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EMPIRICAL ARTICLE

Positive risk taking across the world

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Abstract

Around the world, adolescence is characterized by increased risk taking. Much research has focused on negative risk taking, but there is growing recognition of positive risk taking, which can benefit adolescent development. So far, research on positive risk taking has been limited to Western samples. This study examined a self-report scale of positive risk taking with a sample of 962 adolescents ($M_{age} = 18.51$ years) from nine diverse countries: China, Colombia, Italy, Jordan, Kenya, the Philippines, Sweden, Thailand, and the United States of America. There were three aims: (1) Examine the measurement invariance of positive risk taking across countries, (2) examine whether positive and negative risk taking are distinct constructs, and (3) compare positive risk taking endorsement and perceptions of its safety and benefits across countries and sex. Results indicated that the 14-item positive risk-taking scale was invariant across all nine countries. Evidence also suggested that positive and negative risk taking were distinct constructs. Endorsement of positive risk taking varied significantly across all countries, with adolescents from China and Jordan exhibiting the lowest endorsement. Although positive risk taking was generally perceived as safe and beneficial, adolescents from Asian countries perceived positive risk taking to be less safe and beneficial than their peers from other countries. Together, findings from this study offer evidence of a promising positive risk-taking measure for cross-national use. Future research directions for identifying cultural factors that can help explain cross-national differences in positive risk taking are discussed.

KEYWORDS

adolescence, alignment method, cross-national, measurement invariance, positive risk taking

INTRODUCTION

Around the world, adolescence is a time of increased risk taking (Duell et al., 2018; Eisner, 2002). Most research on adolescent risk taking focuses on negative behaviors such as health risks (e.g., binge drinking) and anti-social risks (e.g., shoplifting). This focus on negative risk taking has led many to view risk behaviors as deviant and something to be prevented. However, not all risk taking is inherently problematic. Some risks—*positive risks*—are developmentally

adaptive and generally considered acceptable by society (Duell & Steinberg, 2021; Gullone & Moore, 2000), such as standing up for one's beliefs, initiating new friendships, or enrolling in a challenging course. Scholars have theorized many potential benefits of positive risk taking, such as learning new skills (Spear, 2013) and developing autonomy (Seale, 2014). However, research on positive risk taking is still relatively new and many questions remain about its antecedents and outcomes. Among the studies that have been published, all focus on samples of individuals

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from Western societies (e.g., Duell & Steinberg, 2020; Fryt et al., 2022; Patterson et al., 2022). Thus, the field's current understanding of positive risk taking is limited both in its scope and its generalizability. Developing a positive risktaking scale that is accessible to scholars across the world is essential for gaining a comprehensive understanding of adolescent risk behavior.

Defining and measuring risk

Broadly speaking, risk taking is engaging in a behavior for which the likelihood of its outcome, good or bad, is uncertain (Crone et al., 2016). Whereas high-risk behaviors yield the potential for serious harm (e.g., driving while intoxicated), low-risk behaviors yield potential outcomes with a low magnitude of harm (e.g., drinking one glass of wine). Individual risk behaviors are theorized to fall along a spectrum (Duell & Steinberg, 2021). On one end are negative risks, which have the potential to harm one's development and are not socially acceptable (e.g., getting in a car with an intoxicated driver). On the other end of the spectrum are positive risks, which may benefit one's development and are generally socially acceptable (e.g., enrolling in a challenging course). Thus, positive and negative risks are thought to be distinct in their potential to benefit adolescents' well-being (Dworkin, 2005) and their social acceptability (Hansen & Breivik, 2001). While it is true that negative risks also have the potential to benefit adolescents in some way (e.g., by gaining their status among their peers), positive risks are unique in their potential to allow youth to fulfill their desires for exciting and risky activities with the help of adult support and societal resources (Duell & Steinberg, 2019). This may be especially important during late adolescence, a transitional period wherein many young people are preparing to graduate high school and enter new roles as young professionals or university students.

To measure positive risk taking among adolescents, Duell and Steinberg (2020) developed a positive risk-taking questionnaire by adapting previously published measures of positive risk taking (Fischer & Smith, 2004; Hansen & Breivik, 2001; Wood et al., 2013). This 14-item scale includes developmentally constructive and socially acceptable behaviors from various life domains including social risks (e.g., initiating a friendship), school-based risks (e.g., enrolling in a challenging course), and personal risks (e.g., trying a new food). What distinguishes the Duell-Steinberg scale from other published scales is that it excludes behaviors reflecting physical thrill seeking such as riding a roller coaster (Fischer & Smith, 2004) or playing extreme sports (Wood et al., 2013). This exclusion is to avoid conflating the association between positive risk taking and sensation seeking (Duell & Steinberg, 2019). Additionally, the questions in the Duell-Steinberg scale include language emphasizing the riskiness of each behavior. For example, asking someone on a date was modified to asked someone new on a date when you thought the person might say no. This modification was made

to prevent including behaviors that are socially acceptable but not necessarily risky (e.g., asking someone on a date is not a risk if you know they will say yes).

Currently, the Duell-Steinberg positive risk-taking scale (Duell & Steinberg, 2020) and similar variations of it (e.g., Patterson et al., 2022) have been studied and validated in samples of adolescents and adults from Western societies, including the United States and Poland (Fryt et al., 2022). Findings from this research have offered preliminary evidence of the scale's construct validity. For example, Duell and Steinberg (2020) found that positive and negative risk taking were positively correlated. Furthermore, whereas both positive and negative risk taking were associated with higher sensation seeking, only negative risk taking was associated with greater impulsivity. Additionally, academic engagement was associated with higher positive risk taking but less negative risk taking (Duell & Steinberg, 2020). Granted, the literature thus far is limited by its focus on Western samples. Indeed, peoples' endorsement of risks as well as their perceptions of how safe and appealing the risks are depend on cultural norms, values, and beliefs. This is true even for negative risk taking. For example, whereas in Italy, the prevalence of binge drinking among adolescents is 23%, this prevalence rate is only 7% in Kenya (World Health Organization, 2023). Adolescents' perceptions of the safety and benefits of binge drinking are also variable across countries. As an example, whereas 53% of youth in Portugal regard binge drinking as highly risky, this is true for only 13% of Danish youth (Morgan et al., 1999).

Cross-national variation in positive risk taking

It is likely that endorsement and perceptions of positive risk taking are also variable across the world. Although many adolescents enjoy greater decision-making autonomy and independence to engage in risks as they get older, opportunities and norms around certain behaviors are culturally dependent. For example, in some societies, dating during adolescence is considered a normative behavior that facilitates adolescents' personal and emotional development. However, in Islamic societies, premarital dating is culturally (and in some cases legally) prohibited (Rahbari, 2016). Thus, in such societies, premarital dating may be perceived as high-risk (or unsafe) and endorsement is likely to be lower than in societies where premarital dating is accepted. Similarly, whereas adolescents' participation in extracurricular activities is encouraged in many countries, for many Chinese families, school work is highly valued and extracurricular activities may be seen as taking time away from academics (Stevenson & Zusho, 2002). To this end, Chinese youth may not feel that the benefits of positive risks such as extracurricular activities outweigh the costs (e.g., taking time away from studying). Therefore, it is important to establish a culturally invariant scale of positive risk taking that will allow scholars across the world to establish a comprehensive understanding of positive risk taking. This measure will not only offer

some much-needed balance to the adolescent risk-taking literature, which is still focused heavily on negative risk taking, but it may also offer new and exciting opportunities to promote adolescent well-being globally.

To advance the field's understanding of positive risk taking, we examined the Duell and Steinberg (2020) positive risk-taking scale across nine countries: China, Colombia, Italy, Jordan, Kenya, the Philippines, Sweden, Thailand, and the United States. Theoretical work has suggested that positive risk taking is "positive" because it yields some type of developmental benefit to young people (Duell & Steinberg, 2019), yet it is still unclear what this benefit may be. To this end, we also examined correlations between positive risk taking and various psychological factors thought to be related to positive functioning, including internalizing/ externalizing symptoms, well-being, and prosocial behavior. Whereas internalizing symptoms (e.g., anxiety, depression) and externalizing symptoms (e.g., aggression) have been consistently linked to greater negative risk taking (O'Neil et al., 2011), engagement in socially acceptable behaviors such as sports and student government has been linked to fewer internalizing symptoms (Bohnert et al., 2008), perhaps because they increase opportunities for positively reinforcing experiences (Dimidjian et al., 2011). Similarly, positive risk taking may be linked to higher well-being because positive risks provide youth with opportunities to increase engagement and connectedness to their communities (e.g., through extracurricular activities), their overall happiness (e.g., through positive social experiences), and their ability to persevere in the face of challenges (Hendricks et al., 2010). Finally, positive risk taking and prosocial behavior may be associated as they both involve stepping outside of one's comfort zone for a perceived benefit, whether for oneself or others. As some prosocial behaviors often require a degree of personal risk (e.g., protesting for civil rights or standing up to a bully) (Do et al., 2017), it may be that there is overlap between the two behaviors.

The present study

The first aim of this study was to assess the measurement invariance of the positive risk-taking scale across the nine countries in this sample. Next, we aimed to establish whether positive and negative risk taking are distinct constructs. Finally, we compared endorsement and perceptions (i.e., safety and benefits) of positive risk taking across countries and sex. To explore the measure's construct validity, we also examined correlations among positive risk taking, negative risk taking, and relevant psychological variables: internalizing and externalizing symptoms, well-being, and prosocial behavior. Associations between levels and perceptions of safety and benefits of positive risk taking and key demographic characteristics such as socioeconomic status and sex were also examined. Together, this study evaluates a psychometric tool with the potential to advance the field's understanding of adolescent risk behavior.

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We addressed our study aims using cross-national data from the Parenting Across Cultures (PAC) study (Lansford & Bornstein, 2011), which is an international collaboration across nine countries. Participants were recruited from metropolitan cities within those countries: Chongqing, China; Medellín, Colombia; Naples and Rome, Italy; Zarqa, Jordan; Kisumu, Kenya; Manila, the Philippines; Trollhättan and Vänersborg, Sweden; Chiang Mai, Thailand; and Durham, North Carolina, the United States. Together, the sample includes individuals from regions that are diverse in sociodemographic dimensions including race and ethnicity, predominant religion, and economic indicators. To learn more about each site, we direct readers to two special issues with papers dedicated to each of our study sites: Lansford (2011, 2024). References to site-specific papers are available in Appendix A.

Aside from the United States, these countries were chosen because they are under-represented in the developmental literature (Henrich et al., 2010). As is true for most studies, including those conducted in the United States, participants would not be considered representative of the countries from which they were sampled. Nevertheless, data from the PAC study allow us to examine our research questions in a sample that is more culturally diverse and more generalizable to a wider range of the world's population than is typical in most research.

MATERIALS AND METHODS

Participants

Participants included 962 late adolescents and young adults (53% female) from the longitudinal PAC study (Lansford & Bornstein, 2011). At the Year 10 assessment, when measures addressing the research questions of the present study were administered, participants were between 16 and 21 years of age ($M_{age} = 18.52$, SD_{age} = .96). The sample sizes across countries were as follows: China (n = 97), Colombia (n = 79), Italy (n=189), Jordan (n=98), Kenya (n=51), the Philippines (n=85), Sweden (n=64), Thailand (n=89), and United States of America (n=210). The highest level of household education in each country (used as a proxy for socioeconomic status in this study) ranged from having a high school diploma to having a post-graduate degree. Following are the SES scores within each country (where a value of 0 indicates no education, values 1-12 correspond to grade level completed, 13 indicates some college, 14 indicates a college degree, and values over 15 indicate education beyond college): China (M = 12.14, SD = 3.30), Colombia (M = 12.52, SD = 5.14), Italy (M=13.18, SD=4.79), Jordan (M=14.11, SD=2.29), Kenya (M=13.62, SD=3.43), Philippines (M=14.9, SD=4.16), Sweden (M = 15.2, SD = 3.16), Thailand (M = 13.87, SD = 5.43), and USA (*M* = 14.54, SD = 4.98).

Participants from each country's majority ethnic group were recruited except in Kenya, where Luo (3rd largest ethnic group; 13% of the population) families were Research on Adolescence

recruited and in the United States, where equal proportions of White, Black, and Latinx families were recruited. Data on race and ethnicity are not available for the other countries in this sample as asking for this information was either not allowed (e.g., in Italy and Sweden) or was considered culturally inappropriate. In addition to race and ethnicity, data were not collected on other demographic characteristics such as immigration status given the sensitive nature of this information. Additional information about the study sites such as majority ethnic group, region, GDP per Capita, and predominant religion are available in Appendix A. From the entire sample with available data, n = 50 (5.8%) adolescents were enrolled in high school and n = 375 (43.4%) were enrolled in college (data on school enrollment were not available in China; thus, data are based on a sample of 865 participants).

Procedure

This research was approved by the IRB of the participating universities in each country. Participants were initially recruited through letters sent home from schools in all nine countries, and families who expressed interest were interviewed annually. Parental consent and adolescent assent were obtained from participants younger than 18 years, and informed consent was obtained from participants 18 years or older. Trained research assistants administered self-report surveys at a location of the participant's choosing. Interviews lasted approximately 1.5–2 hours, and participants were given modest monetary or other compensation for their participation based on what was deemed appropriate by the local IRB.

Self-report surveys were administered in Mandarin Chinese (China), Spanish (Colombia and the United States), Italian (Italy), Arabic (Jordan), Dholuo (Kenya), Filipino (the Philippines), Swedish (Sweden), Thai (Thailand), and American English (Kenya, the Philippines, and the United States) following forward- and back-translation and meetings to resolve any ambiguities in linguistic or semantic content (Erkut, 2010; Peña, 2007). Translators were research assistants fluent in English and the target language. Translators noted items that did not translate well, were inappropriate for the participants, were culturally insensitive, or elicited multiple meanings, and worked with site coordinators to make appropriate modifications.

Measures

Positive risk taking

Positive risk taking was measured using a 14-item scale (see Table 1) that has been validated and published in a sample of US teens (Duell & Steinberg, 2020). Participants indicated whether they had (coded 1) or had not (coded 0) engaged in various activities over the past 6 months. An average variety

score was computed to indicate the proportion of positive risks participants endorsed out of all 14 possible risks (1 = all risks endorsed). Variety scores are commonly used in research on risk behavior because they are less susceptible to participant recall bias and unreliable estimates of behavioral occurrences (Hindelang et al., 1981).

Perceptions of positive risk taking

Participants were asked to rate their perceptions of the safety and benefits of each positive risk. This part of the measure was modeled after the Benthin Risk Perception Scale (Benthin et al., 1993). The risk-safety items (Chronbach's α =.84) asked participants to rate how risky it is that something bad would happen to them if they engaged in the risk. Response options ranged from 1 (*very risky*) to 4 (*not at all risky*). The risk-benefit questionnaire (Chronbach's α =.826) asked participants to compare the benefits (or pleasures) of the activity with the risks. Response options ranged from 1 (*risks are much greater than benefits*) to 4 (*benefits are much greater than risks*).

Negative risk taking

Negative risk taking was measured using seven items developed along with the positive risk-taking scale (e.g., looked at the phone while driving a car; cheated on schoolwork; see Table 1). The response format of the negative risk scale was identical to that of the positive risk scale. A negative risk taking variety score (Chronbach's α = .783) was computed as the proportion of negative risks endorsed out of all seven risks.

Correlates of risk taking

Youth-reported internalizing and externalizing symptoms were measured using items from the internalizing (e.g., I am unhappy, sad, or depressed; I worry a lot; Chronbach's α = .917) and externalizing (e.g., I steal things at home; I use alcohol or drugs; Cronbach's $\alpha = .872$) subscales of the Child Behavior Checklist (Achenbach, 1991). Each item measured how frequently youth participated in a particular behavior (0 = never, 1 = sometimes, and 2 = often). Prosocial behavior (Pastorelli et al., 1997) (Cronbach's α = .921) was measured by asking participants to indicate the frequency with which they engaged in 13 behaviors (e.g., I share things I have with my friends; I try to help others) on a scale of 1 (never/almost never) to 5 (almost always/always). Finally, well-being was measured using the EPOCH scale (Kern et al., 2016) (Cronbach's $\alpha = .907$), which asks participants to report on 25 items reflecting engagement (e.g., I get completely absorbed in what I am doing), perseverance (e.g., I finish whatever I begin), optimism (e.g., In uncertain times, I expect the best), connectedness (e.g., I have friends that I really care about),

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TABLE 1 Positive and negative risk-taking questionnaire items and factor loadings for the 2-factor and 1-factor models.

		2-factor model		1-factor model		
	Risk item	Factor loading	SE	Factor loading	SE	
Positive risks	1. Tried out for team or auditioned for play when you were not sure you would be picked	1	0	1	0	
	2. Joined a new club or activity when you were not sure you would like it	1.186	0.134	1.182	0.141	
	3. Told someone the truth, even if they did not want to hear it	1.114	0.144	1.187	0.158	
	4. Tried a new food you thought you might not like	1.054	0.136	1.072	0.146	
	5. Ran for a leadership role in school or some other organization when you were not sure you would be picked	0.829	0.124	0.804	0.13	
	6. Asked someone new on a date when you thought the person might say no	1.005	0.132	1.094	0.143	
	7. Taken a class in a subject you knew nothing about or that seemed challenging	1.234	0.14	1.256	0.15	
	8. Tried a new hairstyle or outfit that you were not sure others would like	1.12	0.134	1.148	0.145	
	9. Gone to a party or social event where you did not know very many people and thought you might not have anyone to talk with	1.299	0.145	1.367	0.159	
	10. Told a secret or shared something personal about yourself to someone	1.431	0.161	1.512	0.178	
	11. Stood up for what you believe is right, even though you thought someone might disagree with you	1.388	0.157	1.412	0.171	
	12. Started a friendship with someone new when you were not sure how your other friend would react	1.383	0.149	1.406	0.161	
	13. Tried a new sport or played a sport you are not good at where you might have embarrassed yourself	1.088	0.128	1.077	0.136	
	14. Spent time with a new group of people when you were not sure you would fit in	1.612	0.171	1.648	0.186	
Negative risks	1. Looked at your phone while driving a car instead of paying attention to the road	1	0	1.984	0.219	
	2. Cheated on a homework assignment or exam even though you knew you would get in trouble if you were caught	0.529	0.05	0.973	0.128	
	3. Decided to skip class even though you could get in trouble and fall behind on your schoolwork	0.725	0.048	1.346	0.155	
	4. Posted something very personal about yourself on the Internet that you hoped only your friends would see but that other people could find out about	0.443	0.061	0.907	0.141	
	5. Snuck out of your house without telling your parents where you were going	0.423	0.054	0.773	0.125	
	6. Sent sexy messages or pictures to someone	0.608	0.052	1.161	0.155	
	7. Driven faster than the legal speed limit	0.986	0.053	1.957	0.213	

and happiness (e.g., I am a cheerful person). Participants endorsed items on a scale of 1 (almost never) to 5 (almost always).

parents or caregivers. A value of 0 indicated no education, values 1–12 corresponded to grade level (e.g., 10 indicated completion of 10th grade), 13 indicated some college, 14 indicated a college degree, and values over 15 indicated education beyond college.

Demographics

Participant sex and socioeconomic status (SES) were collected from participants and their parents. Participants selfreported their sex (1 = male; 0 = female). SES was measured as the highest level of education reported by participants'

Analysis plan

Measurement invariance of positive and negative risk taking was evaluated using the alignment method with maximum

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likelihood estimation (Asparouhov & Muthén, 2014) in Mplus Version 8. Specifically, we conducted an analysis of measurement invariance using a confirmatory factor analysis framework whereby *positive risk taking* was estimated by each of the 14 positive risk taking items. We identified each country as a known class within the dataset and called on Mplus to use the alignment method. In the alignment invariance analysis output, Mplus provided the intercepts and factor loadings for each positive risk-taking item and then, for each item, reported a list of the countries for which approximate measurement invariance held. Any country missing from that list indicated that the positive risk item was non-invariant for that given country.

The alignment method is ideal for comparisons across multiple countries (Asparouhov & Muthén, 2014). It is based on the configural model, which allows for the estimation of group-specific factor means and variances without requiring exact measurement invariance (Asparouhov & Muthén, 2014). The alignment method estimates factor mean and variance parameters in each country by incorporating a simplicity function similar to the rotation criteria used with exploratory factor analysis. An iterative procedure determines the largest "set" of countries containing no significant difference in the average value of a given scale item. First, pairwise tests establish the largest set of countries that do not differ ($\alpha = .01$ to account for multiple comparisons). Second, the average value of the item from this invariant group is compared to the value of the item of each individual country (whether it is part of the invariant set or not). If that comparison suggests nonsignificant differences (p > .01), the country is maintained in the invariant set; otherwise, it is removed. This procedure is repeated until no countries are added or removed for each scale item.

Next, to examine whether positive and negative risk taking are distinct constructs, we conducted a confirmatory factor analysis in Mplus that compared model fit statistics between a single-factor general risk-taking model that included all positive and negative risk items together and a two-factor model that estimated positive and negative risk taking as separate factors. The two-factor model was estimated first. The derivatives from this model were saved and used in a subsequent analysis for the single-factor model using the DIFFTEST option in Mplus. The DIFFTEST option compares chi-square model fit statistics and accounts for the dichotomous nature of the scale items (Muthén & Muthén, 2017).

Once measurement invariance and discriminant validity from negative risk taking were established, we explored similarities and differences in positive risk taking endorsement, perceived safety, and perceived benefits across countries and sex using MANOVA in SPSS 28. Significant omnibus tests were followed up with post-hoc pairwise comparisons. Correlations between positive risk taking and variables of interest (e.g., internalizing/externalizing behaviors, prosociality, and well-being) were also assessed in SPSS.

Transparency and Openness

This study was not pre-registered. Materials and analysis code for this study are available by emailing the corresponding author.

RESULTS

Measurement invariance

For the dichotomous positive risk-taking items, a total of 252 parameters were estimated for the measurement invariance analysis (intercepts and loadings for 14 scale items within 9 countries). Results indicated approximate measurement non-invariance of the intercepts for Item 7 (enrolled in a challenging new course) in Italy, Item 12 (started a friendship with someone new) in the Philippines, and Item 2 (joined a new club or activity) in Thailand. All other items in all countries were identified as invariant. Factor loadings for all items in all countries were also identified as invariant. A general rule of thumb proposed by Muthén and Asparouhov (2014) is a limit of 25% non-invariance for trustworthy alignment results. The positive risk-taking items fell well below the 25% threshold for acceptable noninvariance (3 non-invariant parameters out of 252 possible) thus indicating measurement invariance across the countries in this sample.

For the negative risk-taking items, a total of 126 parameters were estimated for the measurement invariance analysis (intercepts and loadings for 7 scale items within 9 countries). Results indicated approximate measurement non-invariance of the intercepts for Item 1 (*looked at phone while driving a car*) in Sweden and the United States, Item 5 (*snuck out of the house*) in Thailand and the United States, and Item 7 (*driven faster than the legal speed limit*) in China. All other items in all countries were identified as invariant. Factor loadings for all items were also identified as invariant. Together, there were 5 non-invariant parameters out of 126 possible, resulting in 4% non-invariance, again below the 25% threshold for acceptable non-invariant. Therefore, the negative risk-taking scale was also invariant across the countries in this sample.

Distinction from negative risk taking

Results comparing the two-factor and single-factor models of positive and negative risk taking indicated that the twofactor model ($\chi^2(188) = 840.12$, p < .001; RMSEA = .06 (90% CI [LB, UB] = .056, .064, p < .001); CFI = .868; SRMR = .092) was a significantly better fit to the data than the singlefactor model ($\chi^2(189) = 1220.76$, p < .001; RMSEA = .075 (90% CI [LB, UB] = .071, .079; p < .001); CFI = .791; SRMR = .106) ($\Delta\chi^2(1) = 168.8$, p < .001). The correlation between positive and negative risk taking in the two-factor model was r = .232(p < .001). Thus, results suggest that positive and negative risk taking represent related but distinct constructs. Factor loadings for the two-factor and single-factor models are presented in Table 1.

Additionally, we conducted a Wald Test for discriminant validity using the MODEL TEST command in Mplus. This analysis tested whether the correlation between the positive and negative risk factors was equal to 1, which would suggest they are the same construct. Results yielded a significant Wald coefficient (Wald $\chi^2(1) = 790.25$, p < .001), indicating that the correlation between the positive and negative risk-taking factors was not equal to 1 and further confirming that positive and negative risk-taking are distinct constructs.

Positive risk taking Descriptives

The mean and standard deviation of positive risk taking within each country and for the full sample are reported in Table 2. Item-specific means and standard deviations are available in Table S1. We estimated the Cronbach's alpha of the 14 dichotomous-item scale across the entire sample and within each country (see Table 2). Results suggested that the scale had good reliability overall ($\alpha = .74$). Reliability was lowest in Jordan (Chronbach's $\alpha = .567$) and highest in the US (Chronbach's $\alpha = .795$). Results from our reliability analyses did not indicate any single item contributing to lower reliability in Jordan. Then, using the positive risk taking variety score, we estimated within-country correlations for positive risk taking with negative risk taking, perceived safety, perceived benefits, and SES. Across countries, higher positive risk taking was correlated with higher negative risk taking. Positive risk taking was also correlated with higher SES, but only in Colombia, Italy, and the US. See Table 3 for the full report of correlations.

Cross-country differences in positive risk taking

Next, we compared positive risk taking and participants' perceptions of the safety and benefits of positive risk taking across all countries in a single model using MANOVA. Results indicated significant differences across countries in positive risk taking (F(8, 945) = 19, p < .001), the perceived safety of positive risk taking (F(8, 945) = 26.939, p < .001), and the perceived benefits of positive risk taking (F(8, 945) = 9.149, p < .001).

Following, we examined pairwise differences between countries for all positive risk-taking variables (variety score, perceived safety, and perceived benefits). Pairwise comparisons were conducted using the Games-Howell post-hoc test to account for unequal variances across countries and to adjust for multiple comparisons (Sauder & DeMars, 2019). Results from the post-hoc pairwise comparisons are reported in Tables S2-S4. With respect to positive risk taking, results suggested that adolescents in China and Jordan reported the lowest levels of positive risk taking compared to adolescents in all other countries. Rates of positive risk taking were not different between China and Jordan. Positive risk-taking scores were highest in Kenya, the Philippines, Thailand, and the United States (whose scores were not significantly different from each other).

With respect to the perceived safety of positive risk taking, adolescents in most countries viewed positive risk taking as being relatively safe (i.e., adolescents perceived a low likelihood of something bad happening after taking the risk). However, adolescents in Italy and Jordan had the highest ratings of perceived safety. In contrast, adolescents from China, the Philippines, and Thailand perceived positive risk taking to be less safe than their peers in other countries. Finally, adolescents across countries also yielded relatively high scores for the perceived benefits of positive

TABLE 2 Means and standard deviations for positive risk endorsement and perception across countries.

	Risk endorsement			Perceived safet	У	Perceived benefits	
	α	Mean	SD	Mean	SD	Mean	SD
China	.698	.329	.129	2.781	.431	2.794	.464
Colombia	.705	.445	.209	3.022	.534	3.097	.530
Italy	.684	.477	.189	3.448	.398	3.084	.494
Jordan	.567	.346	.188	3.432	.472	2.863	.534
Kenya	.692	.618	.201	3.108	.465	2.994	.547
Philippines	.700	.552	.202	2.970	.430	2.854	.429
Sweden	.583	.490	.176	3.038	.332	3.323	.437
Thailand	.720	.576	.207	2.929	.541	2.988	.435
USA	.795	.529	.236	3.201	.532	3.105	.550
Full sample	.740	.481	.221	3.154	.517	3.020	.517

Note: Positive risk endorsement represents the proportion of the 14 positive risks endorsed by participants (values range from 0 No risks endorsed to 1 All risks endorsed); perceived safety represents participants' perceptions of how safe positive risks are; perceived benefits represents participants' perceptions of how much the benefits of positive risks outweigh the costs; *a* refers to the Cronbach's alpha reliability estimate for the positive risk-taking scale.

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TABLE 3Country-specific correlations among risk-taking variablesand SES.

		1	2	3	4	5
China	1. PRT	_	.290**	061	.224*	.051
	2. NRT		_	.003	.117	.003
	3. PRT-Safety			_	.745**	.103
	4. PRT-Benefits				_	.139
	5. SES					_
Colombia	1. PRT	_	.378**	082	.142	.296**
	2. NRT		_	071	105	.029
	3. PRT-Safety			_	.548**	.234*
	4. PRT-Benefits				_	.341**
	5. SES					_
Italy	1. PRT	_	.427**	151*	.170*	.149*
	2. NRT		_	156*	021	.191**
	3. PRT-Safety			_	.448**	044
	4. PRT-Benefits				_	.122
	5. SES					_
Jordan	1. PRT	_	.315**	047	.117	.131
	2. NRT		_	.149	.16	095
	3. PRT-Safety			_	.368**	019
	4. PRT-Benefits				_	.1
	5. SES					_
Kenya	1. PRT	_	.481**	-0.17	.267	.005
	2. NRT		_	359**	.15	068
	3. PRT-Safety			—	.346*	.036
	4. PRT-Benefits				_	.297*
	5. SES					_
Philippines	1. PRT	—	.409**	.352**	.502**	.196
	2. NRT		—	.1	.330**	.186
	3. PRT-Safety			_	.726**	.162
	4. PRT-Benefits				—	.272*
	5. SES					—
Sweden	1. PRT	_	.317*	153	.313*	.035
	2. NRT		—	075	018	195
	3. PRT-Safety			—	.437**	196
	4. PRT-Benefits				_	.125
	5. SES					_
Thailand	1. PRT	_	.436**	091	.135	.130
	2. NRT		_	155	096	.025
	3. PRT-Safety			—	.245*	.056
	4. PRT-Benefits				_	.097
	5. SES					—
USA	1. PRT	_	.517**	137*	.294**	.300**
	2. NRT		—	173*	.139*	.304**
	3. PRT-Safety			—	.320**	028
	4. PRT-Benefits				—	.278**
	5. SES					_

Abbreviations: NRT, negative risk taking; PRT, positive risk taking; PRT-Benefits, perceived benefits of positive risk taking; PRT-Safety, perceived safety of positive risk taking; SES, socioeconomic status measured as the highest level of household education.

risk taking (i.e., participants felt the benefits of positive risk taking outweighed the potential costs). Although there were few differences across countries in perceived benefits scores, the lowest scores were observed in China, Jordan, Kenya, the Philippines, and Thailand (the scores between these countries did not differ).

Sex differences in positive risk taking

To identify potential sex differences in positive risk taking, we examined the interaction between *sex x country* for positive risk-taking variety, perceived safety, and perceived benefits using MANOVA. For the positive risk taking variety score, results indicated no main effect of sex (F(1, 935) = .83,p=.363), suggesting no differences in positive risk taking between girls (M=.485, SD=.216) and boys (M=.478, SD = .226). Furthermore, there was no interaction between country and sex (F(8, 935) = .565, p = .807). However, there was a significant sex x country interaction for the perceived safety of positive risk taking (F(8, 935) = 3.75, p < .001) and the perceived benefits of positive risk taking (F(8, 935) = 2.001), p = .043). Follow-up *t*-tests separated by country indicated significant sex differences in the perceived safety and benefits of positive risk taking in Jordan only. Jordanian boys perceived positive risks to be safer than Jordanian girls did. Full statistical results are available in Table 4.

Correlates of positive risk taking

Construct validity of the positive risk-taking scale was examined by correlating positive and negative risk taking with internalizing and externalizing symptoms, prosocial behavior, and well-being, adjusting for sex and SES. Results of the partial correlations with the full sample indicated that positive risk taking was correlated with higher internalizing (r=.147, p<.001) and externalizing (r=.183, p<.001) behaviors, higher prosocial behaviors (r=.186, p<.001), and higher well-being (r=.153, p<.001). Negative risk taking was also associated with higher internalizing (r=.203, p<.001) and externalizing (r=.-023, ns). Additionally, higher negative risk taking was correlated with lower well-being (r=.-073, p=.025).

The pattern of partial correlations observed in the full sample was not observed consistently across countries (see Table 5). For example, in China, only negative risk taking was associated with greater externalizing behaviors, whereas in Colombia, Italy, Jordan, the Philippines, and Thailand, both positive and negative risk taking were associated with greater externalizing behaviors. Additionally, positive risk taking was associated with prosocial behavior in four of the nine countries: Italy, Kenya, the Philippines, and the United States. Finally, positive risk taking was only associated with well-being in Jordan, where greater negative risk taking was associated with worse well-being. **TABLE 4** Sex differences in perceived safety and benefits of positive risk taking across countries.

		Females Males		Mean differences (Females–Males)				
		M	SE	М	SE	t	df	p-Value
Perceived safety	China	2.741	.065	2.811	.069	799	94	.426
	Colombia	3.044	.072	2.998	.075	.38	77	.705
	Italy	3.466	.047	3.428	.049	.659	187	.511
	Jordan	3.203	.066	3.676	.068	-5.614	93	<.001
	Kenya	3.069	.082	3.173	.106	766	49	.447
	Philippines	3.021	.071	2.918	.072	1.098	83	.275
	Sweden	3.044	.074	3.028	.093	.191	62	.849
	Thailand	3.005	.068	2.847	.071	1.388	87	.169
	USA	3.209	.046	3.192	.045	.228	208	.82
Perceived benefits	China	2.717	.07	2.854	.074	-1.496	94	.138
	Colombia	3.069	.078	3.127	.081	484	77	.63
	Italy	3.142	.05	3.019	.052	1.71	187	.089
	Jordan	2.725	.072	3.004	.073	-2.603	91	.011
	Kenya	3.031	.088	2.932	.114	.621	49	.537
	Philippines	2.916	.076	2.791	.077	1.355	83	.179
	Sweden	3.369	.08	3.25	.099	1.069	62	.289
	Thailand	2.976	.073	3.001	.076	269	87	.789
	USA	3.066	.05	3.141	.048	989	205	.324

Note: Bold indicates a significant difference between males and females (p < .001).

TABLE 5 Country-specific correlates of positive and negative risk-taking, adjusted for sex and SES.

Country		Pos risk	Neg risk	Intern.	Extern.	Prosocial	Well-being
China	Pos Risk	_	.29**	.078	.197	.092	.097
	Neg Risk		_	.137	.275*	.052	.176
Colombia	Pos Risk	_	.39***	.257*	.372***	.15	.021
	Neg Risk		_	.05	.447***	047	.008
Italy	Pos Risk	_	.414***	.109	.176*	.208**	.042
	Neg Risk		_	.104	.35***	.026	121
Jordan	Pos Risk	_	.315**	.174	.331***	.081	.038
	Neg Risk		_	.348***	.482***	087	332***
Kenya	Pos Risk	_	.48***	.134	.114	.306*	.215
	Neg Risk		_	.336*	.254	.008	049
Philippines	Pos Risk	—	.39***	.217*	.259*	.261*	.037
	Neg Risk		_	.168	.459***	.171	029
Sweden	Pos Risk	_	.317*	.269*	.286*	.154	.056
	Neg Risk		_	.013	.26+	142	015
Thailand	Pos Risk	—	.432***	.167	.281**	.102	.133
	Neg Risk		_	.408***	.565***	064	135
USA	Pos Risk	_	.464***	.104	.111	.167*	.088
	Neg Risk		_	.264***	.334***	063	068

 $\textit{Note: Partial correlations were conducted separately within each country. Intern = CBCL internalizing symptoms; Extern = CBCL externalizing symptoms; Externalizing$

 $prosocial \,{=}\, prosocial \,\, behavior.$

***p < .001; **p < .01; *p < .05; *p = .053.

DISCUSSION

Unlike negative risk taking, positive risk taking allows young people to fulfill their desires for new and exciting experiences in developmentally adaptive and socially acceptable ways (Duell & Steinberg, 2019). By studying positive risk taking in adolescence globally, scholars can uncover culturally inclusive strategies for promoting the well-being

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of adolescents and young adults. In this study, we examined the 14-item positive risk-taking scale developed by Duell and Steinberg (2020) across nine countries: China, Colombia, Italy, Jordan, Kenya, the Philippines, Sweden, Thailand, and the United States. Using the Alignment Method, we determined that the 14-item scale is invariant across all nine countries. Furthermore, we established positive risk taking as a construct distinct from negative risk taking, consistent with previous research (Duell & Steinberg, 2020; Fryt et al., 2022). Thus, the Duell–Steinberg positive risk-taking scale may be a promising measure for use by scholars across the world.

As expected, positive risk taking significantly differed across the countries in our sample. Adolescents from China and Jordan stood out as yielding the lowest levels of positive risk taking, whereas adolescents from Kenya, the Philippines, Thailand, and the US reported some of the highest levels of positive risk taking. Cross-national differences also emerged regarding the perceived benefits and safety of positive risk taking. In general, the perceived safety and benefits of positive risk taking were lowest among adolescents from Asian countries (e.g., China, the Philippines, and Thailand). Such cross-national differences in risk behavior and preference are best understood by considering a combination of several cultural and country-specific factors. Such factors exist at the between-country level, such as wealth inequality (Chancel et al., 2022), the cultural level, such as collectivism versus individualism (Hofstede, 2001), and even at the within-country level, such as parenting norms (Lansford et al., 2021). Although the specific country-by-country differences observed in this study warrant replication, we offer a few examples of potential explanations for country differences in the context of our findings.

One potential source of cultural variation is the extent to which countries are "loose" versus "tight" (Gelfand et al., 2011). Tight countries such as China have strong social norms with global expectations (as opposed to individual discretion) on how to behave across situations. Tightness may interact with other cultural factors such as collectivism (Hofstede, 2001), which prioritizes the needs and harmony of the group (e.g., family) over personal goals. In the context of our findings demonstrating low perceived safety of positive risk taking among Asian adolescents, we speculate that adolescents from Asian countries, which typically score high on tightness and collectivism, may perceive positive risks as more unsafe than their peers from other parts of the world because such risks yield the potential to disrupt group harmony (e.g., stand up for one's beliefs), break social norms (e.g., try a new hairstyle or outfit), and lead to unnecessary failure (e.g., enroll in a challenging course). Cultural norms such as tightness and collectivism may also interact with country-specific events to influence risk behavior. For example, high school students in both China and Jordan are extremely committed to preparing for college entrance exams, often foregoing activities that may distract from studying (João Pires, 2019; Najdawi et al., 2022), thereby curbing positive risk taking.

Although these explanations are all speculative, they may offer a starting point for future research to contextualize the findings from this study.

Paradoxically, we found that although adolescents from Kenya, the Philippines, and Thailand evinced the lowest ratings for the perceived safety and benefits of positive risk taking, they also reported the highest rates of positive risk taking. This is somewhat surprising, although not entirely novel. Several studies of negative risk taking have shown that teens engage in risk behaviors despite understanding the riskiness of those behaviors (Reniers et al., 2016). The reasons for this discordance between behaviors and beliefs may be related to social factors, such as peer norms around risk taking (Fryt et al., 2021; Koll et al., 2015), or parental pressure (e.g., to engage in positive risks that may promote success such as enrolling in a challenging course), and individual factors such as sensation-seeking or impulsivity (Duell & Steinberg, 2020). Thus, in contexts where positive risk taking is normalized or encouraged, it may be that teens feel compelled to engage in the risks despite their personal beliefs.

From a cultural perspective, adolescents may hold certain values that inspire them to take risks even in the face of uncertainty. For example, the cultural attitude of "bahala na" (i.e., "come what may") in the Philippines is framed as "hopeful risk taking" and is rooted partly in the desire to make meaning of the Filipino migration experience (Menguito & Teng-Calleja, 2010). This expression is also linked to spirituality (i.e., "it's up to God"), reflective of the country's Catholic roots. Bahala na is an expression that is interpreted as a sense of courage and forging ahead, even in the face of inadequate resources or uncertain outcomes, thereby promoting risk taking. That adolescents from the Philippines reported low levels of perceived benefits and safety of positive risks may also be related to cultural values around modesty or self-effacement such that adolescents may be reticent to assume positive outcomes of their actions (e.g., not wanting to assume that running for a leadership position will result in success).

In this study, we also examined links between positive risk taking with psychological variables, and demographic characteristics including sex and SES. Although it was initially surprising to find that positive risk taking was associated with higher internalizing symptoms, this correlation may simply suggest that positive risk taking is not a buffer against negative mental health. Indeed, many pro-social, developmentally beneficial activities that teens engage in (e.g., advanced academics, competitive sports) are stressful and may negatively impact mental health. With respect to externalizing symptoms, given the positive correlation between positive and negative risk taking observed in this study and in others, we were not surprised to find that both forms of risk taking were correlated with higher externalizing symptoms. In contrast, prosocial behavior and wellbeing seem to distinguish positive and negative risk taking in the expected direction, where teens engaging in more positive risk taking evince higher prosocial behavior and

higher well-being, whereas those engaging in more negative risk taking evince lower well-being. Granted, it is important to remember that these findings were not observed consistently within countries—variation that warrants investigation in future research.

The correlational findings across the full sample suggest that well-being may be one psychological factor that distinguishes between positive and negative risk taking, offering supporting evidence that positive risk taking may indeed confer benefits to adolescents. One reason for this could be that positive risks provide youth with opportunities to forge connections with their communities (e.g., via extracurricular activities), to engage in positively reinforcing activities (e.g., initiating new friendships with peers), and to build confidence (e.g., enrolling and doing well in a challenging course) (Duell & Steinberg, 2019; Hendricks et al., 2010). Together, these correlations contribute to a growing body of literature supporting the validity of the positive risk-taking scale.

Prior research has shown that males engage in more negative risk taking than females, although these sex differences are diminishing (Abbott-Chapman et al., 2007). Previous research has shown that females engage in more positive risk taking than males in the United States (Duell & Steinberg, 2020), but no sex differences were observed in our study. This could suggest that positive risks are more accessible across sexes, or perhaps less gendered in their social acceptability (e.g., trying a new food). Granted, there may be specific positive risk items that are gendered, such as asking someone on a date, which is often more common for males than females (Morr Serewicz & Gale, 2007). A more fruitful approach for future research will be to step away from binary perspectives of sex and consider positive risk taking across the entire spectrum of gender identities. Further, understanding the nature of positive risk taking among nonbinary or transgender youth is an important area for future research, especially in terms of how positive risks can help these youth explore their identities or engage in critical activism (Frost et al., 2019).

Although there were no sex differences in positive risk taking, we did find that positive risk taking was correlated with higher SES in Colombia, Italy, and the United States. One speculation for these findings is that SES may play a larger role in positive risk-taking endorsement within countries with higher economic disparities and lower social safety nets. For example, in Sweden, where SES is not correlated with positive risk taking, 50% of the country's GDP is spent on social programs, whereas in Italy (where the correlation between SES and positive risk taking is significant but half that of the US) spends approximately 38% of its GDP, the US spends only 25% of its GDP, and Colombia only 2.5% of its GDP on social programs (de Neubourg et al., 2007, p. 2; Nuñez et al., 2020, p. 37). Perhaps positive risk taking is a privilege, in that it requires access to resources and free time (Braveman et al., 2005). SES may also be related to cultural norms and values around positive risk taking. For example,

child independence is more widely accepted and encouraged among parents from regions with greater wealth and more highly educated populations (Park & Lau, 2016). In Colombia, for example, adolescents from higher SES backgrounds in cities such as Medellín tend to exhibit stronger social skills and greater participation in activities that promote risk taking (Calixto & Anaya, 2014). Thus, future research exploring associations between positive risk taking and SES should consider its influence from both an economic and a cultural lens.

While we are encouraged by the potential for the positive risk-taking scale to be administered to young people across the world, we acknowledge a few important limitations of the current work. First, despite evidence of measurement invariance (i.e., validity) across countries, future work may need to address potential issues with the internal consistency (i.e., reliability) of the scale, as reliability scores for the positive risk scale were variable across countries in this study. Additionally, there are constraints on the generality of our findings, as the samples recruited for this study are not nationally representative of the countries from which they were drawn. For example, all participants were recruited from metropolitan cities, thereby excluding the cultural norms and unique experiences of youth from more rural communities. We also acknowledge that cultural patterns and norms of behavior are embedded in rich sociocultural histories. Although we speculate on potential reasons for the cross-national differences we observed in positive risktaking endorsement and perceptions, we did not have data on the sociocultural, political, economic, or historical (e.g., histories of colonization) contexts in which our findings are likely grounded. Such contextual details are important for consideration in both cross-cultural and mono-cultural studies.

An additional limitation is that our study sample was limited to late adolescents and young adults. Although positive risk taking is developmentally relevant to adolescents (Duell & Steinberg, 2021), individuals engage in positive risk taking across the lifespan (Fryt et al., 2022). Indeed, cross-sectional work has shown that positive risk taking increases between adolescence and early-to-mid adulthood (Fryt et al., 2022). We suspect that while positive risk occurs across the lifespan and may benefit people of all ages, opportunities for positive risks increase as people get older and have more decision-making autonomy and independence. Additionally, positive risk taking may have different motivations across the lifespan. For example, in high school, positive risk taking may be motivated by developmental milestones like establishing social connections or making oneself competitive for college. In early adulthood, those motivations might shift towards getting promoted at work or starting a family. Further, the types of positive risks individuals take are likely to change across the lifespan. Whereas auditioning for a play, trying out for a sports team, or enrolling in a challenging course are likely to be more common and available activities in adolescence, these behaviors may be less relevant to adults,

including young adults who may be more focused on educational and career-related goals.

Similarly, the definitional attributes of which positive risk behaviors are developmentally appropriate may also change across the lifespan. For example, enrolling in a challenging course is not a developmentally appropriate risk for a toddler. Rather, actions such as trying new foods, exploring new environments (e.g., the park), and engaging in tasks independently (e.g., playing with toys independently instead of with a parent) are examples of potential positive risks unique to children. Thus, a critical direction for future research is not only to explore measurement invariance of the positive risk-taking scale across age groups, but to think critically about how the nature of positive risk-taking evolves across the lifespan.

In translating the positive risk-taking scale for use across multiple countries, it is important to consider how certain language, such as the use of the terms "very" or "a little bit" can make it easier or harder for participants to endorse different items (Clifton et al., 2023). There may also be items that are irrelevant in certain cultural contexts. For example, in Brazil, sports teams are not typically linked to educational institutions the way that they are in countries such as the United States. Thus, the positive risk-taking item asking participants whether they tried out for an athletic team would not be appropriate. In these instances, changing or completely removing such items may be warranted. Additionally, it is important to consider that conceptualizing positive risk taking and identifying positive risks may be more ambiguous than negative risks. Whereas most people would agree that binge drinking is a risk, asking someone on a date is more ambiguous. Asking someone new on a date is much riskier (i.e., the potential for a favorable outcome is much less certain) than asking a romantic partner out on a date. To address this ambiguity, the Duell-Steinberg scale includes qualifying language emphasizing the potential riskiness (i.e., uncertainty and potential for a negative outcome) of each behavior to better capture the propensity for risk. Although researchers have also published and validated positive risk-taking scales without such qualifiers (e.g., Fischer & Smith, 2004; Patterson et al., 2022), developing language that emphasizes the "riskiness" of the positive risk items is a key consideration in the translation process.

Overall, examining positive risk taking among adolescents across different parts of the world presents a compelling opportunity for understanding how cultural, social, and economic contexts shape the manifestation and perception of risk behavior. That the Duell–Steinberg (Duell & Steinberg, 2020) positive risk-taking scale was shown to be invariant across the countries investigated in this study underscores its potential as a promising tool for international research. Although this study has made notable strides in shedding light on positive risk taking within a global context, future research should delve deeper into item-level nuances, consider developmental variations in risk behavior, and broaden the understanding of how positive risktaking interacts with socioeconomic status and individual identities such as gender. Moreover, ongoing refinement and adaptation of the positive risk-taking scale for cultural relevance will be essential. Ultimately, the study of positive risk taking across the world will enhance researchers' understanding of its role in adolescent development and lay the foundation for culturally inclusive opportunities for promoting young peoples' well-being.

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CONFLICT OF INTEREST STATEMENT

The authors report that there are no competing interests to declare.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author, ND, upon reasonable request.

CONSENT

Informed parental consent and child assent of all participating subjects were obtained.

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REFERENCES

- Abbott-Chapman, J., Denholm, C., & Wyld, C. (2007). Gender differences in adolescent risk taking: Are they diminishing? An Australian intergenerational study. *Youth & Society*, 40, 131–154. https://doi.org/ 10.1177/0044118X07309206
- Achenbach, T. M. (1991). Integrative guide for the 1991 CBCL 14-18, YSR, and TRF profiles. University of Vermont, Department of Psychiatry.
- Asparouhov, T., & Muthén, B. (2014). Multiple-group factor analysis alignment. Structural Equation Modeling: A Multidisciplinary Journal, 21, 1–14. https://doi.org/10.1080/10705511.2014.919210
- Benthin, A., Slovic, P., & Severson, H. (1993). A psychometric study of adolescent risk perception. *Journal of Adolescence*, 16, 153–168. https:// doi.org/10.1006/jado.1993.1014
- Bohnert, A. M., Kane, P., & Garber, J. (2008). Organized activity participation and internalizing and externalizing symptoms: Reciprocal relations during adolescence. *Journal of Youth and Adolescence*, 37, 239–250. https://doi.org/10.1007/s10964-007-9195-1
- Braveman, P. A., Cubbin, C., Egerter, S. A., Williams, S. S., & Pamuk, E. R. (2005). Socioeconomic disparities in health: Pathways and policies. *Health Affairs*, 24, 375–388.
- Calixto, R., & Anaya, M. (2014). Sociodemographic factors influencing risk-taking behavior in adolescents from Medellín. *Revista Colombiana de Psicología*, 23, 189–201.
- Chancel, L., Piketty, T., Saez, E., & Zucman, G. (2022). *World inequality report 2022*. World Inequality Lab. https://wir2022.wid.world.
- Clifton, A. B. W., Stahlmann, A. G., Hofmann, J., Chirico, A., Cadwallader, R., & Clifton, J. D. W. (2023). Improving scale equivalence by increasing access to scale-specific information. *Perspectives on Psychological Science*, 18(4), 843–853. https://doi.org/10.1177/17456916221119396
- Crone, E. A., van Duijvenvoorde, A. C. K., & Peper, J. S. (2016). Annual Research Review: Neural contributions to risk-taking in adolescence—developmental changes and individual differences. *Journal* of Child Psychology and Psychiatry, 57, 353–368. https://doi.org/10. 1111/jcpp.12502
- de Neubourg, C., Castonguay, J., & Roelen, K. (2007). Social safety nets and targeted social assistance: Lessons from the European Experience. Social protection discussion paper, no. SP 0719, Figure 1. World Bank Group. http://documents.worldbank.org/curated/en/916501468037521250/ Social-safety-nets-and-targeted-social-assistance-lessons-from-the-European-experience.
- Dimidjian, S., Barrera, M., Jr., Martell, C., Munoz, C., Munoz, R. F., & Lewinsohn, P. M. (2011). The origins and current status of behavioral activation treatments for depression. *Annual Review of Clinical Psychology*, *7*, 1–38. https://doi.org/10.1146/annurev-clinpsy-03221 0-104535
- Do, K. T., Guassi Moreira, J. F., & Telzer, E. H. (2017). But is helping you worth the risk? Defining prosocial risk taking in adolescence. *Developmental Cognitive Neuroscience*, 25, 260–271. https://doi.org/ 10.1016/j.dcn.2016.11.008
- Duell, N., & Steinberg, L. (2019). Positive risk taking in adolescence. Child Development Perspectives, 13, 48–52. https://doi.org/10.1111/cdep. 12310
- Duell, N., & Steinberg, L. (2020). Differential correlates of positive and negative risk taking in adolescence. *Journal of Youth and Adolescence*, 49, 1162–1178. https://doi.org/10.1007/s10964-020-01237-7
- Duell, N., & Steinberg, L. (2021). Adolescents take positive risks, too. Developmental Review, 62, 100984. https://doi.org/10.1016/j.dr.2021. 100984
- Duell, N., Steinberg, L., Icenogle, G., Chein, J., Chaudhary, N., Di Giunta, L., Dodge, K. A., Fanti, K. A., Lansford, J. E., Oburu, P., Pastorelli, C., Skinner, A. T., Sorbring, E., Tapanya, S., Uribe Tirado, L. M., Alampay, L. P., Al-Hassan, S. M., Takash, H. M. S., Bacchini, D., & Chang, L. (2018). Age patterns in risk taking across the world. *Journal* of Youth and Adolescence, 47, 1052–1072. https://doi.org/10.1007/ s10964-017-0752-y
- Dworkin, J. (2005). Risk taking as developmentally appropriate experimentation for college students. *Journal of Adolescent Research*, 20, 219–241. https://doi.org/10.1177/0743558404273073

- Eisner, M. (2002). Crime, problem drinking, and drug use: Patterns of problem behavior in cross-national perspective. *The Annals of the American Academy of Political and Social Science*, 580, 201–205. https://doi.org/10.1177/0002716202580001009
- Erkut, S. (2010). Developing multiple language versions of instruments for intercultural research. *Child Development Perspectives*, 4, 19–24. https://doi.org/10.1111/j.1750-8606.2009.00111.x
- Fischer, S., & Smith, G. T. (2004). Deliberation affects risk taking beyond sensation seeking. *Personality and Individual Differences*, 36, 527– 537. https://doi.org/10.1016/S0191-8869(03)00112-0
- Frost, D. M., Fine, M., Torre, M. E., & Cabana, A. (2019). Minority stress, activism, and health in the context of economic precarity: Results from a national participatory action survey of lesbian, gay, bisexual, transgender, queer, and gender non-conforming youth. American Journal of Community Psychology, 63, 511–526. https://doi.org/10. 1002/ajcp.12326
- Fryt, J., Szcygiel, M., & Duell, N. (2021). Positive and negative risk taking in adolescence: Age patterns and relations to social environment. *New Directions in Child and Adolescent Development*, 179, 127–146. https://doi.org/10.1002/cad.20431
- Fryt, J., Szcygiel, M., & Duell, N. (2022). Positive and negative risk-taking: Age patterns and relations to domain-specific risk-taking. Advances in Life Course Research, 54, 100515. https://doi.org/10.1016/j.alcr. 2022.100515
- Gelfand, M. J., Raver, J. L., Nishii, L., Leslie, L. M., Lun, J., Chong Lim, B., Duan, L., Almaliach, A., Ang, S., Arnadottir, J., Aycan, Z., Boehnke, K., Boski, P., Cabecinhas, R., Chan, D., Chhokar, J., D'Amato, A., Subirats Ferrer, M., Fischlmayr, I. C., ... Yamaguchi, S. (2011). Differences between tight and loose cultures: A 33 nation study. *Science*, 332, 1100–1104. https://doi.org/10.1126/science.1197754
- Gullone, E., & Moore, S. (2000). Adolescent risk-taking and the five factor model of personality. *Journal of Adolescence*, 23, 393–407. https://doi. org/10.1006/jado.2000.0327
- Hansen, E. B., & Breivik, G. (2001). Sensation seeking as a predictor of positive and negative risk behaviour among adolescents. *Personality and Individual Differences*, 30, 627–640. https://doi.org/10.1016/S0191 -8869(00)00061-1
- Hendricks, J. M., Cope, V. C., & Harris, M. (2010). A leadership program in an undergraduate nursing course in Western Australia: Building leaders in our midst. *Nurse Education Today*, 30, 252–257. https://doi. org/10.1016/j.nedt.2009.12.007
- Henrich, J., Heine, S. J., & Norenzayan, A. (2010). The weirdest people in the world? *Behavioral and Brain Sciences*, 33, 1–75.
- Hindelang, M. J., Hirschi, T., & Weis, J. G. (1981). *Measuring delinquency*. Sage Publications.
- Hofstede, G. (2001). Culture's consequences: Comparing values, behaviors, institutions, and organizations across nations (2nd ed.). Sage.
- Kern, M. L., Benson, L., Steinberg, E. A., & Steinberg, L. (2016). The EPOCH measure of adolescent well-being. *Psychological Assessment*, 28, 586–597.
- Koll, L. J., Magis-Weinberg, L., Speekenbrink, M., & Blakemore, S.-J. (2015). Social influence on risk perception during adolescence. *Psychological Science*, 26, 583–592. https://doi.org/10.1177/0956797615569578
- Lansford, J. E. (Ed.). (2011). Special issue: Parenting attributions and attitudes around the world. *Parenting: Science and Practice*, 11, 87–238.
- Lansford, J. E. (Ed.). (2024). Special issue: Parenting across culture. International Journal of Psychology, 59, 505–610.
- Lansford, J. E., & Bornstein, M. H. (2011). Parenting attributions and attitudes in diverse cultural contexts: Introduction to the special issue. *Parenting: Science and Practice*, 11, 87–101. https://doi.org/10.1080/ 15295192.2011.585552
- Lansford, J. E., Zietz, S., Al-Hassan, S. M., Bacchini, D., Bornstein, M. H., Chang, L., Deater-Deckard, K., Di Giunta, L., Dodge, K. A., Gurdal, S., Liu, Q., Long, Q., Oburu, P., Pastorelli, C., Skinner, A. T., Sorbring, E., Tapanya, S., Steinberg, L., Uribe Tirado, L. M., ... Alampay, L. P. (2021). Culture and social change in mothers' and fathers' individualism, collectivism, and parenting attitudes. *Social Sciences*, *10*, 459. https://doi.org/10.3390/socsci10120459

Besearch on Adolescence

- Menguito, M. L., & Teng-Calleja, M. (2010). Bahala Na as an expression of the Filipino's courage, hope, optimism, self-efficacy and search for the sacred. *Philippine Journal for Psychology*, 43, 1–26.
- Morgan, M., Morgan, M., Hibell, B., Andersson, B., Bjarnason, T., Kokkevi, A., & Narusk, A. (1999). The ESPAD study: Implications for prevention. Drugs: Education, Prevention and Policy, 6(2), 243–256. https:// doi.org/10.1080/09687639997205
- Morr Serewicz, M. C., & Gale, E. (2007). First-date scripts: Gender roles, context, and relationship. Sex Roles, 58, 149–164. https://doi.org/10. 1007/s11199-007-9283-4
- Muthén, B., & Asparouhov, T. (2014). IRT studies of many groups: The alignment method. *Frontiers in Psychology*, 5, 978. https://doi.org/10. 3389/fpsyg.2014.00978
- Muthén, L. K., & Muthén, B. O. (2017). *Mplus user's guide* (8th ed.). Muthén & Muthén. 1998–.
- Najdawi, Z. R., Kardan, R., Zuraik, I., Al Shobaki, Z., Alarood, S., & Dardas, L. A. (2022). Depressive symptoms among students pursuing the general secondary education certificate examination (Tawjihi): A national study. *International Journal of Mental Health*, 53(3), 215– 232. https://doi.org/10.1080/00207411.2021.2017393
- Nuñez, J., Olivieri, S., Parra, J., & Pico, J. (2020). The distributive impact of taxes and expenditures in Colombia. Policy Research Working Paper 9171. World Bank Group. https://documentsl.worldbank.org/curat ed/en/486571583244394872/pdf/The-Distributive-Impact-of-Taxesand-Expenditures-in-Colombia.pdf
- O'Neil, K. A., Conner, B. T., & Kendall, P. C. (2011). Internalizing disorders and substance use disorders in youth: Comorbidity, risk, temporal order, and implications for intervention. *Clinical Psychology Review*, 31, 104–112. https://doi.org/10.1016/j.cpr.2010.08.002
- Park, H., & Lau, A. S. (2016). Socioeconomic status and parenting priorities: Child independence and obedience around the world. *Journal* of Marriage and Family, 78, 43–59. https://doi.org/10.1111/jomf.12247
- Pastorelli, C., Barbaranelli, C., Cermak, I., Rozsa, S., & Caprara, G. V. (1997). Measuring emotional instability, prosocial behavior, and aggression in pre-adolescents: A cross-national study. *Personality and Individual Differences*, 23, 691–703.
- Patterson, M. W., Pivnick, L., Mann, F. D., Grotzinger, A. D., Monahan, K. C., Steinberg, L., Oosterhoff, B., Tackett, J. L., Tucker-Drob, E. M., & Harden, K. P. (2022). A mixed-methods approach to refining and measuring the construct of positive risk-taking in adolescence. *Journal of Research on Adolescence*, 33, 680–700. https://doi.org/10. 1111/jora.12807
- Peña, E. D. (2007). Lost in translation: Methodological considerations in cross-cultural research. *Child Development*, 78, 1255–1264. https:// doi.org/10.1111/j.1467-8624.2007.01064.x
- Pires, J. M. D. (2019). Gaokao: Far more than an exam. *Revista Diadorim*, 21, 168–185. https://doi.org/10.35520/diadorim.2019. v21nEspa27418
- Rahbari, L. (2016). Sexuality in Iran. In C. L. Shehan (Ed.), The Wiley Blackwell encyclopedia of family studies (Vol. 4, pp. 1768–1771). Wiley.
- Reniers, R. L. E. P., Murphy, L., Lin, A., Para Bartolomé, S., & Wood, S. J. (2016). Risk perception and risk-taking behaviour during adolescence: The influence of personality and gender. *PLoS One*, *11*, e0153842. https://doi.org/10.1371/journal.pone.0153842
- Sauder, D. C., & DeMars, C. E. (2019). An updated recommendation for multiple comparisons. Advances in Methods and Practices in Psychological Science, 2, 26–44. https://doi.org/10.1177/2515245918 808784
- Seale, J. (2014). The role of supporters in facilitating the use of technologies by adolescents and adults with learning disabilities: A place for positive risk-taking? *European Journal of Special Needs Education*, 29, 220–236. https://doi.org/10.1080/08856257.2014.906980
- Spear, L. P. (2013). Adolescent neurodevelopment. Journal of Adolescent Health, 52, S7–S13. https://doi.org/10.1016/j.jadohealth.2012.05.006
- Stevenson, H. W., & Zusho, A. (2002). Adolescence in China and Japan: Adapting to a changing environment. In B. B. Brown, R. W. Larson, & T. S. Saraswathi (Eds.), *The World's youth: Adolescence in eight regions of the globe* (pp. 141–170). Cambridge University Press.

- Wood, A. P., Dawe, S., & Gullo, M. J. (2013). The role of personality, family influences, and prosocial risk-taking behavior on substance use in early adolescence. *Journal of Adolescence*, 36, 871–881. https://doi. org/10.1016/j.adolescence.2013.07.003
- World Health Organization. (2023). Prevalence of heavy episodic drinking among 15–19 year old adolescents. Maternal, Newborn, Child, and Adolescent Health and Ageing. https://www.who.int/health-topics/ adolescent-health

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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APPENDIX A

Below is some additional information about the study sites. Unless otherwise stated, information is in reference to the cities. All sites are metropolitan cities within each country.

Study site	Majority ethnic group	Region within country	GDP per capita in USD: City (country)	Predominant religion (% of population)
Chongqing, China	Han Chinese	Southwest- Central	13,359 (12,509)	Buddhism (33%)
Medellín, Colombia	Mestizo	Northwest	17,600 (6947)	Catholicism (87%)
Naples, Italy	Italian	Southern	28,600 (38,672)	Catholicism (98%)
Rome, Italy	Italian	Central	46,100 (38,672)	Catholicism (82%)
Zarqa, Jordan	Arab	Northeast	4222 (4456)	Islam (96%)
Kisumu, Kenya	Luo	Western	2176 (1952)	Christianity (86%)
Manila, the Philippines	Tagalog	Southwestern	3623 (3805)	Catholicism (79%)
Trollhätan, Sweden	Swedish	Western	52,838 (55,439)	Christianity (48%)
Chiang Mai, Thailand	Tai Yuan	Northern	8000 (7182)	Buddhism (92%)
North Carolina, USA	White	Southeastern	48,496 (80,706)	Christianity (69%)

For further information about each of the study sites, including an extensive review of cultural background, values, and norms, please see the references below.

- Al-Hassan, S. M. (2024). Cultural values, parenting, and child adjustment in Jordan. *International Journal of Psychology*, 59, 531–539.
- Bacchini, D., Cirimele, F., Di Giunta, L., & Pastorelli, C. (2024). Cultural values, parenting, and child adjustment in Italy. *International Journal* of Psychology, 59, 540–549.
- Breiner, K., Lansford, J. E., Skinner, A. T., Steinberg, L., Bornstein, M. H., Deater-Deckard, K., Dodge, K. A., & Rothenberg, W. A. (2024). Cultural values, parenting, and child adjustment in the United States. *International Journal of Psychology*, 59, 588–597.
- Di Giunta, L., Uribe Tirado, L. M., & Garcia, M. R. (2024). Cultural values, parenting, and child adjustment in Colombia. *International Journal* of Psychology, 59, 578–587.

- Gurdal, S., & Sorbring, E. (2024). Cultural values, parenting, and child adjustment in Sweden. *International Journal of Psychology*, 59, 550-558.
- Lu, H. J., Zhu, N., Chen, B. B., & Chang, L. (2024). Cultural values, parenting, and child adjustment in China. *International Journal of Psychology*, 59, 512–521.
- Oburu, P. (2024). Cultural values, parenting, and child adjustment in Kenya. International Journal of Psychology, 59, 522-530.
- Yotanyamaneewong, S., & Junla, D. (2024). Cultural values, parenting, and child adjustment in Thailand. *International Journal of Psychology*, 59, 559–567.