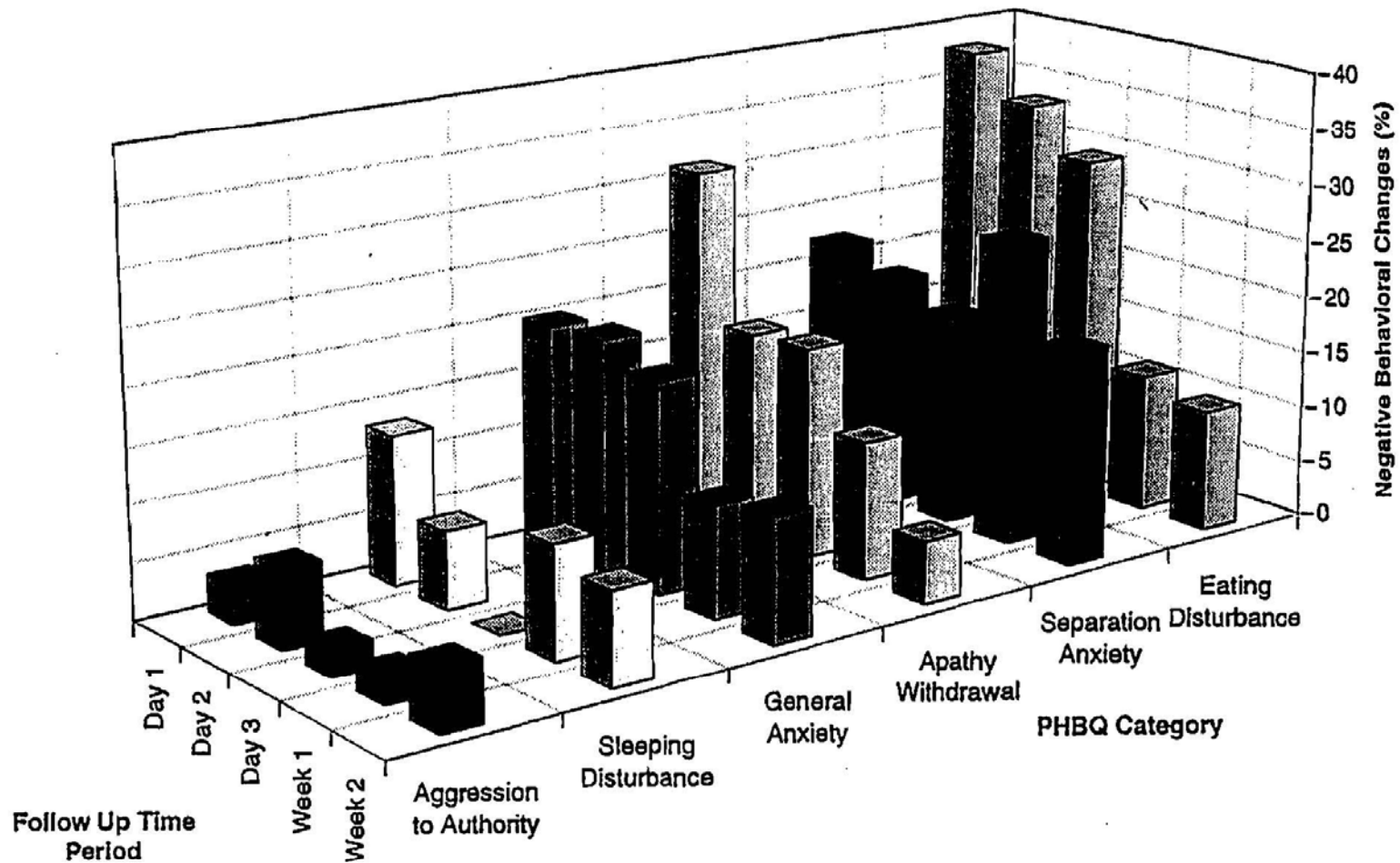


# **The Effects of Parental Presence in the Postanesthetic Care Unit on Children's Postoperative Behavior: A Prospective, Randomized, Controlled Study**

Llardner DR, Dick BD, Crawford S:  
Anesth Analg 2010; 110(4):1102-8.

# Anxiety Factoids

- 75% children psychological and/or physiological anxiety
- Postoperative behavioral changes
  - Sleep disturbances
  - Acting out
  - Poor school performance
  - Clinging behavior
  - Enuresis



**Figure 1.** Negative behavioral changes as a function of postoperative time. The behavioral changes were assessed by using the Post-Hospitalization Behavioral Questionnaire (PHBQ).

(Kain et al., Anesth Analg 1998;88:1042)

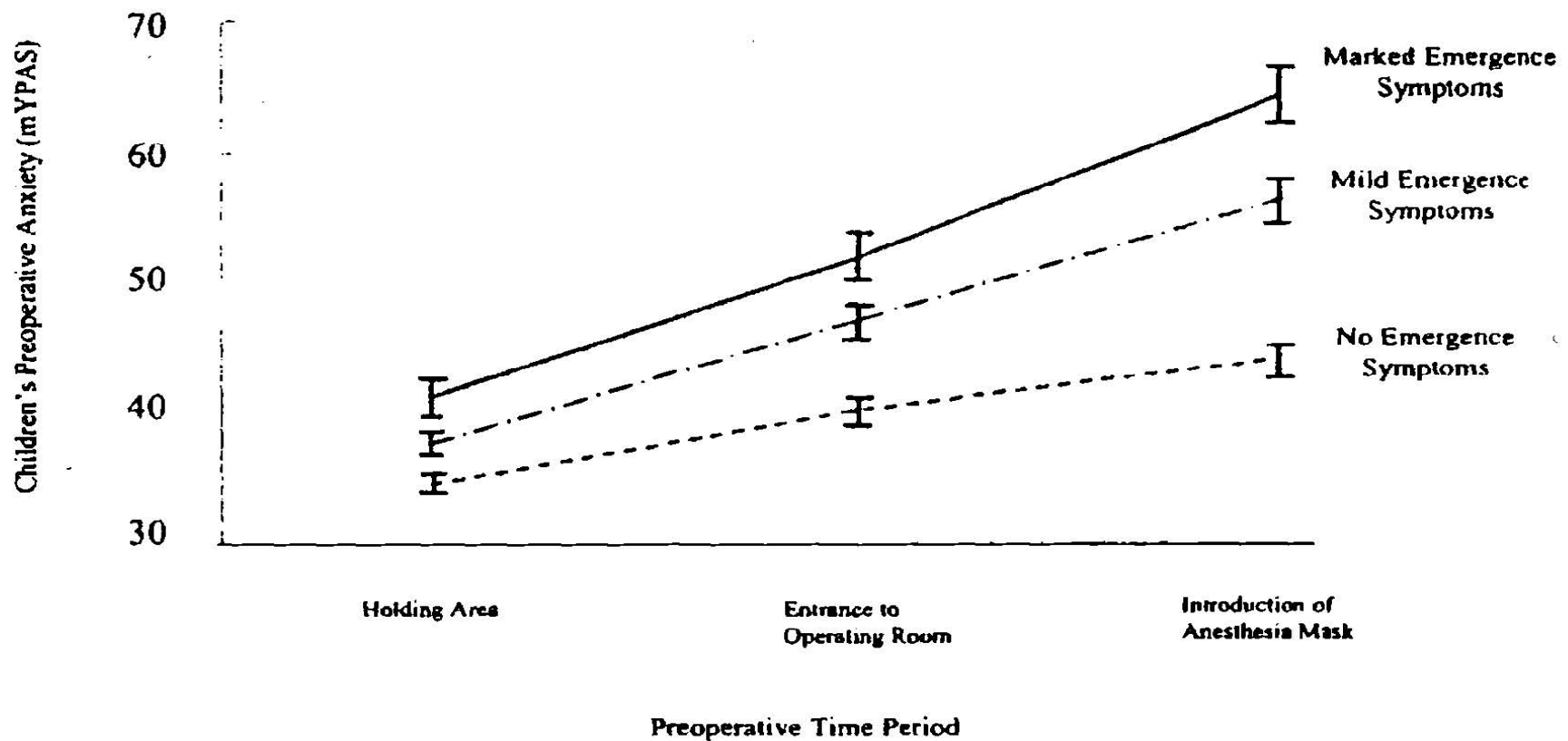
# Age-related Psychological Concerns

- Fear of separation
- Stranger anxiety
- Fear of the unknown – put to sleep
- Loss of control
- Fear of mutilation
- Knowing boundaries and limits

# Anxiety Effects Recovery

- 1613 patient database
- Anxiety (mYPAS) modified Yale Preoperative Anxiety Scale
- PHBQ, Post-hospital behavior questionnaire
- Level anxiety as postop behavior worsens

(Kain et al., Anesth Analg 2004;99:1648)



**Figure 2.** Relationship between preoperative anxiety and emergence delirium symptoms. mYPAS = modified Yale Preoperative Anxiety Scale

(Kain et al., *Anesth Analg* 2004;99:1651)

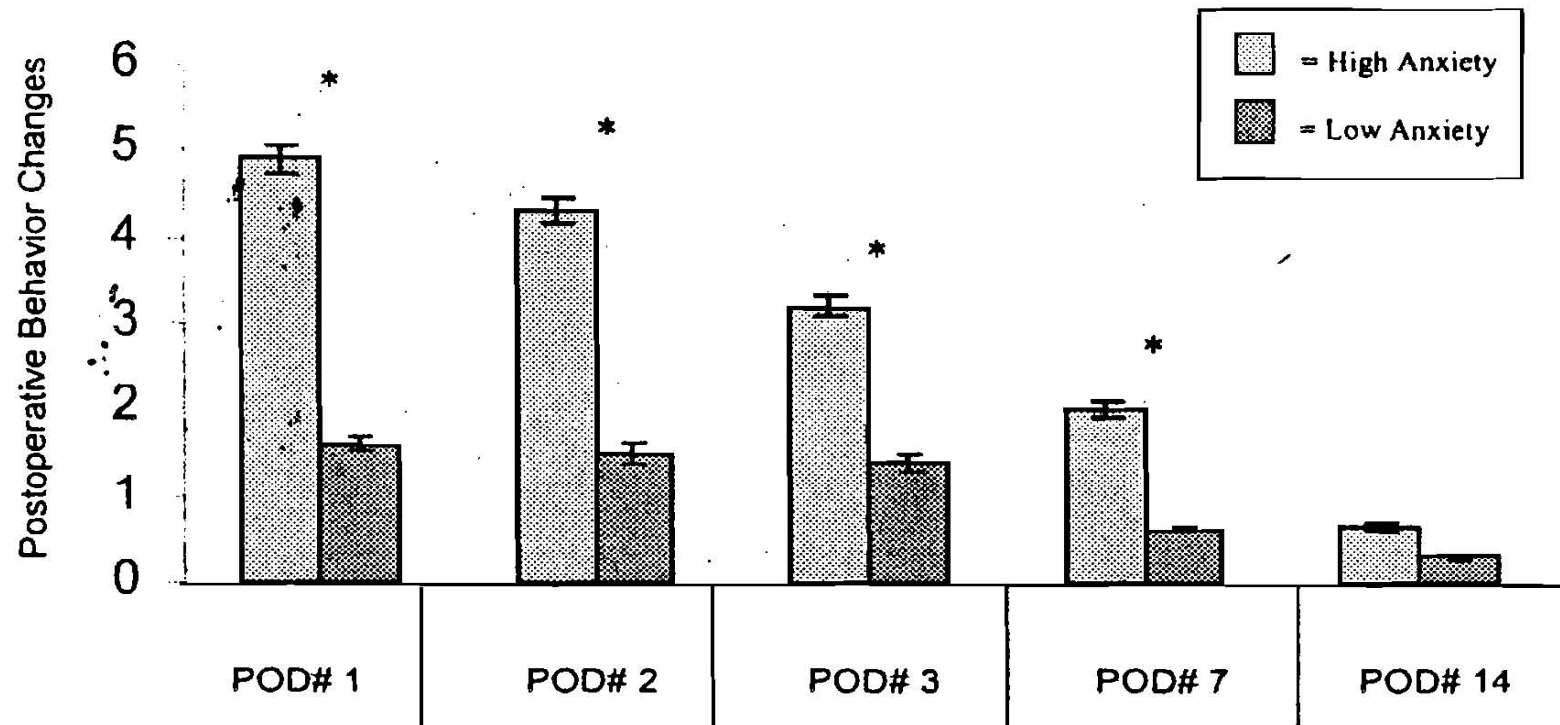


Figure 3. The number of new-onset maladaptive behaviors over a 2-wk postoperative period as exhibited by groups of children with high and low preoperative anxiety. \*statistical significance;  $P < 0.05$

(Kain et al., Anesth Analg 2004;99:1652)

# Childhood Risk Factors

- Age: 1-5 years, highest risk
- Temperament: Shy and inhibited, higher risk  
Socially adaptive, less risk
- Experience – previous medical experiences
- Parental trait anxiety: Anxious parents create  
anxious kids



# Parental Risk Factors for Anxiety

- Divorce, lower educational levels
- Parents whose children NOT in day care
- Parents of children < 1 year of age
- Parents who were frequent patients

- Alberta Children's Hospital
- Children 2 to 9 years
- Elective surgery ASA 1 & 2
- Appropriate patient exclusions
- Computer generator randomized
- Blinded until patient entry to PACU  
(intraop Rx unaffected)

# Anesthetic Technique

- All patients 8 min video and brochure
- Hospital preparation program not standard practice
- Premed anesth technique: anesthesiologist's discretion
- Parental presence allowed

# PACU Parental Presence

- 1 parent throughout but after
  - PACU – anesthesia handoff
  - VSS, airway secure
  - Patient opened eyes
- Non-parent – patient reunited in SDS

# Behavior Assessment

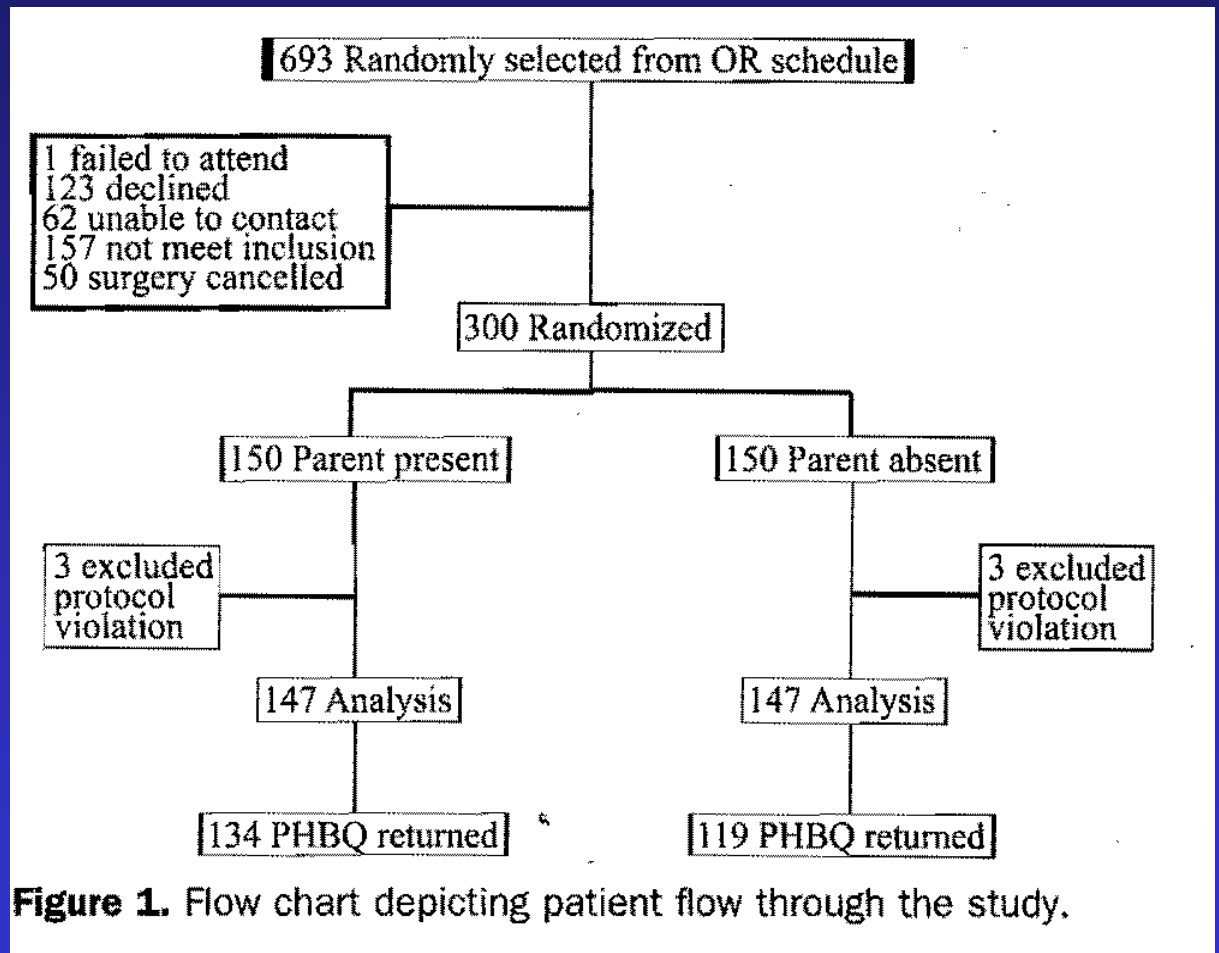
- PACU behavior – Cole scale
  1. Sleeping
  2. Awake, calm
  3. Irritable, crying
  4. Inconsolable
  5. Severe restlessness

# Behavior – 2 weeks

- Post-hospital behavioral questionnaire (PHBQ)
- Mail in form (phone reminder, 2 weeks)
- Behavioral changes defined
  - Frequency of negative behavioral change
  - 2 components rated as more or much more than before hospitalization

# Results I

- Appropriate Statistics



# Results II

**Table 1. Demographic Data**

Variable	Parent absent	Parent present
Age (y)	4.9 (1.9)	4.7 (1.9)
ASA physical status I/II (n)	130/17	132/15
Stay at home parent (%)	44.2	41.5
Previous hospitalization (%)	34.0	36.9
Previous surgery (%)	30.6	29.4
Number of previous surgeries	1.4 (0.8)	1.4 (0.8)
Attendance at preparation program (%)	20.4	23.3
Socioeconomic status low/middle/high (%)	23.1/42.9/34.0	29.9/51.0/19.1*
Parental presence at induction (%)	65.3	72.1
mYPAS on admission	27.5 (7.5)	28.1 (8.7)
mYPAS on induction	45.3 (26.2)	44.8 (24.9)
Use of regional anesthesia (%)	66.2	65.9
Volatile anesthesia (%)	99.3	99.3
Intravenous maintenance (%)	2.8	4.3
Intraoperative narcotic analgesia (%)	63.0	49.3 *

Mean ( $\pm$ sd) for continuous variables, % for categorical data.  
mYPAS = modified Yale Preoperative Anxiety Scale.

(Lardner et al: Anesth Analg 2010; 110(4):1102-8)



# Results III

**Table 2. Procedures**

<b>Operation</b>	<b>Number</b>
Dental restorations	52
Tonsillectomy ± adenoidectomy	49
Circumcision/meatoplasty/hypospadias	30
Strabismus	23
Inguinal hernia/hydrocele	22
Adenoidectomy ± diathermy turbinates	22
Umbilical hernia	21
Skin/subcutaneous lesion excision	19
Orchidopexy	16
Combined procedures	17
Other	23
Total	294

(Lardner et al: Anesth Analg 2010; 110(4):1102-8)

# Results IV

**Table 4. Results**

<b>Variable</b>	<b>Parent absent</b>	<b>Parent present</b>	<b><i>P</i></b>
Proportion time after initial eye opening with behavior score 3, 4, or 5 (%)	27.9 (30.4)	26.5 (27.7)	0.694
Negative behavior change at 2 wk (%)	45.8	29.3	0.007
Time in postanesthetic care unit (min)	39.7 (18.1)	41.1 (12.4)	0.422

Llardner et al: Anesth Analg 2010; 110(4):1102-8)

# Results V

- Regression analysis – negative behavior
- Age < 5
- Parental presence PACU
- Greater CHEOPS Score return to SDS
- Intraoperative opioid and SES → NS

## Results VI

- Only 2 patients premedicated/ group
- Higher intraoperative opioid not explained

summary

# A Proposal for Training in Pediatric Cardiac Anesthesia

DiNardo JA, Andropoulos DB, Baum VC:  
Anesth Analg 2010;110:1121-5.