

# **HHS Public Access**

Author manuscript *Eur J Dev Psychol.* Author manuscript; available in PMC 2018 January 10.

Published in final edited form as:

Eur J Dev Psychol. 2017; 14(4): 449–464. doi:10.1080/17405629.2016.1236722.

## East-West, Collectivist-Individualist: A Cross-Cultural Examination of Temperament in Toddlers from Chile, Poland, South Korea, and the U.S

Ariye M. Krassner, Bowdoin College, Brunswick, Maine, USA

Maria A. Gartstein, Washington State University, Pullman, Washington, USA

Curie Park, Yonsei Center for Psychological Health, Seoul, South Korea

Wojciech Ł. Dragan, University of Warsaw, Warsaw, Poland

Felipe Lecannelier, and University of Desarrollo, Santiago, Chile

Samuel P. Putnam Bowdoin College, Brunswick, Maine, USA

## Abstract

The present study examined toddler temperament across Chilean, South Korean, Polish, and US samples, providing an opportunity to examine both collectivist-individualist and East-West contrasts. The effect of culture on the three factor and 18 dimension scores provided by the Early Childhood Behavior Questionnaire were investigated. Results provide evidence of cross-cultural differences between the four samples. Chilean toddlers scored significantly higher than US, Polish, and South Korean children on the overall factor of Negative Affectivity, as well as higher than the Polish and South Korean samples on the Surgency factor. South Korean toddlers scored significantly higher on the factor of Effortful Control, and two related dimensions, than US, Polish, or Chilean samples. Results are discussed in terms of the apparent roles of individualism/ collectivism and East-West distinctions in shaping temperament development.

## Keywords

Temperament; Culture; Toddlers

Correspondence regarding this article should be addressed to Sam Putnam, Department of Psychology, Bowdoin College, 6900 College Station, Brunswick, ME 04011, sputnam@bowdoin.edu.

Preliminary analyses of these data were presented by Rebecca Maller of Bowdoin College at the 2009 meeting of the Society for Research in Child Development.

Temperament has commonly been defined as constitutionally-based, individual differences in reactivity and self-regulation (Rothbart & Bates, 2006). Reactivity refers to initial arousal elicited by stimuli, whereas self-regulatory processes modulate reactivity. Factor analysis of fine-grained temperament attributes across multiple ages (e.g., Putnam, Ellis & Rothbart, 2001) and cultures (e.g., Gartstein, Slobodskaya, Zylicz, Gostyla & Nakagawa, 2010) has consistently yielded a three-factor model. These factors consist of Surgency, comprising active, exuberant, and approachful forms of reactivity; Negative Affectivity, including sad, fearful, and anger reactions; and Effortful Control, encompassing attentional and behavioral control, in addition to apparent pleasure in sedate activities.

Although temperament is influenced by heredity and demonstrates considerable stability from infancy onward, temperament traits are also influenced by maturation and experience over time (Rothbart & Derryberry, 1981). Accordingly, different societal norms, standards of parenting, and conceptualizations of desirable traits across nations should lead to crosscultural variation in temperament. Whereas temperament research has most frequently included Western participants, researchers have increasingly explored cross-cultural temperament differences to better understand the role of culture in shaping individual differences. Because culture greatly impacts the organization of experience, cross-cultural research should facilitate identification of the environmental sources that contribute to temperament variability, and enhance understanding of factors that may limit generalizability of findings obtained in a given population. The current study elaborates on previous cross-cultural temperament literature by comparing the temperament profiles of toddlers growing up in Chile, South Korea, Poland, and the United States (US).

Collectivism-individualism is the most widely invoked distinction used to explain crosscultural differences (Triandis & Suh, 2002). Whereas the individualism axis is anchored in an emphasis on caring for self and one's immediate family, collectivistic values orient toward the wellbeing of ones more extended network. A variety of differences in interactional strategies have been identified, for example, with participants from collectivistic cultures expressing a preference for harmony-enhancing approaches, and those from individualistic cultures endorsing confrontational methods (Leung, Fernández-Dols, & Iwawaki, 1992), extending to interactions between caregivers and young children. Broadly speaking, individualism leads parents to foster independence in their children, whereas collectivism is manifested in parenting strategies aimed at producing interdependence (Greenfield & Suzuki, 2000).

Because individualism tends to be pronounced in Western societies, with collectivism more frequently characterizing Eastern cultures (Hofstede et al., 2010), differences between cultures that are attributed to the collectivism-individualism orientation may alternatively be explained by east-west distinctions. The connection between Western culture and individualism, however, is not absolute, and some western countries (e.g., Chile) are deemed more collectivistic than others (e.g., US). The disentanglement of these influences has been examined in the temperament literature, albeit in a limited manner to date. For instance, Gartstein et al. (2006) examined cross-cultural differences in parent-reported temperament between infants in the US, Spain, and the People's Republic of China (PRC), identifying Spain as a collectivist-Western county, the US as an individualist-Western county, and the

PRC as a collectivist-Eastern country. Gartstein et al. (2006) found that the cross-cultural differences in temperament between Spanish and PRC infants closely resembled differences between US and PRC infants, suggesting that characteristics associated with Eastern/ Western orientation are particularly important influences on temperament development.

These prior efforts including Western cultures have been limited by exclusively assessing North American and European samples, thereby excluding South American societies that possess notably different values, childcare/educational systems, and parenting practices (Cote & Bornstein, 2000; Fulligni, Tsend, & Lam, 2003). Similarly, Eastern samples have most frequently included Japanese and Chinese participants, with no cross-cultural examinations of temperament involving children from South Korea. In addition, these previous studies are limited in scope with respect to the range of considered temperament attributes, relative to the present investigation.

Substantial cross-cultural differences are anticipated between South Korean and US samples in the current study, based on past research comparing the temperament profiles of other collectivist/far-East and individualist/far-West samples. An early study by Hsu, Soon, Stigler, Hong and Liang (1981) found Taiwanese infants were rated by their mothers as less active, approachable, and adaptable, and more negative in mood than US infants. These findings were complemented by a recent investigation of differences between US and Japanese infants ages 3 to 12 months, in which Japanese infants and toddlers were rated significantly lower than US infants by their caregivers on dimensions associated with Surgency, such as High Intensity Pleasure (HIP), Approach, and Sociability; and higher on dimensions of Negative Affectivity, such as Fear, Sadness and Distress to Limitations (Slobodskaya, Gartstein, Nakagawa, & Putnam, 2013). Studies focusing more explicitly on fearfulness in laboratory settings have revealed that two-year old South Korean and Chinese toddlers score higher than their US and Canadian counterparts on measures of behavioral inhibition (Rubin et al., 2006; Chen et al., 1998). Cross-cultural studies comparing parent reports of Effortful Control levels between East Asian and Western samples have yielded more inconclusive results. Some investigations have revealed that Japanese toddlers and Chinese children score lower on the Effortful Control factor, as well as the dimensions of Inhibitory Control, Duration of Orienting and Low Intensity Pleasure (LIP), than US children (Slobodskaya et al., 2013; Ahadi, Rothbart & Ye, 1993). In contrast, other studies have indicated that Chinese infants score higher than US infants on Duration of Orienting at six months of age (Gartstein et al., 2006), and that Taiwanese infants are significantly less distractible than US infants (Hsu et al., 1981). Because South Korea is geographically close, and relatively similar with respect to collectivism (Hofstede Individualism score of 18), to Japan, China, and Taiwan (Hofstede scores of 46, 20 and 17, respectively), prior literature leads us to predict that South Korean toddlers will score higher on dimensions of Negative Affectivity, and lower on dimensions of Surgency, than toddlers from other countries in the present study. Due to inconsistencies in the literature, we have no firm hypotheses with respect to aspects of Effortful Control among South Korean toddlers.

Because Poland lies midway between the US and South Korea both geographically and in terms of its Hofstede's (Hofstede, Hofstede & Minkov, 2010) individualist/collectivist score (60; in comparison to 18 for South Korea and 91 for the US), one might expect the

temperament of Polish toddlers to demonstrate similarities with children from either of these nations. Dragan, Kmita & Fronczyk (2011) found Polish infants ages 3 to 12 months to be rated higher by parents on aspects of Negative Activity, and lower on components of Surgency and Regulatory Capacity, than their US counterparts. Gartstein et al. (2010), on the other hand, reported higher Smiling and Laughter (an aspect of Surgency) in Polish 3 to 12 month-olds, than US counterparts, and no differences between the two countries on other scales. Gartstein et al. (2010) additionally indicated that Polish infants were rated significantly higher than their Japanese or Russian peers on the Surgency-related dimensions of HIP and Smiling and Laughter, and significantly lower on the Negative Affectivity dimension of Distress to Limitations. Combined, these studies lead us to expect Polish toddlers to be rated higher in aspects of Surgency and Negative Affect, and lower in dimensions of Effortful Control, than toddlers from other countries.

Critically, the current study also includes toddlers from Chile, a nation that is both far-West and highly collectivistic, receiving a score of 23 on Hofstede's (Hofstede et al., 2010) orientation ratings. To our knowledge, no cross-cultural temperament studies to date have included South American samples on which to base our predictions regarding Chilean toddlers. However, analyses of parenting behaviors has revealed that Chilean mothers are more likely to engage their infants in social behaviors than far-east Asian mothers, whereas far-east Asian mothers more frequently engage infants in didactic behaviors (e.g., directing infants' attention to objects or the environment) (Cote & Bornstein, 2000). Similarly, past research suggests that Columbian mothers demonstrate significantly higher levels of Active-Animated behavior (e.g., seeks animated social interaction) when interacting with their infants than US mothers (Posada, Jacobs & Richmond, 2002). These elements of maternal behavior may be expected to enhance expression of approach/positive affect in children, resulting in higher levels of Surgency among Chilean toddlers than in those from other countries. Our analyses of Negative Affectivity and Effortful Control in Chilean children are more exploratory, but in combination with data from other countries, may lead to insight regarding the relative influence of collectivism-individualism and Eastern-Western orientation in shaping these aspects of temperament.

In sum, inclusion of samples from Chile, South Korea, Poland, and the US in the present study provided the opportunity to examine both collectivist-individualist and East-West contrasts, and to extend cross-cultural temperament research to Chile and South Korea. We have chosen to evaluate temperament via caregiver report for a variety of reasons, and most importantly because this approach has been consistently demonstrated as reliable and valid in developmental and cross-cultural research (Gartstein, Bridgett, and Low, 2012; Goldsmith, Rieser-Danner, & Briggs, 1991). Although at times construed as less optimal than laboratory observations (e.g., Kagan, 1994), parent ratings have more recently been viewed as an important source of information (Hart, Field & Roitfarb, 1999; Pauli-Pott, Mertesacker & Beckmann 2004), which may be most critical to consider as caregiver perceptions, accessible via questionnaires such as the ECBQ, constitute a key component of the child's social milieu (Bornstein, 2014). In addition, parent ratings are relatively easy and inexpensive to administer and analyze, and provide an opportunity to examine multiple dimensions of temperament simultaneously (Bates, 1989; Bornstein, 2014).

Chilean children were expected to score particularly high on dimensions associated with Surgency, and South Korean toddlers were predicted to score relatively low. South Korean children were hypothesized to exhibit higher levels of Negative Affectivity compared to those from the US, whereas Polish toddlers were expected to receive mid-point scores that were higher than US and lower than South Korean children for this factor. Regarding the Effortful Control factor, predictions could not be generated for the Chilean sample, due to a lack of prior research, or for the South Korean sample, due to inconsistencies in past literature. Polish toddlers were hypothesized to score lower than US children on dimensions associated with Effortful Control.

#### Methods

#### Participants

The Chilean sample consisted of 125 children (65 female) ranging in age from 16 to 35 months (M = 25.73, sd = 5.83), recruited through early care and primary care centers in the city of Santiago, located in the Chile's central valley. The South Korean sample consisted of 420 children (198 female) ranging in age from 16 to 38 months (M = 27.09, sd = 5.67), recruited through internet advertisements and from childcare centers in the Busan and Seoul metropolitan areas, populous areas of the southeastern and northwestern portions of South Korea. The Polish sample consisted of 291 children (149 female) ranging in age from 18 to 36 months (M = 28.04, sd = 5.83), recruited from nurseries in the city of Warsaw, which is located in the east-central part of Poland. The U.S. sample consisted of 319 children (165 female) ranging in age from 18 to 36 months (M = 24.97, sd = 3.68), recruited largely from birth announcements in local newspapers in Eugene-Springfield, Oregon, a metropolitan area in the northwestern U.S.

#### Measures

To assess temperament, primary caregivers (99% female) in each country were administered the Early Childhood Behavior Questionnaire (ECBQ; Putnam, Gartstein & Rothbart, 2006). The ECBQ contains 201 items for which parents are asked to report on the frequency of specific child behaviors in commonly occurring situations, using a 7-point scale ranging from 1 (never) to 7 (always). Parents are also given the option of Not Applicable, to be used if they have not seen the child in the situation. Scale scores are calculated as the average of ratings for all completed items, with high scale scores corresponding to high levels of the temperament dimension. The ECBQ includes scales for 18 separate dimensions, which form three broad factors: Surgency (Activity Level, High Intensity Pleasure [HIP], Impulsivity, Positive Anticipation, Sociability), Negative Affectivity (Fear, Sadness, Discomfort, Frustration, Motor Activation, Unsoothability, Shyness, Perceptual Sensitivity) and Effortful Control (Attention Shifting, Attention Focusing, Inhibitory Control, Cuddliness, Low Intensity Pleasure [LIP]). As shown in Table 1, internal consistency (Cronbach's Alpha) of the scales ranged from .56 to .88, .63 to .89, .71 to .89, and .61 to .89 in the Chilean, South Korean, Polish, and US samples, respectively.

## Results

The effect of culture on the three factor and 18 dimension scores were investigated using 2 (gender) by 4 (country) ANOVAs. Because age differed significantly between the four samples, F (3, 1151) = 19.82, p < .01, age was included as a covariate.

Table 2 contains marginal means (adjusted for age and gender) of the scale and factor scores for each sample. This table also indicates the F-values for the effect of culture, which was significant, p < .005, for each test; and F-values for gender. Superscripts in the table indicate significant (p < .05) pairwise comparisons (least squared differences) between individual countries. To facilitate interpretation of effects across the multiple scales and factors, z-scores were calculated and are presented in Figures 1–3.

Although not substantive to the goals/hypotheses of this investigation, gender effects should be briefly noted. Males were rated more highly than females on the broad Surgency factor, as well as the affiliated HIP and Activity Level scales. No gender differences were obtained on the broad Negative Affectivity factor, but males were rated higher on Motor Activation, and females received higher ratings on Shyness. Girls were rated higher on the broad Effortful Control factor, and on both LIP and Inhibitory Control.

#### **Culture Effects**

Regarding the broad Surgency factor, South Korea and Poland did not differ from one another, but both were significantly lower than Chile and the US. Turning to the specific scales in this factor, Chile was particularly high in Activity Level, followed by the US, South Korea and Poland. The US was higher than all other countries in HIP, and higher than Poland in Impulsivity. The US was also higher in Sociability than South Korea and Poland, while Chile scored higher than Poland. South Korea was higher than Poland and the US on Positive Anticipation, and the US was lower on this dimension than Chile and Poland as well.

On the broad Negative Affectivity factor, and on the Fear scale, Chile rated highest, followed by South Korea, Poland and the US (all pairwise comparisons significant). Chile was among the highest scoring countries for 6 of the 8 scales comprising this factor. For Discomfort, Chile and South Korea were each significantly higher than Poland and the US, and Poland was higher than the US. Chile was higher than South Korea and the US on Frustration. On Motor Activation, Chile and Poland were each higher than South Korea and the US, and South Korea was higher than the US. Chile and US were each higher on Shyness than South Korea and Poland, and South Korea was higher than Poland. On Perceptual Sensitivity, Chile and South Korea were each higher than Poland and the US, and the US was higher than Poland. On Sadness, Poland was higher than all other countries, and the US was lower than all others. Similarly, for Soothability, Poland was lower, and the US higher, than all other countries.

On the Effortful Control factor, South Korea rated higher than all other countries, Poland rated lower than all others, and Chile and the US were not significantly different. South Korea was also higher than all other countries in Attention Focusing and Inhibitory Control.

For these two scales, the US was higher than the other two countries, and for Inhibitory Control, Poland was higher than Chile. Chile was higher than all other countries in Attention Shifting, followed by South Korea, the US, and Poland. For LIP, Chile was higher than all other countries, and the US was lower than all others. Finally, for Cuddliness, Chile and South Korea each were higher than Poland and the US.

## Discussion

The current study provides evidence of cross-cultural differences in both higher-order factors and fine-grained dimensions of temperament between samples of US, South Korean, Chilean, and Polish toddlers. Overall, our findings supported the predictions that Chilean children would score high on the factors of Negative Affectivity and Surgency, as well as related dimensions, as compared to children from the other three nations. The Chilean sample scored significantly higher than U.S., Polish, and South Korean children on the overall factor of Negative Affectivity, and was also among the highest scoring countries for 6 of the 8 scales comprising the factor. Regarding the Surgency factor, Chilean children scored significantly higher than the Polish and South Korean samples, receiving particularly high scores on the related dimension of Activity Level. Regarding Effortful Control, South Korean toddlers scored significantly higher than children from other countries on the overall factor, as well as the subscales of Inhibitory Control and Attention Focusing.

#### **Temperament Profiles Across Four Cultures**

In comparison to toddlers from other countries, parental reports suggest that South Korean children are characterized by high levels of Effortful Control, demonstrating strong tendencies to focus on activities for long periods and capabilities for control over unacceptable behaviors. These findings are consistent with a previous study revealing that Chinese toddlers took significantly longer to approach attractive toys in an experimental playroom setting than their Canadian counterparts (Chen et al., 1998), indicating a high level of constraint. Past studies have revealed that a high level of behavioral control is positively valued and encouraged by parents and teachers in many East Asian countries (Rubin, Coplan, & Bowker, 2009; Chen et al., 1998), which likely contributes to South Korean infants' high levels of Effortful Control, and may even heighten South Korean parents' perceptions that their children are highly regulated. In addition, children from South Korea exhibit relatively low Surgency, displaying low levels of activity, impulsivity, risk-taking and desire for social interaction. These results are consistent with previous research revealing that East Asian infants are generally rated lower by their caregivers than US infants on Surgency-related dimensions, such as HIP, Approach, Sociability, and Activity Level (Slobodskaya et al, 2013; Hsu et al., 1981). South Korean children were additionally perceived as expressing somewhat high levels of Negative Affect, particularly in the dimensions of Perceptual Sensitivity, Fear, and Frustration, also consistent with past crosscultural trends reported between US and East Asian samples (Gartstein et al., 2006; Slobodskaya et al., 2013; Ahadi et al., 1993).

Polish children were similar to South Korean children in terms of their low levels of Surgency, including very low activity level and sociability. This finding was somewhat

inconsistent with Gartstein et al.'s (2010) finding that Polish infants scored significantly higher on the Surgency-related dimension of HIP than Japanese infants. It is unclear whether this failure to replicate is due to greater expression of high-intensity pleasure in South Korean than Japanese children, or because these differences between Polish and East Asian children diminish between infancy and toddlerhood. Polish toddlers were in stark contrast to South Korean children with respect to their Effortful Control, receiving lower ratings than toddlers from other countries on this general factor, with particularly low tendencies for shifting attention from one activity to another. These findings were consistent with previous research revealing that Polish infants scored lower on orientation/regulation scales than US children (Dragan et al., 2011), since US toddlers' Effortful Control scores were also significantly lower than those of South Korean toddlers in the current study. In addition, Polish children were rated as demonstrating moderate levels of Negative Affect overall, consistent with expectations based on Dragan et al.'s (2011) comparisons of US and Polish infants. Polish toddlers were perceived as particularly high on sadness and low on soothability, which may derive from the Polish "culture of complaining," a term coined by Wojciszke (2004) to describe norms of frequent expressions of negativity regarding their circumstance among Polish citizens. Parental expectations regarding these types of behavioral scripts are likely to shape the emotional activity of their children, in addition to possibly impacting Polish parents' evaluations of their toddlers' negative affectivity.

Chilean children were characterized by high levels of Negative Affectivity, demonstrating particularly pronounced levels of social and non-social fear. Chilean infants also scored significantly higher than the other cultural samples on the dimensions of Frustration, Discomfort, and Sadness, which may in part derive from South American parents' interactions with their children, and expectations for their children's play. Specifically, Posada, Jacobs, & Richmond (2002) revealed that a Close-Intimate domain (e.g., mother displays affection by touching) category emerged for US mothers, but not for Columbian mothers, across mother-child interaction episodes; while a Concern with Physical Appearance domain (e.g., will interfere with appropriate activity if it is likely to get baby messy or soiled) domain emerged for Columbian mothers, but not US mothers across mother-child interaction episodes. If Chilean parents hold similar concerns as Columbian mothers about their children's physical appearance, restrictions imposed on their children's freedom to play and explore may lead to higher levels of Frustration among Chilean infants.

Toddlers from the US were similar to Chilean children in some respects, exhibiting moderate levels of Effortful Control and scoring high on Surgency. Both US and Chilean children appear to be impulsive and sociable, with Chilean toddlers showing extremely high activity levels and US children taking great pleasure in highly intense activities. Youth from these two American cultures, however, differed drastically in their negative emotionality. Children from the US were rated far lower than children from other countries on the broad Negative Affectivity factor, and on several subdimensions. Held (2004) has argued that the US has cultivated an atmosphere of intolerance for the expression of negative emotion, which may lead US parents to actively discourage their children from expressing negativity. It is also possible that these cultural values caused parents in our study to underreport the degree to which their children express discomfort, sadness and fear.

#### Mechanisms Potentially Underlying Cross-Cultural Differences

Cross-cultural temperament research has frequently proposed East-West or Collectivist-Individualist cultural orientations as explanations of obtained differences. Whereas these cultural forces are often conflated, they are somewhat independent in the current study, allowing for insight regarding the relative importance of these constructs for different aspects of temperament. Individualism-Collectivism seems to be strongly relevant to negative affect. The most collectivist countries, South Korea and Chile, were far more negative than the most individualist country, the US, with Poland between these extremes in terms of the dimension of negative affectivity. Looking at the specific aspects of Negativity, however, suggests a more complex picture, with Polish children expressing very little shyness, but high sadness and relative difficulty recovering from distress. The Polish "culture of complaining" may be particularly relevant to expressions of unsoothable sadness, whereas low shyness appears to be more consistent with individualist values that support unrestrained social interaction (Chen et al., 1998). It may be that Polish caregivers have begun to adapt the latter in the post-communism period, with the emerging political and economic systems resembling those of more individualistic cultures, like the US.

The distinction between East and West, in contrast, seems more closely related to Surgency, with children from the two American countries demonstrating higher degrees of this attribute than their counterparts from Asia and Europe. This set of findings may be associated with migration patterns. In comparison to the samples gathered in Poland and South Korea, the groups studied in Chile and the US are primarily comprised of individuals whose ancestors left their native countries to seek opportunities on a new continent. Tendencies toward high impulsivity, risk-taking and activity level would be exactly the type of individual differences compelling and sustaining this type of exploration. Particularly high levels of Surgency in Chilean toddlers may also reflect the parenting they receive. Mothers from South American cultures have been characterized as demonstrating a high degree of interpersonal and animated engagement with their infants (Cote & Bornstein, 2000; Posada, Jacobs & Richmond, 2002), which may amplify motivation for sociable and energetic conduct in their offspring.

Our findings regarding dimensions of Effortful Control are inconsistent with interpretations involving either East-West or Individualist-Collectivist orientations. Toddlers from South Korea, the most collectivist and eastern of the cultures studied, scored very high on this factor, but Poland, also further east than the American countries and more collectivist than the US, scored very low. Additionally, children from Chile and the US, countries similar to one another on the geographical variable but distinct on Collectivism-Individualism, were moderate in Effortful Control. One cultural factor that may be relevant with respect to regulatory capacity is "Long-Term Orientation" (Hofstede et al., 2010), on which South Korea scores extremely high. This dimension reflects an emphasis on preparation for the future and pragmatism, values that would be promoted through parenting that facilitated the development of regulatory capacities comprising Effortful Control. This cultural orientation dimension has not been studied as extensively as individualism and collectivism, and our results suggest it deserves more attention in the context of cross-cultural developmental research.

Our interpretation of mechanisms behind observed cross-cultural distinctions in temperament are limited by the available data, and would be enhanced by a comprehensive evaluation of the "developmental niche", defined as the interface between a child and culture - a function of (1) customs (especially those related to child rearing), (2) settings available to the child, and (3) caregiver psychosocial characteristics (Super & Harkness, 1986). Among these multiple aspects of this "niche", the component most critical with respect to temperament development for toddlers likely involves socialization practices around displays of emotion, and cultural variability in emotion socialization has indeed been noted (see Cole & Tan, 2007, for review). This element of the developmental niche appears to be a promising candidate for further elucidating pathways linking dimensions of cultural orientation and child social-emotional outcomes, which were suggested by the results of the present investigation.

#### Conclusions

The current study greatly contributes to the literature addressing cross-cultural differences in temperament by examining the temperament profiles of toddlers from Chile, South Korea, Poland, and the US, thereby affording the opportunity to examine the effects of both collectivist-individualist and East-West contrasts on toddlers' reactivity and self-regulation. In addition, the present study extended cross-cultural temperament research to Chile and South Korea, two nations that were previously excluded from the literature. However, the contributions of our project to the broader literature are tempered by the inherent limitations of the study. The temperament data in the current study relied entirely on parent-reported measures of temperament characteristics, without complementary observational data. Although parent-reported measures of child temperament at ages 4, 8, and 12 months have been shown to exhibit higher predictive validity relative to some observational instruments (Pauli-Pott et al., 2004), future research would still benefit from the collection of other forms of data, in order to explore consistency and inconsistency between methods.

Another potential limitation of the current study relates to how representative the samples are with respect to their cultures of origin. Unfortunately, this question of generalizability cannot be easily resolved in this study, or other similar investigations conducted to date, yet our results can be expected to reflect communities from which the samples were drawn. In addition, comprehensive demographic information, such as maternal and paternal age, socioeconomic status, and years of education, was not obtained for all of the samples. Future research should more closely measure these characteristics, as cultural variability in these factors likely represent important dimensions of differences in geo-political and economic environments, which explain a portion of the variability in child development that is associated with culture. Future studies should also include a wider range of countries when conducting cross-cultural comparisons, as well as multiple sites within countries, to investigate provide a more nuanced perspective on cultural influence. In addition, future studies should collect biological data (e.g., gene assays) in addition to environmental data (e.g., parent values and behaviors). Doing so will build a more comprehensive understanding of the bidirectional relations between societal beliefs, parenting goals, children's environments, biological factors, and variations in behavior patterns across the lifespan and around the globe.

This work was supported by a grant from the Polish Ministry of Science and Higher Education under grant number N N106 0196 33; a faculty award from Universidad del Desarrollo-Facultad de Psicología (Chile); funds from Yonsei Center for Psychological Health, and National Institutes of Mental Health (US) under grant number T32 MH1893.

## References

- Ahadi SA, Rothbart MK, Ye R. Children's temperament in the U.S. and China: Similarities and differences. European Journal of Personality. 1993; 7:359–378.
- Barnett MA, Deng M, Mills-Koonce WR, Willoughby M, Cox M. Interdependence of parenting of mothers and fathers of infants. Journal of Family Psychology. 2008; 22:561–573. DOI: 10.1037/0893-3200.22.3.561 [PubMed: 18729670]
- Bornstein, MH. Parenting × gender × culture × time. In: Wilcox, WB., Kline, KK., editors. Gender and parenthood. New York: Columbia University Press; 2013. p. 91-119.
- Bates, JE. Concepts and measures of temperament. In: Kohnstamm, GA.Bates, JE., Rothbart, MK., editors. Temperament in childhood. Chichester: Wiley; 1989. p. 3-26.
- Chen X, Hastings PD, Rubin KH, Chen H, Cen G, Stewart SL. Child-rearing attitudes and behavioral inhibition in Chinese and Canadian toddlers: A cross-cultural study. Developmental psychology. 1998; 34:677. [PubMed: 9681259]
- Clarke-Stewart KA. Interactions between mothers and their young children: Characteristics and consequences. Monographs of the society for research in child development. 1973:1–109.
- Cole, PM., Tan, PZ. Emotional socialization from a cultural perspective. In: Grusec, JE., Hastings, PD., editors. Handbook of socialization: Theory and research. New York: Guilford Press; 2007. p. 516-542.
- Cote LR, Bornstein MH. Social and didactic parenting behaviors and beliefs among Japanese American and South American mothers of infants. Infancy. 2000; 1(3):363–374.
- Dragan WŁ, Kmita G, Fronczyk K. Psychometric properties of the Polish adaptation of the Infant Behavior Questionnaire—Revised (IBQ-R). International Journal Of Behavioral Development. 2011; 35(6):542–549.
- Else-Quest N, Hyde J, Goldsmith H, Hulle CAV. Gender differences in. 2006
- Gartstein, MA., Bridgett, DJ., Low, CM. Self- and Other-Report Measures of Temperament. In: Zentner, M., Shiner, R., editors. Handbook of Temperament. New York: Guilford Press; 2012. p. 183-208.
- Gartstein MA, Gonzalez C, Carranza JA, Ahadi SA, Ye R, Rothbart MK, Yang SW. Studying crosscultural differences in the development of infant temperament: People's Republic of China, the United States of America, and Spain. Child Psychiatry and Human Development. 2006; 37(2): 145–161. [PubMed: 16874564]
- Gartstein MA, Slobodskaya HR, ylicz PO, Gosztyła D, Nakagawa A. A cross-cultural evaluation of temperament: Japan, USA, Poland, and Russia. International Journal Of Psychology & Psychological Therapy. 2010; 10(1):55–75.
- Goldsmith HH, Rieser-Danner LA, Briggs S. Evaluating convergent and discriminant validity of temperament questionnaires for preschoolers, toddlers, and infants. Developmental Psychology. 1991; 27:566–579.
- Greenfield, PM., Maynard, AE., Suzuki, LK. Culture and development. In: Kazdin, AE., editor. Encyclopedia of Psychology. Washington D.C. and NY: American Psychological Association and Oxford University Press; 2000. p. 404-407.
- Hart S, Field T, Roitfarb M. Depressed mothers' assessments of their neonates' behavior. Infant Mental Health Journal. 1999; 20:200–210.
- Hofstede, G., Hofstede, GJ., Minkov, M. Cultures and Organizations: Software of the Mind. Revised and Expanded. 3. New York: McGraw-Hill; 2010.
- Hsu CC, Soong WT, Stigler JW, Hong CC, Liang CC. The temperamental characteristics of Chinese babies. Child Development. 1981; 52:1337–1340. [PubMed: 7318527]

Kagan, J. Galen's Prophecy. Temperament in human nature. New York: Basic Books; 1994.

- Leaper C, Anderson KJ, Sanders P. Moderators of gender effects on parents' talk to their children: a meta-analysis. Developmental psychology. 1998; 34(1):3. [PubMed: 9471001]
- Leung K, Au Y, Fernandez-Dols JM, Iwawaki S. Preference for methods of conflict processing in two collectivist cultures. International Journal of Psychology. 1992; 27:195–209.
- Pauli-Pott U, Mertesacker B, Beckmann D. Predicting the development of infant emotionality from maternal characteristics. Development And Psychopathology. 2004; 16(1):19–42. [PubMed: 15115063]
- Posada G, Jacobs A, Richmond MK, Carbonell OA, Alzate G, Bustamante MR, Quiceno J. Maternal caregiving and infant security in two cultures. Developmental Psychology. 2002; 38(1):67–78. [PubMed: 11806703]
- Putnam, SP., Ellis, LK., Rothbart, MK. The structure of temperament from infancy through adolescence. In: Eliasz, A., Angleitner, A., editors. Advances/proceedings in research on temperament. Germany: Pabst Scientist Publisher; 2001. p. 165-182.
- Rothbart, MK., Bates, JE. Handbook of child psychology: Vol 3. Social, emotional, and personality development. 6. Wiley; New York: 2006. Temperament; p. 99-166.
- Rothbart, MK., Derryberry, D. Development of individual differences in temperament. In: Lamb, ME., Brown, AL., editors. Advances in developmental psychology. Vol. 1. Hillsdale, NJ: Erlbaum; 1981. p. 37-86.
- Rubin KH, Hemphill SA, Chen X, Hastings P, Sanson A, Coco AL, Liyin C. A cross-cultural study of behavioral inhibition in toddlers: East-West-North-South. International Journal of Behavioral Development. 2006; 30(3):219–226.
- Rubin KH, Coplan RJ, Bowker JC. Social withdrawal in childhood. Annual Review of Psychology. 2009; 60:141–171.
- Ruble, DN., Martin, CL., Berenbaum, SA. Gender development. In: Kuhn, D., Siegler, RS., editors. Handbook of child psychology: Vol. 2. Cognition, Perception, and language. 6. Hoboken, NJ: Wiley; 2006. p. 858-932.W. Damon (Series Ed.)
- Slobodskaya HR, Gartstein MA, Nakagawa A, Putnam SP. Early temperament in Japan, the United States, and Russia: Do cross-cultural differences decrease with age? Journal Of Cross-Cultural Psychology. 2013; 44(3):438–460.
- Super CM, Harkness S. The developmental niche: A conceptualization at the interface of child and culture. International Journal of Behavioral Development. 1986; 9:545–569.
- Triandis HC, Suh EM. Cultural influences on personality. Annual Review of Psychology. 2002; 53:133–160.
- Will JA, Self A, Datan N. Maternal behavior and perceived sex of infant. American Journal of Orthopsychiatry. 1976; 46(1):135–139. [PubMed: 1247092]
- Wojciszke, Bogdan. The negative social world: The Polish culture of complaining. International Journal of Sociology. 2004; 34(4):38–59.

Krassner et al.





## Figure 1.

Standardized marginal means, adjusted for child's age and sex, of scores on Surgency factor and affiliated scales for Chilean, South Korean, Polish, and U.S. children.



#### Figure 2.

Standardized marginal means, adjusted for child's age and sex, of scores on Negative Affectivity factor and affiliated scales for Chilean, South Korean, Polish, and U.S. children.

Krassner et al.



## Figure 3.

Standardized marginal means, adjusted for child's age and sex, of scores on Effortful Control factor and affiliated scales for Chilean, South Korean, Polish, and U.S. children.

#### Table 1

Internal Consistency of ECBQ scales in Chile, Korea, Poland and U.S.A. datasets

		Cronba	ch's Alpha	L
Scale	Chile	Korea	Poland	U.S.A.
Surgency				
Activity Level	.76	.73	.79	.75
High Intensity Pleasure	.78	.80	.84	.83
Impulsivity	.56	.63	.71	.61
Positive Anticipation	.80	.80	.78	.82
Sociability	.69	.88	.86	.83
Negative Affectivity				
Fear	.68	.68	.81	.74
Sadness	.83	.78	.80	.83
Discomfort	.78	.70	.79	.70
Frustration	.85	.78	.85	.83
Motor Activation	.81	.73	.73	.68
Soothability	.66	.80	.87	.82
Shyness	.81	.80	.83	.88
Perceptual Sensitivity	.88	.84	.86	.84
Effortful Control				
Low Intensity Pleasure	.63	.73	.80	.73
Attention Shifting	.76	.64	.75	.67
Inhibitory Control	.78	.89	.87	.86
Attention Focusing	.72	.86	.81	.87
Cuddliness	.81	.86	.89	.89

≥
Ltt
ğ
2
lar
IJ L
ŝ
õ
crip

Table 2

Cross-Cultural Comparisons of Toddlers from Chile, Korea, Poland and U.S.A.

	D	Sco	res			
Factor or Scale	Chile	Korea	Poland	U.S.A.	Country F	Sex F
Surgency	5.04 (.05) <sup>a</sup>	4.89 (.03) <sup>b</sup>	4.83 (.04) <sup>b</sup>	5.01 (.03) <sup>a</sup>	6.53 **	5.35*
Activity Level	5.14 (.07)	4.68 (.04)	4.55 (.05)	4.80 (.05)	18.43	11.63
High Intensity Pleasure	4.54 (.09) <sup>a</sup>	4.48 (.05) <sup>a</sup>	4.62 (.06) <sup>a</sup>	4.85 (.06)	8.62 **	18.77 **
Impulsivity	4.88 (.07) <sup>ab</sup>	4.73 (.04) <sup>ab</sup>	4.72 (.04) <sup>b</sup>	5.02 (.04) <sup>a</sup>	11.47 **	.92
Positive Anticipation	5.18 (.07) <sup>ab</sup>	5.23 (.04) <sup>a</sup>	5.09 (.05) <sup>b</sup>	4.93 (.05)	$11.05^{**}$	.66
Sociability	5.44 (.09) <sup>ab</sup>	5.28 (.05) <sup>ac</sup>	5.19 (.06) <sup>c</sup>	5.46 (.06) <sup>b</sup>	4.41 **	2.54
Negative Affectivity	3.45 (.05)	3.21 (.03)	3.11 (.03)	2.87 (.03)	39.82 <sup>**</sup>	11.
Fear	3.23 (.08)	2.90 (.04)	2.71 (.05)	2.38 (.05)	36.34 **	3.19
Sadness	2.99 (.08) <sup>a</sup>	3.00 (.04) <sup>a</sup>	3.30 (.05)	2.72 (.05)	21.65 **	.37
Discomfort	3.39 (.08) <sup>a</sup>	3.22 (.05) <sup>a</sup>	2.77 (.06)	2.42 (.05)	56.67 **	.07
Frustration	$3.81(.08)^{a}$	3.51 (.05) <sup>b</sup>	3.63 (.05) <sup>ab</sup>	3.58 (.05) <sup>b</sup>	3.82 **	1.35
Motor Activation	2.71 (.07) <sup>a</sup>	2.07 (.04)	2.65 (.04) <sup>a</sup>	1.90 (.04)	78.11 <sup>**</sup>	9.29 **
Soothability	5.23 (.08) <sup>a</sup>	5.24 (.04) <sup>a</sup>	4.88 (.05)	5.41 (.05)	8.73 **	1.14
Shyness	3.69 (.09) <sup>a</sup>	3.28 (.05)	2.94 (.06)	3.32 (.06) <sup>a</sup>	17.76 <sup>**</sup>	5.27 *
Perceptual Sensitivity	5.03 (.09) <sup>a</sup>	4.94 (.05) <sup>a</sup>	3.76 (.06)	4.06 (.06)	101.21	00.
Effortful Control	<b>4.73</b> (.05) <sup>a</sup>	4.92 (.03)	4.55 (.03)	<b>4.67</b> (.03) <sup>a</sup>	27.30 <sup>**</sup>	4.92
Low Intensity Pleasure	5.23 (.06) <sup>a</sup>	5.14 (.04) <sup>ab</sup>	5.06 (.04) <sup>bc</sup>	4.96 (.04) <sup>c</sup>	5.99 **	7.14*
Attention Shifting	5.15 (.06)	4.82 (.03)	4.35 (.04)	4.55 (.04)	53.53 **	.20
Inhibitory Control	3.74 (.08)	4.42 (.05)	3.95 (.06)	4.17 (.05)	23.99 **	$10.95^{**}$
Attention Focusing	4.07 (.08) <sup>a</sup>	4.78 (.04)	4.21 (.05) <sup>a</sup>	4.46 (.05)	37.04 **	.84
Cuddliness	5.47 (.08) <sup>a</sup>	5.43 (.04) <sup>a</sup>	5.18 (.05) <sup>b</sup>	5.23 (.05) <sup>b</sup>	7.58**	.58

Krassner et al.

p < .05p < .05p < .005

Author Manuscript

Author Manuscript