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# A comparative study of child temperament and parenting in Beijing, China and the western United States

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The purpose of this investigation was to examine comparable dimensions and linkages between child temperament and parenting styles with samples from Beijing, China and the western United States. Participants included 404 mothers and fathers from Beijing, China and 325 mothers and fathers from the western United States. Both mothers and fathers completed Buss and Plomin's (1984) EAS Temperament Scale as well as a spousal-report measure of parenting styles. Structural equation modelling was used to identify invariant (statistically comparable) factors for child temperament and parenting styles. Within-culture gender comparisons showed that Chinese fathers (relative to mothers) viewed their sons as being more active and sociable than daughters while US mothers (relative to fathers) rated their sons as being more active. Across-culture differences revealed that US parents (relative to Chinese parents) viewed children as more emotional while Chinese fathers (relative to US fathers) rated their children as more active. Similar and differential cultural patterns of linkages were also found between parenting styles and child temperament. Child emotionality was positively associated with authoritarian parenting in both cultures while child activity level was linked to more authoritative and less authoritarian parenting styles, but only in the Chinese sample. Finally, child sociability was found to be negatively linked to cross-gender patterns of authoritarian parenting in the US while mothers' and fathers' authoritarian parenting in China was linked to lower sociability in daughters only.

## Introduction

Since Bell's (1979) treatise on the reciprocal nature of socialization and Thomas and colleagues' New York Longitudinal Study (NYLS; Thomas, Chess, & Birch, 1963), an increasing number of studies have addressed linkages between parenting and child temperament (e.g., Rothbart & Bates, 1998; Sanson & Rothbart, 1995; Thomas & Chess, 1977). An interest in the mutual interplay between parent socialization practices, child characteristics, and their contributions to child outcomes has fostered much of this work (e.g., DeVries & Sameroff, 1984; Sanson, Hemphill, & Smart, 2002). The bulk of it has concentrated on parents and children from Western cultures, while only a handful of studies have examined the interface between parenting and child temperament in non-Western cultures (e.g., Chang, Schwartz, Dodge, & McBride-Chang, 2003).

While not completely free from ambiguity, research on parenting–child temperament linkages suggests that "easy" child characteristics (e.g., more adaptable, soothable, sociable; Thomas & Chess, 1977) tend to be linked with warm and responsive parenting (Sanson & Rothbart, 1995). Conversely, "difficult" child characteristics (e.g., negative emotionality, unadaptability) tend to be associated with less responsive parenting (e.g., Crockenberg & Acredolo, 1983; Putnam, Sanson, & Rothbart, 2002). It is not clear if these patterns hold up in non-Western cultures; therefore, this study addresses this question by examining mothers' and fathers' parenting and children's temperament by child gender in mainland China and the United States.

While an understanding of the linkages between parenting and child temperament is increasing in Western societies (e.g., Crockenberg, 1986; Putnam et al., 2002; Sanson & Rothbart, 1995; Thomas & Chess, 1977), comparatively little is known about parenting dimensions, children's temperament, and their relations in non-Western cultures (Ahadi, Rothbart, & Ye, 1993; Kohnstamm, 1989; Super & Harkness, 1986). The need for this type of research is underscored by both Sanson

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and Rothbart (1995) and Putnam et al. (2002) in their reviews. This study was designed to address this gap in the literature and examines whether mothers and fathers in a non-Western (mainland China) and Western culture (United States) would similarly identify temperament and parenting dimensions. Also examined were unique and similar cultural linkages between child temperament and parenting styles for mothers and fathers and sons and daughters as well as potential mean differences in child temperament and parenting within and between cultures.

## *Dimensions of temperament in Mainland China*

Hsu, Soon, Stigler, Hong, & Liang (1981) were among the first to examine temperament in modern times among Chinese children. Employing a translation of the Infant Temperament Questionnaire, they compared Taiwanese and US infants. Their initial studies found that Taiwanese parents rated infants as less active, less approachable, less adaptable, and more negative in mood than US parents. Using observational techniques, Kagan, Reznick, and Snidman (1986) reported similar cross-cultural findings; Chinese infants were more fearful, timid, and more likely to cry intensely when separated from mothers than Caucasian infants. More recently, Kagan, Arcus, Snidman, and Feng (1994) also observed that Chinese infants were lower in motor activity than Caucasian infants. However, contrary to Hsu et al.'s (C. Hsu, Soon, Stigler, Hong, & Liang, 1981) findings, Kagan observed that Chinese infants were less irritable than Caucasian infants (Kagan et al., 1994). Ahadi et al. (1993), studying older Chinese children (ages 6–7 years) from Shanghai, found that they were perceived to be less active, approachable, and more withdrawn than their US counterparts. In addition, they also reported a high degree of similarity on temperament factors across cultures along dimensions of positive and negative emotionality and effortful control (Rothbart, Ahadi, Hershey, & Fisher, 2001).

The discrepancies in these findings may be attributed to differing methodologies, measures, and differing parental or cultural preferences for child characteristics. Concerns also exist regarding the validity of employing Western measures in Eastern cultures (Berry, 1989; K. Yang & Bond, 1990) to capture culture-unique aspects of temperament. Given these validity concerns, Zhang (1997) explored indigenous characteristics among Chinese children. Employing a free description approach, Zhang identified five common factors in Chinese parents' description of children's characteristics. These factors included intellect (i.e., strong language ability, able to think fast), sociability (i.e., ease of making friends), manageability/emotionality (i.e., prone to throw temper tantrums, talks back to parents), activity (i.e., moves around a lot, likes practising martial arts), and anxiety/shyness (i.e., fear of mice or small bugs, shy when first visiting others). While intellect is an important construct, its inclusion is more likely to reflect the high value Chinese parents place on children's academic performance as opposed to a cultural-specific temperament feature (Chao & Sue, 1996; Ho, 1986; Stevenson, Chen, & Lee, 1992). The remaining four factors all share conceptual similarities with Western temperament dimensions of emotionality, activity, and sociability/shyness (Buss & Plomin, 1984). Not surprisingly, these factors have been shown to have a high degree of heritability (Buss & Plomin, 1984; Caspi, 1998; C. J. Chen et al., 1990), and may illustrate the adaptive function of these characteristics in multiple contexts (Ahadi et al., 1993).

Therefore, the first purpose of this study was to assess cultural similarities and/or differences in child temperament. Specifically, we hypothesized that invariant temperament structures from Buss and Plomin's (1986) EAS model could be reproduced in each cultural subset by parents (mothers/fathers) and across child gender. Additionally, given differential patterns of findings across gender in the Western literature, we also expected to find within-cultural gender differences in temperament (e.g., expecting sons to be rated as more active than daughters and daughters as more emotional than sons). We also anticipated that Chinese children would be rated as more emotional, but less active and sociable, than North American children (e.g., Ahadi et al., 1993; X. Chen et al., 1998; J. Hsu et al, 1981). However, given ongoing social-cultural structural changes in China associated with movement towards a broader market economy (see X. Chen, Cen, Li, & He, 2005), it was not clear whether these previously identified cultural differences in child temperament would be entirely replicated. Therefore, a portion of our analyses focused on examining both within- and between-cultural differences/similarities on temperament dimensions.

## *Parenting across cultures*

While commonalities in temperament dimensions appear to exist across cultures, it is likely that subtle differences in the social value placed on these various temperament traits remain (e.g., Russell, Hart, Robinson, & Olsen, 2003). In turn, differing social values may result in differential socialization strategies designed to help children conform to cultural expectations. In interpreting the direction of effects of socialization, Bell (1979) argued that particular parenting behaviours are the result of both cultural pressures and stimulation from the object of acculturation. In other words, knowledge of children's characteristics, cultural demands, and the parent's own assimilation of these demands into a set of parenting and child expectations coalesce to influence differing socialization practices and child outcomes (DeVries & Sameroff, 1984). As a result, parents in China and the United States are likely to interact with their children based on unique cultural expectations for parenting and according to their child's characteristics.

In efforts to foster conformity to rules, emotional maturity, self-control, and harmonious relationships with others, Chinese parents begin to use active forms of discipline that may include harsh scolding and physical punishment when children reach what Ho (1986) describes as an age of understanding (X. Chen, Liu, & Li, 2000a; Stevenson et al., 1992; D. Y. H. Wu, 1996). This is consistent with recent findings indicating that, although Chinese parents exhibit considerable care, concern, and involvement, they are more prone to engage in various forms of authoritarian control with children between 4 and 6 years of age (P. Wu et al., 2002).

Furthermore, Ho (1986) argues that certain child characteristics tend to evoke greater responses among Chinese parents, regardless of their children's age. Specifically, Chinese parents are viewed as being more concerned with their children's impulse control than their Western counterparts are. Although corresponding child temperament characteristics such as negative emotionality are typically viewed adversely in

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both cultures (Bates, 1989; Ho, 1986), high levels of activity (often associated with poor impulse control) may be prone to more authoritarian parental control in China due to cultural expectations for modest and reserved behaviour.

Even in the face of cultural influences, several researchers have demonstrated that certain aspects of Chinese parenting can be reliably captured with preschoolers and older children, using Baumrind's parenting typologies, particularly authoritative and authoritarian styles (e.g., X. Chen, Dong, & Zhou, 1997; J. Hsu, 1985; Steinberg, Dornbusch, & Brown, 1992; P. Wu et al., 2002). For instance, X. Chen and colleagues (1997) found support for reliable features of authoritative and authoritarian parenting typologies with a sample of Chinese parents, but not for permissive parenting. Others (X. Chen et al., 1997; McBride-Chang & Chang, 1998) have reported a similar pattern of findings, with permissiveness typically being a less reliable parenting dimension among Chinese samples. Due to a cultural emphasis on child obedience and parental authority (X. Chen et al., 2000b), cross-cultural comparisons between Chinese and Western parents have shown that Chinese parents tend to be more authoritarian (J. Hsu, 1985; Leung, Lau, & Lam, 1998; Steinberg et al., 1992) and less authoritative than their Western counterparts (P. Wu et al., 2002).

In line with recent conceptualizations of parenting style (e.g., Barber & Olsen, 1997; Baumrind, 1996), three distinct stylistic dimensions of parenting were measured that comprised the authoritative construct used in this study. These included (a) connection—the degree of warmth, nurturance, and acceptance displayed with children, (b) regulation—the degree of behavioural control that places fair and consistent limits on child behaviour through reasoning about rules and consequences for misbehaviour, and (c) the degree of psychological autonomy granting or democratic participation that allows children to express themselves. Authoritarian parenting as measured in this study included items representing two harsh disciplinary dimensions: (a) physical and verbal coercion (e.g., using physical punishment; exploding in anger, yelling or shouting, arguing), and (b) nonreasoning/punitive (e.g., punishes without explanation, threatens with no justification). Recent research supports these dimensions among parents of younger children (Hart, Newell, & Olsen, 2003), which are measurable in mainland Chinese and North American settings (X. Chen et al., 2000b; P. Wu et al., 2002).

The second purpose of this study was to identify whether parenting dimensions obtained from spousal reports were comparable across culture and maternal and paternal respondents. Because the parenting style instrument was developed for use with mothers in Chinese and North American samples (P. Wu et al., 2002), another goal was to expand the scope of this measure by examining mothers' and fathers' spousal reports and linking parenting dimensions to child temperament. While spousal reports are not entirely unproblematic, we elected to use them to overcome some of the more idiosyncratic issues associated with self-report measures (Nederhof, 1983; Nix et al., 1999; Russell et al., 2003; C. Yang et al., 2004). We also examined correlations between mother and father parenting dimensions within each culture (anticipating low to moderate correlations), and conducted mean parenting style comparisons across cultures, expecting more authoritarian and less authoritative parenting in China based on past research.

### *Parent and child gender*

Parent and child gender may also be related to child temperament and parenting differences. For example, Western research has shown that sons are consistently viewed as being more active and "difficult" than daughters (e.g., Bates, 1989; see also Putnam et al., 2002, for review). Research has further demonstrated the moderating influence of gender on linkages between child characteristics and parenting (Lamb, Frodi, Hwang, Forstromm, & Corry, 1982; Lindsey, Mize, & Pettit, 1997). Although informative, findings from these past studies have not consistently established direct linkages between specific dimensions of child temperament and broader parenting styles.

Research has established that father–son, father–daughter, mother–son, and mother–daughter dyads should be viewed as unique relationships (e.g., Russell et al., 1998; Synder, 1998), and that same-sex versus cross-sex relationships may yield differential patterns of child outcomes (e.g., X. Chen, Wang, Chen, & Liu, 2002). Specifically, research shows that mothers' coercive parenting may have a stronger effect on children than fathers' authoritarian parenting practices (e.g., Denham et al., 2000). However, this pattern is not always consistent within or across cultures. Earlier findings from the Chinese culture suggest that fathers are more coercive towards sons than towards daughters (Ho, 1986). Chang and colleagues (2003) recently found that fathers' harsh parenting was more strongly linked to sons' outcomes than to daughters. In contrast, in another Chinese study, fathers' coercion was strongly linked to daughters' rather than son's aggression, with no maternal coercion linkages to sons' or daughters' aggression (C. Yang et al., 2004). Similarly, Hart, Nelson, Robinson, Olsen, and McNeilly-Choque's (1998) study of Russian preschoolers indicated that fathers' coercion was more strongly associated with daughters' than sons' aggression. However, contrary to the Yang et al. Chinese findings, Russian mothers' coercive parenting was similarly linked to sons' and daughters' aggression.

What is becoming evident from this confusing pattern of findings is that parent- and child-gender interactions are differentially linked to parenting styles/practices and child outcomes. Gender effects may differ in these studies because of the different ways that gender is viewed across social contexts (Chang, 2004). While research in the Western literature points towards somewhat more specific patterns of parenting interactions by child and parent gender, cultural findings to date provide few consistent trends to guide expectations for differential gender patterns in non-Western cultures. Thus, it was difficult to anticipate what parent gender by child gender patterns of parenting–temperament interactions would likely be found in our Chinese sample.

Therefore, the third purpose of this study was to explore within-culture links between parenting dimensions and children's temperament across parent and child gender. Given past research, we did suspect that temperament characteristics such as negative emotionality, which is typically viewed adversely by adults (Bates, 1989; Ho, 1986), would be related to less authoritative and more authoritarian parenting in the Chinese culture (C. Yang et al., 2004), and especially for fathers in the US (Lamb et al., 1982). However, whether this pattern would hold for both sons and daughters was not entirely clear.

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Furthermore, we suspected that high activity level would be viewed more negatively by Chinese parents (e.g., Ho, 1986) and related to more authoritarian and less authoritative constructs in the Chinese sample. However, it was not clear whether a differential pattern of linkages to parenting dimensions on activity level would emerge between sons and daughters. We did suspect that child sociability would be favoured in both cultures, resulting in more authoritative and less authoritarian parenting in China and the US. More specifically, we anticipated that sociability would be related to US mothers' authoritative parenting of both sons and daughters (Stevenson-Hinde & Simpson, 1982). Whether this specific pattern would likewise be found in the Chinese culture was not entirely clear.

To achieve the three purposes of the research, the analyses in this study used more vigorous cross-cultural invariance criteria and techniques than those employed in previous studies in order to examine mean differences and structural relations based on latent rather than observed variables.

## Methods

### *Sample*

This study involved 729 children, aged 4 to 6 years, from the People's Republic of China and the United States. The Chinese sample consisted of 404 families in which both parents participated (203 girls and 201 boys) from three nursery schools in Beijing. The US sample included 325 families (164 girls and 161 boys) attending two early childhood programmes in an urban moderate-sized community in the western United States. The Chinese children averaged 63.20 months in age ($SD = 9.39$) and came from only-child families, with the exception of three sets of twins. The average age of children in the US sample was 57.22 months ($SD = 8.94$). Children in both samples came from educationally advantaged family backgrounds, with mothers averaging 13.25 years of education in China ($SD = 2.62$), and 15.06 years in the US ($SD = 2.51$). In both countries 12 years of education is equivalent to high school graduation. Corresponding father years of education were 13.76 years in China ($SD = 2.79$) and 16.17 years in the US ($SD = 3.20$).

Parental consent was obtained for each child who participated in the US sample. However, schools in China act "*in loco parentis*," and we were not allowed to obtain written parental permission (cf. X. Chen, Rubin, & Sun, 1992). School administrators did help arrange group meetings with Chinese parents to explain procedures. Teachers and parents were assured of confidentiality.

### *Measures*

All parenting and temperament items were forward- and back-translated by Chinese linguists, who were fluent in English. Translators received input from the investigators for difficult-to-translate items. The back-translated Chinese measures were comparable with the English version.

*Child temperament questionnaire.* Mothers and fathers completed the parent version of the EAS Temperament Survey for Children (Buss & Plomin, 1986), which is composed of 20 items, rated on a 5-point scale anchored by 1 (*not typical of child*) and 5 (*very typical of child*). The EAS includes three scales that assess parents' perceptions of their children's emotionality, activity level, and sociability. The Emotionality scale includes items reflecting distress or negative affectivity (e.g., child often fusses and cries), intensity of reaction, and the tendency to become upset easily. The Activity scale is comprised of items reflecting level of motor activity (e.g., child is always on the go) and total energy output. The Sociability scale includes items that reflect sociability (responsiveness to others, rewarding interactions) and shyness (items reversed scored). The EAS was selected due to significant conceptual overlap with previously identified temperament dimensions from both cultures and because of its brief nature. Past research has demonstrated the psychometric adequacy of the EAS in Western settings (e.g., Buss & Plomin, 1986; Hubert, Wachs, Peters-Martin, & Gandour, 1982) and the adequacy of parent perceptions as valid measures of children's temperament (Slabach, Morrow, & Wachs, 1991).

*Authoritative and authoritarian parenting styles.* Mothers and fathers from each sample completed a reduced version of the Parenting Styles and Dimensions Questionnaire (PSDQ) instrument (Robinson, Mandleco, Olsen, & Hart, 2001) regarding their spouse's parenting. The 60-item PSDQ was developed to overcome limitations of other widely used parenting style measures for preschool-age children (see Robinson et al., 2001). The reduced PSDQ included 17 items forming two patterns of parenting (authoritative and authoritarian) that have previously been found to be factorally invariant from maternal self-reports in US and Chinese samples (P. Wu et al., 2002). Permissive parenting items from the original measure and items from the authoritarian and authoritative typologies that did not adequately represent parenting constructs among Chinese parents were eliminated in the reduced version of the PSDQ (see P. Wu et al., 2002). The authoritative pattern consisted of three stylistic dimensions: (a) warmth/acceptance (connection) (e.g. gives praise, comfort and understanding), 3 items; (b) reasoning (regulation) (e.g., gives child reasons why rules should be obeyed), 3 items; and (c) democratic participation (autonomy granting) (e.g., allows child to give input into family rules), 3 items. The authoritarian pattern consisted of two stylistic dimensions: (a) verbal hostility/physical coercion (e.g., yells and shouts when child misbehaves, spanks when child is disobedient), 5 items; and (b) nonreasoning/ punitive (punishes by taking privileges away from child with little if any explanations), 3 items. Parents rated each other by assessing how often they perceived their partner to exhibit each parenting behaviour, using a 5-point scale anchored by 1 (*never*) and 5 (*always*). The scales contained three to five items for each stylistic dimension, which is deemed adequate for SEM (Kline, 1998).

## Results

### *Child temperament*

In the first set of analyses, a multigroup confirmatory factor analysis (MCFA) was employed to test whether the factor loadings of the three latent temperament constructs derived from the EAS (emotionality, activity, sociability) were invariant across Chinese and US mothers' and fathers' reports and for both sons and daughters. These and all subsequent analyses

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were carried out using *MPlus* statistical software. The same temperament models were estimated across four groups (Child Gender × Culture), with both mother and father reports included in the model for each group due to their interdependent nature (both parents reporting on the same child). The initial goodness-of-fit indices for the unconstrained three-factor model revealed an unsatisfactory model fit, $\chi^2$ (2797) = 4393.27, TLI = .79, CFI = .80, RMSEA = .06 (see Table 1). Placing full equality constraints across each of the comparative groups (Parent and Child Gender × Culture) resulted in a significant decrease in model fit ($\chi^2 = 361.73$, $df_{diff} = 102$, $p < .05$), indicating variant parameters within the model.

In accordance with past efforts to create invariant or comparable measures (Pitts, West, & Tein, 1996; Tomada & Schneider, 1997), items were isolated whose measurement properties varied across cultures, parents, or child gender, using a series of confirmatory factor analyses. Moore, Halle, Vandivere, and Mariner (2002) have argued that measures that retain as few as three or four items per factor can demonstrate good predictability and validity. Additionally, Pitts et al. (1996) demonstrated that it is possible to drop problematic indicators to achieve invariance across groups without appreciably affecting content validity. The measurement model without any equality constraints on any factor loading across parental and child gender served as the baseline model. Subsequently, the factor loading of each item was constrained to be equal across parental and child gender, respectively, in an alternative model. Items with low standardized factor loadings (< .40, Stevens, 1996) and/or that were not invariant across parental and child gender were subsequently dropped from the full item model. This was accomplished through a series of item-level analyses employing a $\chi^2$ difference criterion to achieve an invariant model across parents and cultures.

The final unconstrained three-factor baseline model, which retained three activity, three emotionality, and six sociability items was deemed adequate to measure the temperament constructs, $\chi^2$ (920) = 1320.12, TLI = .90, CFI = .92, RMSEA = .05, and did not differ appreciably when the model was fully constrained, $\chi^2_{dif}$ (63) = 73.93 *ns*. Findings indicate the invariant and comparable nature of the factor loadings for the remaining items across mothers and fathers, child gender, and the two cultures. The items retained in the final measurement model also appear to maintain good face validity and convey much of the intent of the original EAS factors (see Table 1).

**Table 1**
*Standardized factor loadings of full-scale measurement model of EAS*[a]

| | *US* | | | | *Chinese* | | | |
|---|---|---|---|---|---|---|---|---|
| | *Daughters* | | *Sons* | | *Daughters* | | *Sons* | |
| *Temperament constructs* | *Father* | *Mother* | *Father* | *Mother* | *Father* | *Mother* | *Father* | *Mother* |
| Emotionality | | | | | | | | |
| 2. Cries easily | .76 (.77) | .83 (.82) | .76 (.77) | .80 (.79) | .45 (.49) | .64 (.55) | .56 (.55) | .56 (.55) |
| *6. Tends to be somewhat emotional | .74 | .84 | .70 | .73 | .09 | .32 | .36 | .28 |
| 11. Often fusses and cries | .76 (.79) | .81 (.83) | .71 (.71) | .81 (.84) | .41 (.52) | .52 (.61) | .61 (.58) | .65 (.65) |
| 15. Gets upset easily | .75 (.71) | .79 (.79) | .71 (.70) | .72 (.69) | .68 (.54) | .60 (.58) | .47 (.54) | .58 (.59) |
| *19. Reacts intensively when upset | .51 | .56 | .59 | .60 | .24 | .44 | .30 | .33 |
| Activity | | | | | | | | |
| 4. Is always on the go | .65 (.68) | .66 (.66) | .73 (.68) | .65 (.64) | .73 (.70) | .71 (.78) | .84 (.75) | .84 (.82) |
| *7. When child moves about, usually moves slowly | .53 | .56 | .45 | .32 | .08 | .07 | .14 | .09 |
| 9. Is off and running as soon as he/she wakes up | .47 (.49) | .66 (.60) | .43 (.52) | .61 (.55) | .43 (.43) | .37 (.47) | .35 (.39) | .43 (.49) |
| 13. Very energetic | .82 (.82) | .85 (.91) | .72 (.77) | .85 (.88) | .56 (.60) | .72 (.68) | .64 (.72) | .76 (.76) |
| *17. Prefers quiet, inactive games to more active ones | .44 | .48 | .32 | .14 | .03 | .13 | .09 | .06 |
| Sociability | | | | | | | | |
| *1. Tends to be shy | .55 | .55 | .59 | .58 | .03 | .07 | .01 | .10 |
| 3. Likes to be with people | .68 (.63) | .64 (.65) | .71 (.68) | .59 (.62) | .56 (.48) | .50 (.48) | .53 (.58) | .53 (.54) |
| 5. Prefers playing with others rather than alone | .50 (.47) | .30 (.43) | .47 (.52) | .47 (.51) | .54 (.44) | .41 (.50) | .53 (.45) | .70 (.50) |
| 8. Makes friends easily | .57 (.65) | .67 (.74) | .66 (.68) | .63 (.63) | .53 (.55) | .74 (.65) | .72 (.71) | .73 (.70) |
| *10. People more stimulating than anything else | .45 | .50 | .45 | .56 | .35 | .32 | .43 | .27 |
| 12. Is very sociable | .76 (.77) | .88 (.87) | .81 (.84) | .81 (.83) | .49 (.63) | .65 (.70) | .71 (.69) | .63 (.71) |
| *14. Takes a long time to warm up to strangers | .53 | .59 | .64 | .47 | .01 | .06 | .05 | .09 |
| 16. Is something of a loner | .43 (.47) | .60 (.57) | .60 (.55) | .49 (.52) | .37 (.43) | .46 (.48) | .42 (.42) | .36 (.47) |
| *18. When alone, child feels isolated | .01 | .02 | .06 | .04 | .25 | .08 | .17 | .23 |
| 20. Is very friendly with strangers | .45 (.38) | .55 (.40) | .46 (.42) | .59 (.43) | .41 (.41) | .44 (.45) | .34 (.40) | .41 (.47) |

[a] Values in parenthesis represent the factor loadings from the final invariant trimmed-scale measurement model. These items were used in subsequent analyses.

* Variant across the four groups in the initial full-item model.

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*Relationship between mother and father reports of temperament.* The analyses examined the degree of overlap (latent correlations) between the latent constructs of mothers' and fathers' reports of child temperament within each culture. US mothers' and fathers' latent constructs were found to be moderately to strongly correlated for both daughters (i.e., emotionality, $r = .41$, activity level, $r = .59$, sociability, $r = .69$) and sons (emotionality, $r = .74$, activity level, $r = .52$, sociability, $r = .70$). Moderate correlations were likewise found between Chinese mothers' and fathers' latent temperament constructs for daughters (i.e., emotionality, $r = .52$, activity level, $r = .43$, sociability, $r = .32$) and sons (emotionality, $r = .40$, activity level, $r = .34$, sociability, $r = .47$).

*Within-culture gender differences in temperament.* We next compared mean level differences between sons' and daughters' temperament within each culture. This was done separately for mothers' and fathers' reports. Daughter's temperament means were set to zero and the differences between sons' and daughters' latent means were estimated and tested for significance. Within-culture comparisons revealed that Chinese fathers rated sons as more active (*mean difference* = .27, $t = 2.13$, $p < .05$) and sociable (*mean difference* = .26, $t = 2.07$, $p < .05$) than daughters. There were no significant gender differences in the way Chinese mothers rated either sons or daughters. Within the US sample, mothers rated sons as more active (*mean difference* = .33, $t = 2.56$, $p < .05$) than daughters, but no significant gender differences were observed on fathers' ratings.

*Across-culture differences in temperament.* We next compared mean differences in children's temperament between the Chinese and US samples. This was done separately for sons and daughters and for mothers' and fathers' ratings. Temperament means for the Chinese sample were set to zero and the differences between the US and the Chinese latent means were estimated and tested for significance. Sons in the US were rated as less active than sons in China by their fathers (*mean difference* = –.35, $t = 2.53$, $p < .05$) and daughters in the US were rated as more emotional than daughters in China by their fathers (*mean difference* = .40, $t = 2.54$, $p < .05$). No differences were found for daughters' activity or sons' emotionality between cultures. Additional cultural comparisons found that daughters in the US were rated as less sociable by their mothers and fathers than daughters in China (*mean difference*$_{\text{mothers}}$ = –.36, $t = 3.10$, $p < .05$; *mean difference*$_{\text{fathers}}$ = –.44, $t = 3.50$, $p < .05$), but no cultural differences were found for sons' sociability. Collapsing across child gender, overall cultural comparisons showed that US mothers and fathers rated their children as more emotional than their Chinese counterparts (*mean difference*$_{\text{mothers}}$ = .20, $t = 2.40$, $p < .05$; *mean difference*$_{\text{fathers}}$ = .27, $t = 3.09$, $p < .05$), while Chinese fathers rated their children as being more active (*mean difference* = .25, $t = 2.62$, $p < .05$) than US fathers did. However, no cultural differences were obtained on the dimension of sociability when collapsing across gender.

## *Parenting styles*

MCFA was used to examine invariance in factor loadings for authoritative and authoritarian parenting styles across mothers and fathers in each of the four groups (Culture × Child Gender). Due to the interdependent nature of the spousal reports (i.e., each partner reported their spouse's parenting of the same child), mothers' and fathers' reports were included in the same model.

*Authoritative and authoritarian parenting.* The authoritative parenting factor included three latent constructs (connection, reasoning-oriented regulation, and autonomy granting) measured with nine items. The authoritarian parenting factor included two latent constructs (physical coercion/verbal hostility and nonreasoning/punitive) measured with eight items (see Table 2). Preliminary analyses indicated variant parameters in the authoritarian model; however, this still allowed for cautious interpretations of comparisons across groupings (Vandenberg & Lance, 2000). For the sake of parsimony, second-order confirmatory factor models for both authoritarian and authoritative parenting, using the parenting subdimensions as latent indicators of these two higher-order constructs, are used in subsequent analyses.

*Intercorrelations between mothers' and fathers' parenting dimensions.* With the exception of authoritarian parenting of sons, low latent correlations were observed between US mothers' and fathers' latent constructs for authoritarian (daughters: $r = .26$; sons: $r = .75$) and authoritative styles (daughters: $r = .27$; sons: $r = .26$). Low correlations were also observed between Chinese mothers' and fathers' authoritarian parenting (daughters: $r = .09$; sons: $r = .20$) and authoritative parenting (daughters: $r = .03$; sons: $r = .36$).

*Parenting style comparisons within cultures.* The next set of analyses examined possible latent mean differences in parenting within cultures for mothers and fathers. To compare differences, mothers' means were set to zero. Findings indicate that Chinese fathers were less authoritarian and authoritative than mothers in their parenting of daughters (*mean difference* = –.26, $t = 2.42$; *mean difference* = –.37, $t = 3.26$, $p < .05$, respectively) and sons (*mean difference* = –.22, $t = 2.06$; *mean difference* = –.26, $t = 2.70$, $p < .05$, respectively). In the US sample, mothers and fathers did not differ on the overall dimension of authoritarian parenting; however, US fathers were found to be less authoritative than mothers in their parenting of sons (*mean difference* = –.42, $p < .05$) and daughters (*mean difference* = –.40, $p < .05$).

*Parenting styles comparisons across cultures.* To compare means across cultures, US parenting means were set to zero. Between-culture comparisons revealed that Chinese mothers and fathers were more authoritarian than US mothers and fathers with daughters (*mean difference*$_{\text{mothers}}$ = .64, $t = 6.05$, $p < .01$; *mean difference*$_{\text{fathers}}$ = 1.17, $t = 8.13$, $p < .01$) and with sons (*mean difference*$_{\text{mothers}}$ = 1.12, $t = 6.31$, $p < .01$; *mean difference*$_{\text{fathers}}$ = 1.02, $t = 8.16$, $p < .01$). However, no significant differences were found on overall authoritative parenting between the two cultures.

## *Correlations between Chinese and US parenting constructs and child temperament*

The next set of results were estimated using a series of four group models (Child Gender × Culture combinations) that consisted of four latent variables, including fathers' report of child temperament, mothers' report of child temperament, fathers' report of mothers' parenting, and mothers' report of

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**Table 2**
*Factor structure of parenting dimensions*

| | *US* | | | | *Chinese* | | | |
|---|---|---|---|---|---|---|---|---|
| | *Daughters* | | *Sons* | | *Daughters* | | *Sons* | |
| *Authoritative* | | | | | | | | |
| Warmth/acceptance (connection) | | | | | | | | |
| 1. Encourages child to talk about troubles | .66 | .73 | .76 | .68 | .48 | .63 | .60 | .57 |
| 5. Gives praise when child is good | .53 | .59 | .68 | .61 | .46 | .52 | .47 | .42 |
| 12. Gives comfort when child is upset | .70 | .65 | .76 | .68 | .54 | .61 | .64 | .55 |
| Reasoning (regulation) | | | | | | | | |
| 25. Gives child reasons why rules should be obeyed | .71 | .69 | .75 | .74 | .54 | .64 | .68 | .67 |
| 29. Helps child understand impact of behaviour by encouraging child to talk about consequences | .77 | .74 | .77 | .73 | .59 | .69 | .75 | .77 |
| 58. Explains consequences of the child's behaviour | .66 | .61 | .69 | .70 | .47 | .58 | .68 | .65 |
| Democratic participation (autonomy granting) | | | | | | | | |
| 22. Allows child to give input into family rules | .50 | .59 | .51 | .39 | .51 | .57 | .48 | .49 |
| 31. Takes child's desires into account before asking child to do something | .58 | .56 | .50 | .44 | .50 | .49 | .46 | .49 |
| 48. Encourages child to freely express even when disagreeing | .52 | .59 | .46 | .42 | .60 | .60 | .58 | .56 |
| *Authoritarian* | | | | | | | | |
| Physical coercion & verbal hostility | | | | | | | | |
| 6. Spanks when child is disobedient | .57 | .64 | .56 | .78 | .50 | .80 | .50 | .73 |
| *43. Slaps child when misbehaves | .59 | .47 | .61 | .75 | .41 | .72 | .53 | .73 |
| *37. Uses physical punishment to discipline | .50 | .58 | .53 | .74 | .47 | .68 | .50 | .68 |
| *13. Yells or shouts when child misbehaves | .80 | .63 | .50 | .60 | .53 | .46 | .54 | .43 |
| *32. Explodes in anger towards child | .53 | .52 | .40 | .42 | .74 | .55 | .74 | .55 |
| Non-reasoning/punitive | | | | | | | | |
| 10. Punishes by taking privileges away from child with little explanations | .67 | .60 | .53 | .55 | .49 | .68 | .47 | .57 |
| 28. Punishes by putting child off somewhere with little explanation | .74 | .71 | .78 | .63 | .49 | .68 | .55 | .63 |
| 54. Uses threats as punishment with little or no justification | .69 | .57 | .62 | .58 | .47 | .64 | .46 | .57 |

* Variant across the four groups in the initial full-item model.

fathers' parenting. In each of the separate models, the child temperament variables (i.e., emotional, activity, sociability) were linked to either authoritative or authoritarian parenting. The primary factor loadings of each model were completely or partially constrained to be invariant, reflecting prior analyses. The temperament to parenting relationships were not constrained for equality across mothers and fathers or across the four Child Gender × Culture groups, and served as the baseline models in these analyses.

*Authoritarian parenting and child temperament.* Findings in each culture demonstrated positive correlations between mothers' and fathers' authoritarian parenting and sons' and daughters' emotionality (see Table 3). A culture-specific pattern of findings, however, emerged with negative linkages between authoritarian parenting and child activity found only for the Chinese sample. Negative correlations were found for authoritarian parenting and sociability in the US between cross-gender, parent–child dyads. However, in the Chinese sample, authoritarian parenting was negatively associated only with daughters' sociability for both mothers and fathers (see Table 3).

*Authoritative parenting and child temperament.* Authoritative parenting was negatively correlated with sons' emotionality in the US sample for both mothers and fathers, but in the Chinese sample, only mothers' authoritative parenting was related with sons' emotionality (see Table 3). Similar to authoritarian parenting, a culture-specific pattern of findings also emerged between authoritative parenting in China and child activity level; however, in this instance, linkages were specific to daughters but not to sons. Activity level was not found to be significantly related to the authoritative parenting dimension in the US. Finally, only US fathers' authoritative parenting was found to be linked to their sons' dimension of sociability. No additional significant linkages were found between authoritative parenting and children's sociability (see Table 3).

## Discussion

This study examined cross-cultural similarities and differences in parents' perceptions of children's temperament and spousal perceptions of parenting in the United States and the People's Republic of China. Work on the cultural meaning of temperament has been advancing in Western literature (see Rothbart & Bates, 1998; Wachs & Kohnstamm, 2001), with particular emphasis being placed on the meaning of temperament in socializing contexts (Sanson et

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**Table 3**
*Correlations between child temperament and parenting dimension across cultures, parents, and child gender*

| | *US* | | | | *Chinese* | | | |
|---|---|---|---|---|---|---|---|---|
| *Temperament* | *Father–daughter* | *Mother–daughter* | *Father–son* | *Mother–son* | *Father–daughter* | *Mother–daughter* | *Father–son* | *Mother–son* |
| Authoritarian | | | | | | | | |
| Emotionality | .22* | .39* | .18* | .38* | .42* | .31* | .25* | .33* |
| Activity | –.04 | –.09 | –.04 | –.09 | –.26* | –.26* | –.17* | –.28* |
| Sociability | –.18* | –.10 | –.06 | –.27* | –.25* | –.14* | –.06 | –.10 |
| Authoritative | | | | | | | | |
| Emotionality | –.02 | –.01 | –.19* | –.32* | —.16 | .00 | –.04 | –.18* |
| Activity | .08 | .07 | .12 | .05 | .37* | .34* | .09 | .09 |
| Sociability | .10 | .02 | .24* | .02 | .18 | –.14 | –.01 | –.04 |

* $p < .05$.

al., 2002). Nevertheless, studies of the indigenous notions of temperament in China have only recently begun (Zhang, 1997).

## *Child temperament*

Consistent with past research (e.g., Ahadi et al., 1993; X. Chen et al., 2000a; C. Hsu et al., 1981), findings from this study demonstrate that temperament dimensions of emotionality, activity level, and sociability can be meaningfully reproduced in samples from both cultures. These findings extend the literature by demonstrating that both mothers and fathers across Eastern and Western cultures employ some similar dimensions (invariant factors) in their perceptions of children's temperament. While invariant structures were found at the statistical level, findings may also be indicative of some common features of individual characteristics that are arguably adaptive in their respective contexts (C. J. Chen et al., 1990; Kagan et al., 1994; Rothbart & Bates, 1998). It should be noted, however, that the way these characteristics are adaptive is likely to be bound to the cultural frameworks in which they are expressed (Super & Harkness, 1986; Wachs & Kohnstamm, 2001; K. Yang & Bond, 1990). Caution also is needed in interpreting findings from this study as being representative of the full range of indigenous temperament structures in each culture, in that culture-specific aspects of temperament have gone untapped**.** Additional research, especially of an indigenous nature in non-Western cultures, is needed to further understanding of the unique structures of temperament among these differing cultural groups (K. Yang & Bond, 1990).

Despite limitations in capturing temperament features unique to each culture, several within- and between-culture differences and similarities were observed. Specifically, within-culture findings demonstrated that Chinese fathers rated their sons as being more active and sociable than daughters, whereas mothers in the US, rather than fathers, tended to rate their sons as more active than daughters. This pattern of higher activity level for sons in both cultures is consistent with past research in the West employing maternal reports (e.g., Rothbart & Bates, 1998, for review) and holds up in maternal ratings in our US sample. Interestingly, in the Chinese sample it was fathers and not mothers who rated their sons' activity level higher than that of their daughters. Why Chinese fathers are more prone to view sons as more active than daughters is not entirely clear from these data but may be related to differences in gender expectations within the Chinese culture. Past research suggests that Chinese fathers are the dominant disciplinarians, as compared with mothers, and are more coercive towards sons than towards daughters (e.g., X. Chen et al., 2000a; Ho, 1986). Perhaps this reflects higher expectations by fathers for impulse control in sons and, thus, a more acute awareness of activity levels that fall outside of cultural norms for sons.

Our analyses of between-culture comparisons of child temperament demonstrated that US mothers and fathers rated their children as more emotional than their Chinese counterparts. Furthermore, Chinese mothers and fathers rated their daughters as being more sociable than their US counterparts. This general pattern appears to run contrary to prior studies that have traditionally shown Chinese children to exhibit more negative emotionality (e.g., Ahadi et al., 1993; C. Hsu et al., 1981) and less sociability (X. Chen et al., 1998). These departures from previous findings could be explained by several factors incorporated in this study, such as differences in children's age at time of study (preschoolers), the use of statistically invariant constructs to measure temperament across cultures, and the use of multiple informants. Typically, prior research on Chinese temperament has relied on measures largely derived from the NYLS dimensions for infants, without accounting for structural invariance, and largely employing mothers as informants (e.g., Hsu et al., 1981; Rothbart et al., 2001).

Our inclusion of fathers' ratings in the two cultural settings also provides a unique point for comparison that has gone untapped in much of the previous literature. Perhaps differences reported here, particularly with the cultural differences in fathers' ratings of activity level, may reflect differing dynamics between Chinese fathers and their children. US fathers may be less attuned or more accepting of moderate to high levels of activity in their children, whereas Chinese fathers may have rated similar levels of activity higher for their children, particularly their sons. Consequently, mean differences in parental ratings could be due to response sets reflecting different societal norms, resulting in ratings that do not reflect a common metric across cultures (Triandis, 1994).

## *Parenting styles*

In addition to examining child temperament, our analyses further demonstrated unique differences in parenting across cultures. As anticipated (e.g., Leung et al., 1998; P. Wu et al.,

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2002) Chinese mothers and fathers in this study were found to be more authoritarian than their US counterparts. However, no cross-cultural differences were found along the dimension of authoritative parenting. Congruent with prior research, within-culture comparisons showed that US fathers were perceived to be less authoritative than mothers (Russell et al., 1998). This finding was also replicated in our Chinese sample. Yet unlike past research (Hart & Robinson, 1994; Russell et al., 1998), our within-culture comparisons failed to demonstrate differences in authoritarian parenting between US mothers and fathers. Somewhat surprisingly, in addition to being less authoritative, we found that Chinese fathers were also rated as less authoritarian than Chinese mothers. This finding may help to explain what had been thought to be incongruous findings from past research, showing that Chinese mothers are perceived as being both ''soft-hearted'' (Ho, 1986) and more coercive (D. Y. H. Wu, 1996). Instead of past findings being incongruous it could be that Chinese mothers employ a balance of both authoritative and authoritarian parenting strategies with their children, as suggested by findings from this study.

## *Parenting–child temperament linkages*

*Emotionality.* We also set out to examine linkages between mothers' and fathers' parenting styles and sons' and daughters' temperament in each cultural setting. One of the more striking findings demonstrated that authoritarian parenting was positively linked to children's negative emotionality across each parent–child dyad from both samples. These findings are consistent with research demonstrating that emotional elements of children's temperament, especially negative features, are commonly among the most salient features of parents' perceptions of child temperament (Hubert & Wachs, 1985; Mebert, 1991) and tend to elicit more authoritarian parenting approaches (Lee & Bates, 1985; Sanson & Rothbart, 1995; C. Yang et al., 2004). However, these findings also diverge somewhat from previous studies showing that it is typically fathers rather than mothers who are less accepting of girls' rather than boys' negative temperament characteristics (e.g., Lamb et al., 1982). Why this is the case may be linked to the nature of the emotionality construct employed in this study (cry easily, often fuss, and gets upset easily). These characteristics reflect behaviours that are often taxing on parents' own psychological resources, demanding immediate parenting action to alleviate the stress of a highly emotional child. As a result, the immediacy of the parenting action may induce more authoritarian approaches rather than authoritative practices that commonly require greater patience to implement (Grusec & Goodnow, 1994). Unwittingly, these authoritarian practices may exacerbate the negative features of children's' emotionality since less responsive and more harsh parenting tends to increase children's negative emotionality over time (e.g., Crockenberg, 1986). Thus, these findings are likely to reflect the cumulative transactional effects of authoritarian parenting and children's negative emotionality over time (DeVries & Sameroff, 1984).

While authoritarian parenting was linked to child emotionality in each parent–child dyad, authoritative parenting was only found to be negatively associated with child emotionality between US fathers and mothers with their sons and Chinese mothers with their sons. In this case, it appears that mothers in each culture are especially less accepting of their sons' negative emotionality, resulting in lower authoritative and greater authoritarian parenting approaches. It is interesting, though, that fathers in the US, but not in China, also demonstrated lower levels of authoritative parenting with sons who were more emotional. This may be partially explained by the finding that US fathers and mothers viewed their children as more emotional than Chinese parents did. As a result, higher levels of emotionality in US sons may result in fathers who become more prone to engage the child with less authoritative techniques.

*Activity level.* Contrary to expectations, findings indicated that across all Chinese parent–child dyads, children who were high in activity had parents who responded with less authoritarian parenting, while children's activity was not related to parenting styles in the US. Based on previous research, we had anticipated that high activity level would be met by Chinese parents with more restrictive and harsh parenting, given the cultural expectations for modest and reserved children (Ho, 1986), and that mothers and fathers in the US would react with more authoritarian parenting with highly active daughters (Lindsey et al., 1997; Russell & Russell, 1994). In contrast, our findings demonstrated that Chinese fathers and mothers greeted daughters' higher activity with greater authoritative and less authoritarian parenting.

The lack of findings in the US may reflect the more neutral features of the activity items that were retained in this construct (always on the go, off and running in the morning, and energetic). It may also be that Chinese parents, despite suggestions to the contrary (e.g., Garcia Coll, Meyer, & Brillon, 1995; D. Y. H. Wu, 1996), may still view their children in a partial state of innocence (cf. Ho, 1986), and are therefore more tolerant of children's activity (but not emotionality) during this transitory period. Alternatively, though, these findings may also suggest that Chinese parents who employ a more authoritative style may be more encouraging or accepting of children's higher levels of activity.

*Sociability.* Interestingly, for each culture, different patterns were found for parenting and children's sociability. For the US, a cross-gender pattern was observed. Specifically, higher authoritarian parenting in fathers was linked with lower sociability in daughters while higher authoritarian parenting in mothers was linked with lower sociability in sons. These cross-gender patterns between parenting and child temperament partially replicate past research. For instance, based on Sanson and Rothbart's (1995) review of the literature, fathers in the West are less tolerant of social ineptness in daughters, more so than in sons. Furthermore, Lindsey et al. (1997) have shown that mothers' and fathers' authoritarian parenting is linked to lower sociability in sons. While this particular finding was not replicated in our US sample, our findings did show that fathers' authoritative parenting is positively linked to their sons' sociability. In contrast, past research (Stevenson-Hinde & Simpson, 1982) has typically demonstrated a link to sons' sociable behaviours through mothers' authoritative parenting, not fathers'.

By comparison, unlike the US sample, the cross-gender parent–child pattern was not found in our Chinese sample. Instead, higher authoritarian parenting for mothers and fathers was linked to lower sociability in daughters but not sons. These findings diverge from research in the West (e.g., Lindsey et al., 1997) that demonstrates linkages between authoritative par-

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enting and son's lower sociability. Why parents' authoritarian styles in China are associated to daughters' lower sociability but not sons' is not altogether clear. Perhaps girls are expected to demonstrate more modest and reserved behaviour in social settings relative to boys, and authoritarian parenting is one way to socialize that expectation. These discrepancies from Western research further highlight the need to attend to cultural nuances and suggest the need for additional research.

### *Limitations*

This study presents new evidence suggesting links between parenting and children's characteristics in two cultural settings. The inclusion of fathers' as well as mothers' ratings of child temperament and spousal reports of parenting extends the literature in important ways. While encouraged by these findings, our enthusiasm is tempered by a few design limitations. One is the reliance on parenting reports of temperament and spousal reports of parenting. While debate continues on the importance and meaning of parent perceptions of children's temperament (see Kagan, 1998), evidence suggests that parental reports do offer insights into children's individuality (see Rothbart & Bates, 1998). Sanson and Rothbart (1995) remind us about the potential for nonindependence of measures due to parent characteristics influencing both parents' reports of their child's temperament, as well as their own parenting. This possibility remains, given the design of the current study. At the same time, this argument further highlights the transactional interplay that exists between parenting behaviour and child characteristics.

In addition to limitation with measures, there are also possible differences between samples that may account for some of the observed cultural differences. For instance, most of the Chinese sample was comprised of single-child families, while the US sample primarily comprised of multichild families. It is possible that parity may influence to some degree US parents' parenting practice and that perceptions of child traits may be altered in multichild families. To avoid these limitations in the future, researchers will need to employ methodologies that are prospective in nature and allow for multimethod assessments, including long-term observations of parenting and child characteristics in various cultural contexts.

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