

# Boys' and Girls' Relational and Physical Aggression in Nine Countries

Jennifer E. Lansford<sup>1\*</sup>, Ann T. Skinner<sup>1</sup>, Emma Sorbring<sup>2</sup>, Laura Di Giunta<sup>3</sup>, Kirby Deater-Deckard<sup>4</sup>, Kenneth A. Dodge<sup>1</sup>, Patrick S. Malone<sup>5</sup>, Paul Oburu<sup>6</sup>, Concetta Pastorelli<sup>3</sup>, Sombat Tapanya<sup>7</sup>, Liliana Maria Uribe Tirado<sup>3,8</sup>, Arnaldo Zelli<sup>9</sup>, Suha M. Al-Hassan<sup>10</sup>, Liane Peña Alampay<sup>11</sup>, Dario Bacchini<sup>12</sup>, Anna Silvia Bombi<sup>3</sup>, Marc H. Bornstein<sup>13</sup>, and Lei Chang<sup>14</sup>

<sup>1</sup> *Duke University, Durham, North Carolina*

<sup>2</sup> *University West, Trollhättan, Sweden*

<sup>3</sup> *Rome University 'La Sapienza', Rome, Italy*

<sup>4</sup> *Virginia Polytechnic Institute and State University, Blacksburg, Virginia*

<sup>5</sup> *University of South Carolina, Columbia, South Carolina*

<sup>6</sup> *Maseno University, Kisumu, Kenya*

<sup>7</sup> *Chiang Mai University, Chiang Mai, Thailand*

<sup>8</sup> *Universidad San Buenaventura, Medellin, Colombia*

<sup>9</sup> *University of Rome 'Foro Italico', Rome, Italy*

<sup>10</sup> *Hashemite University, Zarqa, Jordan*

<sup>11</sup> *Ateneo de Manila University, Quezon City, Philippines*

<sup>12</sup> *Second University of Naples, Naples, Italy*

<sup>13</sup> *Eunice Kennedy Shriver National Institute of Child Health and Human Development, Bethesda, Maryland*

<sup>14</sup> *Chinese University of Hong Kong, Hong Kong, China*

Distinguishing between relational and physical aggression has become a key feature of many developmental studies in North America and Western Europe, but very little information is available on relational and physical aggression in more diverse cultural contexts. This study examined the factor structure of, associations between, and gender differences in relational and physical aggression in China, Colombia, Italy, Jordan, Kenya, the Philippines, Sweden, Thailand, and the United States. Children ages 7–10 years ( $N = 1,410$ ) reported on their relationally and physically aggressive behavior. Relational and physical aggression shared a common factor structure across countries. In all nine countries, relational and physical aggression were significantly correlated (average  $r = .49$ ). Countries differed in the mean levels of both relational and physical aggression that children reported using and with respect to whether children reported using more physical than relational aggression or more relational than physical aggression. Boys reported being more physically aggressive than girls across all nine countries; no consistent gender differences emerged in relational aggression. Despite mean-level differences in relational and physical aggression across countries, the findings provided support for cross-country similarities in associations between relational and physical aggression as well as links between gender and aggression. *Aggr. Behav.* 38:298–308, 2012. © 2012 Wiley Periodicals, Inc.

**Keywords:** cross-cultural; gender; international; physical aggression; relational aggression

## INTRODUCTION

### Different Forms of Aggression

Aggression during childhood is a major concern not only because of the detrimental effects of aggression on its victims but also because of the long-term negative developmental consequences associated with being a perpetrator or victim of aggression during childhood [e.g., Broidy et al., 2003; Kokko and Pulkkinen, 2000; Nagin and Tremblay, 1999; Serbin et al., 1998]. Contemporary research in child development often distinguishes among different forms of

Contract grant sponsor: Eunice Kennedy Shriver National Institute of Child Health and Human Development; Contract grant number: RO1-HD054805; Contract grant sponsor: Fogarty International Center; Contract grant number: RO3-TW008141; Contract grant number: 2KO5DA015226; Contract grant sponsor: National Institute on Drug Abuse; Contract grant sponsor: National Institute on Drug Abuse; Contract grant number: K01DA024116; Contract grant sponsor: Intramural Research Program of the NIH/NICHD.

\*Correspondence to: Jennifer E. Lansford, Center for Child and Family Policy, Duke University, Box 90545, Durham, NC 27708. E-mail: Lansford@duke.edu

Received 16 September 2011; Accepted 7 April 2012

Published online in Wiley Online Library (wileyonlinelibrary.com). DOI: 10.1002/ab.21433

aggression [Card et al., 2008; Crick and Grotpeter, 1995; Underwood, 2003; Warren et al., 2011]. The defining characteristic of aggressive behavior is the aggressor's intent to cause harm to another person, but the form that aggressive behavior takes can be either direct (involving a physical or verbal confrontation with the victim) or nondirect [which can include relational, social, or indirect aggression; Warren et al., 2011]. The present study focuses on physical aggression as one form of direct aggression and on relational aggression as one form of nondirect aggression that involves harming another's social relationships [e.g., spreading rumors, excluding another child from a peer group; see Coyne et al., 2006, for a discussion of nuances in terminology related to relational and other forms of nondirect aggression]. Because previous research on aggression has been conducted primarily using North American and Western European samples, it is unclear to what extent different forms of childhood aggression are present in countries that are underrepresented in the developmental literature, whether associations between relational and physical aggression are similar or different across countries, and whether there are gender differences in different forms of aggression across countries. The present study addresses these issues using data on children's self-reported relational and physical aggression in nine countries.

### **Associations Between Relational and Physical Aggression**

A conceptual framework that includes attention both to developmental and cultural factors can help guide understanding of relational and physical aggression. From a developmental systemic perspective, the development of aggression is a function of a child's individual characteristics [e.g., temperament, Ortiz and del Barrio Gándara, 2006; genetic factors, Schmidt et al., 2002] as well as proximal and distal social systems [e.g., parenting, Gershoff, 2002; cultural norms about the acceptability of aggression, Huesmann and Guerra, 1997]. To the extent that individual characteristics and social systems act as general risk factors for the development of problem behaviors, one might expect little differentiation between individuals' displays of relational and physical aggression. However, if these risk factors act in a way that promotes one, but not the other, form of aggression, one might expect divergence between individuals' displays of relational and physical aggression. Divergence may be especially likely if cultural- or gender-based norms make it acceptable within a group to engage in relational but not physical aggression, for example.

There are at least two ways to conceptualize links between relational and physical aggression. The first is in terms of mean levels of each form of aggression (e.g., whether children exhibit more, the same, or less relational than physical aggression). Children in Japan, for example, have been reported to engage in more relational than physical aggression [Morita et al., 1999]. The second is in terms of associations between the use of each form of aggression. For example, one could find a positive correlation between relational and physical aggression that would indicate that children might have overarching behaviors that hurt others in a variety of ways. Alternatively, one could find a negative correlation or no correlation between relational and physical aggression that would indicate that children are likely to specialize in one form of aggression to the exclusion of the other form or exhibit specific forms essentially at random. In a sample of Japanese and American fourth graders, Kawabata et al. [2010b] found that self-reported relational and physical aggression were correlated .54 in Japan and .60 in the United States suggesting that, at least in these two countries, children who use one form of aggression are also likely to use the other form. It is unclear from research to date whether mean levels of relational and physical aggression as well as associations between relational and physical aggression are similar or different in children from a wider range of countries.

### **Gender Differences in Relational and Physical Aggression**

Gender differences in physical aggression have been well established, with boys exhibiting physically aggressive behavior more often than girls [for reviews see, e.g., Archer, 2004; Bettencourt and Miller, 1996; Eagly and Steffen, 1986]. Although there have been exceptions [Cook, 1992; Fry, 1992], the finding of gender differences in physical aggression has been replicated in many countries and is robust in meta-analyses [Archer, 2004]. Researchers have drawn on theories regarding biological factors as well as gender-based socialization to explain these replicated gender differences in physical aggression [e.g., Bettencourt and Miller, 1996; Eagly and Steffen, 1986].

Early aggression studies focused primarily on direct forms of aggression, such as physical violence and verbal insults. Then in the late 1980s, Lagerspetz and her colleagues [Björkqvist et al., 1992; Lagerspetz et al., 1988] introduced the concept of indirect aggression in which the target of aggression is not present. Many of the indirect aggressive behaviors Lagerspetz and her colleagues assessed dealt with relationship issues (e.g., "tells untruth behind the back," or "says to others

‘Let’s not be with him or her’”; however, the focus was on the indirect nature of the aggression not the “relationship” nature). Building on this research, Crick and Grotpeter [1995] coined the term “relational aggression” to designate direct or indirect aggressive behaviors that harm social relationships (e.g., behaviors such as spreading rumors and excluding peers). Since then, research on relational aggression has proliferated, and an extensive body of research now describes developmental precursors and consequences associated with relational as well as physical aggression.

One main early impetus in the study of relational aggression was to understand a form of aggression that was hypothesized to be more common among girls than boys. However, empirically, studies of gender differences in relational aggression have yielded mixed results. Some research shows that girls are significantly more relationally aggressive than boys [Björkqvist et al., 1992; Crick et al., 1997; Lagerspetz et al., 1988; Ostrov and Crick, 2007]. In contrast, some studies have found no significant gender differences in the use of relational aggression [Delveaux and Daniels, 2000], and other research has found that boys have higher rates of relational aggression than girls [Salmivalli and Kaukiainen, 2004]. A meta-analysis of 107 studies with data on gender differences in direct and indirect aggression characterized the small gender differences found as trivial [Card et al., 2008].

Several factors may help explain these mixed results. First, children’s age at the time of assessment may account for different patterns of findings regarding gender differences and similarities in relational aggression [Underwood et al., 2009]. For example, in examining trajectories of different forms of aggression, Côté et al. [2007] found that from ages 2–8 girls are more likely than boys to decrease their use of physical aggression and increase their use of nonphysical and relational aggression. Gender differences in relational aggression have been reported more consistently for samples assessed during middle childhood and adolescence than during preschool [Crick et al., 1999]. Second, taking a dimensional approach to understanding aggression, Salmivalli and Kaukiainen [2004] found in a sample of over five hundred 10-, 12-, and 14-year olds that, although boys were both directly and indirectly more aggressive than girls, cluster analysis revealed a group of highly aggressive adolescents whose use of aggression was predominantly indirect. The members of this cluster were all girls. Taken together, these findings suggest that during middle childhood and adolescence, the most extreme relational aggression may be demonstrated by girls rather than boys. However, only

one study has taken a dimensional approach using a sample outside North America. Tomada and Schneider [1997] did not find a disproportionate number of girls in the extremely relationally aggressive group of Italian 8- to 10-year olds in their sample, leaving open the extent to which gender differences in relational aggression will replicate across diverse cultural groups.

To date, most of this research has been conducted using American and Canadian samples, but exceptions that have extended research on relational aggression to other cultural contexts are worth noting. Several studies report no gender differences in relational aggression. Österman et al. [1994] found in a sample of 8-year olds from Finland, Poland, and the United States that, according to peer and self-nominations, boys were more physically aggressive than girls, but there were no significant differences in indirect aggression. Hart et al. [1998] found no gender differences in teacher-reported relational aggression in a Russian preschool sample, and Sakai and Yamasaki [2004] found no gender differences in relational aggression in a Japanese sample.

Other international studies suggest that girls are more relationally aggressive than boys. Österman et al. [1998] found in a sample of 8- to 15-year olds in Finland, Israel, Italy, and Poland that, according to same-gender peer reports, girls were proportionally more likely to use indirect than verbal or physical aggression, whereas boys were proportionally less likely to use indirect than verbal or physical aggression. French et al. [2002] coded open-ended descriptions of disliked peers provided by 11- and 14-year-old Indonesian and American youths. In both countries, relational aggression was spontaneously mentioned more frequently by girls than boys, whereas physical aggression was spontaneously mentioned more frequently by boys than girls. Teachers of preschool children in Australia rated girls as being more relationally aggressive than boys and boys as being more physically aggressive than girls [Russell et al., 2003].

Yet other studies suggest that boys are more relationally aggressive than girls. Tomada and Schneider [1997] examined aggression in a sample of Italian 8- to 10-year olds and reported that boys were more overtly and relationally aggressive than girls according to peer and teacher reports. Kawabata et al. [2010a] found that Japanese 9- to 10-year old boys were both more physically and relationally aggressive than girls. These previous studies of relational aggression in contexts outside of North America have presented a mixed picture and call for a single research study using a larger sample of countries with a uniform methodology as well as statistical comparison of

results across countries (which was not possible in the studies using samples in a single country) to advance understanding of country differences and similarities in relational aggression. The present study addresses these noted gaps in the research literature.

### The Present Study

In an analysis of the sample characteristics in the most influential journals in six subdisciplines of psychology from 2003 to 2007, 96% of research participants were from Western industrialized countries, and 68% were from the United States alone [Arnett, 2008]. This finding means that 96% of research participants in psychological studies were from countries with only 12% of the world's population [Henrich et al., 2010]. This unfortunate pattern also is evident in research specifically addressing questions related to aggression. In Archer's [2004] meta-analysis of gender differences in aggression, 73% of studies included participants only from the United States, an additional 17% of studies included participants from Canada or the United Kingdom, and only 10% of studies included participants from other countries (and only 2% of these studies included participants from developing countries). Similarly, in Card et al.'s [2008] meta-analysis, 70% of the studies were conducted in the United States, 15% in Canada or the United Kingdom, and 15% in all other countries (primarily Australia, Finland, and Germany).

To advance understanding of childhood relational and physical aggression in diverse countries around the world, we analyzed data from the Parenting Across Cultures Project, an international collaboration among nine countries: China, Colombia, Italy, Jordan, Kenya, the Philippines, Sweden, Thailand, and the United States. This sample of countries is diverse on several sociodemographic dimensions, including predominant ethnicity, religion, economic indicators, and indices of child well-being. For example, on the Human Development Index, a composite indicator of a country's status with respect to health, education, and income, participating countries ranked from 4 to 128 of 169 countries with available data [Human Development Report, 2010]. To provide a sense of what this range entails, the infant mortality rate in Kenya, for example, is 40 times higher than the infant mortality rate in Sweden [UNICEF, 2009]. In the Philippines, 23% of the population falls below the international poverty line of less than US \$1.25 per day, whereas the percentage of the population that falls below this poverty line in Italy, Sweden, or the United States is less than 1% [UNICEF, 2009]. The participating countries vary widely not only on sociodemographic indicators, but also on psychological

constructs such as individualism versus collectivism. Using Hofstede's [2001] rankings, the participating countries ranged from the United States, with the highest individualism score in the world, to China, Colombia, and Thailand, countries that are among the least individualistic countries in the world. The countries also varied on a looseness-tightness continuum in which loose countries are characterized by weak social norms and high tolerance for deviant behavior, whereas tight countries are characterized by strong social norms and little tolerance for deviant behavior [Gelfand et al., 2011]. The purpose of recruiting families from these diverse countries was to create an international sample that would vary with respect to a number of sociodemographic and psychological characteristics. Ultimately, this diversity provided us with an opportunity to examine our research questions in a sample that is more generalizable to a wider range of the world's population than is typical in most research to date.

In this paper, we addressed two primary research questions. First, are the concepts of relational and physical aggression in childhood similar across different cultural contexts, as indicated by a shared factor structure and correlations between relational and physical aggression in countries that are underrepresented in the literature to date? One of our major goals was to provide a description of childhood relational and physical aggression in countries that have been neglected in previous research. We hypothesized that in each country, higher levels of relational aggression would be associated with higher levels of physical aggression in childhood but that countries may vary in whether children report using more relational than physical aggression or more physical than relational aggression. Second, are there consistent gender differences in children's relational and physical aggression across countries? Guided by the extant literature, we hypothesized that boys would report being more physically aggressive than girls across countries but that gender differences would not be consistently demonstrated for relational aggression.

## METHOD

### Participants

Children (age range = 7–10 years,  $M = 8.29$ ,  $SD = .66$ ; 51% girls) from 1,410 families in nine countries responded to questions about their relational and physical aggression as part of the larger Parenting Across Cultures Project. Participants were recruited through schools serving socioeconomically diverse populations in Jinan and Shanghai, China ( $n = 239$ , 53% girls); Medellín, Colombia ( $n = 108$ , 56% girls);

Naples and Rome, Italy ( $n = 202$ , 51% girls); Zarqa, Jordan ( $n = 114$ , 47% girls); Kisumu, Kenya ( $n = 100$ , 61% girls); Manila, Philippines ( $n = 120$ , 49% girls); Trollhättan/Vänersborg, Sweden, ( $n = 102$ , 47% girls); Chiang Mai, Thailand ( $n = 119$ , 49% girls); and Durham, North Carolina, United States ( $n = 306$ , 50% girls). In the United States, the sample was 35% European American, 33% African American, and 32% Hispanic. In Kenya, the sample was from the Luo ethnic group, which is the third largest ethnic group in Kenya (13% of the population), after the Kikuyu (22%) and Luhya (14%) ethnic groups. Although there are ethnic minorities and immigrant families to varying degrees, the samples in the other participating countries identified with the majority cultural group of the country. Child age and gender did not differ significantly across countries.

Letters describing the study were sent home with children, and parents were asked to return a signed form if they were willing to be contacted about the study (in some countries) and contacted by phone to follow up on the letter (in other countries). Rates of agreement to participate, as indicated by returning the signed form or agreeing over the telephone ranged across sites from 24% to almost 100%. Families were then enrolled in the study until the target sample size was reached in each country. To make each country's sample as representative as possible of the city from which it was drawn, families of students from private and public schools were sampled in the approximate proportion to which they were represented in the population of the city. Furthermore, children were sampled from schools serving high-, middle-, and low-income families in the approximate proportion to which these income groups were represented in the local population. These sampling procedures resulted in an economically diverse sample that ranged from low income to high income within each site.

### Procedure and Measures

To measure self-reported relational and physical aggression, we used the Behavior Frequency Scale, which includes items adapted from Farrell et al. [1992], Crick and Bigbee [1998], and Orpinas and Frankowski [2001]. Children were asked how often in the last 30 days they engaged in a series of aggressive acts. Three items were tested as indicators of relational aggression: excluding another child from a group, trying to keep others from liking someone by saying mean things about that person, and saying things about another child to make people laugh. Three items were tested as indicators of physical aggression: throwing something at someone to hurt them, shov-

ing or pushing, and hitting or slapping other children. Responses ranged from *never* to *20 or more times* in the last 30 days but were dichotomized into "no" (coded as 0) or "yes" (coded as 1) responses for both relational and physical aggression because few children reported engaging in these behaviors more than once in the last 30 days.

A procedure of forward and back translation was used to ensure the linguistic and conceptual equivalence of measures across languages [Maxwell, 1996]. Translators were fluent in English and the target language and were asked to (1) note places in the research instruments that did not translate well, were inappropriate for the different groups, or were culturally insensitive; (2) identify words that elicited several meanings in particular contexts; (3) suggest improvements of instruments if they identified problems; and (4) indicate reasons for altering the translated versions if discrepancies were identified and alterations were deemed necessary. Site coordinators and translators reviewed identified discrepancies and unclear items and modified items appropriately. At a cross-site meeting, all investigators discussed and resolved ambiguities or difficulties with the measures on an item-by-item basis. These substantial efforts were implemented to ensure that the measures would be valid in all sites by focusing on linguistic equivalence as well as the cultural meanings that would be imparted by the measures [Erkut, 2010; Peña, 2007]. Measures were administered in the following languages: Mandarin Chinese (China), Spanish (Colombia and the United States), Italian (Italy), Arabic (Jordan), Dholuo (Kenya), Filipino (the Philippines), Swedish (Sweden), Thai (Thailand), and English (the United States and the Philippines).

Institutional review boards in each country approved the study protocol. After obtaining parental informed consent and child assent, interviews were completed in the participant's home or location of their choosing (e.g., school, café, library) where the child's responses could not be overheard by parents or others. Interviewers read each question to children and recorded their answers. Rating scales were provided in the form of visual aids to help children remember response options as they answered questions. Interviews lasted approximately 45 min. Depending on the site, parents were given modest financial compensation for their participation, families were entered into drawings for prizes, or modest financial contributions were made to participating children's schools; children were given a small age-appropriate gift to thank them for their participation.

## RESULTS

### Factor Structure and Correspondence Between Relational and Physical Aggression Across Countries

In cross-national comparisons, it is important to establish measurement validity and invariance to ensure that the measures assess what they are intended to assess and assess the same thing in each country. If invariance cannot be established, then group comparisons are not meaningful because the measure is not operating similarly in the different countries [Chen, 2008; Widaman and Reise, 1997]. In this study, it was necessary to establish that the six indicators of aggression loaded as expected onto the separate relational and physical aggression factors, with the same three indicators of each in each country. Thus, our first research question was whether the concepts of relational and physical aggression were similar across countries as indicated by a consistent factor structure of relational and physical aggression that would apply across the nine participating countries.

We examined configural invariance using confirmatory factor analysis to test the pattern of factor loadings using a multiple-group approach with country as the grouping variable. The model fit the data adequately,  $\chi^2(72) = 148.93$ ,  $P < .001$ , comparative fit index (CFI) = .94, root mean square error of approximation (RMSEA) = .028 [CI: .021, .034]. All six items loaded significantly on their respective factors in all nine countries. That is, across all countries, throwing something at someone to hurt them, shoving or pushing, and hitting or slapping other children were significant indicators of physical aggression; excluding another child from a group, trying to keep others from liking someone by saying mean things about that person, and saying things about another child to make people laugh were all significant indicators of relational aggression. On the basis of these findings, we concluded that the measures met the criteria for establishing configural invariance described by Vandenberg and Lance [2000], indicating a similar factor structure underlying the constructs of relational and physical aggression across countries [Robert et al., 2006].

We next examined whether associations between relational and physical aggression were similar or different across countries. Paired samples *t*-tests (Table I) revealed that children reported being more relationally than physically aggressive in three countries (China, Italy, and Thailand), more physically than relationally aggressive in two countries (Jordan and Kenya), and no significant differences between their physical and relational aggression in four coun-

**TABLE I. Descriptive Statistics, *t*-Tests, and Correlations Between Relational and Physical Aggression**

Country	Relational aggression <i>M</i> (SD)	Physical aggression <i>M</i> (SD)	<i>t</i>	<i>r</i>
China	.19 (.27)	.13 (.23)	2.96**	.33***
Colombia	.18 (.30)	.18 (.32)	-.06	.64***
Italy	.27 (.30)	.22 (.30)	2.39*	.48***
Jordan	.32 (.35)	.45 (.38)	-3.15**	.32***
Kenya	.44 (.37)	.66 (.32)	-6.07***	.44***
Philippines	.21 (.28)	.21 (.31)	.00	.44***
Sweden	.16 (.24)	.16 (.28)	-.13	.49***
Thailand	.26 (.32)	.13 (.23)	4.93***	.50***
United States	.17 (.26)	.18 (.30)	-.93	.48***

*Note.* Relational and physical aggression items were dichotomized with 0 = no, 1 = yes; therefore, mean values can be interpreted as the proportion of the sample that reported any form of the aggressive behavior.

\* $P < .05$ . \*\* $P < .01$ . \*\*\* $P < .001$ .

tries (Colombia, Philippines, Sweden, and United States).

We found positive and significant correlations between relational and physical aggression in all nine countries (Table I), with an average weighted correlation of .49 across all nine countries. Because of the disparity in sample sizes, a mean weighted and normalized correlation coefficient was computed for the whole sample. The correlations to be combined were transformed into Fisher *Z* values, which are approximately normally distributed and are numbers on a ratio scale and can thus be directly compared. *Z* values were then weighted and subjected to a linear combination. The result is a weighted and normalized average correlation [Hedges and Olkin, 1985]. The correlations were in the medium to large effect size range using Cohen's [1988] criteria: estimate of population correlation for a small effect size:  $r = .10$ , medium effect size:  $r = .30$ , large effect size:  $r = .50$ .

To examine whether the correlations between relational and physical aggression differed significantly across any countries, we statistically compared the Fisher *Z* values representing each country's correlation with each other country's correlation. Relational and physical aggression was significantly more strongly correlated in Colombia than in China, Italy, Jordan, Kenya, the Philippines, or in the United States. Relational and physical aggression also was significantly more strongly correlated in the United States than in China.

### Gender Differences in Relational and Physical Aggression

Our second research question concerned whether there were gender differences in relational and

**TABLE II. Descriptive Statistics for Relational and Physical Aggression by Gender and Country**

Country	Relational aggression		Physical aggression	
	Boys <i>M</i> (SD)	Girls <i>M</i> (SD)	Boys <i>M</i> (SD)	Girls <i>M</i> (SD)
China ( <i>n</i> = 239)	.22 (.28)	.16 (.26)	.20 (.27)	.07 (.15)
Colombia ( <i>n</i> = 108)	.21 (.30)	.16 (.29)	.25 (.36)	.12 (.27)
Italy ( <i>n</i> = 202)	.27 (.29)	.27 (.31)	.24 (.32)	.20 (.28)
Jordan ( <i>n</i> = 114)	.34 (.36)	.30 (.34)	.56 (.38)	.33 (.34)
Kenya ( <i>n</i> = 100)	.47 (.36)	.43 (.37)	.67 (.34)	.66 (.31)
Philippines ( <i>n</i> = 120)	.21 (.28)	.21 (.29)	.22 (.32)	.20 (.32)
Sweden ( <i>n</i> = 102)	.14 (.22)	.17 (.27)	.17 (.29)	.14 (.24)
Thailand ( <i>n</i> = 119)	.29 (.34)	.22 (.30)	.19 (.27)	.07 (.16)
United States ( <i>n</i> = 306)	.19 (.28)	.15 (.24)	.21 (.33)	.16 (.26)

*Note.* Tests of country and gender differences are reported in the text. Relational and physical aggression items were dichotomized with 0 = *no*, 1 = *yes*; therefore, mean values can be interpreted as the proportion of the sample that reported any form of the aggressive behavior.

physical aggression across countries. Multivariate analyses of variance revealed a significant main effect of gender, Pillai's  $F(2, 1391) = 12.63, P < .001$ , and a significant main effect of country, Pillai's  $F(16, 2784) = 20.71, P < .001$ . The Gender  $\times$  Country interaction was not significant,  $F(16, 2784) = 1.27$ . Follow-up univariate tests revealed significant main effects of country for relational aggression,  $F(8, 1392) = 11.93$ , and for physical aggression,  $F(8, 1392) = 41.84$ , and a main effect of gender,  $F(1, 1392) = 24.94$ , for physical aggression, all  $P$ s  $< .001$ . There was no significant main effect of gender on relational aggression,  $F(1, 1392) = 2.88$ .<sup>1</sup>

Descriptive statistics are presented separately by country and gender in Table II. As shown, boys reported being more physically aggressive than girls, but no gender differences emerged for relational aggression. Across countries, the average effect size (Cohen's *d*) for gender differences was .08 for relational aggression and .22 for physical aggression.

<sup>1</sup>In China, Italy, and the United States, it was possible to test for within-country geographic or ethnic differences in relational and physical aggression. We conducted a MANOVA separately for each country. There were no significant differences in relational or physical aggression between Jinan and Shanghai, China, nor was the City  $\times$  Gender interaction significant. There was a significant difference in both relational,  $F(1, 198) = 5.17, P < .05$ , and physical,  $F(1, 198) = 5.09, P < .05$ , aggression between Naples and Rome, Italy, with more frequent relational and physical aggression in Naples than Rome. The City  $\times$  Gender interaction was not significant. There was a significant ethnic group difference in relational aggression in the United States,  $F(2, 300) = 3.97, P < .05$ , with African-American children reporting significantly more frequent relational aggression than European-American children. There was no ethnic group difference in physical aggression, and the Ethnicity  $\times$  Gender interaction was not significant.

Because we were more interested in where countries fell on a continuum of aggressive behavior rather than individual comparisons between any two specific countries, we used a deviation contrast method of comparing an individual country's mean level of each type of aggression to the grand mean of each type of aggression across all nine countries. Using this method of analysis, children in Jordan and Kenya reported levels of relational aggression significantly higher than the grand mean across countries, whereas children in China, Colombia, Sweden, and the United States reported levels of relational aggression significantly lower than the grand mean. Children in Italy, the Philippines, and Thailand did not differ from the grand mean of relational aggression across countries. Children in Jordan and Kenya reported levels of physical aggression higher than the grand mean, whereas children in China, Colombia, Italy, Sweden, Thailand, and the United States reported levels of physical aggression significantly lower than the grand mean. Children in the Philippines did not significantly differ from the grand mean of physical aggression across countries.

Following the procedures used by Crick and Grotpeter [1995] in their sample from the United States and Tomada and Schneider [1997] in their sample from Italy, we created groups of children who were more than one standard deviation above the mean in relational aggression and, separately, physical aggression within their respective countries. Table III displays the percentages of boys and girls within each country in each of four groups: more than 1 SD above the mean in neither relational nor physical aggression, more than 1 SD above the mean in relational but not physical aggression, more than 1 SD above the mean in physical but not relational aggression, and more than 1 SD above the mean in both relational and physical aggression. As shown, in all nine countries, the percentage of boys in the group that was physically but not relationally aggressive was larger than the percentage of girls in the group that was physically but not relationally aggressive. The pattern was more mixed for the group that was relationally but not physically aggressive. In four of the countries, the percentage of boys in the group that was relationally but not physically aggressive was larger than the percentage of girls in this group; in four of the countries, the percentage of girls in the group that was relationally but not physically aggressive was larger than the percentage of boys in this group; and in one country, the percentages of boys and girls in this group were the same. Averaging across countries and genders, 76% of children exhibited neither relational nor physical aggression, 7% exhibited high levels of both relational

**TABLE III. Percentages of Boys and Girls Scoring Higher than 1 SD above the Within-Country Mean on Relational and Physical Aggression**

Country	Neither relational nor physical		Relational, not physical		Physical, not relational		Both relational and physical	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
China	72	87	13	10	10	2	5	1
Colombia	73	83	2	7	10	5	15	5
Italy	68	70	10	16	12	6	10	8
Jordan	57	85	12	3	28	6	3	6
Kenya	54	62	5	5	26	18	15	15
Philippines	75	76	5	8.5	12	8.5	8	7
Sweden	81	79	2	9	13	6	4	6
Thailand	72	83	15	14	5	0	8	3
United States	75	86	7	4.5	8	5	10	4.5

and physical aggression, and 17% of children scored more than 1 SD above the mean in just one of the two forms of aggression.

## DISCUSSION

Research often makes implicit assumptions about the universality of psychological or social processes without empirically investigating the generalizability of findings across diverse populations around the world [Norenzayan and Heine, 2005]. Our overarching goal and first specific research question focused on providing a comparative description of relational and physical aggression in diverse countries that have been underrepresented in the literature to date. We found that childhood relational and physical aggression share a common factor structure across nine countries. However, we also found that countries differ significantly in the mean levels of both relational and physical aggression that children report using. To our knowledge, this is the first study to address these issues.

We also examined whether associations between relational and physical aggression were similar across countries. As hypothesized, more frequent relational aggression was associated with more frequent physical aggression in all nine countries. The average correlation between relational and physical aggression across countries was .49, similar to the moderate correlations between relational and physical aggression of .54 in Japan and .60 in the United States reported by Kawabata et al. [2010b]. The average correlation in Western industrialized countries reported in Card et al.'s [2008] meta-analysis was .76. These average correlations between relational and physical aggression, both in our diverse international sample and in the samples included in other recent work, suggest that the magnitude of similarity between relational

and physical aggression is similar to the magnitude of similarity between verbal and physical aggression that has been reported in previous literature [e.g., correlations of .44 and .51 reported by Archer et al., 1995, on two different aggression inventories; correlation of .45 reported by Buss and Perry, 1992].

In our study, contrasting physical aggression with relational aggression, all of the relational items were verbal (with the possible exception of excluding a peer, which could have been accomplished either verbally or nonverbally). Verbal and physical aggression often are combined into composite aggression scores with good psychometric properties [e.g., Howes and Phillipson, 1998; Kokko and Pulkkinen, 2000], whereas since the introduction of the concept of relational aggression, studies have tended to treat relational aggression as distinct from physical aggression. An issue that might bear consideration is whether it is fruitful to treat relational aggression as a distinct form of aggression, or whether relational aggression could be combined with other forms of aggression in overall composites, without compromising unique developmental properties of the different forms. On the one hand, correlations in the .50–.70 range represent large effect sizes in Cohen's [1988] terms, suggesting that the different forms could be combined. On the other hand, these correlations mean that approximately 50–75% of the variance is not shared by relational and physical aggression, suggesting enough difference to be explained by factors unique to either relational or physical aggression. When more extreme groups were considered in the present study, 83% of the children across countries were either high or low on both physical and relational aggression, whereas 17% of the children were high on one but low on the other form of aggression.

Within this context of significant correlations between relational and physical aggression, which were



stronger in Colombia but otherwise generally of comparable magnitude across the countries, there were differences across countries with respect to whether children reported using more physical than relational aggression or more relational than physical aggression. Österman et al. [1994] hypothesized that the particular type of aggression children use depends on children's evaluations of the risks versus benefits of using that type of aggression in a given cultural context. Risks of using a particular type of aggressive behavior might depend on how normative that type of aggression is within the cultural context, and benefits might depend on how likely that type of aggressive behavior is to have its desired effect or be punished.

Our second research question focused on gender differences in relational and physical aggression. As hypothesized, using our diverse international sample, we did not find consistent evidence of gender differences in relational aggression, although we did replicate the widely reported gender difference in physical aggression [Archer, 2004]. The average effect sizes for gender differences across our diverse international sample were .08 and .22 for relational and physical aggression, respectively, in comparison to effect sizes of  $-.02$  and .39 for gender differences in self-reported indirect and physical aggression, respectively, in Archer's [2004] meta-analysis of studies including primarily North American samples. The lack of gender differences in relational aggression is consistent with findings reported in some [e.g., Hart et al., 1998; Österman et al., 1994; Sakai and Yamasaki, 2004], but not other [e.g., Crick and Grotpeter, 1995; French et al., 2002] samples. Developmentally, our sample of 7- to 10-year olds was in the middle childhood period in which gender differences in relational aggression have been reported more consistently than during the preschool period [Crick et al., 1999]. Although gender differences in physical aggression appear to be robust to methodological features of studies, such as age of the children and method of assessing aggression, findings regarding relational aggression may be more sensitive to such methodological features that vary from study to study.

### Limitations and Directions for Future Research

Although each sample was meant to be locally representative of the community from which it was drawn, the samples are not nationally representative, and caution should be used in not overgeneralizing the results to entire countries. We sampled from two cities in China, two cities in Italy, and three ethnic groups in the United States; we recognize great variability within all of the participating countries (e.g., as a function of socioeconomic status, urban versus

rural residence, and so forth). Future research would benefit from additional within- as well as between-country comparisons.

We relied on children's reports of their own relational and physical aggression. Previous research has supported the utility of 10- to 14-year old children's reports of their own aggression when studying the relation between disaggregated forms of aggression and the risk for later antisocial behavior [Di Giunta et al., 2010]. However, a number of different approaches to studying aggression in childhood have been taken in previous studies, including observation, peer nomination, teacher report, parent report, and self-report. Each of these approaches has advantages and disadvantages. For example, an advantage of self-report (as used in the present study) is that children may have greater awareness of their own behavior (especially the kinds of covert behavior that can characterize relational aggression) than do parents or teachers, who may lack inside knowledge of peer relationships. A disadvantage of self-report is that children may have been reluctant to report all of the aggressive behavior in which they actually engaged, particularly if they felt that doing so would be socially undesirable. This would be less a concern if children in all countries perceived reporting aggression as equally socially undesirable, but if cultural norms regarding aggression in one country are more accepting than in a different country, then children in the country with more acceptance of aggression will likely be more willing to report aggressive behavior.

A related concern is that individuals in different countries may use rating scales in different ways [e.g., Ji et al., 2000], leading to apparent differences between countries that are more a reflection of differences in responding than differences in actual behavior. For example, there is some evidence that Chinese and Japanese adolescents are more likely to use scale midpoints than extreme response options than are American and Canadian adolescents [Chen et al., 1995]. Possible differences across countries in responding are less a concern in our analyses examining gender differences within each country, and because each aggression item was dichotomized to reflect whether children ever engaged in the behavior or not.

Finally, the items we used to assess aggression were indicators of physical and relational forms of aggression. Warren et al. [2011] observed that relational aggression can be executed in either a direct way (e.g., by telling another child he or she cannot join the group) or indirect way (e.g., by spreading unkind rumors). However, individuals' relational aggression is highly correlated with their indirect aggression measured in different ways, and these different forms of nondirect

aggression are likely capturing the same underlying construct [Warren et al., 2011]. Nevertheless, we caution that gender differences may be more or less pronounced depending on how nondirect aggression is operationalized.

## CONCLUSIONS

One advantage of cross-national comparative research is that more confidence can be placed in the robustness of findings that generalize across diverse cultural contexts than in findings that are reported only in a single cultural group [Norenzayan and Heine, 2005]. Knowledge about relational and physical aggression in diverse countries is especially important in international prevention and intervention efforts. In the present study, there are several take-home messages. Relational and physical aggression shared a common factor structure in nine diverse countries. In some countries, relational aggression was more frequent than physical aggression, whereas in other countries, physical aggression was more frequent than relational aggression, and the mean levels of relational and physical aggression varied across countries. In all nine countries, more frequent use of relational aggression was moderately to highly correlated with more frequent use of physical aggression. Although boys reported more physical aggression than girls across countries, there were no consistent gender differences in relational aggression across countries. Overall, the findings of the study provide support for distinct concepts of childhood relational and physical aggression in several national contexts, suggesting that that distinction is quite robust.

## ACKNOWLEDGMENTS

KAD is supported by Senior Scientist award 2K05 DA015226 from the National Institute on Drug Abuse. PSM is supported by grant K01DA024116 from the National Institute on Drug Abuse. The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIH or NICHD.

## REFERENCES

- Archer J. 2004. Sex differences in aggression in real-world settings: A meta-analytic review. *Rev Gen Psychol* 8:291–322.
- Archer J, Kilpatrick G, Bramwell R. 1995. Comparison of two aggression inventories. *Aggr Behav* 21:371–380.
- Arnett JJ. 2008. The neglected 95%: Why American psychology needs to become less American. *Am Psychol* 63:602–614.
- Bettencourt BA, Miller N. 1996. Gender differences in aggression as a function of provocation: A meta-analysis. *Psychol Bull* 119:422–447.
- Björkqvist K, Lagerspetz K, Kaukiainen A. 1992. Do girls manipulate and do boys fight? Developmental trends in regard to direct and indirect aggression. *Aggr Behav* 18:117–127.
- Broidy LM, Nagin DS, Tremblay RE, Bates JE, Brame B, Dodge KA, et al. 2003. Developmental trajectories of childhood disruptive behaviors and adolescent delinquency: A six-site, cross-national study. *Dev Psychol* 39:222–245.
- Buss AH, Perry M. 1992. The aggression questionnaire. *J Pers Soc Psychol* 63:452–459.
- Card NA, Stucky BD, Sawalani GM, Little TD. 2008. Direct and indirect aggression during childhood and adolescence: A meta-analytic review of gender differences, intercorrelations, and relations to maladjustment. *Child Dev* 79:1185–1229.
- Chen FF. 2008. What happens if we compare chopsticks with forks? The impact of making inappropriate comparisons in cross-cultural research. *J Pers Soc Psychol* 95:1005–1018.
- Chen C, Lee S, Stevenson HW. 1995. Response style and cross-cultural comparisons of rating scales among East Asian and North American students. *Psychol Sci* 6:170–175.
- Cohen J. 1988. *Statistical power analysis for the behavioral sciences*. 2nd edition. Hillsdale, NJ: Erlbaum.
- Cook H. 1992. Matrilocality and female aggression in Margeriteno Society. In: Björkqvist K, Niemela P, editors. *Of mice and women: Aspects of female aggression*. San Diego, CA: Academic Press. p 149–162.
- Côté SM, Vaillancourt T, Barker ED, Nagin D, Tremblay RE. 2007. The joint development of physical and indirect aggression: Predictors of continuity and change during childhood. *Dev Psychopathol* 19:37–55.
- Coyne SM, Archer J, Eslea M. 2006. “We’re not friends anymore! Unless . . .”: The frequency and harmfulness of indirect, relational, and social aggression. *Aggr Behav* 32:294–307.
- Crick NR, Bigbee MA. 1998. Relational and overt forms of peer victimization: A multiinformant approach. *J Consult Clin Psychol* 66:337–347.
- Crick NR, Casas JF, Mosher M. 1997. Relational and overt aggression in preschool. *Dev Psychol* 33:579–588.
- Crick NR, Grotpeter JK. 1995. Relational aggression, gender, and social-psychological adjustment. *Child Dev* 66:710–722.
- Crick NR, Werner NE, Casas JF, O’Brien KM, Nelson DA, Grotpeter JK, et al. 1999. Childhood aggression and gender: A new look at an old problem. In: Bernstein D, editor. *Gender and motivation: Nebraska symposium on motivation*. Lincoln, NE: University of Nebraska Press. p 75–141.
- Delveaux KD, Daniels T. 2000. Children’s social cognitions: Physically and relationally aggressive strategies and children’s goals in peer conflict situations. *Merrill-Palmer Q* 46:672–692.
- Di Giunta L, Pastorelli C, Eisenberg N, Gerbino M, Castellani V, Bombi AS. 2010. Developmental trajectories of physical aggression: Prediction of overt and covert antisocial behaviors from self and mothers’ reports. *Eur Child Adolesc Psychiatry* 19:873–882.
- Eagly AH, Steffen VJ. 1986. Gender and aggressive behavior: A meta-analytic review of the social psychological literature. *Psychol Bull* 100:309–330.
- Erkut S. 2010. Developing multiple language versions of instruments for intercultural research. *Child Dev Perspect* 4:19–24.
- Farrell AD, Danish SJ, Howard CW. 1992. Relationship between drug use and other problem behaviors in urban adolescents. *J Consult Clin Psychol* 60:705–712.
- French DC, Jansen EA, Pidada S. 2002. United States and Indonesian children’s and adolescents’ reports of relational aggression by disliked peers. *Child Dev* 73:1143–1150.
- Fry D. 1992. Female aggression among the Zapotec of Oaxaca, Mexico. In: Björkqvist K, Niemela P, editors. *Of mice and women:*

- Aspects of female aggression. San Diego, CA: Academic Press. p 187–199.
- Gelfand MJ, Raver JL, Nishii L, Leslie LM, Lun J, Lim BC, et al. 2011. Differences between tight and loose cultures: A 33-nation study. *Science* 332:1100–1104.
- Gershoff ET. 2002. Corporal punishment by parents and associated child behaviors and experiences: A meta-analytic and theoretical review. *Psychol Bull* 128:539–579.
- Hart CH, Nelson DA, Robinson CC, Olsen SF, McNeilly-Choque MK. 1998. Overt and relational aggression in Russian nursery-school-age children: Parenting style and marital linkages. *Dev Psychol* 34:687–697.
- Hedges LV, Olkin I. 1985. *Statistical methods for meta-analysis*. San Diego, CA: Academic Press.
- Henrich J, Heine SJ, Norenzayan A. 2010. The weirdest people in the world? *Behav Brain Sci* 33:1–75.
- Hofstede G. 2001. *Culture's consequences: Comparing values, behaviors, institutions, and organizations across nations*. 2nd edition. Newbury Park, CA: Sage.
- Howes C, Phillipsen L. 1998. Continuity in children's relations with peers. *Soc Dev* 7:340–349.
- Huesmann LR, Guerra NG. 1997. Children's normative beliefs about aggression and aggressive behavior. *J Pers Social Psychol* 72:408–419.
- Human Development Report. 2010. *The real wealth of nations: Pathways to human development*. New York: United Nations Development Program.
- Ji LJ, Schwarz N, Nisbett RE. 2000. Culture, autobiographical memory, and behavioral frequency reports: Measurement issues in cross-cultural studies. *Pers Soc Psychol Bull* 26:585–593.
- Kawabata Y, Crick NR, Hamaguchi Y. 2010a. Forms of aggression, social-psychological adjustment, and peer victimization in a Japanese sample: The moderating role of positive and negative friendship quality. *J Abnorm Child Psychol* 38:471–484.
- Kawabata Y, Crick NR, Hamaguchi Y. 2010b. The role of culture in relational aggression: Associations with social-psychological adjustment problems in Japanese and US school-aged children. *Int J Behav Dev* 34:354–362.
- Kokko K, Pulkkinen L. 2000. Aggression in childhood and long-term unemployment in adulthood: A cycle of maladaptation and some protective factors. *Dev Psychol* 36:463–472.
- Lagerspetz KMJ, Björkqvist K, Peltonen T. 1988. Is indirect aggression typical of females? Gender differences in aggressiveness in 11- to 12-year-old children. *Aggr Behav* 14:403–414.
- Maxwell B. 1996. Translation and cultural adaptation of the survey instruments. In: Martin MO, Kelly DL, editors. *Third international mathematics and science study (TIMSS) technical report, volume I: Design and development*. Chestnut Hill, MA: Boston College.
- Morita Y, Soeda H, Soeda K, Taki M. 1999. Japan. In: Smith PK, Morita Y, Junger-Tas J, Olweus D, Catalano R, Slee P, editors. *The nature of school bullying: A cross-national perspective*. New York: Routledge. p 309–323.
- Nagin D, Tremblay RE. 1999. Trajectories of boys' physical aggression, opposition, and hyperactivity on the path to physically violent and nonviolent juvenile delinquency. *Child Dev* 70:1181–1196.
- Norenzayan A, Heine SJ. 2005. Psychological universals: What are they and how can we know? *Psychol Bull* 131:763–784.
- Orpinas P, Frankowski R. 2001. The aggression scale: A self-report measure of aggressive behavior for young adolescents. *J Early Adolesc* 21:50–67.
- Ortiz MÁC, del Barrio Gándara V. 2006. Study on the relations between temperament, aggression, and anger in children. *Aggr Behav* 32:207–215.
- Österman K, Björkqvist K, Lagerspetz KMJ, Kaukiainen A, Huesmann LR, Frączek, A. 1994. Peer and self-estimated aggression and victimization in 8-year-old children from five ethnic groups. *Aggr Behav* 20:411–428.
- Österman K., Björkqvist K., Lagerspetz KMJ, Kaukiainen A, Landau SF, Frączek, A, et al. 1998. Cross-cultural evidence of female indirect aggression. *Aggr Behav* 24:1–8.
- Ostrov JM, Crick NR. 2007. Forms and functions of aggression during early childhood: A short-term longitudinal study. *School Psychol Rev* 36:22–43.
- Peña ED. 2007. Lost in translation: Methodological considerations in cross-cultural research. *Child Dev* 78:1255–1264.
- Robert C, Lee WC, Chan K-Y. 2006. An empirical analysis of measurement equivalence with the INDCOL measure of individualism and collectivism: Implications for valid cross-cultural inference. *Personnel Psychol* 59:65–99.
- Russell A, Hart CH, Robinson C, Olsen SF. 2003. Children's sociable and aggressive behavior with peers: A comparison of the US and Australia, and contributions of temperament and parenting styles. *Int J Behav Dev* 27:74–86.
- Sakai A, Yamasaki K. 2004. Development of proactive and reactive aggression questionnaire for elementary school children. *Jpn J Psychol* 75:254–261.
- Salmivalli C, Kaukiainen A. 2004. "Female aggression" revisited: Variable- and person-centered approaches to studying gender differences in different types of aggression. *Aggr Behav* 30:158–163.
- Schmidt LA, Fox NA, Rubin KH, Hu S, Hamer DH. 2002. Molecular genetics of shyness and aggression in preschoolers. *Pers Individual Differences*, 33:227–238.
- Serbin LA, Cooperman JM, Peters PL, Lehoux PM, Stack DM, Schwartzman AE. 1998. Intergenerational transfer of psychosocial risk in women with childhood histories of aggression, withdrawal, or aggression and withdrawal. *Dev Psychol* 34:1246–1262.
- Tomada G, Schneider BH. 1997. Relational aggression, gender, and peer acceptance: Invariance across culture, stability over time, and concordance among informants. *Dev Psychol* 33:601–609.
- Underwood MK. 2003. *Social aggression among girls*. New York: Guilford Press.
- Underwood MK, Beron KJ, Rosen LH. 2009. Continuity and change in social and physical aggression from middle childhood through early adolescence. *Aggr Behav* 35:357–375.
- UNICEF. 2009. *State of the world's children*. New York: UNICEF.
- Vandenberg RJ, Lance CE. 2000. A review and synthesis of the measurement invariance literature: Suggestions, practices, and recommendations for organizational research. *Organiz Res Methods* 3:4–70.
- Warren P, Richardson D, McQuillin S. 2011. Distinguishing among forms of nondirect aggression. *Aggr Behav* 37:1–11.
- Widaman KF, Reise SP. 1997. Exploring the measurement invariance of psychological instruments: Applications in the substance use domain. In: Bryant KJ, Windle M, West SG, editors. *The science of prevention: Methodological advances from alcohol and substance abuse research*. Washington, DC: American Psychological Association. p 281–324.