



Childhood Temperament: **Assessment and Findings from the** **Mannheim Study of Children at Risk**

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Temperament

Part of personality

Differences in the tendency to behave or react

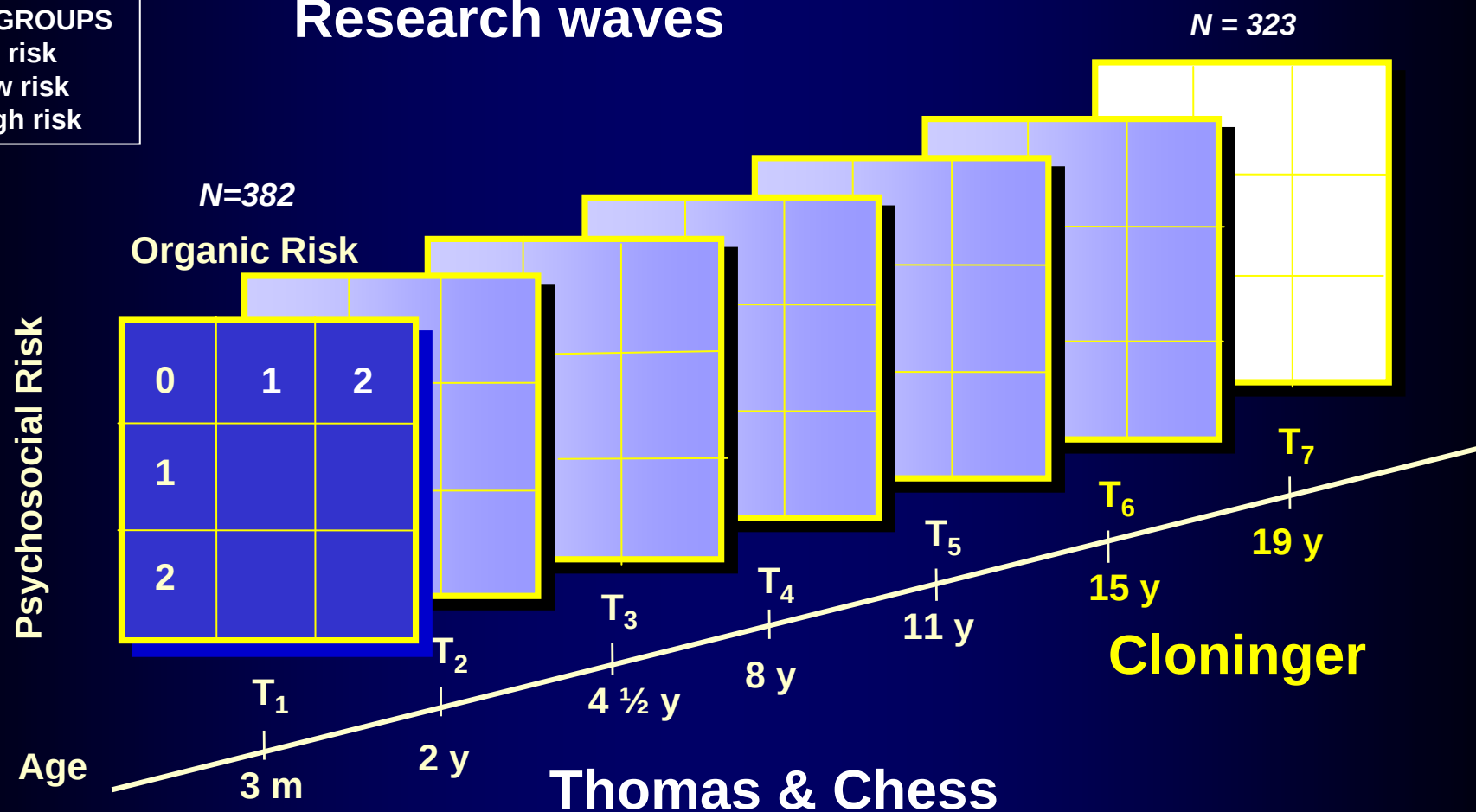
- appears very early
- biologically rooted / moderately heritable
- relatively stable across different situations
- relatively stable across lifetime
- some core dimensions common to various models
- hierarchically organized with 3 to 5 higher-order traits (Thomas & Chess, Cloninger, Eysenck)

Mannheim Study of Risk Children MARS

RISK GROUPS

0 = no risk
1 = low risk
2 = high risk

Research waves



Temperamental Dimensions by Thomas & Chess (1968)

- New York Longitudinal Study (NYLS)
- Trait-descriptive approach → tries to observe and classify the manifest structure of temperament.
- 9 Temperamental dimensions
- 3 clusters of temperamental dimensions (easy child, difficult child, slow-to-warm-up child)

Temperamental Dimensions I

1. Activity	Frequency & intensity of motor behavior
2. Rhythmicity	Regularity in biological functions
<u>3. Approach/ Withdrawal</u>	Initial reaction to new stimuli (e.g., strangers, new food, unfamiliar surroundings)
<u>4. Adaptability</u>	Length of time needed to habituate to new stimuli
5. Threshold of responsiveness	Sensitivity in the child's reaction to a range of external stimuli or environmental changes (e.g., food temperature, new food, pain, parental frowning)

Temperamental Dimensions II

6. Intensity of reaction	Expression of positive and negative emotions
<u>7. Prevailing mood</u>	Continuum between positive and negative mood
8. Distractibility / Soothability	Ease of child's soothing after unpleasant occurrences (disappointments, failures, trifling physical pain)
<u>9. Attention span / Persistence</u>	Ability to pursue a particular activity and its continuation in the face of obstacles

Validity of Temperamental Factors by Thomas & Chess

- No strong factor-analytic support for all 9 dimensions in the NYLS
- High intercorrelations of temperamental dimensions → subsummation in one category

sufficient validity:

- **activity level**, (may be connected to impulsivity / excitement seeking)
- **negative emotionality / irritable distress**
- **approach/ withdrawal / social inhibition**
- **attention span / persistence.**

Cloninger Temperament Model

- Neurobiological focus:
Temperamental traits → brain structures → neurotransmitter systems
- Originally 3 genetically independent dimensions hypothesized :
 - novelty seeking (NS)
 - harm avoidance (HA)
 - reward dependence (RD)
 - persistence (P) (later separated from RD)

Cloninger Temperamental Factors

	High levels	Low levels
Novelty Seeking	explorative, impulsive, enthusiastic, messy	indifferent, ruminative, modest, proper
Harm Avoidance	worried, anxious, doubtful, shy	relaxed, optimistic, fearless, vital, mindless
Reward Dependence	sensitive, warm, dedicative, dependent	Purpose-oriented, cold, withdrawn, separated
Persistence	busy, meritocratic, hard working, perfectionistic	lazy, unambitious, gives up easily, undemanding

Assessment of Temperament in MARS

Assessment age:

- *3 months until 11 years (Thomas & Chess)*
- *15 years (Cloninger)*

- 1. standardized parent-interview
 - 2. structured direct observations
 - 3. questionnaire (15 years)
- } 3m to 11y

Standardized Parent-Interview

- Interview with the parent about child's temperament / behavior
- Different situations (e.g. feeding, playing, sleeping, bathing, being left alone, being hungry)
- Rating by interviewer
- 5-point rating scale

Structured direct observations

- Four standardized settings:
 - 1 Central Institute: General
 - 2 Central Institute: EEG
 - 3 Central Institute: Experiment / Examination
 - 4 Home visit
- All ratings by trained judges
- Mean score of all 5 ratings for each dimension
- Interrater reliability (preliminary study of 30 children each):
 - 3 months: mean $\kappa = 0.68$
 - 2 years: mean $\kappa = 0.82$

Stability of Temperamental Factors across Childhood

Stability of NYLS derived temperament dimensions; Pearson correlations

	3m – 2y	2y – 4.5y	4.5y – 8y	8y – 11y
Attention / Persistence	.04	.38**	.57**	.63**
Approach / Withdrawal	.08	.35**	.42**	.51**
Adaptability	.18**	.22**	.44**	.35**
Mood / Emotionality	.12*	.34**	.39**	.55**

* $p < .01$; ** $p < .001$

Pitzer et al., 2007

Assessment of Temperament in 15 year-olds (Cloninger)

- Junior Temperament and Character Inventory (JTCI)
- Self-rating, Questionnaire, 4-point answer scale
- 46 Temperament Items → 4 Scales
- *Novelty Seeking*: I like to make fast decisions, because I don't like to wait
- *Harm Avoidance*: Trying something new makes me nervous
- *Reward Dependence*: I like to help my friends, when they are in trouble.
- *Persistence*: I like to work quickly and well organised

Temperamental Factors by Thomas & Chess and by Cloninger

Cloninger Thomas & Chess	Novelty Seeking	Harm Avoidance	Reward Dependence	Persistence
Persistence	11y (-)		4.5y	4.5y
Approach	2y, 4.5y, 8y, 11y	8y(-), 11y(-)		
Adaptability	8y	8y(-)		
Mood		8y(-), 11y(-)	8y	11y

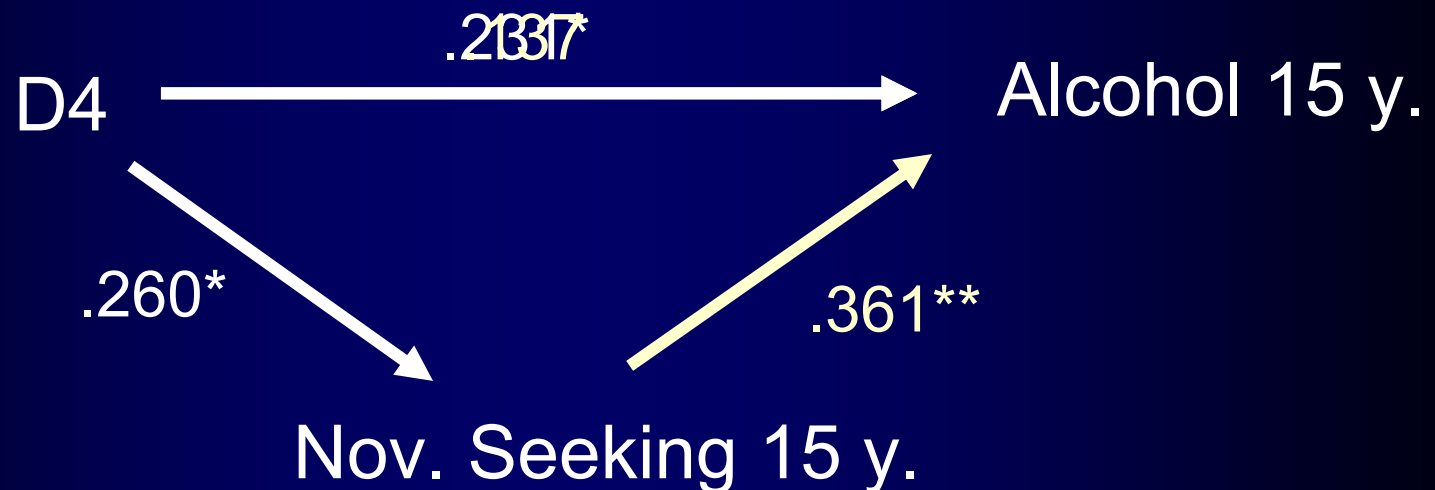
Bivariate correlations significant at level $p \leq .01$

(-): negative correlation

Genetics, Temperament and Risk Behavior

- Genotype: Dopamine Receptor D4 („7r“-Allele = risk)
- Temperament: Novelty Seeking (Cloninger)
- Alcohol: Maximum amount of alcohol drunk until assessment 15 y.

Male 15-year-olds:



* $p < .01$; ** $p < .001$

Laucht et al., 2007

Thank you for your attention

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Temperamental Dimensions I

1. Activity	Frequency & intensity of motor behavior: inactive /lethargic (1) to overactive / restless (5)
2. Rhythmicity	Regularity in biological functions : No rhythmicity, unpredictable (1) to „clockwork“ (5)
3. Approach/ Withdrawal	Initial reaction to new stimuli (e.g., strangers, new food, unfamiliar surroundings): Screaming, turning away (1) to happy, highly interested (5)
4. Adaptability	Length of time needed to habituate to new stimuli: No habituation (1) to very fast habituation (5)
5. Threshold of responsiveness	Sensitivity in the child's reaction to a range of external stimuli or environmental changes (e.g., food temperature, new food, pain, parental frowning): Insensitive, “thick-skinned” (1) to highly sensitive (5)

Temperamental Dimensions II

6. Intensity of reaction	Expression of positive and negative emotions: Apathetic (1) to irritable/ boisterous (5)
7. Prevailing mood	Continuum between positive and negative mood : Regularly sad, irritable (1) to happy, „sunny“ (5)
8. Distractibility / Soothability	Ease of child's soothing after unpleasant occurrences (disappointments, failures, trifling physical pain) : Hard to soothe (1) to easy to soothe (5)
9. Attention span (3m; 2y) Persistence (4½ y-11y)	Ability to pursue a particular activity and its continuation in the face of obstacles : Short attention span (1) to highly distractable (5) Short attention span (1) to high persistence, concentration adequate to task (5)

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- **clusters** of temperamental dimensions (functional significance)
 - „difficult child“ (predictor for later psychopathology)
 - withdrawal, slow adaptability, prevailing negative mood, high intensity of response, and dysrhythmicity
 - „easy child“
 - positive approach, high adaptability, and preponderantly positive mood
 - slow-to-warm-up child
 - combination of negative responses with mild intensity to new stimuli and slow adaptability

Stability of Temperamental Factors across childhood

Stability of NYLS-derived temperament dimensions: Pearson correlations

	3 mo-2 y	2-4.5 y	4.5-8 y	8-11 y
Activity	.11	.52 **	.44 **	.55 **
Rhythmicity	.22 **	.32 **	.34 **	.30 **
Approach/Withdrawal	.08	.35 **	.42 **	.51 **
Adaptability	.18 **	.22 **	.44 **	.35 **
Threshold	.08	.25 **	.25 **	.33 **
Intensity	.00	.33 **	.42 **	.40 **
Emotionality	.12 *	.34 **	.39 **	.55 **
Distractibility/Soothability	.08	.33 **	.40 **	X
Attention/Persistence	.04	.38 **	.57 **	.63 **

X means distractibility/soothability was not assessed at age 11 years.

* $P < .01$.

** $P < .001$.