

# UNDERSTANDING CHILD TEMPERAMENT TO FACILITATE GOODNESS-OF-FIT

Robin June Miller, PhD, RN<sup>1,2</sup>

Mary C. Sullivan, PhD, RN<sup>2,1</sup>

Women and Infants Hospital, Brown Center for the Study of Children at Risk<sup>1</sup>  
University of Rhode Island College of Nursing<sup>2</sup>

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## BACKGROUND

- There is a considerable theoretical and empirical research on child temperament. Yet:
  - There is little consensus on its theoretical perspective, definition, or measurement (Goldsmith, et al., 1987; Seifer & Sameroff, 1986; Strelau, 1998).
  - Empirical research has been limited by a short age span
  - There has been a focus on one temperament dimension (see handout)
  - The study of temperament in preterm samples is mostly limited to the infancy period (see handout for references)
- Temperament is the stylistic component of behavior – that is, the way in which an individual behaves (Chess & Thomas, 1996)

## THEORETICAL FRAMEWORK

The transactional model views child development as a product of the interplay between the continuous, dynamic influences of the child's biological heritage and his/her life experience provided by family and social contexts (Sameroff & Chandler, 1975).

## AIMS

- Determine the factors of temperament across the measures of the Infant Characteristics Questionnaire, Behavioral Style Checklist, EAS Temperament Survey for Children, Middle Childhood Temperament Questionnaire, Early Adolescent Temperament Questionnaire, and Dimensions of Temperament Survey - Revised.
- Assess measurement equivalence for temperament dimensions of unpredictability, activity, attention, and persistence across the instruments.
- Evaluate the stability of child temperament dimensions between measurement occasions of unpredictability, activity, attention, and persistence for infancy, 4 years, 8 years, 12 years, and 17 years.
- Compare the effects of perinatal morbidity on the unpredictability, activity, attention, and persistence of children grouped as full-term, healthy preterm, and preterm with morbidity at infancy, 4 years, 8 years, 12 years, and 17 years of age

## SAMPLE (N = 213)

- This longitudinal sample was recruited at infancy and followed at ages 4, 8, 12, and 17.
- 3 Groups of infants:
  - Full-term
  - Health Preterm – no perinatal illness
  - Preterm with Perinatal Morbidity (medical & neurological neonatal illness, SGA)



## METHODS AND RESULTS

### Aim 1. Factors of Temperament

Principal Components Analysis (PCA)

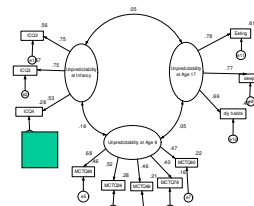
- With the exception of the MCTQ, all data matched the temperament dimensions defined by the instrument authors.
- PCA on the MCTQ resulted in keeping 63 out of the original 99 items. Determinations for dropping items were made from factor analyses (dropping items with loadings < .40), theoretical underpinnings, and reliability analyses.

### Aim 2. Measurement Equivalence

Confirmatory Factor Analysis

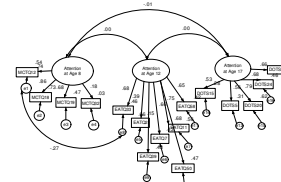
#### Unpredictability

$\chi^2 (43, N = 213) = 54.946, p = .105;$   
CFI = .972; RMSEA = .036



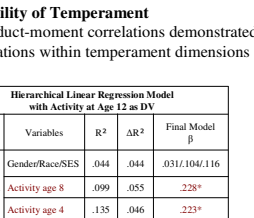
#### Attention

$\chi^2 (102, N = 213) = 154.660, p = .001;$   
CFI = .945; RMSEA = .049



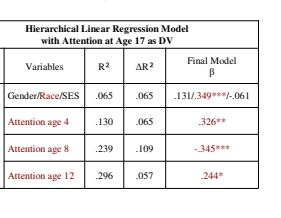
#### Activity

$\chi^2 (348, N = 213) = 606.452, p = .000;$   
CFI = .865; RMSEA = .059



#### Persistence

$\chi^2 (5, N = 213) = 5.315, p = .379;$   
CFI = .936; RMSEA = .017



### Aim 3. Stability of Temperament

Pearson product-moment correlations demonstrated small correlations within temperament dimensions across time.

Perinatal Group	Variables	R <sup>2</sup>	ΔR <sup>2</sup>	Final Model β
Preterm with Morbidity Group	Gender/Race/SES	.044	.044	.031/.104/.116
	Activity age 8	.099	.055	.228*
	Activity age 4	.135	.046	.223*

\*  $p < .05$   
R<sup>2</sup> = .146, R<sup>2</sup> = .100, F (5, 97) = 3.626,  $p = .011$

Perinatal Group	Variables	R <sup>2</sup>	ΔR <sup>2</sup>	Final Model β
Preterm with Morbidity Group	Gender/Race/SES	.099	.099	-.023/.215/-.213
	Persistence at 8	.151	.052	.239*

\*  $p < .05$   
R<sup>2</sup> = .151, R<sup>2</sup> = .104, F (4, 77) = 3.245,  $p = .017$

Perinatal Group	Variables	R <sup>2</sup>	ΔR <sup>2</sup>	Final Model β
Preterm with Morbidity Group	Gender/Race/SES	.065	.065	.131/.349***/.061
	Attention age 4	.130	.065	-.326**
	Attention age 8	.239	.109	-.345***
	Attention age 12	.296	.057	.244*

\*  $p < .05$   
\*\*  $p < .01$   
\*\*\*  $p < .001$   
R<sup>2</sup> = .296, R<sup>2</sup> = .242, F (6, 77) = 4.972,  $p < .001$

Perinatal Group	Variables	R <sup>2</sup>	ΔR <sup>2</sup>	Final Model β
Healthy Preterm Group	Gender/Race/SES	.223	.223	-.048/.401*/-.213
	Persistence at 4	.401	.178	.434*

\*  $p < .05$   
R<sup>2</sup> = .401, R<sup>2</sup> = .275, F (4, 23) = 3.176,  $p = .037$

### Aim 4. Effects of Perinatal Morbidity on Temperament Dimensions

MANOVA was conducted to test the effects of perinatal morbidity group, time, gender, race, and SES on temperament dimensions of unpredictability, activity, attention, and persistence.

Overall MANOVA was not significant; interactions between gender and race, race and SES in activity

- Follow-up one-way ANOVAs
- FT group > PT with morbidity group
    - Attention at age 12 - F (2, 171) = 3.830,  $p = .024$
    - Activity at age 17 - F (2, 134) = 3.877,  $p = .023$
  - PT with morbidity group > FT group
    - Persistence at age 17 - F (2, 134) = 5.105,  $p = .007$

## CONCLUSIONS

- **Aim 1.** With the exception of the MCTQ, all data matched the temperament dimensions defined by the instrument authors.
- **Aim 2.** Examining measurement equivalence across temperament instruments:
  - The hypothesized CFA models for the unpredictability, attention, and persistence dimensions were plausible for the data.
  - The CFA model for activity did not fit the data well.
- **Aim 3.** There is mild stability in temperament over time with less stability in the full-term group and more stability in the preterm with morbidity group.
- **Aim 4.** Examining the effects of perinatal morbidity:
  - There are interactions between gender and race, race and SES with activity.
  - The FT group has more attention at age 12 and higher activity at age 17 than the PT with morbidity group.
  - The PT with morbidity group has higher persistence at age 17 than the FT group.

## IMPLICATIONS FOR GOODNESS-OF-FIT

- Insights into temperament differences in children born preterm suggest therapeutic approaches to improve outcomes.
- Goodness-of-fit in nursing practice
  - Definition - When the organism's capacities, motivations, and style of behavior are in accord with the environmental demands and expectations (Chess and Thomas, 1996).
  - The assessment of temperament profiles of children is imperative - Specific anticipatory guidance and other interventions can be implemented.
  - With a better understanding of temperament, nurses can meet demands and expectations of children and their families in order to facilitate "goodness of fit" and enhance optimal positive development and health.
- Poorness of fit can lead to maladaptive functioning and distorted development
  - Identification of "poorness of fit" can lead to interventions to prevent, stall, or reverse maladaptive functioning and distorted development.
- Screening for at-risk environments
  - SES, race, family structure, and parenting style are examples of areas to screen in pediatric settings such as outpatient services, in-hospital admissions, home health care, and schools.
- Nurses have a responsibility to identify those at risk and to advocate for the comprehensive health of children and families. Nurses have an opportunity to provide education to facilitate parents', health care providers', and teachers' understanding of children's temperaments, including those of preterm children
- Policies can be developed to enhance goodness of fit through:
  - Early screenings for parent-child transactions
  - Teacher-child relationships

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