

Temperament

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John Locke, an English philosopher, stated that all babies come to the world with a blank slate or *tabula rasa*, ready to absorb everything that their outside world has to offer. Behaviorists like John B. Watson similarly advocated the power of nurture (i.e., learning) and disregarded the contribution of nature (i.e., biology, genetics) to human development. Researchers today agree that babies are born with unique characteristics called temperament and that these individual differences in behavior, affect, and attention are believed to have genetic and biological bases. However, researchers also agree that temperament is not immune to environmental influences. In other words, it is both nature and nurture that shape individuals' personality later in life.

Genetic and biological contributions to temperament can be evidenced by moderate correlations (.50 ~ .60) between temperamental characteristics of identical twins (Buss & Plomin, 1984). These correlations, however, are nearly zero for fraternal twins, ordinary siblings, and adopted children living in the same home (Dunn & Plomin, 1990). Temperament is relatively stable during the first few years (Bornstein et al., 2015; Matheny, Wilson, & Nuss, 1984), and its stability tends to increase as age increases (Roberts & DelVecchio, 2000). In addition, characteristics on the extreme ends of the continuum, either too high or too low, show higher stability and stronger resistance against external factors like parenting (Kagan, Reznick, & Snidman, 1987).

Researchers have identified temperamental characteristics that predict later developmental outcomes. According to past research using Thomas and Chess's (1977) temperament types, easy temperament (e.g., positive mood, higher regularity, quicker adaptation and high approach to novelty) is generally associated with more positive and less negative outcomes, whereas difficult temperament (e.g., negative mood, high fear, high irritability, high activity level) is associated with adjustment problems and even psychopathology in later years (Caspi, Henry, McGee, Moffitt, & Silva, 1995).

Temperament makes a certain developmental trajectory more likely, but environmental factors like parenting can alter its effects on developmental outcomes (Rothbart & Bates, 2006). The temperament literature, thus far, has identified three different models that explain this process: a diathesis-stress model, a differential susceptibility model, and a goodness-of-fit model.

A diathesis-stress (or aka dual-risk) model (Monroe & Simons, 1991) suggests that children with temperamental vulnerabilities (or "diatheses") are at higher risk of adjustment problems when exposed to low-quality parenting like controlling parenting (serving as "stress" triggering a problem). For example, fearful 3-year-olds showed more internalizing problems when parents were controlling (Karreman, de Haas, van Tuijl, van Aken, & Deković, 2010). Less sensitive parenting has also been found as a risk factor for later externalizing problems among infants with difficult temperament (Miner & Clarke-Stewart, 2008).

A differential susceptibility model (Belsky, Bakermans-Kranenburg, & van IJzendoorn, 2007) suggests that not only do children with temperamental risk factors get more adversely affected by low-quality parenting (i.e., the diathesis-stress model), but also they benefit more from high-quality parenting. Fearful toddlers with controlling fathers were most likely to cheat during a solitary game, but

their counterparts with less controlling fathers were the least likely (Kochanska, Aksan, & Joy, 2007). Evidence for this model has also been found in attachment research. A sensitive parenting training for mothers helped increase the likelihood of highly irritable infants to develop secure attachment to the mothers, but infants of mothers who did not receive the training were more likely to develop insecure attachment (Cassidy, Woodhouse, Sherman, Stupica, & Lejuez, 2011).

A goodness-of-fit model (Thomas & Chess, 1977) suggests that a good fit between temperament and parenting would promote healthy development of a child, while a poor fit would put the child at risk of adjustment problems. One of the most well-known example of the model comes from the anthropological work by deVries (1984); Masai infants of East Africa with difficult temperament had a better chance of survival during drought due to more attention given to them. Evidence can also be found in that highly fearful boys showed *less* negative outcomes later when exposed to high control by fathers (Belsky, Hsieh, & Crnic, 1998). These findings are somewhat counterintuitive based on the vulnerability model, but they implicate differing effects of a certain parenting practice on children depending temperament.

In conclusion, temperament is largely influenced by nature at early ages and provides a foundation for adult personality. However, nurture, especially parenting, can either positively or negatively alter the trajectory that temperament renders children more susceptible to. It is important to recognize directionality in parent-child relationships so that we know that when children exhibit adjustment issues, it is most likely due to both nature and nurture.

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