Global Journal of Multidisciplinary Studies Available online at www.gjms.co.in
Volume 3, Issue3, Feb 2014
ISSN: - 2348-0459

AN ANALYSIS TO RAISE A CHILD WITH CHALLENGING TEMPERAMENT

Dr. Neetu Yadav

M1 Mall Avenue Lucknow UP

ABSTRACT

In this research, parents' understandings of complicated children and their distinctiveness were a matter of great discussion. A unique point of view to the theme was discovered through the various organizations as parenting a challenging and difficult child appeared as a theme that is discussed worldwide in the child skills development forums. In these forums, parents write about their experiences voluntarily and at the same time, they are the ones who define their children as challenging or difficult. In this study, parents' descriptions were compared with previous definitions and studies on child temperament and behavior. This research was a qualitative research where the interest was in parents' perceptions of uncommon and complex children. The purpose of the research was to provide further incite and tools for parents of children with challenging temperament.

Key Words: - Distinctiveness, Forums, Perception.

INTRODUCTION

lthough there are many different theories of child temperament, most agree that temperament refers to stable, early appearing individual differences in behavioral tendencies that have a constitutional basis[1]. Soon after birth, children show a great deal of variation in those behavioral dimensions considered to be temperamental (e.g., emotionality, activity level, attention/persistence, sociability, reactivity, etc.). For example, some children cry easily and intensely whereas others are more easy going; some are highly active and always on the go where others are more sedentary; some attend and persist in tasks for long periods of time where others' attention wanders quickly. It is these individual

differences and the variations in between that are of interest to behavioral geneticists. That is, we are interested in understanding why children differ in their temperaments. Temperament theories suggest that such individual differences have a biological or constitutional foundation. This is an empirical question that can be answered using behavioral genetic methods.

Quantitative Behavioral Genetics Methods

A goal of behavioral genetic research is to estimate the extent to which genetic and environmental factors contribute to behavioral variability in the population under study. This involves decomposing the observed (i.e., phenotypic) variance of a trait into genetic and environmental variance components.*Heritability* (h^2), the genetic effect size, is the proportion of phenotypic variance that can be attributed to genetic factors. The remaining variance is attributed to environmental factors which comprise all nonheritable influences including prenatal factors. Environmental variance can be further decomposed into shared and nonshared environmental influences. *Shared environmental variance* (c^2) is familial resemblance that is not explained by genetic variance. Thus, shared environmental variance includes those environmental influences that are shared by family members and act to *enhance* familial similarity. *Nonshared environmental variance* (e^2) is a residual variance that includes measurement error and environmental influences that are unique to each individual. These unique environmental influences operate to make members of the same family *different* from one another. Possible sources of nonshared environmental variance include differential parental treatment; extrafamilial relationships with friends, peers and teachers; and nonsystematic factors such as accidents or illness[2].

The two designs most frequently used to disentangle genetic and environmental sources of variance in infant and child temperament are the twin design and the adoptive/nonadoptive sibling design. The twin method involves comparing genetically identical (MZ) twins with fraternal (DZ) twins who share approximately 50% of their segregating genes. Genetic influences are implied when co-twin similarity covaries

with the degree of genetic relatedness. Thus, according to the genetic hypothesis, MZ twins should be approximately twice as similar as DZ twins. DZ twin resemblance that exceeds that predicted by the genetic hypothesis (i.e., resemblance greater than one-half the MZ twin resemblance) suggests the presence of shared environmental influences. Because MZ twins share all of their genes, differences within pairs of identical twins can only be due to environmental influences that are unique to each individual (i.e., MZ twin differences indicate nonshared environmental influences). The adoptive/nonadoptive sibling design shares a similar logic, but compares the similarity of adoptive and nonadoptive sibling pairs. Genetic influences are implied when nonadoptive siblings who share approximately 50% of their segregating genes are more similar than adoptive siblings who are not genetically related. Shared environmental influences are suggested when genetically unrelated adoptive siblings resemble each other. (See Plomin, DeFries, McClearn & McGuffin[3] for more information about behavioral genetics methods).

Behavioral Genetic Studies of Temperament

Although Thomas and Chess' theoretical perspective based on data from the New York Longitudinal Study (NYLS)[4] is most common to the pediatric literature, no single theory dominates behavioral genetic studies of temperament. As indicated above, there are many different theories of temperament. These approaches differ in those behavioral dimensions that are considered to fall under the rubric of temperament, however, some dimensions, such as activity level and emotionality, appear in nearly all theories of temperament[1]. (See Goldsmith et al. 1987[1] for a discussion of theoretical orientations to temperament).

Two measures that are frequently employed in behavioral genetic studies of temperament are the *Colorado Child Temperament Inventory (CCTI)*[5] and the *Infant Behavior Record (IBR)*[6]. The*CCTI* is a questionnaire measure that is based on factor analyses of items designed to assess both Buss and Plomin's[7] EAS (emotionality, activity, sociability) temperaments and the nine NYLS temperaments. The parent and teacher

versions of the*CCTI* assess Emotionality (negative emotionality including distress, fear, and anger), Activity (the tempo, energy, and vigor with which the child behaves), Sociability (a preference to be with other people), Shyness (wariness with strangers), and Attention/Persistence (the tendency to attend and persist when working on tasks). The *IBR* is often used to provide an observational measure of infant temperament. This rating scale is typically completed by an examiner following administration of the *Bayley Scales of Infant Development*[6]. The *IBR* consists of items evaluating broad dimensions of infant behavior, including interpersonal, affective, motivational, and sensory behavioral domains. Factor analyses of the *IBR* items yields three factors related to dimensions found in most systems of temperament: Activity (energy and body movement), Task Orientation (attention span and persistence), and Affect-Extraversion (positive emotionality and sociability)[8, 9]. The temperament dimensions assessed by these two measures are well-studied in behavioral genetics research, however, as will be seen below, a variety of other dimensions have also been explored.

Genetic Influences on Child Temperament

Twin studies using parent ratings, the most frequently employed measure of temperament in infancy and childhood, provide strong evidence of genetic influences on temperament. Such studies consistently find that MZ cotwins are more similar than DZ cotwins across a wide variety of temperament dimensions including emotionality, activity, shyness, sociability, attention/persistence, approach, adaptability, distress, positive affect and negative affect[10–13]. Although estimates of heritability tend to differ from sample to sample, they generally fall within the range of .20 to .60, suggesting that genetic differences among individuals account for approximately 20% to 60% of the variability of temperament within a population. With few exceptions (e.g., soothability and rhythmicity, which show little genetic influence), there is no consistent pattern of differential heritability across dimensions.

Given that temperament is assumed to be biologically based[1], it is not surprising to find

that parent-rated temperament is genetically influenced. What is surprising, however, is the unusual pattern of twin resemblances (as indexed by twin correlations) that frequently emerge when temperament is assessed by parent ratings. MZ correlations for parent-rated temperament dimensions are typically moderate; whereas DZ correlations are much lower than one half the MZ correlations as would be predicted from the simple genetic model. In fact, the DZ correlations are often near zero or even negative[13–15]. The pattern of very low DZ correlations that emerges with parent ratings of temperament is significant because it implies that DZ twins are perceived as no more similar as two randomly-paired children, and in some instances are regarded as having *opposing*temperaments.

Also puzzling is the finding that although twin studies consistently yield evidence of a genetic influence on parent-rated temperament, adoption studies suggest little or no genetic influences on children's temperament as rated by their parents. For example, in the Colorado Adoption Project[16, 17] (CAP), neither genetically related nonadoptive siblings nor genetically*un*related adoptive siblings displayed any resemblance on parent reports of temperament—a finding that replicated across early childhood, middle childhood, and early adolescence[18–20]. Similarly, a combined twin and stepfamily study found significant genetic influences on each of the four EAS[7] dimensions; however, heritability estimates were greater for twins than nontwins[21].

These puzzling outcomes do not arise when temperament is assessed via more objective measures such as tester and observer ratings or mechanical measures[9, 15, 22–27]. Although less frequent than parent-rating studies of temperament, there are a handful of twin studies that have employed observational/behavioral measures of activity level, behavioral inhibition, shyness, fearfulness, affect/extraversion, and task orientation. As with parent ratings, these measures yield evidence of significant genetic influence (and a similar range of heritabilities, i.e., also from .20 to .60), but the problem of low DZ correlations does not emerge. For example, in the MacArthur Longitudinal Twin Study[28] (MALTS) observational measures of affect/extraversion, activity, task orientation

and shyness were obtained for over 200 twin pairs at 14, 20, 24, and 36 months of age. Averaging across age, the DZ correlations for all dimensions were positive and significantly different from zero (ranging from .19 to .63); and consistent with genetic expectations, the DZ twin correlations were approximately half that of the MZ twins[29]. Interestingly, when parents rated the *same* twins on similar dimensions the DZ twin correlations were negative (ranging from −.06 to −.33). Thus, parents reported their DZ twins has having opposing temperaments, whereas when each twin was rated by a different observer, the twins displayed substantial similarity. Although it is possible that contextual differences explain the different outcomes between parent and observer ratings of temperament, this seems unlikely given that similar results have emerged from twin studies of activity level where parent ratings and mechanical measures of activity are based on the *same* 48-hour period[26,30].

Similarly, evidence of genetic influences on temperament emerges from adoption studies when more objective measures of temperament are employed. In the CAP, teacher and tester ratings of temperament yielded correlations for nonadoptive siblings that were higher than when assessed via parent ratings; and consistent with a genetic hypothesis, nonadoptive siblings showed some resemblance in their temperaments, but adoptive siblings did not[18, 31]. Moreover, adoption and twin studies of objectively-assessed temperament yield similar estimates of heritability[32].

The fact that the problems of very low DZ resemblance and higher heritability estimates in twin studies as compared to adoption studies occur only for parent-rating measures of temperament suggests that parent ratings are prone to contrast effects[12, 29, 33]. *Contrast effects* refer to rater biases that exaggerate the differences between cotwins or nonadoptive siblings. Twin research suggests that some parent rating measures may be more subject to contrast effects than others. For example, very low DZ correlations tend to be particularly evident when parents are required to make global judgments (e.g., “always on the go”) as opposed to specific judgments (e.g. “splashes when in the tub”) about their children’s behavior[34–36]; however, even specific measures can yield low DZ

correlations[11]. There are also hints that the tendency to contrast siblings differs across temperament dimensions. Activity level, attention/persistence and shyness are dimensions that frequently show contrast effects; whereas parent ratings of more affective behavioral dimensions such as approach, fear, pleasure, smiling and laughter do not seem to show a pattern of low DZ or nonadoptive sibling similarity[11, 37].

Because contrast effects can overestimate heritability in twin designs and underestimate heritability in adoption designs, parent-rating measures that show a pattern of very low DZ or sibling correlations may be inadequate for obtaining precise estimates of heritability unless such biases are incorporated into the statistical analyses (e.g., sibling interaction models). Nonetheless, the greater similarity of MZ than DZ twins is consistent with the general hypothesis of a genetic influence. Moreover, conclusions regarding moderate genetic influences on individual differences in parent-rated temperament are buttressed by similar findings with more objective temperament measures. Thus, there can be little doubt that temperament is genetically influenced.

Environmental Influences on Child Temperament

The finding of moderate genetic influences on child temperament does not negate the importance of the environment. As indicated above, genetic factors account for between 20% and 60% of the phenotypic variance in personality, which means that the remaining 80% to 40% of the variance is attributed to environmental factors. Clearly, the environment is very important to temperament. However, behavioral genetics research suggests that the types of environments traditionally assumed to influence child behavior may not operate the way we think they do. Twin and adoption studies consistently find that shared family environment accounts for only a small portion of variance in most temperament dimensions[10, 12, 18, 24, 25, 32, 38]. This is demonstrated in a study of infant temperament that found correlations for tester-rated temperament to be about .00 for genetically unrelated adoptive siblings—which provides a direct test of shared family environment—and .20 for genetically related nonadoptive siblings[32]. In other words, growing up in the same family does not make

family members resemble each other in temperaments. Family members are similar in temperaments primarily because of shared DNA.

If shared family environments do not substantially influence temperament, then what does? The answer lies *within*, not between, families. The environmental influences that are important to temperament are those factors that are *not* shared by members of the same family—that is, environmental influences that are unique to family members (i.e., nonshared environmental influences). The finding of significant and substantial nonshared environmental influences on temperament provides an important focus for researchers interested in environmental effects on temperament. Most research exploring environmental influences on temperament have considered between-family effects such as parenting style and family functioning (e.g., Eriksson & Pehrsson[39], Leve, Scaramella & Fagot[40]). Behavioral genetics research suggests that instead of examining environmental factors that differ *across* families, it will be more profitable to focus on environmental factors that differ *within* families (e.g., differential parenting). Researchers need to consider why individuals within the same family differ so much with regard to temperament. This will involve studying more than one individual per family and exploring the association of experiential differences within a family with differences in temperament.

There are some exceptions to the general finding of no shared environmental influences on temperament. Several studies have found shared environmental influences on both parent and observer ratings of positive affect and related behaviors (e.g., smiling, interest in others) during infancy and early childhood[11,41–45]. Maternal personality and attachment security have been suggested as possible sources of shared environmental variance on positive affect[44]. In addition, although not well-studied, rhythmicity and soothability have shown no genetic influence but substantial shared environmental influences each in at least one study[10, 44]. These findings need to be replicated, but it is possible that, to some extent, the shared environmental influences on these two dimensions reflect parenting behaviors (e.g., scheduling of activities,

methods of soothing). Finally, observational measures of shyness and mechanical measures of activity show some shared environmental variance, whereas parent ratings of the same behaviors do not[15, 22, 26, 27, 46]. Again, these findings need to be replicated but they highlight the need for more observational research to assess the possible role of shared environment in personality development.

The Etiology of Continuity and Change in Temperament

Despite the abundance of evidence indicating that individual differences in temperament are genetically influenced, little is known about the role that genetic factors play in the development of temperament. The failure to consider genetic contributions to developmental change in temperament has likely resulted from the mistaken view that genetic factors are immutable and thus, contribute only to behavioral stability. However, genes are dynamic in nature, changing in the quantity and quality of their effects across time and therefore, can be sources of change as well as continuity in behavioral development[47]. Behavioral genetics approaches developmental change in two ways. The first explores differential heritability across ages. This issue is important because the investigation of the etiology of individual differences over age may serve to identify points of causal transition. The second examines the role of genetic influences on continuity and change during development, and thus addresses the *process* by which developmental change takes place[15].

Differential heritability refers to developmental changes in the relative contribution of genetic influences to individual differences in temperament across age. That is, does the heritability of temperament change across age? Intuitively, one might posit that as a child matures and becomes more interactive with increasingly diverse environments, the role of genetic factors on temperament might wane. Empirical research does not support this notion. Many studies find no apparent change in heritability across age. Moreover, when developmental changes in genetic influences on temperament are apparent, it is in the direction of *increased* genetic variance. For example, in the Louisville Twin Study

there was no evidence of a genetic effect on temperament during the neonatal period, but in infancy and early childhood temperament was moderately heritable.

To the develop mentalist, the measurement of within-person change is more interesting than cross-sectional age differences because the measurement of change is more informative about underlying processes[51]. For the same reason, genetic influences on continuity and change are more interesting than the presence or absence of genetic influences at a single age. The question of differential heritability is essentially cross-sectional and does not address mechanisms of change. That is, for any temperament dimension, estimates of heritability may differ across age even though the same genes operate at each age. Similarly, the heritability of a temperament dimension may be similar across two ages, but the genes that operate at one age might differ from those that operate at the other. By using behavioral genetic methods within a longitudinal design we are able to determine the extent to which developmental change and continuity are due to genetic factors.

Longitudinal behavioral genetic studies of early temperament development are rare. One exception is the Louisville Twin Study which found that MZ twins demonstrated greater resemblance than DZ twins on age-to-age change profiles for observational measures of activity, affect/extraversion, and task orientation across 6 to 18 months and 12 to 24 months, emotional tone across 18 to 24 months, and surgency (related to extraversion) across 36 to 48 months of age. In other words, MZ twins were more similar than DZ twins in their patterns of change for these temperament dimensions. These results suggest that changes in temperament across infancy and early childhood are, in part, regulated by genetic influences.

Conclusion

Nearly all temperament theories presume a biological basis to individual differences in early appearing, enduring behavioral tendencies considered to be temperamental. Consistent with these theories, most dimensions of temperament have demonstrated moderate genetic influences in twin and adoption studies. However, the finding of genetic influences on temperament

is only a first step in the understanding of individual differences in early personality development. As illustrated in this paper, behavioral genetic methods can address a wide array of issues of relevance to child development. Researchers have begun to document the importance of environmental factors on temperament dimensions, track the developmental course of genetic and environmental contributions to temperament, address the issue of genetic and environmental overlap between temperament and problem behaviors, and relate specific genetic markers to temperament dimensions. These are just a sampling of the contributions that behavioral genetics has made to the understanding of temperament. Other research has looked at genetic and environmental contributions to the links between temperament and parenting[103], sibling[104] or peer relationships[105], measure-specific and situational effects on temperament[106], and genotype-environment correlations between temperament and the child's environment[107] – just to name a few. It is predicted that behavioral genetics research will make even greater contributions to our understanding of temperament as researchers continue to move beyond the basic heritability question.

Reference

1. Goldsmith HH, Buss AH, Plomin R, et al. Roundtable: What is temperament? Four approaches. Child Dev. 1987;58:505–529.

2. Plomin, R., Chipuer, H. M., & Neiderhiser, J. M. (1994). Behavioral genetic evidence for the importance of nonshared environment. In E. M. Hetherington, D. Reiss, & R. Plomin (Eds.), Separate social worlds of siblings: Importance of nonshared environment on development.Hillsdale, NJ: Erlbaum.

3. Plomin, R., DeFries, J. C., McClearn, G. E., et al., (2001).Behavioral Genetics. (4th ed). Worth Publishing, NY.

4. Thomas, A. & Chess, S. (1977). Temperament and Development.New York, NY: Bruner/Mazel.

5. Rowe DC, Plomin R. Temperament in early childhood. J Pers Assess. 1977;41:150–156.

6. Bayley, N. (1969). *Manual for the Bayley Scales of Infant Development.*New York: The Psychological Corporation.

7. Buss, A. H., & Plomin, R. (1984). *Temperament: Early developing personality traits*Hillsdale, NJ: Erlbaum.

8. Matheny AP., Jr Bayley's Infant Behavior Record: Behavioral components and twin analysis. Child Dev. 1980;51:1157–1167.

9. Matheny AP., Jr A longitudinal twin study of stability of components from Bayley's Infant Behavior Record. Child Dev.1983;54:356–360.

10. Cyphers LH, Phillips K, Fulker DW, et al. Twin temperament during the transition from infancy to early childhood. J Am Acad Child Adoles Psychiatry. 1990;29:392–397.

11. Goldsmith HH, Buss KA, Lemery KS. Toddler and childhood temperament: Expanded content, stronger genetic evidence, new evidence for the importance of environment. Dev Psychol.1997; 33:891–905.

12. Saudino, K. J., & Cherny, S. S. (2001). Parent ratings of temperament in twins. In R. N. Emde & J. K. Hewitt (Eds.) *The transition from infancy to early childhood: Genetic and environmental influences in the MacArthur Longitudinal Twin Study*(pp.73–88). New York: Oxford University Press.

13. Stevenson J, Fielding J. Ratings of temperament in families of young twins. Br J Dev Psychol. 1985;3:143–152.

14. Neale MC, Stevenson J. Rater bias in the EASI temperament scales: A twin study. J Per Soc Psychol. 1989;56:446–455.

15. Plomin R, Emde R, Braungart JM, et al. Genetic change and continuity from 14 to 20 months: The MacArthur Longitudinal Twin Study. Child Dev. 1993;64:1354–1376.

16. Plomin, R., & DeFries, J. C. (1985). *Origins of individual differences in infancy: The Colorado Adoption Project*Toronto: Academic Press.

17. Plomin, R., DeFries, J. C., & Fulker, D. W. (1988). *Nature and nurture during infancy and early childhood.*New York: Cambridge University Press.

18. Gagne, J. R., Saudino, K. J. & Cherny, S. S. (2003). Genetic influences on temperament in early adolescence: A multimethod perspective. In S. Petrill, R. Plomin, J.C. DeFries & J. K. Hewitt (Eds.). *The Transition to Early Adolescence: Nature and Nurture*(pp. 166–184). New York: Oxford University Press.