshead Index of SES	M = 47.40 SD = 14.51	M = 49.29 SD = 7.99

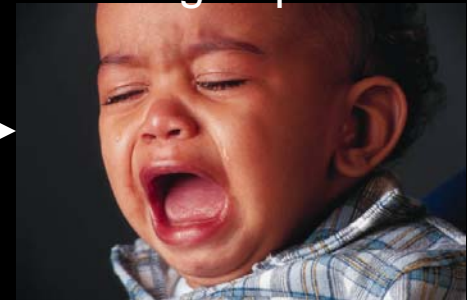
Analysis 1. Comparing Pre- and Post-Needle NFCS Scores of Infants Distressed Prior to Immunization

- No significant differences in NFCS scores

Pre-needle
NFCS: distress
group



Post needle
NFCS: distress
group

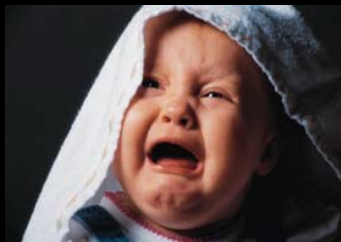


Analysis 2. Tests for Differences in Post-needle NFCS Scores for Infants Distressed and Not Distressed Prior to Immunization

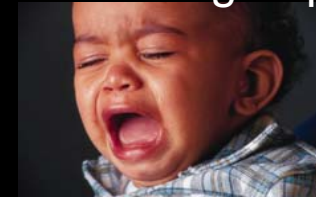
- Significantly higher overall NFCS scores post-needle ($U = -2.86, p < .01$)
- Significantly higher NFCS scores on
 - Nasolabial furrow, taut tongue
- A trend toward higher NFCS scores on
 - brow bulge, eye squeeze, open lips, horizontal stretch mouth

Analysis 2. Tests for Differences in Post-needle NFCS Scores for Infants Distressed and Not Distressed Prior to Immunization

Pre-needle
NFCS:
distress group



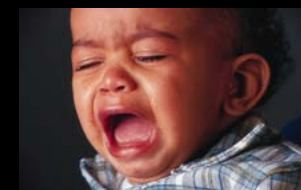
Post-needle
NFCS:
distress group



Pre-needle
NFCS: **NO**
distress group



Post-needle
NFCS: **NO**
distress group



Discussion

- NFCS was not designed to measure different types of distress
- In order to demonstrate specificity to pain, it is reasonable to examine whether NFCS performs differently in pain-related and non-pain-related distress

Discussion

- **Analysis 1.** NFCS is **not** able to discriminate between pain-related and non-pain-related distress:
 - NFCS is coded on a 2 second basis
 - Infants developing ability to express different discrete negatively valenced emotions



The Current Study - Discussion

- **Analysis 2.** NFCS is able to detect gradations of distress
 - Infants who are distressed prior to painful stimuli express more pain related behaviours immediately after the painful event (Holsti, Grunau, Whitfield, Oberlander & Lindh, 2006)

Limitations

- Infants not sufficiently distressed prior to needle had to be excluded from the analysis
- Timing of distress types was not randomized
- There was a large age range of infants
 - Different developmental stages
 - Different immunizations



The Current Study - Implications

- NFCS, as it is currently coded in healthy infants, does not distinguish between pain-related and non-pain-related distress
- Due to its sensitivity and potential ability to detect gradations of distress, NFCS continues to demonstrate its use in known pain-related distress contexts



Thank you.

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