

The Temperament Profiles of School-Age Children

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Maternal reports of child temperament were used to develop temperament profiles of school-age children. The subjects were 883 children who were between 4 and 12 years of age. The children's families varied substantially in their socioeconomic status and race/ethnicity. To develop the profiles, the dimensions derived from the School-Age Temperament Inventory were subjected to a second order principal factor analysis with varimax rotation. Pearson chi-squares were used to determine whether sociodemographic variables were proportionally represented among the profiles. Forty-two percent of the children were classified into four temperament profiles. High maintenance and cautious/slow to warm up were deemed as challenging temperaments. Industrious and social/eager to try were mirror images of those profiles and were labeled easy. Some children were both types of challenging or easy profiles. The generalizability of the profiles in relation to the sociodemographic variables of gender, age, race/ethnicity, and socioeconomic status was also examined. Challenging temperament profiles were disproportionately represented by boys, Hispanic children, and those from lower socioeconomic families. Girls were over represented in the group that included both types of easy temperaments. Social/eager to try children were more often from higher rather than lower socioeconomic status families. Clinical applications and research implications for the profiles are discussed. The profiles can be used as exemplars that parents can use to recognize their child's temperament. Further research is needed to explore whether different developmental outcomes are associated with the profiles.

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ANY ASTUTE OBSERVER OF children recognizes that they differ in their reactions to new situations. For example, children entering elementary schools are encouraged to interact with their classmates and with school personnel. Such social experiences may be distressful to some children, but pleasurable for others. Likewise, some children find it difficult to attend to classroom assignments while it comes naturally to others. This variety of stylistic reactions to new or stressful situations is often conceptualized as temperament. Temperament is a social information processing system through which children view and interact with the world, both altering the responses of others and contributing toward their own development (Derryberry & Reed, 1994; Rothbart & Bates, 1998).

Although the majority of research on temperament has focused on infants and young children, its relevance to school-age children has also been demonstrated. During middle childhood, temperament influences interpersonal interactions and adjustment at home (McClowry et al., 1994) and at school (Martin, Olejnik, & Gaddis, 1994; Rothbart & Jones, 1998). Effective parenting entails recognizing a child's unique temperament so that expectations and management strategies can be success-

fully adapted to enhance positive developmental outcomes.

A variety of methods including parental reports and observational techniques have been used to describe the temperament of children. Subsequently, a myriad of studies have identified how the dimensions of temperament when examined as continuous variables were related to developmental outcomes (see Rothbart & Bates, 1998, for an extensive review). A different approach was used by Kagan (1994) who studied children who fall at the extremes of one dimension of temperament. He contrasted children who are inhibited with those who are uninhibited.

A third method is to develop profiles or typolo-

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gies that classify individuals into qualitatively different categories in which groups of people share a pattern of being high or low on a combination of dimensions (Robins, John, & Caspi, 1998). By using profiles, an individual can be examined as a system of interacting components rather than reducing his or her behavior into isolated dimensional variables (Robins, John, Caspi, Moffitt, & Stouthamer-Loeber, 1996).

Clarification of the dimensions of childhood temperament was an important precursor to the development of profiles of school-age children. Over the past decade, temperament researchers, like those in the broader personality field, have invested a great deal of energy in examining the dimensions that underlie temperament theory. The results of factor analytic studies of childhood temperament questionnaires have consistently identified four dimensions (Martin, Wisenbaker, & Huttenen, 1994; McClowry, 1995; Rothbart & Bates, 1998). Although the names given to the dimensions vary to some degree among the various studies, they each have one related to negative reactivity, task persistence, approach/withdrawal, and activity. A fifth dimension, adaptability, was found in some studies, but not in all. The purpose of this study was to develop temperament profiles of school-age children. Based on the recommendation of Robins, John, & Caspi (1998), the profiles were then evaluated for generalizability in relation to gender, age, race/ethnicity, and socioeconomic status.

The most widely known temperament profiles, described as three constellations, came from the seminal work of Thomas, Chess, and Birch (1968) in the New York Longitudinal Study (NYLS). The constellations were derived from a qualitative analysis of several years of data collected through clinical observations and interviews regarding their 141 subjects. The conclusions drawn were then triangulated with the results of factor analyses conducted on the nine dimensions of temperament that they had previously identified (Thomas & Chess, 1977). The difficult child was biologically irregular, withdrew from new stimuli, adapted slowly, and had a highly intense and negative mood. Ten percent of the children were described as difficult. In contrast, 40% of the children were labeled easy. They were depicted as regular, approached new situations with moderate ease, adapted easily, and had a mild and generally positive mood. Another 15% were called slow to warm up. They were high in negative mood, but showed it with less intensity than the difficult child. The children who were

slow to warm up also were slow to adapt, but when they did do so, showed positive interest. The remaining 35% of the children did not fit in any of the profiles.

More recent studies have used J.H. Block and J. Block's (1980) theory of personality functioning to explicate temperament profiles of children. Caspi and Silva (1995) followed over a thousand New Zealand children from 3 to 18 years of age. Every 2 years, a different rater observed the children's behavior while they were engaged in cognitive and motor developmental tests. The ratings were then subjected to a principal components analysis with varimax rotation. Five childhood temperament qualities were associated with adaptational outcomes when the subjects approached adulthood. Children who were undercontrolled were impulsive, aggressive, danger seekers, and were alienated as young adults. Those who were inhibited as children were not impulsive, or aggressive, and they avoided danger as adults. The inhibited children were not engaged in leadership roles. Neither were those who were reserved as children. Those who were identified as confident as children became impulsive when they got older. Well-adjusted children continued to be so during young adulthood.

Two studies incorporated sociodemographic variables within their study of profiles. Three personality types were found to be generalizable across African-American and Caucasian adolescents (Robins et al., 1996). Inverse factor analysis was conducted on a Q-sort of personality descriptions provided by the children's caregivers. Resilient teens were intelligent, well-adjusted and successful in school. Those who were overcontrolled tended to do well but often experienced internalizing problems. Undercontrolled teenagers had academic and emotional/behavioral problems. The same typologies were replicated in a study of Icelandic children in rural and urban communities (Hart, Hofmann, Edelstein, & Keller, 1997). Three or more judges conducted a Q-sort of personality descriptors on each child after reviewing his or her transcribed interview data and clinical records.

The studies by Caspi and Silva (1995), Robins et al. (1996), and Hart et al. (1997) are impressive because they have engaged in longitudinal, multi-method, and multiinformant designs. Yet, other perspectives might provide further insight into children's temperament. None of those studies used Chess and Thomas's theory of temperament that asserts that goodness of fit mediates whether the child's temperament leads to positive or nega-

tive developmental outcomes. Goodness of fit is the consonance of the child's temperament to demands and expectations of the environment (Chess & Thomas, 1999). Consequently, it would be important to first develop profiles, then to assess how goodness of fit was related to psychological, behavioral, cognitive, and academic outcomes.

Other sources of information or informants might provide another perspective. Ironically, the most frequently used method of assessing child temperament is by parental reports on standardized Likert-type questionnaires. Yet, no published report of temperament profiles has used such instrumentation. Robins et al. (1996) used caretakers to conduct their Q-sort. Robins et al. (1996) and Hart et al. (1997) relied exclusively on raters to assess the children. Interviewers or raters are often regarded as more objective than are parents who may be biased in their report of their children's temperament by their own personality and attitudes. Yet, Rothbart and Bates (1998) cautioned that no method of measurement or informant is without error. Parents have the advantage of observing their children in a myriad of situations over extensive amounts of time.

Based on the literature review, the following questions were asked: What are the temperament profiles of school-age children as reported by their mothers? Are the profiles generalizable across gender, age, race/ethnicity, and socioeconomic status?

METHOD

Subjects

The subjects for this analysis were drawn from the maternal reports of three samples of children. The first sample included 435 children from New England whose data were used in the development of the School-Age Temperament Inventory (McClowry, 1995). Most of the children were Caucasian and middle-class. The 200 children in the second sample were also from New England, but were from families that were more ethnically and sociodemographically diverse than the first sample. The third sample consisted of 248 disadvantaged minority children from a Northeast city.

The combined sample of 883 children were 4 to 12 years old and averaged 9.31 years of age ($SD = 1.58$). The average age of the mothers was 37.3 years old ($SD = 6.78$) and ranged from 18 to 72 years of age. Almost equal numbers of boys and girls were included (49% females). Fifty-three percent of the children lived with both of their parents. An additional 10% lived in blended family with

their mothers and stepfathers. Thirty-one percent lived with their mothers who were single parents. Three percent lived in kinship foster homes. An additional 3% were cared for in nonkinship foster care. The mothers described the race/ethnicity of the children as 57% White, non-Hispanic, 28% Black, non-Hispanic, 12% Hispanic, non-Black, 1% Asian, 1% Native American, and 3% described themselves as other. The socioeconomic status of the families, as identified by Hollingshead (1975), were 23% unskilled, 14% semiskilled, 21% clerical, 30% technical, and 14% professional.

Instrumentation

The School-Age Temperament Inventory (SATI) consists of 38 Likert-type items and has four dimensions as determined by principal factor analysis with varimax rotation (McClowry, 1995). The dimensions of the SATI are negative reactivity (intensity and frequency with which the child expresses negative affect), task persistence (the degree of self-direction that a child exhibits in fulfilling task and other responsibilities), approach/withdrawal (the child's initial response to new people and situations), and activity (large motor activity). Higher scores indicate that the child is high in negative reactivity, is task persistent, has a tendency to withdraw in new situations, and is highly active. Test-retest reliabilities after 4 to 6 months were .85 to .90. The Cronbach's alphas in the original sample one ranged from .80 to .90. The alphas for this analysis ranged from .82 to .89.

Procedures

Maternal informants for Samples 1 and 2 were recruited through the mail by sending letters of invitation to the children's homes. Addresses of the families were provided by the children's elementary schools. The procedures for data collection have been reported in detail elsewhere (McClowry, 1995; McClowry, Halverson, & Sanson, 2001). For greater racial and socioeconomic diversity, a third sample was added. Mothers from two urban elementary schools were recruited while they engaged in activities at a Child Health Care Center (McClowry et al., 1996).

RESULTS

First, the data from the SATI was scored into dimensions. Then to develop the profiles, the children's scores on the temperament dimensions were subjected to principal factor analysis with varimax rotation. This method of factor analysis was used because it maximizes the possibility of distinct and

separate factors (Zeller & Carmines, 1980). Cluster analysis was not used because it assigns each subject exclusively to one category, thus, negating the possibility that some individuals may be exemplars of more than one profile (York & John, 1992).

When the Kaiser-Guttman criterion was used, two factors were retained. Only loadings greater than .40 were interpreted. The total amount of explained variance was 47%. The results supported two secondary order factors as shown in Table 1. Factor 1 and its loadings included high activity (.72), high negative reactivity (.67), and low task persistence (-.65). The factor was named high maintenance. The second factor included high withdrawal (.51) and high negative reactivity (.43). It was named cautious/slow to warm up. Mirror images of those two profiles were also named. Children whose temperaments were named industrious included those who are low in activity, low in negative reactivity, and high in task persistence. The temperament profiles for children who were social/eager to try were high in approach and low in negative reactivity. Based on the results, children who were high maintenance and slow to warm were regarded as challenging temperaments, while those who were industrious or social/eager to try were deemed easy.

In the next step, the children were grouped as high, medium, or low on each of the dimensions by dividing the dimension scores by thirds. Thus the top third were regarded as high and the bottom third low. Table 2 illustrates those 33rd percentiles and the means and standard deviations of the dimensions. The frequency of children in each identified profile was then calculated. Forty-two percent of the children ($n = 369$) were classified by the four profiles. Some of those children had temperaments that qualified as both types of easy or challenging temperaments. This conclusion was deemed acceptable because the issue of whether individuals can belong to more than one profile is still under debate. York and John (1992) maintained that profiles need not have rigid cutoff points, but should be examined for the degree of fit. Thus, while some individuals are prototypes,

Table 1. Varimax Rotated Dimensions for the Temperament Profiles

Dimension	Factor Structure	
	High Maintenance	Cautious/Slow to Warm Up
Activity	.72	-.06
Negative reactivity	.67	.43
Task persistence	-.65	-.17
Approach/withdrawal	.05	.51

Table 2. Profiles Scores for the Dimensions

Dimension	High	Low	Mean (SD)
Activity	3.00	2.33	2.71 (.81)
Negative reactivity	3.42	2.67	3.09 (.76)
Task persistence	3.18	3.91	3.50 (.78)
Approach/withdrawal	2.78	2.22	2.52 (.72)

others may show overlap among two or more profiles or may not fit in any of the identified profiles.

Eight percent of the children were high maintenance only. Another 8% were cautious/slow to warm up. An additional 6% had both types of challenging temperaments being high maintenance and cautious/slow to warm up. Six percent were industrious, whereas 9% were social/eager to try. Four percent were both types of easy temperaments being industrious and social/eager to try. Because negative reactivity was included in both factors, no children had both an easy and challenging temperament. These profiles are illustrated in Figure 1.

Frequency counts were conducted to further explore the subjects. Among the remaining 58% of the children who did not match any of the identified temperament profiles, all but 1.5% were high or low on at least one dimension. Then, an examination of the remaining 56.5% of the children was conducted to see whether any other possible combination of groupings of the dimensions accounted for a higher percentage than those already identified by the factors. Frequencies were calculated among those subjects who were high or low on all four dimensions, but with different configurations. (For example, 5 children or less than 1% were high in negative reactivity and task persistence, but low in approach/withdrawal and activity.) Once they were counted, those subjects were removed from the file. Those who remained with three salient dimensions were subjected to the same analysis, followed by those with two. Finally, only children who were high and low on only one dimension remained. They also were counted. None of these competing temperament profiles described more than 2% of the children.

To examine the generalizability of the results, Pearson chi-squares were used to see whether the frequency of the sociodemographic variables of gender, age, race/ethnicity, and socioeconomic status differed proportionately among the profiles. So that each subject was examined only once, the four profiles and two composite ones of both types of easy and challenging were examined as separate categories. The proportions of each of the profiles

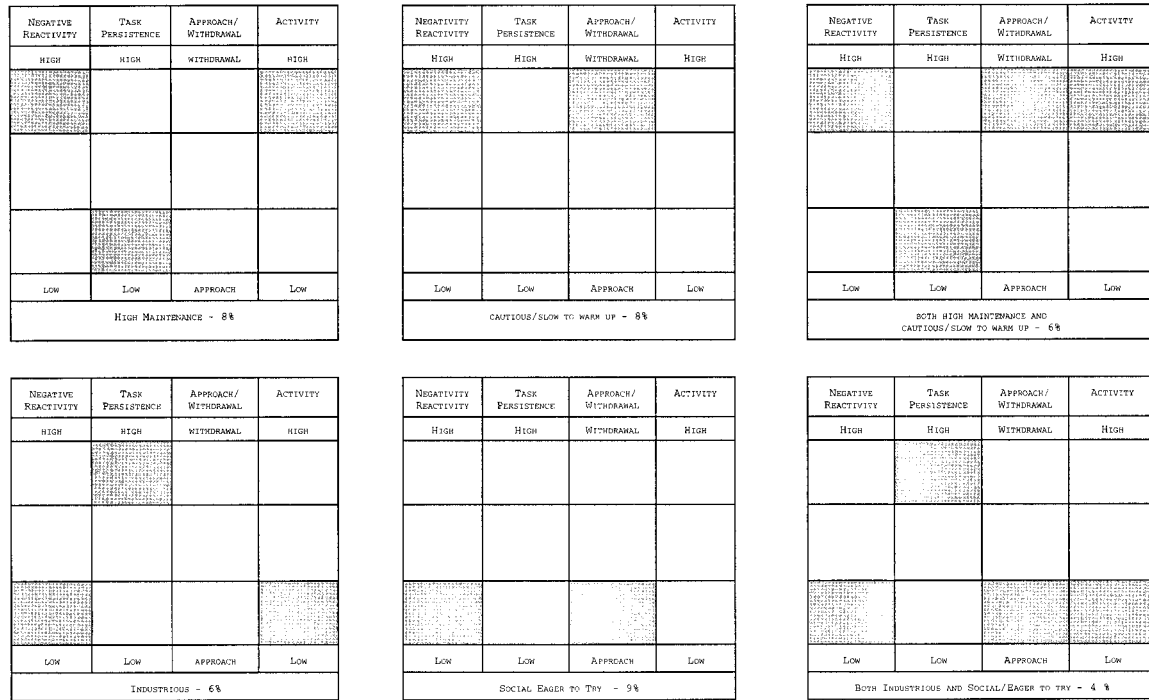


Figure 1. Graphs and percentages of the temperament profiles.

in relation to the sociodemographic variables are presented in Table 3.

Boys were disproportionately described as having more high maintenance temperaments than were girls ($\chi^2 = 6.50, df = 1, p < .05$). Girls, compared with boys, were disproportionately more often easy (industrious and social/eager to try) ($\chi^2 = 4.17, df = 1, p < .05$). No significant differences, however, were found in the proportion of children with the various profiles when age was examined in three categories (4-6, 7-9, and 10-12 year olds).

The three racial/ethnic groups who had the largest representation, Black, Hispanic non-Black, and White were then contrasted. Significant differences were found in high maintenance ($\chi^2 = 23.09, df = 2, p < .01$) and Cautious/Slow to warm up ($\chi^2 = 7.21, df = 2, p < .05$). In both cases, Hispanic mothers reported the highest proportion.

Socioeconomic status was also examined by collapsing the data from the Hollingshead into three categories. Families who were unemployed, unskilled, or semiskilled were labeled lower class. Those who were skilled or in clerical trades were called middle class. Higher class were those who were in major professions or businesses. Significant differences were found in socioeconomic status among the profiles that were high maintenance ($\chi^2 = 9.58, df = 2, p < .01$), cautious/slow to

warm up ($\chi^2 = 10.76, df = 2, p < .01$), and challenging ($\chi^2 = 9.39, df = 2, p < .01$). The proportion of children decreased with higher socioeconomic status. A significant but opposite pattern was found with children who were social/eager to try ($\chi^2 = 7.00, df = 2, p < .05$), so that the proportion of children increased with higher socioeconomic status.

DISCUSSION

The developmental challenges of the school-age years for children and their parents are markedly reflected in the identified profiles. The family environment and how it influences maternal perceptions of child temperament is also evident. Consequently, the results of this study are best examined within a developmental and sociocultural framework.

Because of the evolution and clarification of the dimensions of temperament for school-age children that has occurred in recent years, it appears, at first glance, complex to compare the results of this study with those of Thomas and Chess (1977). Adaptability was included in each of their profiles, but was not reflected in these results for two reasons. On a simplistic level, adaptability couldn't be included because it is not a dimension on the SATI. The broader reason, however, is that factor analytic studies have shown that adaptability items do not

Table 3. Profiles in Relation to Sociodemographic Variables

Variables	Percentages Within Groups			Significance
	Boys (n = 442)	Girls (n = 435)		
Gender				
High maintenance	16.7	10.8		*
Industrious	8.6	12.4		
Cautious/slow to warm up	12.2	15.4		
Social/eager to try	13.3	13.3		
Both types of challenging	6.3	4.6		
Both types of easy	2.9	5.7		*
Age	4-6 (n = 63)	7-9 (n = 344)	10-12 (n = 470)	
High maintenance	17.5	16.0	11.7	
Industrious	9.5	7.6	12.8	
Cautious/slow to warm up	22.2	13.7	12.8	
Social/eager to try	9.5	12.5	14.5	
Both types of challenging	7.9	6.4	4.5	
Both types of easy	3.2	3.2	5.3	
Race/ethnicity	Black (n = 238)	Hispanic (n = 103)	White (n = 493)	
High maintenance	11.1	29.1	12.0	†
Industrious	10.2	9.7	10.2	
Cautious/slow to warm up	14.8	22.3	12.2	*
Social/eager to try	9.8	11.7	15.7	
Both types of challenging	4.5	14.6	4.4	
Both types of easy	3.7	2.9	5.2	
SES	Low (n = 316)	Middle (n = 437)	Higher (n = 118)	
High maintenance	17.7	12.6	6.8	†
Industrious	10.4	11.4	6.8	
Cautious/slow to warm up	17.4	14.2	5.1	†
Social/eager to try	10.1	14.4	19.5	*
Both types of challenging	8.2	5.0	.8	†
Both types of easy	3.2	5.0	5.1	

* $p < .05$.† $p < .01$.

form a distinct factor but load on other dimensions leading some researchers to conclude that it is a higher order or composite factor (Lerner & Lerner, 1983; McClowry, Hegvik, & Teglassi, 1993; Presley & Martin, 1994). Thus, adaptability, may be an outcome to which one or more of the profiles are predisposed, especially if the environment supports the child's development by providing goodness of fit.

Another discrepancy with the Thomas and Chess (1977) profiles is that regularity is missing. Hegvik, McDevitt, and Carey (1982), however, did not find that dimension applicable for school-age children because they are able to regulate their biological functions without parental involvement.

If adaptability and regularity are excluded, similarities in the profiles between the two studies become apparent adding support and clarification to the findings of Thomas and Chess (1977). Their description of the easy child is similar to the social/eager to try child. But, a second type of easy child was also found in this study. That child was task persistent, low in negative reactivity, and low in

activity and was called industrious. The likely reason that the Thomas and Chess (1977) profiles did not address task persistence is because they were developed with data derived from infants and young children. Task persistence becomes a more salient dimension during the school-age years influencing developmental and academic outcomes.

Additional parallels are found in the challenging temperament profiles. The cautious/slow to warm up child in this study is the same as the slow to warm up profile of Thomas and Chess (1977). The high maintenance child is also similar to the difficult child that they described. However, the factor was not labeled "difficult" because of its negative connotation. Rothbart (1982) noted that not all parents who have children whose temperament matches the difficult profile might perceive their child as so. Attaching the "difficult" label may adversely alter their perception of the child. Moreover, difficult at one stage of life or in a particular setting may not continue to be so. Rather than determining some temperaments as preferable than others, an alternative approach, especially when

applying temperament concepts to clinical situations, is to view each profile with strengths and areas of concern.

Sociocultural/familial implications also exist and point toward directions for further research. Longitudinal studies, nested with a goodness of fit model, are required before the profiles identified in this study can be linked to long-term outcomes. Consequently, comparing the results of this study to those of Caspi and Silva (1995), Robin et al. (1996) and Hart et al. (1997) is difficult because their findings are imbedded in adaptational and academic outcomes without consideration of the transactional nature of the environment.

The generalizability findings indicate that the challenging temperament profiles were disproportionately represented by boys, Hispanic children, and those from lower socioeconomic families. Girls were over represented in the group that included both types of easy temperaments. Social/eager to try children were more often from higher rather than lower socioeconomic status families. Data obtained from observational methods or from other informants are needed to ascertain whether maternal perceptions match other sources of information.

The limitations of this study need to be acknowledged. Contrary to Robins et al. (1998) recommendations, this study included data from only one informant, which were maternal reports on a standardized questionnaire. Consequently, the results should be considered preliminary until testing is replicated using a multimethod design with multi-informants such as fathers, teachers, and clinicians. More geographic variability is also needed in future research.

Still, nurses and other clinicians might find the results useful for designing temperament-based interventions. Such applications have the potential to

assist parents in modifying the environment to support the individualistic needs of children. The profiles can be used as a reference point from which a child's temperament can be identified. To recognize their child's temperament, parents can compare their child to the profiles. Even if the child does not match any of them, insight can be gained from clarifying how the child differs. McClowry (2002, this issue) used the profiles to create characters in videotaped vignettes that teach parents and teachers how to develop more effective child management strategies. She also used the data to develop puppets that interact with targeted children and their classmates while they solve daily dilemmas. The process of transforming these profiles statistics into characters and puppets are explained in the next article in this issue.

The results can also help nurses and other clinicians to better understand how parental perceptions are influenced by sociocultural factors. Parents who are economically disadvantaged may describe their children more negatively. Still, goodness of fit can be enhanced if a parent learns to identify their child's strengths as well as improve their transactional processes. Clinicians can assist parents in reframing their perceptions.

During middle childhood, the majority of children expand their interactional surroundings by engaging in school and other institutional settings. Effective parents encourage their growing children's independence in a supportive manner. By recognizing their child's temperament, parents can relay warmth that acknowledges the child's unique characteristics and helps the child successfully navigate these new experiences. Nurses and other clinicians can assist parents in fostering optimal child development by explaining how temperament influences the child's reaction to novel situations.

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