

Studying Cross-cultural Differences in the Development of Infant Temperament: People's Republic of China, the United States of America, and Spain

**Maria A. Gartstein · Carmen Gonzalez · Jose A. Carranza
Stephan A. Ahadi · Renmin Ye · Mary K. Rothbart
Suh Wen Yang**

Published online: 28 July 2006
© Springer Science+Business Media, Inc. 2006

Abstract Investigated early development of temperament across three cultures: People's Republic of China (PRC), United States of America (US), and Spain, utilizing a longitudinal design (assessments at 3, 6, and 9 months of age). Selection of these

M. A. Gartstein (✉)
Department of Psychology, Washington State University, P.O. Box 644820, Pullman,
WA 99164-4840, USA
e-mail: gartstma@wsu.edu

C. Gonzalez · J. A. Carranza
Facultad de Psicología, Campus Universitario de La Merced, 30100 Murcia, Spain

S. A. Ahadi
MetriTech Inc. 4106,
Fieldstone Road, Champaign, IL 61821, USA
e-mail: sahadi@metritech.com

R. Ye
Houston Independent School District,
4400 West 18th Street,
Houston, TX 77092-8501, USA

M. K. Rothbart
Department of Psychology, 1227, University of Oregon,
Eugene, OR 97403-1227, USA
e-mail: maryroth@oregon.uoregon.edu

S. W. Yang
Pacific Graduate School of Psychology,
935 East Meadow Drive,
Palo Alto, CA 94303, USA
e-mail: suyang1976@yahoo.com

J. A. Carranza
e-mail: carranza@um.es

C. Gonzalez
e-mail: cgonzales@um.es

countries presented an opportunity to conduct Eastern–Western/Individualistic–Collectivistic comparisons. The greatest number of significant differences (i.e., involving more temperament dimensions) was anticipated for the US (Western/Individualistic) and PRC (Eastern/Collectivistic) comparisons. The US sample included 66, the PRC group 69, and the Spanish sample, 60 mothers, all of whom completed the Infant Behavior Questionnaire (IBQ) 3 times, when their infants were 3, 6, and 9 months of age. Results related to mean group differences were generally consistent with our hypotheses, demonstrating a greater number of significant differences for US versus PRC, with fewer differences observed for US and Spain. Analyses addressing developmental changes in temperament indicated patterns consistent with a priori expectations and cross-cultural differences.

Keywords Infancy · Temperament · Cross-cultural · Longitudinal

Temperament has been conceptualized as individual differences in reactivity and self-regulation, which are constitutionally based and influenced over time by heredity, maturation, and experience [1]. Reactivity refers to arousability of affect, motor activity, and attentional responses (i.e., orienting), whereas self-regulation involves processes such as behavioral inhibition and self-soothing, serving to modulate reactivity [2]. In so far as these biologically based reactive and regulatory factors are influenced by experience, cultural differences in temperament can be anticipated.

Distinct cultural values and patterns of child rearing tend to be relatively stable, and parents are generally motivated to reproduce temperament characteristics in their offspring that are consistent with their values, and those of their cultural group [3]. Thus, parents in different cultural groups vary in their child-rearing attitudes and behaviors, which in turn produce the “culturally preferred phenotypes” for the offspring. For example, a comparison of American, French, and Japanese cultures, found that although mothers showed equivalent rates of nurturant and imitative responsiveness, they differed in object and social stimulation, and responsiveness to their infants [4]. Mothers across the three cultures showed high levels of responsiveness to their infants; however, American parents displayed higher levels of object stimulation and responsiveness. There is also evidence that parents’ soothing efforts differ across cultures, especially in terms of their involvement of the infants’ developing attention [5]. American caregivers frequently induced soothing by orienting their infants to external events, and spent more time stimulating their infants into positive expressions of emotion. Japanese caregivers, on the other hand, used rocking and soothing by contact more frequently, perhaps directing attention toward internal events. Cross-cultural differences in parental play activities have been reported as well, with US mothers engaging their children in more exploratory play, relative to mothers from Argentina, who tended to involve their children more in symbolic play activities [6]. Such “culturally influenced” parenting impacts the course and outcomes of child social-emotional development [7], and may account for cross-cultural differences in the development of temperament in childhood.

Cultures are typically described in terms of their collectivistic versus individualistic attitudes, as well as their Eastern or Western orientation. Individualistic cultures tend to be more concerned with the consequences of one’s behavior for one’s own needs, whereas collectivistic cultures are more focused on the consequences of individual’s

behavior for the entire group [8, 9]. Differences in interactional strategies have been reported with members of collectivistic cultures expressing a preference for harmony-enhancing approaches, and participants from individualistic cultures endorsing confrontational methods [10]. Whereas individualism leads parents to foster independence in their children, collectivism is manifested in parenting strategies aimed at producing interdependence [11]. Collectivistic Western cultures (e.g., Spain) have been identified [12], even though collectivistic values have been most frequently linked with Eastern cultures. Differences between Eastern and Western societies include factors other than collectivistic/individualistic values. Differences in traditions, social norms, and religion likely contribute to East–West contrasts [13].

Cross-cultural temperament research has not been widespread, especially during the infancy period, however, a number of important findings have emerged. For example, significant differences between American and Taiwanese infants were noted, with parents reporting lower levels of regularity, activity, approach, adaptability, distractibility, and threshold of responsiveness, as well as higher levels of negative mood, and intensity for Taiwanese infants [14]. Japanese preschoolers were rated as more active in sleep, more withdrawal-oriented, less flexible, expressing less positive affect, and as less regular than American children [15]. Japanese children also rated themselves as significantly lower on approach, mood quality, and flexibility, and higher on the rhythmicity factor [16]. In addition, Japanese toddlers were rated as more distractible and intense than toddlers from the United Kingdom [17]. Infants from Quebecois, Haitian, and Vietnamese groups residing in Montreal, Canada were compared, demonstrating significant differences [18]. Specifically, Haitian and Vietnamese infants were reported to exhibit higher levels of “difficult temperament” compared to Quebecois infants.

In addition, Chinese toddlers were described as significantly more inhibited relative to their Canadian counterparts [19]. Research addressing behavioral inhibition has produced important evidence of cultural differences in the development of temperament. Weariness and fear of unfamiliar circumstances and people have been described as biologically based individual differences, associated with identifiable and stable behavioral, as well as physiological manifestations [20, 21]. Behavioral inhibition has received significant attention in the US because it often leads to peer rejection, loneliness, and deficits in social skills [22, 23]; however, these sequelae have not been replicated in China, suggesting an important role of culture in shaping the nature behavioral inhibition. Individualistic cultures, such as the US, endorse assertive and competitive behavior. Given this value placed on sociability and assertiveness, a more inhibited child often finds him/herself at a disadvantage. However, the inhibited behavior is unlikely to have a negative outcome for the group, or the society, and thus is not regarded as maladaptive in more collectivistic cultures, such as China [24]. In fact, behavioral inhibition is positively valued and encouraged in China; shy, quiet children are described as well behaved, and receive praise from teachers and parents [25, 26]. Thus, cultural differences in the inhibited behavior represent and illustration of a significant role culture plays in shaping the development of temperament characteristics.

Developmental changes for multiple temperament attributes have been explored in infancy, with linear and quadratic trajectories generally adequately reflecting the patterns of growth. For example, a dramatic acceleration during the second half of the first year of life has been demonstrated for Fear, also referred to as Behavioral Inhibition [27, 28]. A U-shaped trajectory has been described as reflecting the development of anger responses during the first year of life [29, 30], with initial

decrease being followed by a subsequent increase in reactivity. Duration of Orienting toward objects also develops along a U-shaped trajectory during the first year of life [31], which could be explained by the influence of two different systems. Early in infancy children begin to habituate faster, due to the maturation of the Orienting Attention Network, leading to a decrease in duration of looking at objects. In the second half of the first year of life the emergence of an Executive Attention Network [32], linked to goal-oriented, planned behavior, permits the child to engage and persist in interaction with objects, once again increasing the duration of orienting.

Despite these extensively documented normative changes in infant temperament, some degree of inter-individual/stability can be expected, given that development represents an organized process of change, with a previous level of organization serving as the basis for the next stage [33]. Investigators have generally found moderate levels of normative stability for temperament attributes during infancy [34–37]; although mean scores changed throughout infancy, individuals tended to maintain their relative position within a group. Thus, individual differences in behavioral tendencies can be expected to persist despite significant developmental changes in early childhood. To date, however, the majority of studies addressing continuity and change in infancy have been based on North-American samples [2]. Cross-cultural longitudinal studies of temperament enable evaluations of general, as well as idiosyncratic aspects of temperament development, reflecting interactions between culture and biology in shaping personality development.

The present work aims to investigate the commonalities as well as the idiosyncratic aspects of early development of temperament in three different cultures: the People's Republic of China (PRC), the United States of America (US), and Spain, through a longitudinal design, evaluating temperament at 3, 6, and 9 months of age. These ages were selected because important changes in the expression of temperament characteristics can be anticipated between these three phases of assessment. For example, these evaluations are expected to reflect the U-shaped trajectories previously reported for anger and persistence of orienting responses. In each country, parents completed the Infant Behavior Questionnaire (IBQ) [30], an extensively validated measure of infant temperament. Development of both a Chinese and a Spanish adaptation of the IBQ [38, 39] enabled the implementation of this research. Selection of samples from China, Spain, and US provided an opportunity to evaluate the development of temperament for a set of cultures with different collectivistic/individualistic attitudes as well as Eastern/Western orientations. Specifically, US represents a Western/Individualistic culture and PRC has been identified as Eastern/Collectivistic, thus a wider array of differences in temperament (i.e., a greater number of significant differences) was hypothesized for children from these cultures. Spain has been described as Western/Collectivistic, and thus can be expected to share commonalities and exhibit differences with both the US and the PRC. Greater differences between Spain and US would be indicative of collectivistic attitudes playing a more significant role in shaping the development of temperament. Alternatively, greater differences between Spain and China would suggest the primary role of the Eastern/Western orientation, other than collectivistic values. Significant differences between these cultures were anticipated for mean comparisons and comparisons addressing stability of temperament in infancy. Hypotheses pertaining to developmental changes were as follows: (1) increases in Activity Level and Fear were anticipated in the first year of life; (2) quadratic trends were expected to contribute to explaining the development of Distress to

Limitations (i.e., anger) and Duration of Orienting in infancy. More specific hypotheses addressing culture-by-age and culture-by-gender interactions could not be generated because of lack of prior research, deeming these analyses primarily exploratory in nature.

Method

Participants

US Sample

Sixty-six parents of infants (33 females and 33 males) residing in the US agreed to take part in a study of infant temperament. Mothers of three month old infants were recruited via telephone calls, that were made on the basis of birth announcements published in the Eugene-Springfield, OR, local newspapers. Sixty percent of the contacted parents agreed to take part in this work. Mothers declining participation cited concerns with the time demands of a longitudinal study. Participating mothers were asked to complete the infant temperament questionnaire three times over the course of the study, when their children were 3, 6, and 9 months of age. Mothers in the US sample were between 20 and 41 years of age. These participants represented a broad spectrum of socio-economic circumstances, with the majority of parents working outside the home (mostly in professional and service occupations). The US sample reflects the relative racial homogeneity of the Eugene-Springfield area, with primarily Caucasian mothers responding to the temperament questionnaire.

Spanish Sample

Longitudinal data were collected for a sample of 60 infants (29 females and 31 males) at 3, 6, and 9 months of age. Spanish mothers participating in this research were recruited through the prenatal classes at the Hospital “Virgen de la Arrixaca” (Murcia, SE, Spain). All of the mothers approached regarding participation in this work agreed to take part. These mothers-to-be were asked to respond to three waves of temperament data collection, when their children reached the appropriate ages. The Spanish sample reflected a broad range of socio-economic characteristics, such as employment status and education (50% of mothers worked outside the home; 16.95% of mothers had University degrees). Mothers’ ages ranged from 21 to 42 years.

PRC Sample

Mothers of infants ($n = 70$) were asked to respond to the temperament questionnaires when their infants were 3, 6, and 9 months of age. Chinese mothers were approached regarding participation during their delivery stay at the Hongkou District Hospital, Shanghai, PRC. All of the mothers invited to take part in this research agreed to participate. One child died prior to the completion of this study. Thus, the final sample consisted of 69 infants (35 males and 34 females). Participating parents were recruited from the Hongkou residential district of Shanghai, the largest and one of the most advanced cities in China. Mothers were between 25 and 35 years of age, and tended to work outside the home.

Measures

Infant Behavior Questionnaire (IBQ) [30]

This questionnaire is based on caregiver report, and was designed to refer to specific, concrete behaviors of the infant, occurring during the past week (previous 2 weeks for some items). Item analyses based on the responses of 463 parents of 3-, 6-, 9-, and 12-month-old infants, yielded 6 scales assessing temperament dimensions of Activity Level, Smiling and Laughter, Fear, Distress to Limitations, Soothability, and Duration of Orienting [30]. Distress to Limitations has been defined as the child's distress to sudden changes in stimulation and the child's distress and latency of movement toward a novel, social, or physical object. The Duration of Orienting scale was based on the following operational definition: "The child's vocalization, looking at, and/or interaction with a single object for extended periods of time when there has been no sudden change in stimulation".

Scale scores are formed by summing all the relevant items and dividing by the number of items, producing a potential range of 0–7 for each of the 6 scales. Low scores are reflective of less frequent/intense displays of temperament characteristics, whereas high scores indicate that a given child, or group of children, is more likely to exhibit particular attributes. Mean item-scale correlations for the IBQ have ranged from 0.41 to 0.77, with coefficient Alpha's ranging from 0.67 to 0.84 (median = 0.79). Moderate correlations (between 0.45 and 0.69) were also reported for pairs of adults ($n = 24$) that shared caregiving responsibilities for a particular infant [30].

Reliability and validity of the IBQ have been consistently supported since the introduction of this instrument in 1981. A longitudinal study utilizing the IBQ demonstrated stability as well as convergence between this measure and home observation ratings of infant temperament [37]. Convergence between laboratory observation ratings of temperament and the IBQ scales has been consistently reported [40–42]. For example, the IBQ Fear scale was concurrently and longitudinally correlated with laboratory based measures of the inhibited approach [43]. The IBQ has been translated into Spanish and Chinese languages [38, 39].

Procedure

All of the participating mothers agreed to take part in longitudinal evaluations. They were asked to complete the IBQ when their infants were 3, 6, and 9 months of age. Completion of this paper-and-pencil measure generally takes about 30 min. Participating mothers were contacted by telephone in the United States, whereas they were approached while receiving services at medical centers for the Spanish and the PRC samples. The IBQ was translated into Chinese and Spanish prior to data collection, and the back translation procedures was performed to ensure that the different forms were equivalent. Research described herein has received the Institutional Review Board (IRB) approval.

Results

Internal consistency of the IBQ for the Spanish and PRC samples was examined first by computing Chronbach's Alphas. For the Spanish infants, Alphas were generally

satisfactory, (Mean Alpha = 0.79), ranging from 0.60 to 0.91. Similar results emerged for the PRC sample, with Alpha's ranging from 0.62 to 0.86 (Mean Alpha = 0.76). The overall internal consistency of the IBQ was considered adequate, despite a few outliers. For instance, only one coefficient Alpha below 0.70 was observed for the PRC sample, for the Distress to Limitations scale. Comparable and generally acceptable internal consistency across the different cultures was deemed as evidence supporting the parallel nature of alternate forms (i.e., translated versions) of the IBQ. Given this generally satisfactory reliability of the translated IBQ with the samples recruited outside of the US, analyses addressing hypotheses proposed in the present investigation were conducted.

Mean Differences between Cultures

Significant main effects of culture were observed for Activity Level, Distress to Limitations, Fear, Duration of Orienting, and Soothability. For Activity Level, significant differences were observed between US and Chinese infants, and between Spanish and Chinese infants, with infants from the PRC rated as more active than children from the other two cultures. Chinese infants were rated significantly higher on the Distress to Limitations scale, relative to infants from Spain and the US. Infants from the PRC received higher scores on both Duration of Orienting and Soothability scales, compared to Spanish and American children. Chinese infants were also rated as significantly more fearful than American infants, but there was no significant difference between scores of children from the PRC and Spain for this temperament characteristic.

Culture-by-Age Interactions

Exploratory analyses of the culture-by-age interactions were addressed next. Significant culture by age interactions were observed for Smiling and Laughter ($F(4, 378) = 2.98, P < 0.05$), Activity Level ($F(4, 378) = 7.15, P < 0.01$), Distress to Limitations ($F(4, 378) = 7.76, P < 0.01$), Fear ($F(4, 378) = 3.04, P < 0.05$), and Duration of Orienting ($F(4, 378) = 12.07, P < 0.01$). Simple effects comparisons for infant ratings on the Smiling and Laughter scale indicated cultural differences at 3 months, with follow-up pair wise analysis indicating that Spanish infants were rated as smiling and laughing more than Chinese infants, as seen in Tables 1 and 2. There were no cultural differences in Smiling and Laughter at either 6 or 9 months.

Significant cultural differences were observed for Activity Level at 3 and 6 months of age, but not at 9 months. Follow-up analyses indicated significant differences between infants in the US and China, with children from the PRC receiving higher scores.

Maternal ratings of infant Distress to Limitations differed significantly across cultures at 6 and 9 months of age. Follow-up analyses yielded significant differences between infants from China and the other two cultures, with the PRC infants rated highest on Distress to Limitations (see Table 2). Significant cultural differences between infant ratings on the Fear scale were observed at 3 months of age, with higher levels of Fear reported for infants from the PRC, relative to US and Spanish children.

Duration of Orienting scores were significantly different between cultures at 6 ($F(2, 192) = 3.81, P < 0.05$) and 9 ($F(2, 192) = 24.60, P < 0.01$) months of age. Chinese infants were rated as orienting for longer duration than American infants at

Table 1 Cross-cultural comparisons: US ($n = 66$), Spain ($n = 60$), and PRC ($n = 69$)

Temperament Variable	US		Spain		PRC		F^a
	M	(SE)	M	(SE)	M	(SE)	M
Activity level	4.24 ^b	(0.10)	4.28 ^b	(0.09)	4.64	(0.08)	7.05 ^{c,**}
Distress to limitations	3.55 ^b	(0.09)	3.69 ^b	(0.08)	3.95	(0.07)	28.67 ^{**}
Fear	2.65 ^b	(0.08)	2.77	(0.08)	2.92	(0.07)	3.47 [*]
Duration of orienting	3.51 ^b	(0.14)	3.62 ^b	(0.13)	4.10	(0.11)	6.32 ^{**}
Soothability	4.67 ^b	(0.11)	4.60 ^b	(0.11)	5.12	(0.09)	8.80 ^{**}
Smiling and laughter	4.37	(0.11)	4.62	(0.10)	4.33	(0.09)	2.66

^a F value for the contrast ($df = 2, 189$)

^bSignificantly different from the PRC mean

^{c,*} $P < 0.05$; ^{**} $P < 0.01$; All two-tailed tests

Table 2 Follow-up comparisons for significant age-by-culture interactions: Cultural differences within age group, developmental differences within culture

Temperament variable	US		Spain		PRC		F^a
	M	(SE)	M	(SE)	M	(SE)	M
Smiling and laughter—3 months of age	4.02 ^{b,c}	(0.94)	4.31 ^{b,c,d}	(0.94)	3.76 ^{b,c}	(1.13)	4.41 ^{e,*}
6 Months of age	4.72	(0.84)	4.72	(0.77)	4.64	(0.84)	0.18 ^f
9 Months of age	4.59	(0.91)	4.75	(0.79)	4.62	(0.79)	0.57 ^f
Activity level—3 months of age	3.52 ^{b,c,d}	(0.79)	3.59 ^{b,c,d}	(0.89)	4.28 ^{b,c}	(0.85)	16.40 ^{**}
6 Months of age	4.52 ^d	(0.83)	4.42 ^{c,d}	(0.76)	4.88	(0.76)	5.84 ^{**}
9 Months of age	4.73	(0.80)	4.74	(0.87)	4.77	(0.76)	0.03 ^f
Distress to Limitations—3 months of age	3.70 ^b	(0.86)	3.65 ^b	(0.80)	3.60 ^{b,c}	(0.87)	0.23 ^f
6 Months of age	3.20 ^c	(0.77)	3.38 ^c	(0.67)	3.93 ^c	(0.76)	15.96 ^{**}
9 Months of age	3.81 ^d	(0.10)	3.92 ^d	(0.83)	4.31	(0.68)	6.03 ^{**}
Fear—3 months of age	2.17 ^{b,c,d}	(0.69)	2.41 ^{b,c,d}	(0.85)	2.73 ^c	(0.96)	7.69 ^{**}
6 Months of age	2.63 ^c	(0.81)	2.83	(0.88)	2.83 ^c	(0.73)	0.79 ^f
9 Months of age	3.02 ^d	(0.88)	3.04	(0.75)	3.19	(0.83)	3.04 [*]
Duration of orienting—3 months of age	3.84 ^{b,c}	(1.27)	3.68	(0.98)	3.76 ^c	(1.27)	0.26 ^d
6 Months of age	3.31 ^d	(1.27)	3.62 ^c	(1.08)	3.92 ^c	(1.21)	3.81 [*]
9 Months of age	3.42 ^d	(0.99)	3.33 ^d	(1.05)	4.49	(1.00)	24.60 ^{**}
Soothability—3 months of age	4.31 ^d	(1.00)	4.36 ^d	(1.10)	4.78	(1.06)	3.82 [*]
6 Months of age	4.81	(0.82)	4.63	(0.91)	5.26	(0.82)	8.72 ^{**}
9 months of age	4.84	(0.75)	4.66	(1.14)	4.93	(0.89)	6.69 ^{d,**}

^a F value for the contrast ($df = 2, 192$)

^bSignificantly different from the 6-month mean (same cultural group)

^cSignificantly different from the 9-month mean (same cultural group)

^dSignificantly different from the PRC mean (same age group)

^{e,*} $P < 0.05$; ^{**} $P < 0.01$; all two-tailed tests

^fAge differences within each culture were not evaluated further because the overall culture-by-age interaction was not significant; data are presented for descriptive purposes

6 months, and demonstrating higher levels of Duration of Orienting than infants from US and Spain at 9 months.

Trend Analyses

Trend analyses were conducted next to further follow-up significant culture-by-age interactions in order to examine potential cross-cultural differences in developmental

trajectories of the temperament characteristics examined in this study. Evidence of linear and quadratic trends for Smiling and Laughter scores were observed for infants in the US (linear: $F(1, 65) = 24.66, P < 0.01$; quadratic: $F(1, 65) = 34.76, P < 0.01$) and PRC (linear: $F(1, 68) = 46.10, P < 0.01$; quadratic: $F(1, 68) = 31.67, P < 0.01$), but only the linear trend was significant in explaining the developmental trajectory of Smiling and Laughter for infants in Spain ($F(1, 59) = 11.15, P < 0.01$).

Ratings on the Distress to Limitations scale across time were described by a quadratic trend for infants in the US ($F(1, 65) = 33.80, P < 0.01$) and Spain ($F(1, 59) = 28.10, P < 0.01$). Distress to Limitations ratings for Chinese infants over time were, however, best described by a linear trend ($F(1, 68) = 35.66, P < 0.01$). Significant linear and quadratic trends were observed for infant ratings on the Duration of Orienting scale in the US sample (linear: $F(1, 65) = 6.92, P < 0.05$; quadratic: $F(1, 65) = 9.21, P < 0.01$); however, the development of Duration of Orienting was best described by a linear trend for infants in Spain ($F(1, 59) = 5.00, P < 0.05$) and PRC ($F(1, 68) = 23.18, P < 0.01$).

Activity Level was associated with significant linear and quadratic trends for ratings of American (linear: $F(1, 65) = 96.41, P < 0.01$; quadratic: $F(1, 65) = 10.79, P < 0.01$), Spanish (linear: $F(1, 59) = 71.31, P < 0.01$; quadratic: $F(1, 59) = 10.35, P < 0.01$), and Chinese (linear: $F(1, 68) = 18.07, P < 0.01$; quadratic: $F(1, 68) = 17.02, P < 0.01$) infants over the first 9 months of life. A linear trend was sufficient in explaining the developmental trajectory of Fear for infants in the US ($F(1, 65) = 32.17, P < 0.01$), Spain ($F(1, 59) = 13.01, P < 0.01$), and China ($F(1, 68) = 23.18, P < 0.01$).

Culture-by-Gender Interactions

Exploratory analyses to evaluate the possibility of culture-by-gender interactions also yielded significant results. Specifically, significant interactions emerged in the analyses of the Distress to Limitations ($F(2, 189) = 3.35, P < 0.05$) and the Fear scales ($F(2, 189) = 10.94, P < 0.01$). Follow-up ANOVA's indicated significant gender differences for the Spanish sample only on the Distress to Limitations scale ($F(1, 58) = 4.61, P < 0.05$), with males scoring higher than females. For the Fear scale, significant gender differences were observed for the US ($F(1, 64) = 18.14, P < 0.01$) and Spanish ($F(1, 58) = 8.29, P < 0.01$) samples. Mothers in the US rated girls as more fearful, while in Spain mothers rated boys higher on the Fear scales.

Cross-cultural Differences in the Stability of Temperament

Stability coefficients for the six IBQ scales were computed for each cultural group, from 3 to 6, 6 to 9, and 3 to 9 months of age (Tables 3, 4, 5). Cross-cultural comparisons of these coefficients were performed using the Fisher r to z transformation. Thus, for each scale, three US stability coefficients were compared to those computed for the Spanish and the PRC samples, which were also compared to each other. Significant differences emerged for the US versus Spain comparison, with US infants demonstrating higher levels of stability for the Smiling/Laughter dimension of temperament between 6 and 9 ($z = 2.37, P < 0.05$), and 3 and 9 months of age ($z = 1.97, P < 0.05$). The US and PRC comparison also yielded significant differences for the Distress to Limitations and Duration of Orienting dimensions of the IBQ, with the US sample demonstrating greater stability between 3 and 9 months of age for the former ($z = -2.07, P < 0.05$), and between 3 and 6 months of age for the latter ($z = -2.45,$

Table 3 Stability of the IBQ scales for 3, 6, and 9 months of age: US

Activity level			Smiling and laughter		
3 Months	6 Months	9 Months	3 Months	6 Months	9 Months
1.00	0.50*	0.46*	1.00	0.71*	0.53*
	1.00	0.46*		1.00	0.72*
		1.00			1.00
Distress to limitations			Fear		
1.00	0.47*	0.56*	1.00	0.31*	0.07
	1.00	0.64*		1.00	0.44*
		1.00			1.00
Duration of orienting			Soothability		
1.00	0.64*	0.61*	1.00	0.71*	0.52*
	1.00	0.64*		1.00	0.72*
		1.00			1.00

* $P < 0.01$; all two-tailed tests

$P < 0.05$). One other significant difference for the Fear scale was detected in the comparison of the Spanish and the PRC samples, with PRC parents reporting greater stability between 3 and 9 months of age for their infants ($z = 2.15$, $P < 0.05$).

Discussion

The present study was designed to address cross-cultural differences in the development of infant temperament in the US, Spain, and China, utilizing a validated and established parent-report instrument to measure infant Activity Level, Smiling and Laughter, Fear, Distress to Limitations, Soothability, and Duration of Orienting. Differences in mean levels of temperament characteristics across cultures, interaction effects involving culture, age, and gender, and cross-cultural differences in the stability of temperament attributes were investigated.

A number of significant cross-cultural differences in mean levels of infant temperament characteristics were observed. Chinese mothers rated their infants as more active than did parents from the US and Spain. Infants from the PRC were also described as more prone to distress in the face of limitations, than infants from either the US or Spain. Infants from China were rated as significantly more fearful than

Table 4 Stability of the IBQ scales for 3, 6, and 9 months of age: Spain

Activity level			Smiling and Laughter		
3 Months	6 Months	9 Months	3 Months	6 Months	9 Months
1.00	0.57*	.38*	1.00	.53*	.22
	1.00	.57*		1.00	.44*
		1.00			1.00
Distress to limitations			Fear		
1.00	0.61*	0.32*	1.00	0.30*	-0.07
	1.00	.57*		1.00	0.45*
		1.00			1.00
Duration of orienting			Soothability		
1.00	0.50*	0.42*	1.00	0.20	0.09
	1.00	0.56*		1.00	0.50*
		1.00			1.00

* $P < 0.01$; all two-tailed tests

Table 5 Stability of the IBQ scales for 3, 6, and 9 months of age: PRC

Activity level			Smiling and laughter		
3 months	6 months	9 months	3 months	6 months	9 months
1.00	0.40**	0.34**	1.00	0.49**	0.39**
	1.00	0.44**		1.00	.63**
		1.00			1.00
Distress to limitations			Fear		
1.00	0.37**	0.24	1.00	0.05	0.37**
	1.00	0.44**		1.00	0.41**
		1.00			1.00
Duration of orienting			Soothability		
1.00	0.30**	0.34**	1.00	0.31**	0.24
	1.00	0.59**		1.00	0.47**
		1.00			1.00

** $P < 0.01$; all two-tailed tests

their US counterparts, and were seen by their mothers as more persistent in orienting and more soothable, compared to infants from the US and Spain. These findings reflect a pattern of greater differences between cultures being consistent with the Eastern/Western distinction, rather than the Collectivistic/Individualistic differentiation. That is, despite the fact that both the PRC and Spain can be described as Collectivistic, a number of significant differences between these two cultures emerged in the present study. Furthermore, the pattern of differences between the PRC and Spain was similar to the one for the PRC and US comparisons. Thus, the mean levels of temperament among infants from the Western cultures (US and Spain) were more similar than characteristic levels of temperament in the Eastern culture (PRC). This pattern of findings suggests that attributes associated with the Eastern versus Western orientation, other than the Individualistic/Collectivistic values and attitudes, are salient in determining cross-cultural differences in infant temperament. These attributes could include traditions, philosophical and religious beliefs, social norms, and should be examined more systematically in their relationship to child-rearing attitudes and behaviors, which in turn, would be reflected in child temperament variability. Contrasts between typical American and Chinese personality profiles have been noted in the past. Residents of the US were reported to display more “humorous” personalities, whereas people in China presented as more modest/humble [44]. This difference was described as substantial, going beyond varying display rules utilized in the two cultures. The nature of these differences may at least be in part due to the fact that Chinese Confucianism considers introverted and inhibited personality as a virtue [44]. Spanish culture has been described as collectivistic, and the value of familism identified as central to Hispanic cultures. Strong attachment, loyalty, reciprocity, and solidarity to families, in both nuclear and extended forms, have been traditionally valued among individuals from Hispanic cultures [45]. Despite these values consistent with the interdependent/collectivistic orientation, results of the presents study revealed differences between infants from Spain and PRC. Perhaps greater similarity in economical and political structures in Spain and the US contributes to more parallels in social structures, which contribute to familial/parental factors, expected to impact the development of temperament.

Significant culture-by-age interactions were also explored. First, simple effects follow-up comparisons were conducted, evaluating differences between the three

cultures for each assessment period. The pattern of results included numerous significant differences in comparisons of infants from the two Western cultures (US and Spain) and the PRC, along with considerable similarity (i.e., lack of significant differences) among infants from the two Western cultures. Thus, the results of simple effects comparisons were consistent with the findings for the main effects associated with culture, and our hypotheses. The fact that the nature of cross-cultural differences observed in this study remained consistent across the three assessment periods, despite considerable developmental changes, lends further support to the conclusions based on these differences.

These cross-cultural differences emerging in the first year of life are consistent with the notion that infancy is critical because it is during this developmental period that “culture sets the gyroscope of development along a particular pathway” [11]. In infancy children are first exposed to the “cultural place” surrounding them, which includes cultural beliefs and practices, and meanings ascribed by the surrounding community [11]. Differences in infant temperament observed in this study are likely a function of both genetic influences and environmental factors that distinguish the three cultural groups (US, Spain, PRC). Cross-cultural temperament differences in infancy have been interpreted as having genetic basis [46]; however, more recently environmental explanations have been introduced [47]. Orientation, habituation, and state regulation early in life were described as being under the influence of environmental factors (e.g., aspects of parenting), which tend to vary across cultures [48]. For example, infant orientation and irritability were linked with maternal sensitivity, which in turn differed for Hmong and US mothers in the first days of life [49]. Hmong mothers were described as exhibiting higher levels of sensitivity, and their infants, in turn, were rated lower on irritability and higher on orientation, relative to infants of American mothers.

Follow-up trend analyses indicated significant differences between all three cultures in developmental trajectories of the temperament characteristics assessed in this study. A quadratic trend, previously reported for Duration of Orienting, was observed only for the US sample, whereas a linear trend explained the developmental trajectory of this temperament dimension for Spain and PRC. In contrast, a quadratic trend, anticipated for Distress to Limitations on the basis of the existing literature, was demonstrated for the US and Spanish infants, but did not contribute to explaining the developmental trajectory of this temperament attribute for the PRC infants. Fear tended to increase over the first year of life at a constant rate (i.e., only the linear trend was significant) across all three cultures, whereas Activity demonstrated a more prominent increase from 3 to 6 months of age, responsible for the significant contribution of the quadratic trend to explaining development of this infant temperament dimension.

Cultural influences on the unfolding of the developmental processes, underlying changing manifestations of temperament characteristics, were also supported by the results of analyses addressing cross-cultural differences in the stability of temperament. Significant differences emerged in the comparison of US and Spain, with higher levels of stability for Smiling and Laughter reported for US infants. The ratings of US parents regarding infant Distress to Limitations and Duration of Orienting also demonstrated greater stability than ratings provided by parents from the PRC. For the Fear scale, the PRC parent-report showed greater stability in comparison with the Spanish sample.

Results of this study were generally consistent with our hypotheses and previous findings, indicating an increase in the levels of Activity, Smiling and Laughter, Distress to Limitations, and Fear in the first year of life [27, 37, 38]. However, they also provide preliminary evidence for cross-cultural differences in developmental trajectories of some temperament characteristics. Interestingly, the quadratic trend predicted for Duration of Orienting was demonstrated only for the US sample, and the hypothesized quadratic trend for Distress to Limitations was observed for US and Spanish infants. Thus, results of this study suggest that the timing of developmental changes in temperament appears to be open to experience (i.e., impact of culturally influenced parenting). These findings also indicate the importance of going beyond western samples in examining the development of temperament in infancy.

Exploratory analyses of culture-by-gender interactions were also undertaken, producing significant results for Distress to Limitations and Fear scales. Spanish males received higher scores on the Distress to Limitations scale, relative to females. In addition, mothers in the US rated females as more fearful, whereas in Spain, mothers reported higher levels of Fear for males. These latter findings await future replication because of their exploratory nature.

Results of this study demonstrated a number of cross-cultural differences, including variability in mean levels of temperament characteristics, interaction effects involving culture, age, and gender, and differences in stability of infant temperament. Majority of these findings is consistent with our hypotheses and prior research, whereas other results should be deemed as preliminary, and require replication. Results of this study contribute to our understanding of development of temperament in the first year of life, and the relationship between developmental changes and cultural influences. These findings also have clinical implications, in so far as these early appearing cross-cultural differences in temperament may serve as the bases for later differences in the expression of psychopathology across cultures [50]. Cross-cultural differences in psychopathology have been reported, including significant differences in the patterns of predominant childhood disorders/behavior problems [51]. For example, significant differences between 12 cultures were reported for children between six and 17 years of age [51]. Overall, children from Puerto Rico were reported to exhibit higher levels of difficulties, whereas Swedish youngsters consistently received the lowest score on indicators of externalizing and internalizing behavior problems. Children from China scored above the mean on somatic complaints, social problems, attention problems, and delinquent behaviors. The importance of investigating the origins of these cross-cultural differences was underscored in the context of this research [51]. Results of the present investigation indicate that cross-cultural differences in manifestations of temperament can be identified as early as the first year of life, and these in turn may lead to different patterns of psychopathology/behavior problems, given the theoretically and empirically supported links between temperament and later behavioral and/or emotional difficulties [2]. It is possible, for instance, that higher levels of infant fearfulness, that were observed in this study, contribute to higher levels of internalizing symptoms (i.e., somatic complaints, social problems) for Chinese youngsters, relative to children from other cultures.

In this research temperament was evaluated through a parent-report questionnaire that included items addressing infants' characteristics manifested in a variety of situations. This exclusive reliance on parent report represents the most significant limitation of the present study, limiting the opportunity to rule out the potential

influence of “reporting biases” and/or cultural variability in responding patterns. It should be noted that the longitudinal analyses conducted in this investigation support the pattern of the overall cross-cultural differences, making the “response bias” explanation of the differences less plausible. Nonetheless, future longitudinal cross-cultural investigations should include laboratory-based observational measures of temperament in infancy, enabling researchers to “untangle” true cross-cultural differences from potential contributions of “reporting biases” and/or cross-cultural differences in reactions to parent-report measurement tools. In addition, the use of multiple assessment methodologies (e.g., parent-report and laboratory observations of temperament) could help determine if the somewhat lower internal consistency estimates (Alphas of about 0.60) noted for several scales in this study have led to an attenuation of the addressed relationships. It is possible that additional significant effects involving culture, age, and/or gender have gone undetected in the present investigation due to lower internal consistency for several IBQ scales, administered at certain ages/assessments. A multi-method investigation could provide evidence of this potential attenuation, in so far as additional significant effects emerge when alternative methodologies (e.g., observations) are utilized. In summary, the multi-method approach is necessary in order to extend the results obtained in this study, and to ensure that the temperament constructs addressed in this study can be adequately represented by identical indicators across the different cultures. Additionally, cross-cultural differences in temperament were predicted primarily because culturally-influenced parenting was expected to lead to differential expressions of temperament across cultures in early childhood; however, parenting behaviors/attitudes were not directly assessed in the context of the present investigation. Thus, a simultaneous evaluation of cross-cultural differences in child temperament and parenting should be conducted in the future.

Finally, the PRC one-child policy could have had an impact on the observed cross-cultural differences; although, the pattern of findings is not consistent with the latter explanation. Given that parents are able to raise a single child they would be expected to put forth greater effort in parenting this only offspring. This greater effort, translated into higher levels of sensitivity, would be expected to lead to lower levels of negative emotionality (e.g., fear), and possibly higher levels of positive temperament characteristics (e.g., smiling and laughter). However, the pattern of cross-cultural differences in this study was not consistent with the latter expectations (e.g., Chinese infants were described as more fearful than children from the US). On the other hand, the pattern of results observed in this study could be explained by elevated levels of parental anxiety. That is, parents of an only child would necessarily be less experienced in parenting, and therefore possibly more anxious regarding their efficacy in the parental role and the child’s well being, which in turn, could translate into higher levels of child fearfulness. Future studies should include Eastern/Collectivistic cultures that do not impose the same constraints on the parents (e.g., Taiwan), in order to completely rule out any potential contributions of this policy on child social-emotional development.

Summary

This study examined the development of temperament across three cultures: People’s Republic of China (PRC), United States of America (US), and Spain, utilizing a longitudinal design with assessment conducted throughout the first year of

life (3, 6, and 9 months of age). Selection of these cultural communities presented an opportunity to conduct Eastern–Western/Individualistic–Collectivistic comparisons. More pronounced differences between US, the most Western/Individualistic culture, and PRC, the most Eastern/Collectivistic country, were anticipated, with comparisons involving the Spanish sample producing a fewer number of statistically significant differences.

The US sample included 66, the PRC group 69, and the Spanish sample, 60 mothers, all of whom completed the Infant Behavior Questionnaire (IBQ) when their infants were 3, 6, and 9 months of age. Results related to mean group differences were generally consistent with our hypotheses, demonstrating a greater number of significant differences for US versus PRC, with fewer differences observed for US and Spain.

Significant main effects of culture were observed for Activity Level, Distress to Limitations, Fear, Soothability, and Duration of Orienting. Chinese infants were rated significantly higher on the Distress to Limitations scale, relative to infants from Spain and the US. Infants from the PRC received higher scores on both Duration of Orienting and Soothability scales, compared to Spanish and American children. Chinese infants were also rated as significantly more fearful than US children, whereas there was no significant difference between scores of children from the PRC and Spain. Analyses addressing developmental changes in temperament indicated patterns generally consistent with a priori expectations, and provided evidence for cross-cultural differences in temperament trajectories.

Results of this study contribute to our understanding of development of temperament in the first year of life, and the relationship between cultural influences and developmental changes. These findings also have clinical implications, in so far as these early appearing cross-cultural differences in temperament likely provide the foundation for later appearing differences in symptoms of psychopathology and behavior problems. Future longitudinal cross-cultural investigations should include laboratory-based observational measures of temperament in order to conclusively address potential contributions of “reporting biases” and/or cross-cultural differences in reactions to parent-report measurement tools, as well as to confirm that the temperament constructs addressed in this study can be adequately represented by identical indicators across the different cultures.

References

1. Rothbart MK, Derryberry D (1981) Development of individual differences in temperament. In: Lamb ME, Brown AL (eds) *Advances in developmental psychology*, vol. 1. Erlbaum, Hillsdale, NJ, pp 37–86
2. Rothbart MK, Bates JE (1998) Temperament. In: *Handbook of child psychology: social, emotional, and personality development*, vol. 3(5). Series ed. Damon W, Vol. ed. Eisenberg N. Wiley, New York. pp 105–176
3. Kohnstamm GA (1989) Temperament in childhood: cross-cultural and sex differences. In: Kohnstamm G, Bates JE, Rothbart MK (eds) *Temperament in childhood*. Wiley, New York, pp 483–508
4. Bornstein MH, Tal J, Tamis-LeMonda C (1991) Parenting in cross-cultural perspective: The United States, France, and Japan. In: Bornstein MH (ed) *Cultural approaches to parenting*. Erlbaum, Hillsdale, NJ, pp 69–90
5. Caudill W, Frost L (1972) A comparison of maternal care and infant behavior in Japanese-American, American, and Japanese families. In: Bronfenbrenner U (ed) *Influences on human development*. Dryden Press, Hinsdale, IL

6. Bornstein MH, Haynes OM, Pascual L, Painter KM, Galperin C (1999) Play in two societies: pervasiveness of process, specificity of structure. *Child Dev* 70:317–331
7. Keller H, Yovsi R, Borke J, Kartner JH, Jensen H, Papaligoura Z Developmental consequences of early parenting experiences: self-recognition and self-regulation in three cultural communities. *Child Dev* 75:1745–1760
8. Triandis HC (1995) Individualism and collectivism. Westview, Boulder, CO
9. Triandis HC (2001) Individualism–collectivism and personality. *J Pers* 69:907–924
10. Leung K (1987) Some determinants of reaction to procedural models for conflict resolution: a cross-national study. *J Pers Soc Psychol* 53:898–908
11. Greenfield PM, Suzuki LK (2000) Culture and human development: implication for parenting, education, pediatrics, and mental health. In: Damon W, Sigel IE, Renninger KA (eds) *Handbook of child psychology*. John Wiley & Sons, New York, pp 1059–1109
12. Hofstede G (1980) *Cultures of consequences: international differences in work-related values*. Sage, Beverly Hills, CA
13. Leung K, Au Y, Fernández-Dols JM, Iwawaki S (1992) Preference for methods of conflict processing in two collectivist cultures. *Int J Psychol* 27:195–209
14. Hsu C, Soong W, Stigler JW, Hong C, Liang C (1981) The temperamental characteristics of Chinese babies. *Child Dev* 53:1337–1340
15. Windle W, Iwawaki S, Lerner RM (1988) Cross-cultural comparability of temperament among Japanese and American preschool children. *Int J Psychol* 23:547–567
16. Windle W, Iwawaki S, Lerner RM (1987) Cross-cultural comparability of temperament among Japanese and American early- and late- adolescents. *J Adolesc Res* 2:423–446
17. Arbiter E, Sato-Tanaka R, Bowlby IK, Letich I (1999) Differences in behaviour and temperament between Japanese and British toddlers living in London: a pilot study. *Child Psychol Psychiatr Rev* 4:117–125
18. Pomerleau A, Sabatier C, Malcuit G (1998) Quebecois, Haitian, and Vietnamese mothers' report of infant temperament. *Int J Psychol* 33:337–344
19. Chen X, Hastings PD, Rubin KH, Chen H, Cen G, Stewart SL (1998) Child-rearing attitudes and behavioral inhibition in Chinese and Canadian toddlers: a cross-cultural study. *Dev Psychol* 34:677–686
20. Fox NA (1994) Dynamic cerebral processes underlying emotion regulation. In *The development of emotion regulation: Behavioral and biological considerations*. Monogr Soc Res Child Dev, vol. 59. ed. Fox NA pp 152–166, 250–283
21. Kagan J, Reznick JS, Snidman N (1987) The physiology and psychology of behavioral inhibition in children. *Child Dev* 58:1459–1473
22. Boivin M, Hymel S, Bukowski WM (1995) The roles of social withdrawal, peer rejection, and victimization by peers in predicting loneliness and depressed mood in childhood. *Dev Psychopathol* 7:765–785
23. Rubin KH, Chen X, Hymel S (1993) Socio-emotional characteristics of aggressive and withdrawn children. *Merrill-Palmer Q* 49:518–534
24. Rubin KH (1998) Social and emotional development from a cultural perspective. *Dev Psychol* 34:611–615
25. Ho DYF (1986) Chinese patterns of socialization: a critical review. In: Bond MH (ed) *The psychology of Chinese people*. Oxford University Press, New York, pp 1–37
26. Ho DYF, Kang TK (1984) Intergenerational comparisons of child-rearing attitudes and practices in Hong Kong. *Dev Psychol* 20:1004–1016
27. Kagan J (1998) Biology and the child. In: *Handbook of child psychology: Social, emotional and personality development*, vol. 3(5). Series ed. Damon W, Vol. Ed. Eisenberg N. New York: Wiley, pp 177–235
28. Rothbart MK (1988) Temperament and the development of the inhibited approach. *Child Dev* 59:1241–1250
29. Carranza JA, Perez J, González C, Martínez MT (2000) A longitudinal study of temperament in infancy: stability and convergence of measures. *Eur J Pers* 41:21–37
30. Rothbart MK (1981) Measurement of temperament in infancy. *Child Dev* 52:569–578
31. Ruff HA, Rothbart MK (1996) *Attention in early development: themes and variations*. Oxford University Press, New York
32. Posner MI, Rothbart MK (1992) Attention and conscious experience. In: Milner AD, Rugg MD (eds) *The neuropsychology of consciousness*. Academic Press, London, pp 183–199
33. Cairns RB (1983) The emergence of developmental psychology. In: Mussen PH (ed) *Handbook of child psychology: history, theory, and methods*. Wiley, New York

34. McDevitt SC, Carey WF (1981) Stability of ratings vs. perceptions of temperament from early infancy to 1–3 years. *Am J Orthopsychiatry* 51:342–345
35. Peters-Martin P, Wachs T (1984) A longitudinal study of temperament and its correlates in the first 12 months. *Infant Behav Dev* 7:285–298
36. Riese ML (1987) Temperamental stability between the neonatal period and 24 months. *Dev Psychol* 23:216–222
37. Rothbart MK (1986) Longitudinal observation of infant temperament. *Dev Psychol* 22:356–365
38. González C, Hidalgo MD, Carranza JA, Ato M (2000) Elaboración de una adaptación a población española del Cuestionario Infant Behavior Questionnaire para la medida del temperamento en la infancia (Development of a Spanish adaptation of the Infant Behavior Questionnaire for the measurement of temperament in infancy). *Psicothema* 12:513–519
39. Ye R, Rothbart MK (1988) A longitudinal study of infants' behaviors. *Psychol Dev Educ* 4:6–10
40. Bridges LJ, Palmer SA, Morales M, Hurtado M, Tsai D (1993) Agreement between affectively based observational and parent-report measures of temperament at infant age 6 months. *Infant Behav Dev* 16:501–506
41. Crockenberg S, Acredolo C (1983) Infant temperament ratings: a function of infants, of mothers, or both? *Infant Behav Dev* 6:61–72
42. Goldsmith HH, Rothbart MK (1991) Contemporary instruments for assessing early temperament by questionnaire and in the laboratory. In: Angleitner A, Strelau J (eds) *Explorations in temperament: International perspectives on theory and measurement*. Plenum, New York
43. Reznick JS, Gibbons JL, Johnson MO, McDonough PM (1989) Behavioral inhibition in a normative sample. In: Reznick JS (ed) *Perspectives on behavioral inhibition*. The John D. and Catherine T. MacArthur Foundation series on mental health and development. The University of Chicago Press, Chicago, IL, pp 25–49
44. Zhang K, Lee Y, McCauley CR (1999) Chinese-American differences: A Chinese view. In: Lee Y, McCauley CR, Draguns JG (eds) *Personality and person perception across cultures*. Lawrence Erlbaum Associates, Mahwah, NJ, pp. 127–138
45. Diaz-Loving R, Draguns JG (1999) Culture, meaning, and personality in Mexico and the United States. In: Lee Y, McCauley CR, Draguns JG (eds) *Personality and person perception across cultures*. Lawrence Erlbaum Associates, Mahwah, NJ, pp 103–125
46. Freedman DG (1971) Genetic influences on development of behavior. In: Stoelting G, van der Werff Ten Bosch J (eds) *Normal and abnormal development of behavior*. Leiden University Press, Leiden, the Netherlands
47. Woodson RH, da Costa E (1989) The behavior of Chinese, Malay, and Tamil newborns from Malaysia. In: Nugent JK, Lester BM, Brazelton TB (eds) *The cultural context of infancy*. Ablex Publishing Corporation, Norwood, NJ, pp 295–317
48. Brazelton TB (1989) Culture and newborn behavior: uses of the NBAS in different cultural settings. In: Nugent JK, Lester BM, Brazelton TB (eds) *The cultural context of infancy*. Ablex Publishing Corporation, Norwood, NJ, pp 367–381
49. Muret-Wagstaff S, Moore SG (1989) The Hmong in America: infant behavior and rearing practices. In: Nugent JK, Lester BM, Brazelton TB (eds) *The cultural context of infancy*. Ablex Publishing Corporation, Norwood, NJ, pp. 319–340
50. Draguns JG, Tanaka-Matsumi J (2003) Assessment of psychopathology across and within cultures: issues and findings. *Behav Res Ther* 41:755–776
51. Crinjen AAM, Achenbach TM, Verhulst FC (1999) Problems reported by parents of children in multiple cultures: the Child Behavior Checklist syndrome constructs. *Am J Psychiatry* 156:569–574

Copyright of *Child Psychiatry & Human Development* is the property of Springer Science & Business Media B.V. and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.