

Cross-cultural differences in temperament in the first year of life: United States of America
(U.S.) and Russia

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Temperament approaches to the development of personality, on the surface, may seem incompatible with the cross-cultural orientation to the study of behavior. Temperament research tends to emphasize common biological underpinnings of individual differences in temperament characteristics. For example, the psychobiological approach proposed by Rothbart and Derryberry (1981) has conceptualized temperament as constitutionally based individual differences in reactivity and self-regulation, influenced by heredity, maturation, and experience. In so far as these biologically-based reactive and regulatory factors are influenced by experience, cultural differences can be anticipated.

Cultural groups often differ in their values and patterns of child rearing, that tend to be relatively stable (Kohnstamm, 1989). Parents within cultural groups are generally motivated to reproduce temperament characteristics in their offspring that are consistent with their values, and those of the cultural group. Thus, individual children are socialized into phenotypical presentations that are desirable, appropriate, or at least tolerable within cultural norms (Kohnstamm, 1989). Although most families can be described as showing a general tendency to avoid the development of extremes in reactivity and regulation, variability in parenting can be attributed to the impact of cultural differences.

Cross-cultural temperament research has not been widespread, especially during the infancy period, however, a number of important findings have emerged. These findings can be divided into two groups: (1) dealing with differences in means and variances between the cultural groups; (2) addressing differences in the structure of temperament across cultures. A number of mean differences in the levels of temperament attributes across cultures have been reported (Hsu, Soong, Stigler, Hong, & Liang, 1981), whereas similarity in the structure of temperament and personality across cultures has been described on the basis of factor-analytic research, that has provided evidence for three and five factor models (Goldberg, 1983). However, differences in the structure of temperament have also been noted in cross-cultural comparisons. Rothbart, Ahadi, Hershey, and Fisher (in press) noted that factor analyses performed with U.S. and Japanese samples led to a regulatory/attentional factor that included indicators of positive affect, whereas for Chinese samples this relationship between regulatory attentional functions and positive emotionality was not observed. The authors concluded that the cultural emphasis on presenting with positive affect (e.g., smiling when being introduced, while greeting, etc.) may be responsible for the observed difference.

The study of cultural influences on temperament has focused on comparisons among vastly different cultures, such as those with Eastern/Interdependent and Western/Independent values (Ho et al., 1981; Triandis, 1995). However, research in cultures with mixed values,

such as Russia, can also provide important information regarding the cultural influences. The Russian culture is similar to the East in stressing the importance of communal over individual values (Triandis, 1995). But unlike the Eastern cultures, children in Russia are not discouraged from independent activities, assertiveness and competition. There has been little systematic study of Russian children's temperament from the cross-cultural perspective. Thus, the present study was designed to address cross-cultural differences between samples of U.S. and Russian infants.

Method

Participants

A community sample of ninety Russian primary caregivers of infants between three and twelve months of age were recruited for the study, and subsequently completed the IBQ-R. Participants were recruited while visiting healthy child clinic in Novosibirsk, Russia. U.S. data were collected at two different locations: Eugene-Springfield, Oregon, and San Francisco Bay area, California. A group of participants (N=90) was selected from the U.S. sample (N = 500) to resemble the Russian sample in terms of the distribution of gender, as well as the mean level and variability of infant age. The Russian and the U.S. samples were identical in terms of infant's gender distribution (54 male, 36 female), and age (U.S.: M = 29.0 weeks; SD = 12.1/Russian: M = 29.0 weeks, SD = 12.1). These samples were also very similar in terms of the caregivers' education (U.S. parents: M = 13.6 years, S.D. = 2.4; Russian parents: M = 13.6 years; S.D. = 2.2), but differed on caregivers' age (U.S. parents: M = 31.4 years, S.D. = 7.1; Russian parents: M = 27.0 years, S.D. = 6.0; $t(1, 173) = 4.38, p < .0001$). There were also significant differences on the caregiver's marital status: in the US sample 91% were married or remarried, 3% separated, divorced or widowed, and 6% single, while in the Russian sample only 72 % were married or remarried, 11% living together, 8% separated or divorced, and 9% single ($\chi^2 = 14.04, p < .003$).

Measures

The Infant Behavior Questionnaire-Revised (IBQ-R; Gartstein & Rothbart, 2001). The IBQ-R represents a rationally derived, fine-grained assessment tool, based on the definition of temperament proposed by Rothbart & Derryberry (1981), work with the Child Behavior Questionnaire (Rothbart, Ahadi, & Hershey, 1994), comparative studies, as well as other developmental research that had identified significant dimensions and associated behavioral tendencies. The development of this measure involved (1) formulating precise operational definitions of each dimension of temperament, and items assessing each of these dimensions; (2) performing item analysis items across the different age groups of infants (i.e., eliminating

items with a large number of missing responses, and items that failed to contribute to the internal consistency of their respective scales). This multi-step process led to the development of 14 IBQ-R scales: Activity Level, Smiling and Laughter, Fear (social and non-social), Distress to Limitations, Duration of Orienting, Soothability, Vocal Reactivity, High and Low Intensity Pleasure, Falling Reactivity, Affiliation/ Cuddliness, Perceptual Sensitivity, Sadness, and Approach (See Table 1 for definitions). A three factor structure has been demonstrated for these IBQ-R scales, including Surgency, Negative Affectivity, and Orienting/Regulatory Capacity.

Demographic Questionnaire. This instrument was designed to evaluate basic background characteristics of the respondent. Information was obtained regarding the participants' education, income, occupation, age and marital status.

Procedure

Translation. All of the materials, including the questionnaires and consent forms, were translated into Russian. The IBQ-R, the Demographic Questionnaire, and the consent form were translated from English to Russian by the first author (M.A.G.), and back-translated by the second author (H.R.S.). Subsequently, the original and the back-translated copies of the IBQ-R and other materials were compared, and the Russian translation was revised on the basis of the observed discrepancies. In addition, the education, occupation and income items of the Demographic Questionnaire for the Russian sample were modified to be consistent with the socio-economical situation in Russia (Kharchenko, 2000).

Data Collection-Russia. Parents of infants between three and twelve month of age, who visited the healthy child clinics in Novosibirsk for their regular examination, were asked to participate in the study until 90 questionnaires were obtained for the total sample, with approximately equal number of participants in each of the three age groups evaluated in this study (Group 1: 3 to 6 month old; Group 2: 6-9 month old; and Group 3: 9 to 12 month old infants). The study was described to each parent, and they were told that their participation would involve completing the IBQ-R and a demographic form, taking about an hour.

Data Collection-U.S. Parents of infants between three and twelve month of age, whose births were reported in the Eugene-Springfield, OR newspaper, were contacted by

phone until 120 questionnaires were obtained for each of the three age groups evaluated in this study (Group 1: 3 to 6 month old; Group 2: 6-9 month old; and Group 3: 9 to 12 month old infants). Each respondent was mailed a consent form with the questionnaire materials, which s/he signed and returned with the other information. A similar procedure was adapted in the San Francisco Bay Area, CA. Birth announcements were reviewed, and parents of infants who were about 3, 6, 9, and 12 months of age were contacted by telephone. Parents were also asked to complete the materials in a timely fashion, since the infant was considered eligible only if s/he was within two weeks of 3, 6, 9, or 12 months of age. The questionnaire materials were exchanged through the mail.

Results

Significant differences between cultures were anticipated in terms of mean levels of temperament attributes, and the structure of temperament, evaluated through a correlational analysis. Reliability of the IBQ-R for the Russian sample was evaluated prior to considering these hypotheses. Satisfactory internal consistency was demonstrated (Table 2). Subsequently, independent t-tests were conducted in order to discern cultural differences between the U.S. and the Russian samples. Significant differences between the U.S. and Russian infants were observed for six IBQ-R subscales (Table 2). Correlations between the IBQ-R scales were computed for the Russian and the U.S. comparison sample (Table 3). These correlation matrices were subsequently compared, following the guidelines provided by Green (1992). Goodness of fit indicators provided evidence of a significant difference between the two correlation matrices ($\chi^2 = 164.86, p < .001; GFI=.90$), suggesting different patterns of associations between the temperament variables for the two cultures.

Discussion

Most of significant differences were indicative of the U.S. parents reporting more frequent manifestations of positive emotions in their infants, whereas report of the Russian participants indicated a greater frequency of negative affect manifestations. The U.S. infants received higher ratings on the scales addressing Smiling/Laughter, High and Low Intensity Pleasure, whereas they were perceived as exhibiting lower levels of Distress to Limitations. There was also a trend for the Russian infants to receive higher scores on the Fear scale.

Parents of Russian infants reported lower levels of Vocal Reactivity, and there was a trend for lower scores on the Approach scale for the Russian infants. A number of these scales (e.g., Smiling/Laughter, High Intensity Pleasure, Vocal Reactivity, Approach) have been linked with the overarching temperament/personality dimension of Extraversion/Surgency (Gartstein & Rothbart, 2001), and our findings may suggest less frequent/intense manifestations of this dimension for the Russian sample. In addition, lower levels of Perceptual Sensitivity were reported by the Russian parents, and there were trends for lower levels of Soothability and Falling Reactivity for the Russian infants. These temperament characteristics have been associated with regulatory functioning (Gartstein & Rothbart, 2001; Rothbart, Ahadi, Hershey, & Fisher, in press), and the present findings may be indicative of lower levels of regulation-related characteristics for the Russian infants. Interestingly, U.S. children have been described as exhibiting higher levels of positive affect and regulatory functioning, and lower levels of negative emotionality relative to children from Asian cultures (e.g., Taiwan, Japan) (Hsu, Soong, Stigler, Hong, & Liang, 1981; Windle, Iwawaki, & Lerner, 1988).

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Table 1

Scale Definitions: Infant Behavior Questionnaire - Revised (IBQ-R)

| | |
|--------------------------------|---|
| Activity Level | Gross motor activity, including movement of arms and legs, squirming and locomotor activity. (“When put into the bath water, how often did the baby splash or kick?”) |
| Distress to Limitations | Fussing, crying or showing distress while a) in a confining place or position; b) in caretaking activities; c) unable to perform a desired action. (“When placed on his/her back, how often did the baby fuss or protest?”) |
| Fear | Startle or distress to sudden changes in stimulation, novel physical objects or social stimuli; inhibited approach to novelty. (“How often during the last week did the baby startle to a sudden or loud noise?”) |
| Duration of Orienting | Attention to and/or interaction with a single object for extended periods of time. (“How often during the last week did the baby stare at a mobile, crib bumper or picture for 5 minutes or longer?”) |
| Smile and Laughter | Smiling or laughter during general caretaking and play. (“How often during the last week did the baby smile or laugh when given a toy?”) |
| High Intensity Pleasure | Pleasure or enjoyment related to high stimulus intensity, rate, complexity, novelty, and incongruity. (“During a peek-a-boo game, how often did the baby smile?”) |
| Low Intensity Pleasure | Amount of pleasure or enjoyment related to low stimulus intensity, rate, complexity, novelty and incongruity. (“When playing quietly with one of his/her favorite toys, how often did the baby show pleasure?”) |
| Soothability | Reduction of fussing, crying, or distress when soothing techniques are |

Continued

used by the caregiver. (“When patting or gently rubbing some part of the baby’s body, how often did s/he soothe immediately?”)

Falling Reactivity Rate of recovery from peak distress, excitement, or general arousal; ease of falling asleep. (“When frustrated with something, how often did the baby calm down within 5 minutes?”)

Cuddliness Expression of enjoyment and molding of the body to being held by a caregiver. (When rocked or hugged, during the last week, how often did the baby seem to enjoy him/herself?)

Perceptual Sensitivity Detection of slight, low intensity stimuli from the external environment. (“How often did the baby notice fabrics with scratchy texture (e.g., wool)?”)

Sadness Lowered mood and activity related to personal suffering, physical state, object loss, or inability to perform a desired action; general low mood. (“Did the baby seem sad when the caregiver was gone for an unusually long period of time?”)

Approach Rapid approach, excitement, and positive anticipation of pleasurable activities. (“When given a new toy, how often did the baby get very excited about getting it?”)

Vocal Reactivity Amount of vocalization exhibited by the baby in daily activities. (When being dressed undressed during the last week, how often did the baby coo or vocalize?)

Table 2. Mean Differences in IBQ-R Scores for the U.S. and Russian Samples^a, and Cronbach Alphas for the Russian sample

| Temperament Variable | Alpha | Mean Difference | t | p |
|-------------------------|-------|-----------------|-------|------|
| Activity | .83 | 0.24 | 1.62 | Ns |
| Distress to Limitations | .81 | -0.38 | -2.95 | .004 |
| Fear | .94 | -0.43 | -2.39 | .018 |
| Duration of Orienting | .87 | -0.23 | -1.28 | Ns |
| Smiling and Laughter | .83 | 0.78 | 4.85 | .000 |
| High Intensity Pleasure | .91 | 0.60 | 3.47 | .001 |
| Low Intensity Pleasure | .91 | 0.46 | 2.88 | .004 |
| Soothability | .96 | 0.41 | 2.16 | .032 |
| Falling Reactivity | .88 | 0.43 | 2.56 | .011 |
| Cuddliness/Affiliation | .91 | 0.09 | 0.58 | ns |
| Perceptual Sensitivity | .88 | 0.82 | 4.29 | .000 |
| Sadness | .86 | -0.15 | -1.02 | ns |
| Approach | .93 | 0.43 | 2.11 | .037 |
| Vocal Reactivity | .81 | 0.73 | 4.70 | .000 |

^a Positive value indicate that the U.S. infants received higher scores than the Russian sample.

Note. All comparisons were done with 178 degrees of freedom.

Table 3. Inter-correlations among the IBQ-R Scales: Russian and U.S. samples.

| | ACT | DL | FEAR | DO | SL | HP | LP | SOOT | FALL | CUD | PS | SAD | APP | VR |
|------|-------|--------|-------|-------|--------|-------|-------|--------|--------|--------|-------|--------|-------|-------|
| ACT | ----- | .60** | .30* | -.10 | -.07 | .19 | -.13 | -.26* | -.34** | -.50** | .23* | .29** | .27* | .15 |
| DL | .27** | ----- | .35** | -.21* | -.44** | .05 | -.27* | -.29** | -.59** | -.47** | .14 | .47** | .17 | -.03 |
| FEAR | .25* | .43** | ----- | .14 | -.02 | .06 | -.01 | -.08 | -.17 | -.27* | .41** | .43** | .09 | .16 |
| DO | -.11 | .02 | .30** | ----- | .48** | .42** | .53** | .34** | .08 | .37** | .42** | .01 | .35** | .53** |
| SL | .27** | -.06 | .08 | .26* | ----- | .43** | .54** | .28** | .32** | .36** | .28** | -.09 | .29** | .62** |
| HP | .39** | .09 | .07 | .25* | .59** | ----- | .45** | .30** | .12 | .19 | .45** | .06 | .62** | .52** |
| LP | -.11 | -.28** | .03 | .37** | .33** | .27* | ----- | .24* | .18 | .39** | .26** | -.05 | .22* | .50** |
| SOOT | .13 | -.09 | .07 | -.03 | .27** | .35** | .11 | ----- | .48** | .39** | .23* | -.26* | .13 | .21* |
| FALL | -.01 | -.43** | -.18 | -.15 | .16 | .11 | .09 | .49** | ----- | .35** | -.04 | -.52** | -.02 | .17 |
| CUD | -.26* | -.27** | -.26* | .04 | .24* | .11 | .31** | .33** | .30** | ----- | .08 | -.22* | -.02 | .15 |
| PS | .31** | .22* | .37** | .12 | .31** | .37** | .15 | .24* | .03 | -.19 | ----- | .16 | .53** | .40** |
| SAD | .12 | .63** | .44** | .13 | .02 | .04 | -.15 | -.03 | -.29** | -.02 | .15 | ----- | .07 | .05 |
| APP | .42 | .08 | .12 | -.05 | .39** | .40** | .05 | .34** | .21* | .14 | .35** | .14 | ----- | .51** |
| VR | .46 | .10 | .26* | .14 | .68** | .63** | .14 | .31** | .09 | -.03 | .51** | .12 | .57 | ----- |

Note. Correlations for the IBQ-R scales computed for Russian infants are above the diagonal, and for U.S. infants are below the diagonal.

** $p < .01$ (2-tailed); * $p < .05$ (2-tailed).