

Infant Temperament in Russia, United States of America, and Israel: Differences and Similarities Between Russian-speaking Families

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Abstract The present study addresses cross-cultural differences between infants born to families of Russian immigrants in USA and Israel, as well as Russian families residing in Russia, with the emphasis on evaluating the impact of immigration and acculturation. Community samples of primary caregivers of infants between 3 and 12 months of age were recruited and asked to complete temperament (IBQ-R) and acculturation (SAM) questionnaires. Results support our hypotheses that cultural influences contribute to shaping infant temperament, in so far as differences between the samples of infants were found in Perceptual Sensitivity and Low Intensity Pleasure domains of temperament. Although, a number of temperament scales did not significantly correlate with the degree of parents' acculturation, different patterns of correlations emerged for Russian–Israeli and for Russian–American samples.

Keywords Infancy · Temperament · Cross-cultural · Longitudinal · Russian immigration

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Introduction

The present study focused on the link between the contextual factors and temperament of infants of Russian decent. In addition, the impact of the immigration process on infant temperament was examined. While limited work has been done to explore environmental elements, such as culture, it is important to consider how non-biological factors may play an integral role in social-emotional development and early manifestation of temperament in particular. This potential environmental influence is especially valuable to consider during infancy, given that the developmental processes are particularly sensitive to environmental factors such as parenting styles and cultural traditions [1]. The investigation of cross-cultural differences in infancy are likely to produce a more profound understanding of how different cultural contexts impact developmental processes, and whether our understanding of temperament development in one cultural context can be readily generalized to another culture, without any limitations.

Potential social influences on the development of temperament likely include cultural differences, and the impact of major life events, such as immigration, both of which may play important roles in shaping the development of temperament and personality. Most researchers agree that temperament represents a group of interrelated factors, such as activity level, emotionality, and stimulus sensitivity [2, 3]. The psychobiological approach proposed by Rothbart and Derryberry [4] has conceptualized temperament as constitutionally based individual differences in reactivity and self-regulation, influenced by heredity, maturation, and experience, wherein “constitutional” refers to the relatively enduring biological make-up of the individual, influenced by the interactions of heredity, maturation, and experience. Reactivity encompasses arousability of affect, motor activity, and attentional responses (i.e., orienting), whereas, self-regulation refers to processes such as behavioral inhibition and self-soothing, serving to modulate reactivity [5]. Thus, the development of temperament has then been conceptualized as a product of genetic influences, the development of the central nervous systems (CNS), as well as the child’s experience in the surrounding environment. Parenting, and related contextual factors, such as culture and acculturation, would be expected to play a particularly influential role in shaping such experience in early childhood, likely contributing to evolving individual differences in temperament, manifesting themselves in the first year of life.

The process of child development cannot be separated from the child’s immediate social and cultural environment, which likely produces different developmental experiences for children in different cultures [6]. For example, children in different cultures may go through the same developmental stages, but at different times, with varying intensities, and/or with differing outcomes. Despite such important potential differences, most of the current developmental theories were generated and tested in the context of western cultures, mostly in the USA [6]. Cross-cultural research on child development provides a broader insight into different aspects of the phenomena, potentially bringing to light mechanisms and processes that may go undetected when studied with a culturally homogenous group. Bornstein [7] specifically emphasized the advantages of multicultural investigations in developmental research, because these studies enrich our understanding of the investigated phenomenon, allowing wider and more reliable generalizations.

The theoretical framework for anticipating culture-related effects has been proposed by Super and Harkness [8]. They conceptualized this interface between child and culture as a “developmental niche”, that was described as a function of (1) customs [especially those related to child rearing], (2) settings available to the child, and (3) caregiver psychosocial characteristics. Each of the three facets then shapes the developmental

niche of a child and in turn interacts with other features of the larger ecology, operating in a coordinated manner. In addition, the child and the niche are mutually adaptive. Aspects of the developmental niche have been studied, with research based on western samples demonstrating differences in “parental ethnotheories”, or culturally derived belief systems regarding children, family, and parenthood [9], which in turn translate into different approaches to parenting, likely leading to systematic variability in child characteristics.

Cross-cultural research addressing infant temperament has not been widespread. Differences found between infants of different cultures have been mainly attributed to genetic factors, and environmental influences such as parenting practices or acculturation, were largely discounted as contributing factors to these differences until recently [3]. Existing studies have documented cross-cultural differences in infant temperament that can be divided into two groups: (1) differences in means and variances between the cultural groups [10–12], and (2) differences in the structure of temperament across cultures [13–15]. Despite increasing attention to cross-cultural differences in child temperament, to date, there has been little systematic study of Russian children’s temperament from the cross-cultural perspective [16], especially in early childhood. More recently, a number of differences between Russian and US infants have been reported, including differences in attributes associated with regulatory functioning, with Russian infants exhibiting lower levels of these characteristics. Russian mothers reported fewer expressions of attributes linked with Positive Affectivity/Surgency, and higher levels of Negative Emotionality in infancy, compared to their US counterparts [17].

The present study was designed to evaluate differences between infants born to Russian families that have immigrated to the United States, infants born to Russian families that have immigrated to Israel, and a sample of Russian families residing in Russia, addressing the impact of immigration and acculturation. Because the culture of origin for the immigrant groups was identical, differences between these Russian-speaking groups were expected to largely reflect discrepancies between the host cultures and respective immigration and acculturation experiences. To date, studies addressing links between caregivers’ immigration and acculturation experiences and infant temperament have not been conducted. Most individuals experience immigration as a stressor of marked gravity [18, 19], with considerable implications for family and parental functioning, which may in turn lead to influences on the development of temperament attributes. Given that immigration, and subsequent acculturation, have been previously described as significantly impacting familial/parental adjustment, and parenting practices [9], the resulting modifications in caregiving have implications for child social-emotional development, including temperament. In addition, acculturation into a new social, political, and economic environment may influence values related to parenting and desired child characteristics [20], also potentially impacting the development of individual differences in these attributes.

Immigration as a major life event represents a stressor that may lead to a substantial change in individual’s values, norms, behaviors, and perceptions of self and others. The intensity of the stress experienced by an individual and the amount of cultural change that will result depends on many factors such as one’s acculturation attitudes, time spent in the host country, reason for immigration, and structural-contextual characteristics of the host country [21]. In fact, the effects of immigration on parenting, such as diminished parental authority and changes in familial structure have been reported by Russian immigrants in the United States. These parents also reported experiencing multiple

stressors arising from the clash between cultural norms in the two countries [22]. Acculturation represents a process of change that an individual or an entire cultural group undergo as a result of continuous and intensive contact with another cultural group over an extended period of time, which typically occurs after immigration [23, 24]. Although this process is likely to occur for both groups in contact, the change will be larger for the nondominant (i.e., immigrant) group. Members of this group may be pressured to adopt some of the salient values of the dominant cultural group such as language, laws, and social norms [18]. As Gibson [24] points out, the process of acculturation is heterogeneous and multidimensional. The nature and outcome of the acculturation process are influenced by numerous factors such as the specific structural characteristic and ethnic makeup of the host culture, the immigrant's status in the country of origin, and reasons for immigration. For example, immigrants who settle down in isolated co-ethnic communities are less likely to undergo an extensive and rapid cultural change compared to those who settle down in the broad communities and are surrounded mainly by members of the host culture. According to Berry [25], the behavioral domains that are impacted most significantly include the use of language, cognitive perceptions, personality, and attitudes. During the process of acculturation, a shift occurs toward increased use of the language of the host culture and decreased use of the language of origin. The language of the host culture also tends to hold a higher prestige for the newcomers. Nevertheless, the opposite trend also exists where the traditional language is retained deliberately in families and carried over throughout generations [25]. Acculturation influences, secondary to immigration, may lead to alterations in parents' interpretations of their infants' reactivity and regulation, and their reports of child temperament.

The present study was designed to evaluate differences between three groups of infants: (1) a sample of infants born to Russian families that have immigrated to the United States; (2) a sample of infants born to Russian families that have immigrated to Israel; and (3) a sample of Russian families residing in Russia, addressing the influences of immigration and acculturation on parental perceptions of infant temperament. We hypothesized significant differences between these groups in the mean levels of infant temperament attributes because of such influence, although the lack of previous research did not allow us to make more precise a-priori hypotheses regarding the effected dimensions. Given that the culture of origin for the two immigrant groups was identical, differences between these Russian-speaking groups were expected to largely reflect discrepancies between the host cultures and respective immigration and acculturation experiences. In this study, parents' orientation toward the host culture (US or Israel), as well as the culture of origin (Russia) were evaluated separately, enabling us to discern child temperament profiles linked with these two dimensions of cultural orientation/acculturation. That is, the extent of caregivers' openness toward the host culture (American or Israeli) and involvement in the culture of origin (Russian culture) were addressed individually, and subsequently correlated with child temperamental attributes. We anticipated that different sets of infant temperament attributes would be linked with parents' reports of higher and lower levels of involvement with the host culture, as well as the culture of origin, although we were not able to specify these temperament domains on an a priori basis because of paucity of prior research.

Despite this necessarily exploratory nature of the present investigation we hypothesized that as parental views and approaches to socialization change to resemble those of the host culture, the development of temperament in early childhood is affected in turn.

Method

Participants

A community sample of ninety Russian primary caregivers of infants between 3 and 12 months of age were recruited for this study. Participants were recruited while visiting healthy child clinic in Novosibirsk, Russia. A group of immigrants from the Former Soviet Union in the United States, residing primarily in the San Francisco Bay area, California ($N = 32$), was recruited through community advertisements (e.g., posted in Russian newspapers and businesses). Another sample of Russian immigrants was recruited through similar community-based approaches in Israel, residing primarily in Tel Aviv ($N = 40$). Both groups of immigrants completed the acculturation measure, along with the child temperament questionnaire, designed specifically for immigrants from the Former Soviet Union. The samples of immigrants from the Former Soviet Union included parents from Russia as well as other ex-Soviet republics (e.g., Ukraine, Belarus). This heterogeneity was not expected to significantly impact our findings, given the considerable uniformity imposed by the Soviet state in all areas of life, including parenting [26]. A group of participants ($N = 32$) was selected from both Russian–Israeli and Russian samples to resemble the Russian–American sample in terms of the distribution of infants' gender, as well as the mean level and variability of infant age. This is, we had matched the samples in terms of child gender and closest age in weeks, which resulted in three samples that were very similar in terms of infant's gender distribution, age, caregivers' education, and marital status; however, a significant difference in caregivers' age emerged, with caregivers in the Russian sample being significantly younger than those in the other two samples.

Measures

The Infant Behavior Questionnaire-revised

The IBQ-R represents a rationally derived, fine-grained assessment tool, based on the definition of temperament proposed by Rothbart and Derryberry [4], work with the Child Behavior Questionnaire [14], comparative studies, as well as other developmental research that had identified significant dimensions and associated behavioral tendencies [27]. The IBQ-R is comprised of 14 scales that have been factor analyzed to yield three overarching temperament dimensions: Positive Affectivity/Surgency (PAS: Approach, Vocal Reactivity, High Intensity Pleasure, Smiling and Laughter, Activity Level, and Perceptual Sensitivity); Negative Affectivity (NA: Sadness, Distress to Limitations, Fear, and negatively loading Falling Reactivity); Orienting/Regulatory Capacity (ORC: Low Intensity Pleasure, Cuddliness/Affiliation, Duration of Orienting, and Soothability). This parent-report measure of infant temperament has been translated into multiple languages, with reliability and validity of the IBQ-R demonstrated for US and Russian samples [13, 17, 27]. For example, the 14 IBQ-R fine-grained scales have been shown to have satisfactory internal consistency across different age groups, with Cronbach's alphas ranging from .70 to .90.

The Demographic Questionnaire

This questionnaire was designed to evaluate basic background characteristics of the respondent. Information was obtained regarding the participants' education, income,

occupation, age and marital status. This instrument was translated into Russian by the first (MAG) and fourth (HS) authors. 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 II personal communication).

The Soviet-Jewish Acculturation Measure

This questionnaire was designed to assess the level of individual's involvement in both the host (American/Israeli) culture and the culture of origin (Soviet Jewish) [28]. The SAM was derived based on the theoretical framework proposed by Berry et al. [23], which postulated that immigrants entering a host culture will adaptively change their original values and behaviors as a result of a conflict between the desire to maintain the values of original culture and the desire to belong to the host culture. The two scales of the SAM: Involvement in the Soviet-Jewish culture (ISJ) and Involvement in the United States culture (IUS) were developed based on a review of literature and consultation with members of Soviet-Jewish community. The items were chosen to reflect both attitudes and behaviors that are descriptive of each culture. The two culture-involvement scales are associated with satisfactory internal consistency, with Cronbach's alphas of .84 and .82 for the ISJ and IUS scales, respectively. Criterion and divergent validity of this measure were also demonstrated, on the bases of patterns of correlations with variables such as proficiency in English, time in the US, and measures of physical health. This instrument is available in Russian and English languages.

Procedure

Participating caregivers in all three countries (US, Russia, and Israel) completed the assessment instruments in Russian, their native language. They were provided with identical instructions for completing the measures.

Data Collection-Israel

Parents of infants between 3 and 12 month of age, who participated in Russian–Jewish activities such as social gatherings and family activities, in the Tel Aviv area, were asked to participate in the study until 40 questionnaires were obtained. The study was described to each parent, and they were told that their participation would involve completing the IBQ-R, SAM, and a demographic form, taking about an hour. Each participant was reimbursed (\$10.00) for his/her participation.

Data Collection-Russia

Parents of infants between 3 and 12 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. 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. As an incentive to participate parents were offered feedback from the pediatrician, on the basis on the evaluation of temperament and other information.

Data Collection-United States

Russian parents of infants between 3 and 12 months of age were recruited primarily in the San Francisco Bay area. This recruitment was accomplished through advertisements in local Russian newspapers, on Russian websites, and flyers distributed in local Russian stores and pediatricians' offices until 32 families responded. Each participating parent was mailed a consent form, which s/he signed and returned with the other information (i.e., questionnaire materials). Each participant was reimbursed (\$10.00) for his/her participation.

Results

Culture-related Differences in Child Temperament

It was hypothesized that the three cultural groups (Russian, Israeli and American) would differ significantly in mean levels of temperamental attributes. In order to investigate this hypothesis, means for all 14 IBQ-R scales were first computed for participants in all three samples. Subsequently, ANOVAs were performed to identify significant differences between the cultural groups for each IBQ-R scale. These analyses were conducted with IBQ-R subscales as dependent variables because of our interest in fine-grained differentiation of infant temperament. The results of these analyses are presented in Table 1.

Significant effects of culture were observed for Low Intensity Pleasure ($p < .01$), Soothability ($p < .01$), Perceptual Sensitivity ($p < .01$), Cuddliness ($p < .01$), and Falling Reactivity ($p < .05$) scales of the IBQ-R. Thus, the first hypothesis was supported for the above temperament constructs. Follow-up procedures, designed to determine more specific differences between the groups were applied to these IBQ-R scales, utilizing a Bonferroni correction to limit the impact of multiple statistical test (i.e., guard against the inflation of type 1 error rate, increased by multiple comparisons).

US infants demonstrated significantly lower rates of Low Intensity Pleasure than their Russian counterparts [$t(1,93) = 3.55; p < .01$]. Significant differences were apparent between the Israeli and American samples and between the Israeli and Russian samples in Soothability. The Israeli group exhibited higher levels of Soothability than Russian [$t(1,93) = 2.64; p < .05$] or American groups [$t(1,93) = 3.44; p < .01$]. Israeli infants also exhibited higher rates of Falling Reactivity compared to US children [$t(1,93) = 2.63; p < .05$], according to their parents. US youngsters were reported to exhibit significantly lower rates of Cuddliness than Israeli [$t(1,93) = 4.39; p < .01$] or Russian [$t(1,93) = 3.96; p < .01$] infants. Finally, significant differences between Israeli and Russian samples were found in Perceptual Sensitivity, with higher level of sensitivity exhibited by the Israeli sample [$t(1,93) = 3.19; p < .01$].

Correlations Between Acculturation and Temperament Measures

Significant correlations were expected between child temperament attributes and the two dimension of acculturation (i.e., orientation toward the host culture and the culture or origin) addressed in this study. This hypothesis was examined by analyzing data from the two groups of parents who had emigrated from Russia to Israel and the USA, respectively. Infants of parents who affiliated mostly with the host culture (American or Israeli) were expected to exhibit a different pattern of temperament attributes, relative to infants of

Table 1 Cross-cultural comparisons: Israel, US, and Russia

Temperament variable	Russia	Israel	US	F^a
Activity Level				
Mean	3.85	4.40	3.94	3.100
(SE)	(.17)	(.18)	(.15)	
Distress to Limitations				
Mean	3.81	3.58	3.74	.545
(SE)	(.18)	(.14)	(.15)	
Fear				
Mean	2.65	2.72	2.76	.069
(SE)	(.24)	(.16)	(.26)	
Duration of Orienting				
Mean	4.13	3.79	3.96	.434
(SE)	(.22)	(.18)	(.35)	
Smiling and Laughter				
Mean	4.31	4.74	4.15	2.869
(SE)	(.17)	(.19)	(.18)	
High Intensity Pleasure				
Mean	5.41	5.51	4.80	2.639
(SE)	(.22)	(.22)	(.28)	
Low Intensity Pleasure				
Mean	4.96	4.60	4.00	6.418**
(SE)	(.18)	(.20)	(.18)	
Soothability				
Mean	4.24	4.94	4.03	6.471**
(SE)	(.25)	(.12)	(.17)	
Falling Reactivity				
Mean	4.54	5.09	4.45	4.036*
(SE)	(.23)	(.14)	(.12)	
Cuddliness/Affiliation				
Mean	5.64	5.73	4.78	11.715**
(SE)	(.15)	(.13)	(.18)	
Perceptual Sensitivity				
Mean	2.78	3.83	3.32	5.090**
(SE)	(.21)	(.24)	(.25)	
Sadness				
Mean	3.61	3.81	3.35	1.719
(SE)	(.19)	(.15)	(.19)	
Approach				
Mean	4.23	4.53	4.42	.355
(SE)	(.28)	(.26)	(.23)	
Vocal Reactivity				
Mean	4.15	4.36	4.16	.352
(SE)	(.20)	(.20)	(.21)	

^a F value for the contrast ($df = 2, 93$)

^b ** $p < .01$; * $p < .05$, all two-tailed test

Table 2 Correlations between the SAM and the IBQ-R scales for the Russian–Israeli sample

Scale name	Involvement in the Soviet-Jewish culture	Involvement in the Israeli culture
Activity	−.003	.310
Distress to Limitations	−.145	.242
Fear	−.077	−.041
Duration of Orienting	−.051	.317*
Smiling and Laughter	−.032	.133
High Intensity Pleasure	.085	.167
Low Intensity Pleasure	.153	.027
Soothability	.144	.133
Falling Reactivity	.064	.052
Cuddliness/Affiliation	−.236	.016
Perceptual Sensitivity	−.316*	.140
Sadness	−.179	.164
Approach	−.098	.105
Vocal Reactivity	.054	.263

* Correlation is significant at the 0.05 level (two-tailed)

Table 3 Correlations between the SAM and the IBQ-R scales for the Russian–American sample

Scale name	Involvement in the Soviet-Jewish culture	Involvement in the USA culture
Activity	.282	−.018
Distress to Limitations	.118	.215
Fear	.023	.327
Duration of Orienting	−.013	.197
Smiling and laughter	.429*	−.054
High Intensity Pleasure	.428*	−.168
Low Intensity Pleasure	.365*	.331
Soothability	.109	−.257
Falling Reactivity	−.231	−.356*
Cuddliness/Affiliation	−.345	−.098
Perceptual Sensitivity	.378*	.181
Sadness	−.003	.258
Approach	−.318	−.086
Vocal Reactivity	.445*	−.004

* Correlation is significant at the 0.05 level (two-tailed)

parents who identified mostly with the values of the Russian culture. In order to investigate this hypothesis, means for the 14 IBQ-R scales and the two SAM scales were computed, and subsequently correlated, utilizing the Pearson product moment correlation coefficients.

The results of these analyzes provide only partial support for the above hypothesis. The results for Russian–Israeli and Russian–American samples are presented in Tables 2 and 3, respectively. The data revealed significant correlations in the Russian–American sample. Involvement in the Soviet-Jewish culture for the participants in this sample was significantly and positively correlated with the following IBQ-R scales: Smiling and Laughter, High Intensity Pleasure, Low Intensity Pleasure, Perceptual Sensitivity, and Vocal Reactivity. Involvement in the US culture was significantly and negatively correlated with the

Falling Reactivity scale in the IBQ-R. In summary, Russian–American parents who were more involved in the host culture tended to rate their infants lower on the Falling Reactivity scale, whereas those reporting greater involvement with the Russian culture reported higher levels of multiple infant temperament attributes associated with the over-arching factor of Positive Affectivity/Surgency.

Fewer significant correlations between the acculturation related indices and domains of infant temperament were observed for the Russian–Israeli sample. Specifically, a significant negative correlation emerged between parental involvement in the Soviet-Jewish culture and the Perceptual Sensitivity scale of the temperament measure. Involvement in the Israeli Culture was significantly and positively correlated with children's Duration of Orienting scores. That is, infants of parents who were more involved in the host culture exhibited higher Duration of Orienting, whereas infants of Russian–Israeli parents who were more involved in their culture of origin scored lower on the Perceptual Sensitivity scale of the IBQ-R.

Discussion

This study was designed to evaluate cross-cultural differences in infant temperament between samples of infants born to Russian families that have immigrated to the US and Israel, as well as Russian families residing in Russia, addressing the impact of immigration and acculturation. The study is based in part on the acculturation framework by Berry [23], as well as the evidence that immigration represents a major stressor [18, 19], often associated with a significant impact on familial/parental adjustment, and parenting practices. Theoretical models have suggested that environmental factors such as parenting styles, patterns of parent-child interactions, and parental stress, may influence temperamental characteristics of infants [3, 4, 29]. A number of studies have demonstrated cultural differences in parenting [7, 20, 30, 31]; however, there has not been previous research addressing variability in infant temperament across different cultural settings, specifically addressing the potential impact of immigration and the acculturation process. The first hypothesis, which proposed cultural differences in infant temperament between the three included groups (Russian, Russian–Israeli, and Russian–American), was partially supported. The analyzes revealed significant differences between the three groups in Low Intensity Pleasure, Soothability, Perceptual Sensitivity, Cuddliness, and Falling Reactivity scales of the IBQ-R. In general, these results support the idea that cultural influences, in addition to biological/hereditary factors, shape the development of infant temperament [4, 29]. Three of the IBQ-R scales (Low Intensity Pleasure, Cuddliness/Affiliation, and Soothability) demonstrating culture-related differences correspond to an over-arching temperament dimension of Orienting/Regulatory Capacity. The present results thus indicate that this aspect of temperament is susceptible to culture and acculturation related influences; however, further research involving other cultural is necessary to further support this conclusion.

Follow-up analyzes revealed that infants of Russian Immigrants in the United States exhibited significantly lower rates of Low Intensity Pleasure and Cuddliness, associated with the Regulatory Capacity/Orienting factor of the IBQ-R, compared to their Russian counterparts. This finding is surprising in light of previous research that showed higher levels of regulatory capacity for the American infants as compared to a Russian sample [17]. These studies utilized the same measure of temperament, thus, the discrepancy may be explained by the differences between included samples. That is, Gartstein, Slobodskaya,

and Kinsht [17] compared Russian and American infants, whereas, in the present study a comparison was made between reports of Russian parents who lived in Russia and reports of those who immigrated to the United States of America. Although it was expected that as parents in the immigrant sample would assume the norms of the host culture, and the temperament characteristics of their infants would thus resemble those of the children born in the USA, the results of this study did not support this prediction. The relationship between the cultural variables and child temperament is likely complicated by additional factors such as the stress of immigration process and adaptation to the new culture. For example, the stress arising from the discrepancy between parenting strategies and expectations in the two cultures (American and Russian) may have also contributed to the lower levels of regulatory capacity in infants of Russian–American parents. In addition, although the process of acculturation involves gradual adaptation of new norms and practices, immigrants may choose to retain different degrees of original values along with the new ones [21, 23], which may also help to account for the pattern of results observed in this study.

Infants of Russian families residing in the US exhibited lower rates of Cuddliness, Soothability, and Falling Reactivity, compared to Russian infants in Israel. Overall, infants of Russian families in the US demonstrated lower regulatory capacity and were described by their parents as requiring longer time to recover from distress, compared to their Israeli counterparts. Coping with stress is an inherent component of everyday life in Israel, and effective regulatory capacity, including a relatively speedy recovery from minor distress, are essential for optimal adjustment this type of an environment. The results of this study may point to the fact that parents in Israel tend to foster these capacities in their children from a very young age, or may perceive higher levels of these attributes because of the value placed on regulatory functions. In the United States, however, a similar demand for regulatory capacity aimed at stress reduction likely does not exist, and the parents may not value these attributes to the same extent. Further research comparing infants born to native Israeli families and raised in Israel and those born to American families and raised in the United States of America would help to support this interpretation of the present findings.

Finally, Israeli infants exhibited higher rates of Perceptual Sensitivity than their Russian counterparts. Although this domain of temperament has been associated with Positive Affectivity/Surgency, it nonetheless encompasses the ability to detect subtle stimuli in the environment. This increased attentional capacity demonstrated in the context of this study may be consistent with the higher levels of vigilance characteristic of Israeli citizens in general, given the threat of violence, acts of terrorism in particular, present in daily life [32]. Most research has indicated that the presence of violence was correlated with negative effects such as increased auditory startle-response and higher prevalence of post-traumatic stress disorder [33]. However, Friedman and Mann [34] found that the frequent exposure to violence may also be associated with positive effects. Specifically, these authors compared decision making strategies and problem solving skills for Israeli and Australian adolescents, reporting that Israeli adolescents demonstrated a greater awareness of the importance of making decisions and exhibited superior problem-solving skills. Although this effect may seem counter-intuitive, it is possible that stressors associated with exposure to violence may be responsible for the latter pattern of findings, and the advances in problem-solving noted for Israeli participants. It is also possible that parents who are more attentive to external stimuli more readily notice perceptual sensitivity in their infants, relative to parents who are less alert to their surroundings. Israeli infants also scored higher than the infants residing in Russia and the US on the Soothability scale, suggesting that they are not showing deficits in early regulatory capacity, and may in fact be superior to

their US and Russian counterparts in taking advantage of their parents' soothing efforts in lowering their level of arousal. Given that family life serves as one of the major ways of reducing stress for many Israelis [35], it may be that Israeli parents apply more effort in developing effective soothing techniques for their children, in an effort to enhance the quality of family interactions from the very beginning of life.

The third hypothesis focused on the correlation between acculturation levels and infant temperament. It was proposed that as parental views and socialization practices change to resemble those of the host culture, this change would be reflected in the profile of infant temperamental characteristics. We did not, however, expect differences between the Israeli and US samples in the patterns of correlations between the acculturation indices and the temperament attributes. Nonetheless, different patterns of associations emerged for the Russian–Israeli and Russian–American samples. For the Israeli sample, the correlations were found for Duration of Orienting and Perceptual Sensitivity temperament scales only, whereas, in the American sample, acculturation indices were related to the Falling Reactivity, Smiling and Laughter, High Intensity Pleasure, Low Intensity Pleasure, Perceptual Sensitivity, and Vocal Reactivity. These differences are likely to reflect variability between Israeli and American cultural settings and suggest that different acculturation strategies may be more or less prominent in various host cultures. In other words, people from the same culture of origin may use different acculturation strategies in different host cultures. In this case, Russian immigrants in the United States may have employed acculturation strategies that differed from those of the Russian immigrants in Israel.

Parental involvement in the Israeli (host) culture was related to higher levels of infant's Duration of Orienting, a member of the Orienting/Regulatory Capacity factor; whereas parental involvement in the Russian culture (i.e., culture of origin) was associated with lower levels of Perceptual Sensitivity, a component of the positive emotionality factor, pointing to lower levels of detection of low intensity stimuli for the latter infants. On the other hand, for the Russian–American sample, parental involvement in the American (i.e., host) culture was associated with lower scores for Falling Reactivity, a scale related to negative affectivity and indicating lower rates of recovery from stress for these youngsters. In other words, infants of parents who were more involved in the American culture were described as showing more negative affect and having more difficulty calming down when distressed. Parents' involvement in Soviet-Jewish culture, on the other had, was associated with higher levels of positive affectivity and extraversion (Smiling and Laughter, High and Low Intensity Pleasure, Perceptual Sensitivity, and Vocal Reactivity) for the Russian–American infants. Collectively, these patterns of relationships suggest increased positive affectivity associated with parental adherence to the culture of origin, the Russian/Soviet culture, in the US, coupled with a negative association between an attribute related to positive affectivity (i.e., Perceptual Sensitivity) and a commitment to the culture of origin in the Israeli sample. Conversely, involvement in the host culture in Israel was associated with a higher level of Duration of Orienting, persistence of attention associated with early self-regulation, whereas in the US, infants of parents reporting greater adherence to the host culture described their infants as demonstrating lower levels of Falling Reactivity, also related to regulation (i.e., ability to lower one's level of arousal). Increasing understanding of regulation-related temperament attributes, and the study of their development across different cultures is essential in its own right, and also because of the accumulating evidence indicating that regulatory capacity makes an essential contribution to adjustment, often making a difference between adaptive versus maladaptive functioning [36, 37]. There is evidence that contextual factors such as parenting styles, socioeconomic status, and racial or ethnic minority status, which have been known to predict adjustment in childhood,

also shape the development of self regulation [38]. This link between social and demographic factors and child self-regulation is further supported in the current study, wherein relationships were found between parents' report of acculturation and regulation-related attributes in their infants.

In summary, these findings point to the fact that for the two groups of parents who had emigrated from Russia, involvement in the culture of origin versus the host culture had different implications, depending on the context of the destination culture. Overall, for the Russian–American sample involvement in the culture of origin appeared to be associated with higher levels of positive emotionality and related temperament characteristics, potentially serving a protective function for the children and families, whereas in the Israeli sample commitment to the culture of origin was associated with lower levels of Perceptual Sensitivity, associated with positive emotionality in infancy. This discrepancy in results obtained for the two groups of Russian immigrants included in this study is consistent with the notion that the adaptive quality of acculturation strategies may vary by context, in that different acculturation strategies may be most adaptive in different cultural and social environments [39]. The direction of the difference between these two cultures is consistent with Berry's [18] theory of acculturative stress in pluralistic societies, proposing that people who acculturate to a more pluralistic society will experience lower levels of stress as a result of higher tolerance for cultural differences. Israel, as a relatively young nation, in many ways still in its formative stages, is likely defined by stronger pressure for an adherence to pure Israeli norms and expectations. For example, many newcomers in Israel are expected to change their names to more traditional Israeli names. Immigrants are also expected to learn and use the Hebrew language as soon as possible and are placed in specialized language classes ("ulpan") almost immediately upon arrival for this purpose. Immigrants are expected to adhere to the Israeli culture and way of life, and manifestations of traditional cultural norms (such as use of original language, or celebration of non-Israeli holidays) are usually not seen as desirable and may even be discouraged. The American culture, on the other hand is characterized by inclusion of many different cultural groups. It is not uncommon for American citizens to maintain their original cultural identity, which is well tolerated and at times even encouraged by the American society at large. It is thus not surprising that adherence to the norms and traditions of the Soviet-Jewish culture had a more positive effect on the children in the Russian–American group as compared to the Russian–Israeli infants, as the results of the present study indicate. Despite this evidence, further research with different cultural groups will be required in order to provide additional support the hypothesis addressing potential acculturation strategy-by-culture differences.

Several limitations of the present study should also be noted, and addressed in future research. Although this work was based on the theory and research linking cultural influences to parenting values and strategies, which, in turn, were expected to impact infant temperament, parenting was not directly evaluated in this study. This notable omission should be addressed in future research, despite the fact that considerable existing literature supports these theorized relationships [7, 9, 20, 30, 31]. Furthermore, the sample size in this study was relatively small, limiting our statistical power, as well as the ability to generalize beyond the present samples to broader populations of interest. A related limitation of this study has to do with the fact that differences between the samples emerged for caregiver age, with Russian parents being younger than the parents in the two immigrant samples. Additional research with larger groups of parents of comparable age should be conducted to rule out the potential influence of this variable on the results of the current research, as well as to address possible problems related to the relatively small sample size. Finally, this study utilized a parent

report questionnaire (IBQ-R) to measure infant temperament. As such, its results may reflect the parents' perceptions of their infants' temperament rather than observable temperament attributes of the children. In order to address the issues of potential bias in parent-report ratings, research involving laboratory procedures that allow direct observations of infant temperament should be conducted in the future.

Summary

This study utilized a cross-sectional design to examine the development of temperament for infants born to families of Russian immigrants in USA and Israel, as well as Russian families residing in Russia. The emphasis was on evaluating the impact of immigration and acculturation on child social-emotional functioning. We hypothesized significant differences between these groups in the mean levels of infant temperament attributes as a result of the influences of immigration and acculturation, although the lack of previous research did not allow us to make more precise a-priori hypotheses regarding the effected dimensions.

Community samples of primary caregivers of infants between 3 and 12 months of age were recruited and asked to complete temperament (IBQ-R) and acculturation (SAM) questionnaires. A group of participants ($N = 32$) was selected from both Russian–Israeli and Russian samples to resemble the Russian–American sample in terms of the distribution of gender, as well as the mean level and variability of infant age. Results support our hypotheses that cultural influences contribute to shaping parental perceptions of infant temperament.

Significant effects of culture were observed for Low Intensity Pleasure, Soothability, Perceptual Sensitivity, Cuddliness, and Falling Reactivity scales of the IBQ-R, in comparisons of the three groups (Russian infants from Russia, USA, and Israel). Fewer significant effects emerged in the context of examining simple correlations between the acculturation related indices and domains of infant temperament. Russian–American parents who were more involved in the host culture tended to rate their infants lower on the Falling Reactivity scale, whereas those reporting greater involvement with the Russian culture reported higher levels of multiple infant temperament attributes associated with the over-arching factor of Positive Affectivity/Surgency. In the Russian–Israeli sample, a significant negative correlation emerged between parental involvement in the Soviet-Jewish culture and the Perceptual Sensitivity scale of the temperament measure. Involvement in the Israeli Culture was significantly and positively correlated with children's Duration of Orienting scores. Although, a number of temperament scales did not significantly correlate with the degree of parents' acculturation, different patterns of correlations emerged for Russian–Israeli and for Russian–American samples.

Results of this study contribute to our understanding of development of temperament in the first year of life and the influence of immigration and acculturation on parental perceptions of infant characteristics. These findings also have clinical implications, in so far as these early appearing cross-cultural differences in temperament likely provide the foundations 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 biases to parent-report, and include measures of parenting to investigate links between cultural influences to parenting values and strategies, which, in turn, would be expected to impact infant temperament.

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