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# Early Temperament and Psychosocial Development

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## Introduction

Temperament refers to individual differences that can be seen early in life, shaping our reaction to events in the social and physical environment, and the environment’s reaction to us. Temperament includes the child's dispositions toward emotionality, activity and orienting, along with their attention based effortful control. The study of temperament is a rapidly growing research area, and the influence of temperament on developmental pathways and outcomes has now been recognized even in areas that have traditionally been seen almost exclusively the result of socialization, such as conduct problems, school performance, empathy and the development of conscience.[1,2,3]

## Subject

Temperament can be observed before many of the more cognitive aspects of personality have developed. The parent can observe temperament in the patterns of the child's behaviour and emotions in different situations. How does the child respond to new situations? How does the child respond to frustration? Can the child control his behaviour and emotions? How soothable is the child when s/he has become upset? To date temperament includes variability in positive

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affect and approach, fear, frustration, sadness and discomfort as well as attentional reactivity and attention controls on behaviour, thought and emotion.[1,2]

Children’s temperamental dispositions are reflected in orientations toward or away from objects, people and events[1,4,5] and other forms of reactivity. Influences of the child's experiences, which in turn are shaped by the child’s temperament, are critical to the development of coping, understanding of the meaning of things, competence and motivation.[1,2,5,6]

**Problems**

Research on temperament in childhood is based on multiple methods, including questionnaires, laboratory and home observations with each approach demonstrating both advantages and disadvantages.[1,2,5] On the positive side, caregiver-report questionnaires are inexpensive to administer and they are based on a wide range of behaviours observed by parents or teachers. Questionnaires also allow measurement of many temperament variables at the same time, so that the underlying structure of temperament can be explored. Laboratory observations allow researchers to control and manipulate the environment and to precisely measure the reaction time, intensity and duration of the children’s behaviour, whereas naturalistic home or school observations allow coder objectivity while seeing children in their natural habitat.[1,2]

There are also problems with each of these methods. Caregiver reports in questionnaires may be biased by the respondent’s desire to portray the child in a desirable way.  Laboratory observations are likely to be limited in the range and frequency of behaviours that can be elicited, and there are often carry-over effects from one episode to another. Natural observations are often expensive and time-consuming, requiring multiple visits to elicit a reliable sample of children’s behaviour. While no one method is completely error-free, each provides tools to improve our understanding of temperament and its relation to developmental outcomes.[1,2] New methods are now being developed in studies of the brain and nervous system. We are finding brain networks that are linked to behaviour and arousability, and we are able to study how these networks change and develop.[7,8]

**Research Context**

Research on temperament in childhood has been greatly influenced by the New York Longitudinal Study (NYLS).4 Thomas, Chess and colleagues interviewed parents about the behaviours of their two- to six-month-old infants, and through content analysis, identified nine

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temperament dimensions. Some of these dimensions referred to general threshold for responses and general intensity of responses, which has not been supported. Thresholds and intensity vary with the system being studied, e.g., positive reactivity and negative reactivity. Also some of their dimensions pit one dimension against another, so we have positive mood versus negative mood, whereas children can be high in one mood and also in the other.  Thus revisions to the Thomas and Chess list have been indicated;[1,2] these will be listed below under Recent Research Results.

**Key Research Questions**

1. What are the major dimensions of temperament in infancy and childhood?
2. How does temperament develop?
3. What psychosocial outcomes are associated with temperament?
4. What are the neural, genetic and experiential contributions to temperament?

**Recent Research Results**

*Dimensions of Temperament*

Factor analyses of children's temperament as measured by questionnaires have led to a revised list of temperament dimensions in infancy and early childhood that began with the dimension identified by Thomas, Chess and colleagues[4]: activity level, approach, withdrawal, distractability, attention span, persistence, adaptability, rhythmicity and mood. The revised list includes 1) positive emotionality; 2) activity level; 3) fearfulness; 4) anger/frustration; 5) attentional orienting; 6) sadness, and later in childhood 7) effortful control, i.e. the capacity to inhibit a dominant response in order to perform a subdominant response.[1,2]

During early and middle childhood, three broad factors have consistently been found in parent reports of temperament: Surgency or Extraversion, related to positive emotionality and activity; Negative Affectivity, related to the negative emotions and soothability. Effortful Control is related to attentional, inhibitory and activational control. These factors have been linked to emotional and attentional brain systems in humans and in non-humans.[1,2]

*Development of Temperament*

Temperament also develops. During the first few months of life, individual differences in orienting, distress proneness, positive affect, approach, fear, sadness and frustration can be

observed.[1,2] By six months of age, when infants are presented with objects, some infants will also show rapid approach by reaching and touching them, while others will approach more slowly.[9] Infant approach tendencies and smiling and laughter in the laboratory predict parent-reported extraversion at seven years.[10]

Late in the first year and beyond, individual differences in fearful inhibition to novel or intense stimuli can be observed.[11,12] Fearful inhibition opposes approach tendencies, so that some infants who previously responded rapidly to new objects or people may now approach more slowly, or not approach at all. Fearful inhibition shows considerable stability and is related to the later development of empathy, guilt and shame in childhood.[4,12] Fearful children tend to develop greater early conscience[3] and benefit from gentle parental discipline in promoting internalized conscience. More fearless children appear to benefit more from maternal responsiveness and their own security of attachment patterns in conscience development.

We continue to learn about how children's emotion and behaviour is regulated. In infancy, children's orienting appears to be the major regulator, including looking away or the presentation of distractors by the caregiver,  but late in the first year of life, effortful control begins to develop, allowing the child to inhibit a dominant response and allowing better pursuit of a coherent plan of action. The brain network underlying effort control is called the executive attention network.[7] As executive attention develops, so does the ability to maintain focused attention for longer periods of time. Sustained attention and ability to refrain from touching a prohibited toy in infancy significantly predict effortful control at 22 months.[13,14] There is also long-term stability in children's ability to delay gratification, with preschoolers' ability to delay predicting adolescent parent-reported attentiveness, ability to concentrate and their control over negative affect.[1,2] Effortful control is strongly related to children's social compliance, and to the development of empathy and guilt or shame in children.[11,12,14]

*Temperament and the Brain*

Neuroimaging studies allow researchers to identify tasks that activate brain networks underlying temperament, and these tasks have been adapted to children of different ages to study the development of temperamental systems.[7,15] Recently, networks of brain areas have been shown to be correlated during the resting allowing researchers to study the development of brain networks in infants.[16] Where possible, laboratory tasks have been used in the study of the development of orienting and effortful control. Performance on these tasks is positively related to

parents' reports about children's ability to control attention and emotion.[17,18] In adults, performance on these tasks has been linked to the action of specific genes, and developing evidence supports the heritability of temperament.[19,20] Increasingly, studies have also found that effects of parenting depend on the temperament and genotype of the child, with negative emotionality and surgency/sensation seeking influencing outcomes in both positive and negative directions.[20]

*Temperament and the development of behaviour problems*

Temperament has also been linked to the development of psychopathology.[1,2,21] Temperament may heighten responses to stressful events or buffer their risk, and relationships have been found between temperamental fearful inhibition and later anxiety, negative affectivity and depression. Extraversion/surgency and low effortful control have also been linked to the development of borderline personality disorder, substance abuse and other externalizing behaviour.[8]

**Conclusions**

The list of temperament dimensions identified by Thomas and Chess4 has been revised to reflect subsequent research: broad basic dimensions with their subcomponents include Extraversion/Surgency (positive affect, activity level, impulsivity, risk-taking); Negative Affectivity (fear, anger, sadness, discomfort); and Effortful Control (attention-shifting and focusing, perceptual sensitivity, inhibitory and activational control). Affiliation has also recently been measured.[22] Positive links have been found between negative affectivity and extraversion and behaviour problems,[1,2] whereas effortful control is related to adaptation and low behaviour problems.[1,2] Both fearfulness and effortful control have predicted the development of conscience.[3] Links are also increasingly being made between temperament and genetic variations[19,20] and between questionnaire measures and measures of brain processes.[1,7,21]

**Implications**

It is important for adults to realize that children's behaviour and emotions are not solely the result of social learning. Instead, children differ from an early age in their reactivity and self-regulation and may follow different pathways to developmental outcomes.[1,2] Knowing this means that differences among developing children do not mean that there are good children or bad children. Each person acts with what they bring to a situation, and we can embrace the

differences rather than condemning the child for not being what we wanted or expected. Training in attentional control has been proven useful for children with ADHD[23] and has been shown to sometimes have general effects on children's cognitive processing.[24,25]

For those who wish to study any of the temperament dimensions such as fear, anger, positive affect, and effortful control, discussed in more detail, the Handbook of Temperament is a rewarding source book.[26] There you can also find applications of temperament non-human animals, peer relationships, personality traits, psychopathology and applications in school and psychotherapy. Each article reflects the progress we have made and the prospects for the future.

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