Received: 14 January 2022 | Revised: 28 April 2022 | Accepted: 20 May 2022

DOI: 10.1002/mpr.1923

ORIGINAL ARTICLE

WILEY

Attention-deficit/hyperactivity disorder (ADHD) in cultural context: Do parents in Hong Kong and the United Kingdom adopt different thresholds when rating symptoms, and if so why?

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Funding information

Centre for Doctoral Studies of King's College London; National Institute for Health Research; King's College London

Abstract

Objectives: Attention-deficit/hyperactivity disorder (ADHD) prevalence is similar across world regions. However, because informants' decision thresholds may vary between regions, these similarities may mask regional variations in actual ADHD behaviours. We tested this by comparing the relationship between informant's ratings and children's measured activity in United Kingdom (UK) and Hong Kong (HK) and then explored whether any national differences in endorsement thresholds discovered are linked to cultural variations in parenting factors.

Methods: Parents rated the 18 ADHD symptoms in 112 three-to-five-year-old children stratified for ADHD symptom levels (49 girls and 63 boys; 55 from the UK and 57 from HK) and completed some parenting questionnaires. Children's task-related activity was measured using actometers.

Results: In both groups, measured activity was positively correlated with hyperactivity/impulsivity ($r = 0.44^{HK}$; $r = 0.41^{UK}$). While HK children were less active than UK children ($p < 0.01$), HK parents rated their children as more hyperactive/impulsive and inattentive ($ps < 0.05$). The lower *rating threshold* indicated by this pattern in HK parents were explained by their higher child-related stress levels.

Conclusions: UK and HK parents operated different ADHD symptom endorsement thresholds. The link between these and child-related stress may mark a more general role of cultural pressure for child conformity and school achievement in HK.

KEYWORDS

attention-deficit hyperactivity disorder, cross-cultural study, parenting, rating threshold, social norms

1 | INTRODUCTION

Attention deficit/hyperactivity disorder (ADHD) is a life span neurodevelopmental disorder characterized by age inappropriate and impairing levels of inattention and/or hyperactivity/impulsivity (American Psychiatric Association, 2013; Posner et al., 2020). Interestingly, global comparisons of epidemiological studies have found little evidence that the prevalence of ADHD varies between nations and/or cultural and ethnic groups, once methodological variations are accounted for; the best global estimate for child ADHD being around 5% (Polanczyk et al., 2007, 2015). In this paper we explore the possibility that these cross-regional similarities in ADHD prevalence mask cross-region differences in actual ADHD related-behaviours. This possibility stems from the fact that decisions to diagnose an individual depend on the subjective reports and interpretations of adults (i.e., parents and teachers) filtered through the prism of clinical judgement: The key question being *"Is a child's ADHD behaviour displayed to a sufficient degree to cross the threshold for it to be endorsed as a symptom"* (Canino & Alegria, 2008; MacDonald et al., 2019; Reid & Maag, 1994). This of course means that factors that change the endorsement threshold will affect whether a behaviour is considered a symptom. Some factors are linked to child characteristics such as sex (Meyer et al., 2020) or ethnicity (Sonuga-Barke et al., 1993). Others are linked to informant characteristics such as mental health (De Los Reyes & Kazdin, 2005; Najman et al., 2001), parenting style (Bajeux et al., 2018; Luk et al., 2002) and/or values (Gross et al., 2004). Still others may derive from family factors (Stone et al., 2013). In the *threshold model*, Weisz et al. (1988) proposed that cultural differences in levels of parental distress over a child's troubling behaviours—associated with social norms regarding children's conduct and child-rearing practices—will also impact these thresholds (Canino & Alegria, 2008; Gomez & Vance, 2008; Hillemeier et al., 2007; Porter et al., 2005; Thompson et al., 2017; Weisz et al., 1988).

On this basis it can be hypothesized that cultural variations in endorsement thresholds for ADHD-related behaviours could lead to the same symptom ratings being associated with different levels of actual behaviour. Here we test this possibility by studying endorsement thresholds in two nations, the UK and HK. To do this we compared the levels of directly measured child activity associated with UK and HK parent's ratings of hyperactivity/impulsivity and inattention symptoms. We then explored the cultural differences in some parenting-related factors that might explain any regional rating threshold differences found. We chose these two nations because, although they are reported to have a similar prevalence of ADHD (Child Assessment Service Department of Health, HKSAR, 2007; Leung et al., 2008; NICE, 2000), parenting research suggests that they have different cultural views about how children should behave, which may be reflected in their ADHD rating thresholds. For instance, it has been repeatedly noted that HK parents, compared to western parents, have relatively high expectations for their children's behaviours when it comes to conformity to rules (Chao, 1994; Chen, 2005; Lam & Ho, 2010; Thompson et al., 2017). In Chinese culture, social norms require individuals to exercise self-control and compliance to avoid creating trouble or inconvenience for others (Chao, 1995). Parents of children who behave in ways that breach these standards may experience higher level of parenting stress (Leung et al., 2005). In western culture, parents are more likely to adopt a more child-centered approach, with more freedom given to children to exercise their "energy" (Chen et al., 2003). We hypothesize that this general approach to parenting and attitudes to children, and the stress that occurs where children do not conform, will be associated with a lower threshold for ADHD-behaviours in HK compared to UK parents.

Previous studies provide indirect evidence that HK parents rate their children as having more ADHD symptoms than UK parents. Ho et al. (1996) found that HK boys were rated as having twice the levels of ADHD symptoms compared to UK children on Rutter's questionnaires items—"restless", "fidgety", "can't settle" (Rutter et al., 1970). A more recent study found similar results for teacher ratings (Lai et al., 2010; Meltzer et al., 2000).

Despite these rating scale findings, studies of actual behaviour tend to suggest that HK children are less active than their UK counterparts. For instance, Luk et al. (2002) compared a HK epidemiological study of hyperactivity (Leung et al., 1996) against a separate but similar British study (Taylor et al., 1991) and found that the measured activity level was significantly lower in HK than UK children. Conformity and self-control are highly valued by parents in HK culture (Chao, 1994; Chen, 2005; Lam & Ho, 2010; Thompson et al., 2017), we therefore predicted that parents in HK would be especially sensitive to more deviant hyperactive behaviours (Ho et al., 1996).

Although these initial studies are consistent with the hypothesis of cross-national differences in ADHD rating thresholds, they have limitations. The comparisons across cultures were not direct, relying instead on data that were collected at different times and often for different purposes, creating potentially important methodological inconsistencies. Furthermore, the cultural differences in the relationship between informant ratings and measured activity were usually addressed separately, with no recent studies examining the two constructs concurrently. Finally, there was no attempt to explore what might underlie these cultural differences in rating thresholds: Are they, as suggested by the Weisz et al. (1988) model, mediated by differences in parenting attitudes, values and tolerances? In the current study we addressed these limitations by applying a common protocol to collect data in the UK and HK, with informant ratings of ADHD symptoms and actual activity collected for the same children using the same approach. We then explored whether the differences found could be explained by cross-national differences in general parenting attitudes and reactions to their children in terms of ADHD-specific emotional responses and more general child related stress.

We addressed four research questions; (i) Do UK and HK parents differ in their ADHD rating thresholds as reflected in the relationship between their ratings of ADHD symptoms and their children's actual

behaviour? (ii) Are these effects different for children with high and low levels of rated ADHD? (iii) Do UK and HK parents differ in their parenting attitudes, parenting stress and emotional reactions to ADHD symptoms? (iv) Do such cultural differences in parental characteristics mediate the national differences in ADHD rating thresholds? Based on prior studies, we hypothesized that; (i) UK children would be more active than HK children who have the same level of parent-rated hyperactivity/impulsivity symptoms; (ii) this national difference in activity level would be more marked in children rated high for ADHD, suggesting that HK parents ratings are particularly sensitive to severe ADHD symptoms; (iii) HK parents would have more authoritarian parenting attitudes, experience more parenting stress and have stronger emotional reactions to ADHD symptoms; (iv) these cultural differences in parental characteristics would statistically explain the relationship between national groups and rating thresholds.

2 | METHOD

2.1 | Participants

One-hundred-and-eighty-nine preschool children and their parents living in London UK ($n = 68$; 51% male) and HK ($n = 121$; 58% male), recruited from nurseries and preschools and via social media adverts. Children were screened for ADHD symptoms using the five-item subscale of *The Strengths and Difficulties Questionnaire* completed by parents and teachers (SDQ, version T2-4; Goodman, 1997). Thirty children ($n^{UK} = 13$ and $n^{HK} = 17$) were excluded based on the following criteria—they were outside the age range, had an IQ below 80, had special educational needs and/or a diagnosis of pervasive developmental disorder, a teacher not engaging or family not able to attend testing sessions. No participant has been formally diagnosed with ADHD and none of them was taking ADHD medications. We attempted to minimize differences in symptom levels between UK and HK at the group level by oversampling children and then excluding some based on parents and teachers SDQ hyperactivity/inattention subscale ratings; a larger proportion of HK children was being rated by their parents as having subclinical/clinical levels of ADHD symptoms, we eventually excluded 47 of those so that the numbers of children in each symptom group would be similar in UK and HK. The number of children having subclinical/clinical levels of ADHD symptoms rated by parents or teachers (subscale score ≥ 5) in the final UK and HK sample were not statistically different, $\chi^2(1) = 1.27$, $p = 0.26$. Full data was available for 112 children ($n^{UK} = 55$ and $n^{HK} = 57$).

2.2 | Measures

2.2.1 | Screening measures

Children were screened for ADHD behaviours and IQ.

ADHD symptom screener

The parent and teacher SDQ (version T2-4) are widely used psychometrically strong, brief behavioural screening questionnaire designed for research and clinical purposes (Goodman, 1997). The hyperactivity/inattention subscale consists of five items: two measuring inattention, two hyperactivity and one impulsivity. The original English language version was used in the UK. A validated Chinese translation was used in HK (Lai et al., 2010).

Intelligence

Children's intelligence was estimated using the Block Design and Vocabulary subtests of *Wechsler Preschool and Primary Scale of Intelligence* (WPPSI-III; Wechsler, 2003). The WPPSI measures the cognitive ability of pre-schoolers and young children between 2 years 6 months and 7 years and 3 months. The English (UK) and Traditional Chinese language versions were used in the UK and HK respectively.

2.2.2 | ADHD symptom ratings

Parents rated children on the 18 DSM-IV ADHD symptoms using a version of the *ADHD Rating Scale IV* (DuPaul et al., 1998) adapted for pre-schoolers (ADHD-RS-IV-P; McGoey et al., 2007). Subscale scores were calculated for inattention and hyperactivity/impulsivity factors by summing scores on odd and even-numbered items respectively. A total score can be computed by adding scores of all the items.

2.2.3 | Children's activity levels

Electronic activity trackers were used to measure children's activity while they performed three tasks. These were selected because they have been shown to elicit increased activity in individuals with high levels of ADHD. Each required waiting during delay: *Cookie Delay Task* (Campbell et al., 1994; Golden et al., 1977), *Bee Delay Task* (Markomichali, 2015) and the *Preschool Delay Frustration Task* (a new task developed based on the *Delay Frustration Task* created by Bitsakou et al., 2006). In the *Cookie Delay Task*, children were instructed to wait for a signal until they could retrieve the reward. In the *Bee Delay Task*, children chose between smaller sooner and larger later rewards. In the *Preschool Delay Frustration Task*, children played a game with unexpected delays presented intermittently. More information on these tasks is available in the appendix.

The activity tracker was a validated wearable CE marked, watch-like actigraph unit designed specifically for use with young children (https://mindpax.me/for-providers/). It is unobtrusive, non-invasive and safe. It measures changes in acceleration over short intervals of time. To detect activity, G (a measure of acceleration) is recorded by the device's motion sensor signal sampled at 6.5 Hz. The data output is the average G for each second. The tester recorded the exact start and end time of each task performed to retrieve

the relevant data from the activity output file. For the purposes of the current study, the average amount of activity per second across each task was used as the dependent variable.

2.2.4 | Parenting measures

Parenting styles

The Parenting Styles and Dimensions Questionnaire—Short Form (PSDQ-SF) is a 32-item self-report instrument developed by Robinson et al. (2001) to measure three dimensions of parenting; (i) authoritative; (ii) authoritarian; (iii) permissive. It has good internal consistency (Robinson et al., 2001) and criterion validity (Olivari et al., 2013). A Chinese version was prepared and validated by Wu et al. (2002).

Parenting stress

The Parenting Stress Index 4th edition (PSI-4-SF) is a brief version of the PSI developed by Abidin (1983). It consists of 36 items, with 12 items evaluating each of the three dimensions: (i) Parental Distress, (ii) Parent-Child Dysfunctional Interaction and (iii) Difficult Child. A high correlation ($r = 0.94$) was found between the total stress score of the PSI and PSI-SF. Both the English and Chinese versions of the PSI-SF have good reliability and validity (Abidin, 2012; Liu & Wang, 2015; Yeh et al., 2001).

Parental emotional reaction to child ADHD symptoms

The Parental Emotional Response to Children Index (PERCI) is a self-report rating scale designed to measure parents' emotional response to AD/HD and related behaviours (Lambek et al., 2017). The five subscales have satisfactory internal consistency. For this study, only the three relevant subscales relating to (i) inattention, (ii) hyperactivity, (iii) impulsivity were used. For use in the present study, the PERCI was translated into Chinese, back-translated and revised. This translated version was found to have good internal consistency (Cronbach's $\alpha = 0.92$).

3 | PROCEDURES

Assessment sessions took place in quiet rooms either at King's College London or the University of Hong Kong. Mother-child dyads were briefed that this was a cross-cultural study exploring pre-schoolers' behaviours in tasks that require sustained attention, patience and waiting. After the introduction, the mother-child dyad enjoyed a period of free play. The children then completed the tasks administered by trained researchers (one each in UK and HK) while their parents filled in questionnaires in a separate room. Throughout the session, the children wore the actometer on their non-dominant wrist. The session lasted for approximately 90 min with breaks. The research team presented a certificate and book voucher to each participating parent-child pair as a token of appreciation.

4 | DATA ANALYSIS

A small proportion of actometer reading data was missing due to technical issue and participants' hesitation to wear the actometer. Where data were missing, we used pairwise deletion, so that all available data were used. The measured activity scores for the three tasks were correlated ($rs^{UK} > 0.51$, $p < 0.001$; $rs^{HK} > 0.48$, $p < 0.001$) and were combined to produce a single *average activity level* variable. The correlations between this score and parent hyperactivity/impulsivity and inattention ratings were calculated in the UK and HK samples. ADHD ratings by UK and HK parents were compared using analysis of variance (ANOVA). The UK and HK groups were then subdivided into *low* and *high* rated hyperactivity/impulsivity symptoms based on the published US norms for the ADHD-RS-IV-P (above or below 10.5 cut-off, i.e., the 80th percentile) (McGoey et al., 2007). The effects of *national group* (UK vs. HK) and *rated symptom level* (hyperactivity/impulsivity) (≤80th vs. >80th percentile), and their interaction, on *average activity level* were tested using a two-way ANOVA. A *rating threshold ratio* was then computed for each child by dividing the *average activity level* by the impulsivity/hyperactivity rating: a higher rating threshold indicated that more activity was required before a symptom was rated as present. Correlational analyses then examined whether parenting factors were associated with this *rating threshold ratio* in the UK and HK. Finally, selecting those parenting factors that were different for UK and HK parents and were correlated with the ratio, we used regression analyses and the SPSS PROCESS macro developed by Hayes (2013) to explore whether these factors statistically accounted for the relationship between national group and *rating threshold ratio*.

5 | RESULTS

Table 1 presents the demographics and background characteristics of the sample. UK and HK participants differed on just three variables. First, the percentage of mothers who were not the major caregiver for the child was greater in HK compared to UK families. A substantial proportion of HK families employed a live-in domestic helper (i.e., nanny) who took on the main child-care role. Second, UK mothers had a higher level of education. Third, the UK sample was more ethnically diverse than the HK sample with around 27% of parents being either of Asian, Black or mixed ethnicity. Seventy-three percent of these parents were second generation, having been born in the UK. No significant differences in symptom scores and parenting measures were found between the parents with different educational levels or from different ethnic groups (in the UK sample). These factors were not included in subsequent analyses (see Table S1 in Supplementary Information).

In both UK and HK groups, the *average activity level* was positively correlated with hyperactivity/impulsivity ($r^{UK} = 0.41$, $p < 0.01$; $r^{HK} = 0.44$, $p < 0.01$) and, to a lesser extent, inattention ($r^{UK} = 0.18$, $p = .23$; $r^{HK} = 0.38$, $p < 0.01$) ratings. HK parents rated their children as significantly more symptomatic than UK parents on both

TABLE 1 Demographic, background, parent-rated ADHD symptoms, rating threshold ratios and parenting factors of participants in UK and HK

	UK (n = 55)	HK (n = 57)	Statistical comparison and effect size
Child characteristics			
Age (months)—mean (SD)	46.6 (6.6)	45.9 (4.9)	$F(1, 110) = 0.44$, *n.s.*
Female—n (%)	25 (45.5)	24 (42.1)	$\chi^2(1) = 0.13$, *n.s.*
IQ—mean (SD)	108.7 (12.2)	105.3 (10.7)	$F(1, 109) = 2.53$, *n.s.*
ADHD symptom screening; high group—n (%)	26 (47.3)	33 (57.9)	$\chi^2(1) = 1.27$, *n.s.*
Mother/caregiver characteristics n (%)			
Mother as major caretaker	51 (92.7)	31 (54.4)	$\chi^2(1) = 20.98$, $p < 0.001$
Living with both parents	51 (92.7)	55 (96.5)	$\chi^2(1) = 0.78$, *n.s.*
Full-time employment	18 (32.7)	27 (47.4)	$\chi^2(1) = 2.50$, *n.s.*
Age group			
25–34	11 (20)	22 (38.6)	$\chi^2(2) = 4.71$, *n.s.*
35–39	30 (54.5)	23 (40.4)	
Over 40	14 (25.5)	12 (21.2)	
Highest education level			
Secondary	1 (1.8)	15 (26.3)	$\chi^2(3) = 26.07$, $p < 0.001$
Higher education	3 (5.5)	11 (19.3)	
Bachelor	22 (40)	21 (36.8)	
Master or above	29 (52.7)	10 (17.5)	
Monthly household income			
Below £2000	4 (7.3)	6 (10.5)	$\chi^2(3) = 5.33$, *n.s.*
£2000–2999	1 (1.8)	7 (12.3)	
£3000–3999	8 (14.5)	8 (14.0)	
Above £4000	42 (76.4)	36 (63.2)	
Ethnicity			
White	40 (72.7)	0 (0)	*Not applicable*
Asian	8 (14.5)	57 (100)	
Black/mixed	7 (12.7)	0 (0)	
Parent ratings on child ADHD symptoms—mean (SD)			
Hyperactivity/impulsivity	10.67 (5.15)	12.86 (5.57)	$F(1, 110) = 4.64$, $p < 0.05$, $\eta^2_p = 0.04$
Inattention	8.45 (4.85)	10.47 (4.99)	$F(1, 110) = 4.72$, $p < 0.05$, $\eta^2_p = 0.04$
Average activity level[a]	162.68 (40.28)	147.59 (37.30)	$F(1, 100) = 3.85$, $p = 0.05$, $\eta^2_p = 0.04$
Rating threshold ratio[b]	22.05 (21.26)	13.74 (6.88)	$F(1, 100) = 7.50$, $p < 0.01$, $\eta^2_p = 0.07$
Parenting style—mean (SD)			
Authoritarian	1.49 (0.27)	1.85 (0.35)	$F(1, 110) = 36.82$, $p < 0.001$, $\eta^2_p = 0.25$
Authoritative	4.11 (0.36)	4.10 (0.41)	$F(1, 110) = 0.03$, *n.s.*
Permissive	2.16 (0.49)	2.19 (0.56)	$F(1, 110) = 0.07$, *n.s.*
Parenting stress—mean (SD)			
Parental distress	2.21 (0.59)	2.64 (0.66)	$F(1, 110) = 13.27$, $p < 0.001$, $\eta^2_p = 0.11$
Parent-child dysfunctional interaction	1.73 (0.43)	2.09 (0.52)	$F(1, 110) = 16.00$, $p < 0.001$, $\eta^2_p = 0.13$
Difficult child	2.24 (0.68)	2.50 (0.56)	$F(1, 110) = 5.05$, $p < 0.05$, $\eta^2_p = 0.04$

(Continues)

TABLE 1 (Continued)

	UK (n = 55)	HK (n = 57)	Statistical comparison and effect size
ADHD-specific emotional response—mean (SD)			
Inattention	2.79 (0.76)	2.81 (0.53)	$F(1, 110) = 0.02$, *n.s.*
Hyperactivity/impulsivity	2.68 (0.55)	3.03 (0.49)	$F(1, 110) = 13.09$, $p < 0.001$, $\eta^2_p = 0.11$

Abbreviations: ADHD, Attention-deficit/hyperactivity disorder; HK, Hong Kong; UK, United Kingdom.

[a]Participants' task-related activity level was measured using actometers; $n^{UK} = 47$; $n^{HK} = 55$.

[b]The rating threshold represented the amount of average activity level divided by the parent hyperactivity rating; $n^{UK} = 47$; $n^{HK} = 55$.

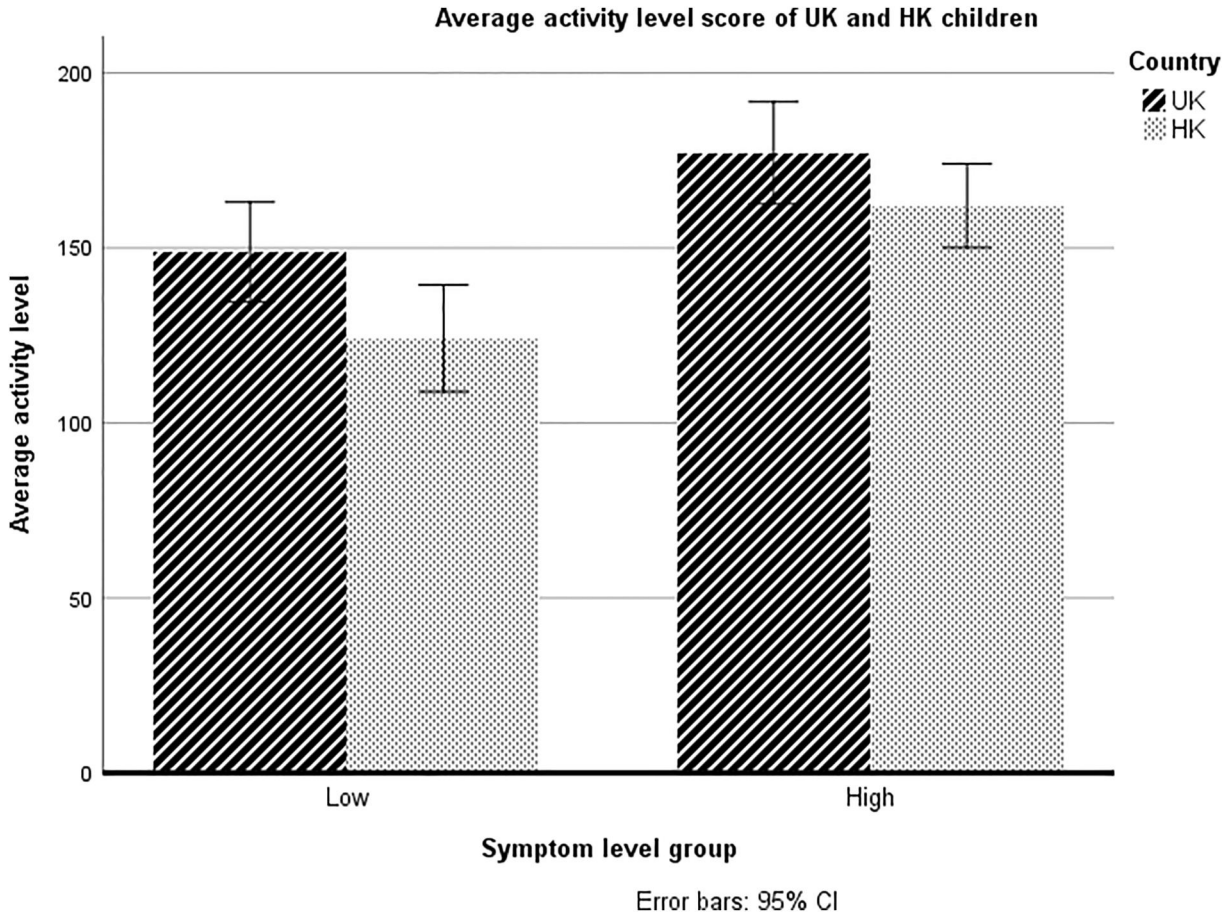

FIGURE 1 Child participants' average activity level as a function of high and low symptom level groups and national group. Average Activity Level was based on the mean actometry score across the three tasks. Symptom level group was based on high and low (above and below the 80th percentile) on the hyperactivity/impulsivity scale of the ADHD-RS-IV-P

the hyperactivity/impulsivity and inattention subscales (Table 1). Figure 1 presents average activity level scores as a function of *national group* and *rated symptom severity* (higher or lower than the 80th percentile). There was a main effect of *national group* ($F = 7.84$, $p < 0.01$) and *rated symptom severity* ($F = 21.73$, $p < 0.001$) but no interaction ($F = 0.45$, $p = 0.50$) - demonstrating that HK children were significantly less active than their UK counterparts at both high and low levels of rated symptoms.

UK parents employed higher *rating thresholds* than HK parents ($F = 7.50$, $p < 0.01$) (Table 1): A higher activity level was required for the endorsement of symptom presence in the UK than HK group. Within-UK group ethnic differences (White vs. Black vs. Asian) were not related to the *Rating Threshold Ratio* ($F = 0.67$, $p = 0.65$). The clinical significance of the HK versus UK difference in *Rating Threshold Ratio* is illustrated in Figure 2 with separate lines representing the relationship between hyperactivity/impulsivity ratings and *average activity levels* in the UK and HK groups. It demonstrates that the average activity level associated with UK parent ratings at the 80th percentile equates to the 93rd–98th percentile of HK parent ratings.

Parents in HK in general rated themselves as more authoritarian, more stressed and having a stronger emotional reaction to children's hyperactive and impulsive behaviours (Table 1). Significant correlations between the *rating threshold ratio* and authoritarian parenting, and child behaviour related parenting stress were found after correction for multiple testing using Bonferroni formula (Table 2).

Statistical mediation was then explored. PROCESS macro tests showed that when authoritarian parenting and child behaviour-related parenting stress were introduced into a parallel model as potential mediators, they reduced the relationship between national group and threshold ratio to a non-significant level. The indirect effects were tested using the bootstrap confidence intervals approach (Hayes, 2013). The 95% bias-corrected confidence interval (−0.4.78, −0.55) based on 10,000 bootstrap samples indicated that the indirect effect (−2.38) was different from zero, suggesting that the effect of national group on rating threshold

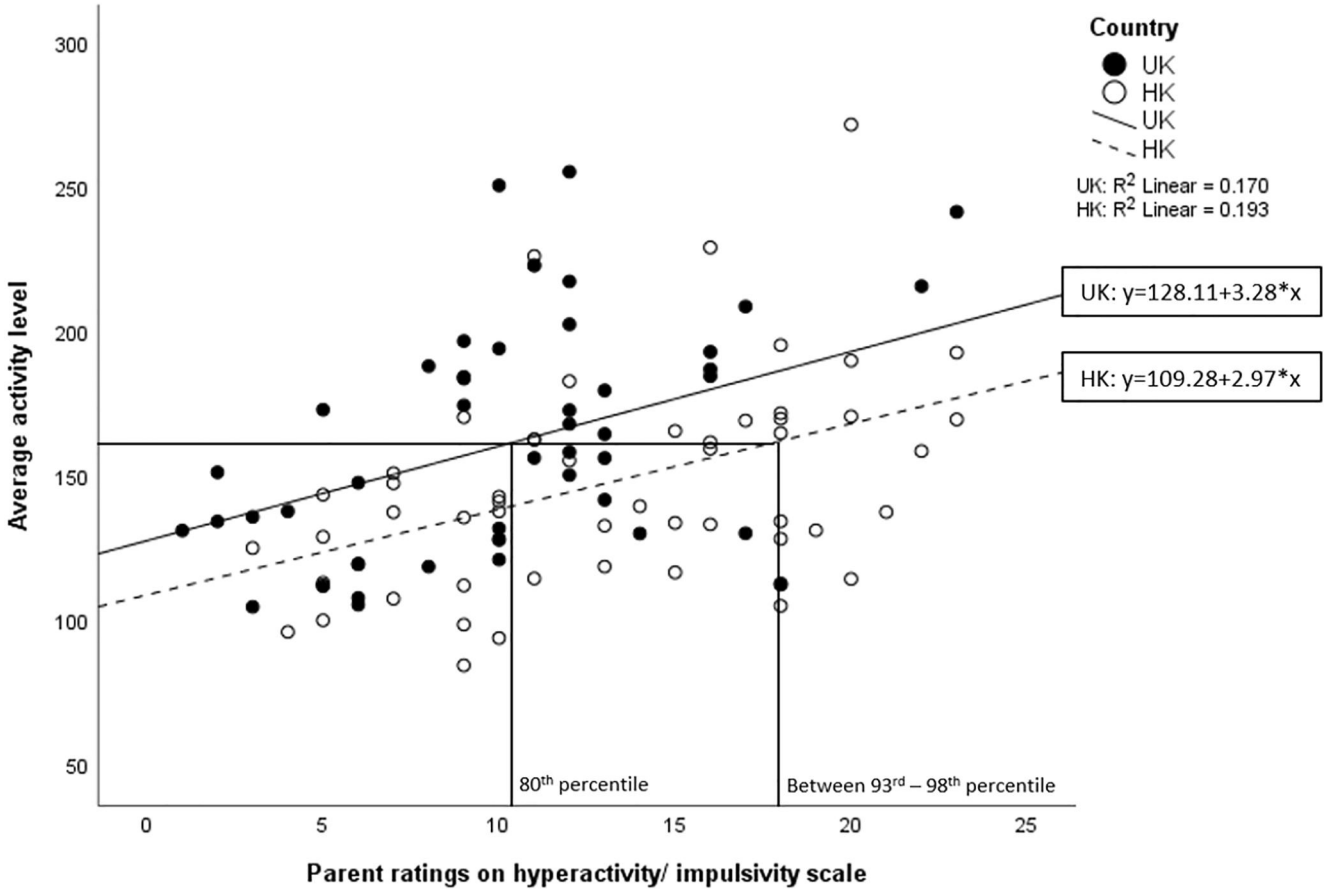

FIGURE 2 Relationship between parent hyperactivity/impulsivity ratings and average activity level in UK and HK. Raw scores of 10.5, 14, 16 and 21 indicated the 80th, 90th, 93rd and 98th percentile respectively

TABLE 2 Correlations between parenting-related factors and Rating Threshold Ratio

		Hyperactivity/impulsivity rating threshold ratios
1	Authoritarian parenting	−0.28*
2	Authoritative parenting	0.05
3	Permissive parenting	−0.08
4	Parental distress	−0.22
5	Stress related to parent-child dysfunctional interaction	−0.18
6	Stress related to difficult child	−0.36**
7	Parental emotional response to inattention	−0.03
8	Parental emotional response to hyperactivity/impulsivity	−0.09

*$p < 0.006$; **$p < 0.001$ (adjusted p values based on Bonferroni correction).

ratio was significantly mediated by child behaviour-related parenting stress (Figure 3).

6 | DISCUSSION

The current study had two aims. First, to test whether HK and UK parents apply different thresholds for the endorsement of ADHD symptoms—as a specific case of a more general phenomenon reflecting the culturally relative nature of informant ratings of children's behaviour. We achieved this by comparing informant ratings against their children's actual activity levels in two countries. Second, to test the hypothesis that differences in these thresholds would be linked to national differences in parenting practices and reactions to their children.

We had four research questions. With regard to the first, we found compelling evidence that HK and UK parents applied very different thresholds when rating ADHD symptoms. This was driven by two separate effects. First, children in HK were significantly less active than children in the UK. Second, despite this HK parents rated their children as more symptomatic than UK parents rated theirs. In terms of clinical thresholds, this led to the striking finding that the average activity level associated with UK parent ratings made at the 80th percentile equated to the ratings at the 93rd–98th percentile of HK parent ratings. This means that nearly all HK children rated in the clinical range by HK parents, if transported to the UK and rated by UK parents, would be in the normal range. This finding is consistent with previous cross-national data comparisons in preliminary studies but using exactly the same methods contemporaneously (Ho et al., 1996; Lai et al., 2010; Luk et al., 2002; Meltzer et al., 2000). It is also consistent with studies in which adult clinicians from different cultural groups rate the severity of a standard description of ADHD in vignettes (e.g., Mann et al., 1992). With regard to the second question, against prediction, we found no evidence that these rating threshold differences operated only at the high end of rating severity. HK parents were differentially more sensitive to activity across the full distribution of ratings not just to hyperactivity of potential clinical significance. This suggests a general shift in cultural perceptions of a linear nature with the whole rating distribution being transposed rather than just the tail extended.

In addressing our third question, and in line with our prediction, we found that HK parents rated themselves as more authoritarian (i.e., stricter) than UK parents. It is important to point out that despite these national differences, overall HK parents still rated themselves on balance as more authoritative than authoritarian. This is consistent with previous findings that Chinese mothers scored significantly higher than European/US mothers on ratings of authoritarianism, but were similar in terms of authoritativeness (Chao, 1994; Pearson & Rao, 2003). It is also possible that this somewhat stricter parenting style contributes, along with potential bio-genetics factors (Bronson, 1972; Freedman & Freedman, 1969; Leung et al., 2017), to the lower actual levels of hyperactivity (Bronson, 1972; Luk et al., 2002) and disruptive behaviour (Chao, 1994; Fung et al., 2018) seen in the HK as compared to UK children. In this regard, it will be interesting to explore the secular trends in parenting attitudes of both local HK parents and those in populations that have migrated to other cultural settings—do changes in parenting style and attitudes lead to changes in directly observed children's behaviours. Interestingly, attempts to promote positive parenting approaches in recent decades have led HK parents to become less demanding and more positive in their interactions with their children than before (Chan et al., 2021), but still comparatively more authoritarian than the UK parents (Yip et al., 2019).

In the current study, HK parents also described feeling more parenting-related stress—in terms of general stress as well as the specific stress related to parent-child interactions and their children's

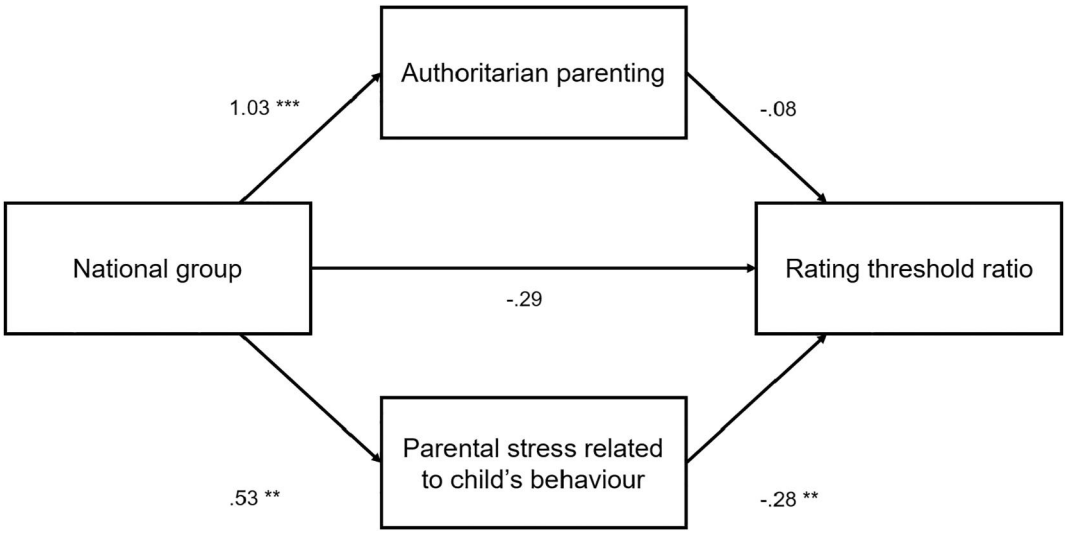

FIGURE 3 The mediation effect of authoritarian parenting and child behaviour related parenting stress in the relationship between national group and rating threshold ratio. *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$; all presented effects are standardised coefficients

behaviour—and having a stronger emotional response to ADHD behaviours. It is not difficult to see why parents in HK might feel both more stressed than UK parents and react more negatively when their children display hyperactivity. Specifically, the higher level of parenting stress in HK parents may reflect the cultural expectations with regard to children's behaviour and performance. Docility, conformity, and self-control are social norms in the HK culture, especially for children and in educational/classroom settings (Chao, 1994; Chen, 2005; Lam & Ho, 2010; Thompson et al., 2017). Academic achievement is highly emphasized in HK; the school system expects even preschool children to sit properly in class and stay focused on learning tasks (Chen & Stevenson, 1989), whereas a preschool classroom in the UK is much less structured and children are usually free to move around to choose activities they are interested to engage in Luk et al. (2002). HK parents may feel under a lot of pressure to bring up their children to conform to culturally relevant behavioural standards and achieve academically. Furthermore, it was previously found that parents in Chinese cultures had a higher tendency than Western parents to attribute children's problem behaviours to their own behaviour (Chiang et al., 2000); they expressed more self-blame and assumed responsibility for their children's behavioural and developmental difficulties (Ryan & Smith, 1989). It has been argued that it is this sense of pressure which creates high stress levels in HK parents that we see in their responses to their children's ADHD (Chao, 1995). Children's level of activity and behaviours that are deviant, even slightly, from cultural expectations are likely to trigger parents' reactions and stress (Ho et al., 1996). It is also possible that stress is experienced more strongly in the current generation of parents as they are caught in the middle between professionals' encouragement to develop a more child-centred, less authoritarian approach, and the need to maintain their children's standard of behaviour and patterns of achievement.

With regard to our fourth question, of the two candidate parenting factors (that were related to both *national group* and the *rating threshold ratio*), it was the child behaviour-related parenting stress that was most strongly and specifically related to cross-national variations in rating thresholds. Statistically, parenting stress fully mediated the association between national grouping and the threshold. Given the design of the current study, we cannot, of course, examine the causal direction of the stress-threshold relationships. It is possible that variations in stress drive threshold levels or that variations in threshold levels drive stress. It is also possible that there is a reciprocal and transactional relationship between stress and the threshold—with strict thresholds driving stress and then stress exacerbating the strict thresholds further. It is also possible that stress is simply a marker of a more general sense of cultural pressure for high standards of behaviour. Longitudinal studies need to be conducted to explore these different explanations.

There are a number of potential clinical implications of our findings. First, it seems that as suggested, similarities in the estimates of ADHD diagnoses observed across different regions and cultures do mask marked differences in actual levels of children's ADHD behaviour—at least regard HK and UK. This raises important and thorny conceptual and practical questions. Are children in some nations/cultures with comparatively low levels of actual activity being rated as symptomatic when they shouldn't be, or that in other nations children who should be being identified as symptomatic are being ignored? Should we impose a universal threshold based on actual behaviour or should the level of behaviour considered symptomatic be left to vary from culture-to-culture—if so, where should those cultural boundaries be drawn? The most obvious answer to these questions is that rating thresholds should be set to reflect levels of activity that are associated with impairment and/or a poor prognosis, and studies of rating thresholds need to be grounded in measurement of these constructs. However, this does not fully solve the problem of the cultural relativity of ADHD symptom endorsements but rather pushes the problem to the next level—as the notion of what constitutes impairment and poor prognosis are also culturally determined. Second, the finding of elevated stress in HK parents is of concern given that we know from previous research that stress can manifest as parental mental ill-health and also increase the risk for child maltreatment. Interventions need to be developed that are culturally adapted to address the problem of parenting stress in HK.

This study provided the strongest evidence to date that parents in HK operate different rating thresholds when endorsing ADHD symptoms when compared to the UK. It also provided some of the first direct evidence that these effects are accounted for by differences in parenting stress. It had many strengths. However, there were also a number of limitations. First, the current study was limited to preschool children. The effects may not extend to other developmental periods. Second, parents did not rate their children's behaviours during the specific episode of task performance when their activity level was being recorded, but rather gave more general ratings on children's behaviours over the last 3 months. However, the recorded activity was strongly correlated with those general ratings—including those for inattention, suggesting that activity during the testing sessions were representative of the child's activity more generally. Third, there was no direct measure of inattention. It therefore remains unclear whether the findings with regard to hyperactivity generalise to less obtrusive behaviours such as inattention. On the one hand, it is possible that the less obtrusive behaviours may trigger less marked parental reactions. On the other, they may be more strongly related to educational achievement and thus associated with an even lower threshold in HK given the importance of academic achievement. Fourth, there was a potential selection bias of participants in this study, with more UK parents having completed tertiary education than their HK counterparts. However, there was no association between education level and rating threshold ratio scores. Finally, as expected, the UK group had a more diverse ethnic composition, with around one quarter of the sample being of black or Asian ethnicity. Interestingly, thresholds did not differ significantly between these participants ($F = 0.33$, $p = 0.723$) though within-ethnic-group variance (in the UK sample) was particularly high in the White and Black/mixed ethnic groups, whereas the variance in Asian group was similar to the HK participants (see Table S2 in Supporting Information). It is possible that the broader range of

sensitivity within the UK group was due to the different parenting philosophies expressed in different ethnic groups. This raises interesting issues of migration and enculturation for future studies.

In summary, we found strong evidence that parents in HK and UK adopt different thresholds when endorsing ADHD symptoms based on their children's activity levels, with these national differences linked to cultural differences in parental stress related to their child's behaviour. This confirms the notion that national similarities in ADHD symptom endorsement and diagnostic rates mask, at least in this case, substantial differences in actual ADHD-related behaviour.

AUTHOR CONTRIBUTIONS

Wendy W. Y. Chan: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Visualization, Writing – original draft, Writing – review & editing. **Kathy Kar-man Shum:** Resources, Supervision, Writing – review & editing. **Edmund J. S. Sonuga-Barke:** Conceptualization, Methodology, Resources, Supervision, Writing – review & editing.

ACKNOWLEDGEMENTS

We express heartfelt gratitude to the children, parents and preschools for their participation and support, and to MSc students for their help in this project. This work was supported by the Centre for Doctoral Studies of King's College London (Wendy Wing-ying Chan) and the National Institute for Health Research (NIHR) Maudsley Biomedical Research Centre at South London and Maudsley NHS Foundation Trust and King's College London (Edmund J. S. Sonuga-Barke).

CONFLICT OF INTEREST

In the last 3 years Edmund J. S. Sonuga-Barke has received research funding and/or consultancy and/or speaker fees from Shire, Medice, Neurotech Solutions, QBTech and ACAMH. The other authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request (Edmund J. S. Sonuga-Barke).

ETHICS STATEMENT

The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008. This study was reviewed and approved by Research Ethics Committee of the University of Hong Kong (EA1812027) and King's College London (HR-18/19-8506).

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REFERENCES

Abidin, R. R. (1983). *The parenting stress Index*. Pediatric Psychology Press.

Abidin, R. R. (2012). *Parenting stress index, Fourth Edition (PSI-4)*. Psychological Assessment Resources.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). American Psychiatric Association. https://doi.org/10.1176/appi.books.9780890425596

Bajeux, E., Klemanski, D. H., Husky, M., Leray, E., Chan Chee, C., Shojaei, T., Fermanian, C., & Kovess-Masfety, V. (2018). Factors associated with parent–child discrepancies in reports of mental health disorders in young children. *Child Psychiatry and Human Development*, *49*(6), 1003–1010. https://doi.org/10.1007/s10578-018-0815-7

Bitsakou, P., Antrop, I., Wiersema, J. R., & Sonuga-Barke, E. J. S. (2006). Probing the limits of delay intolerance: Preliminary young adult data from the Delay Frustration Task (DeFT). *Journal of Neuroscience Methods*, *151*(1), 38–44. https://doi.org/10.1016/j.jneumeth.2005.06.031

Bronson, G. W. (1972). Infants' reactions to unfamiliar persons and novel objects. *Monographs of the Society for Research in Child Development*, *37*(3), 1–46. https://doi.org/10.2307/1165685

Campbell, S. B., Pierce, E. W., March, C. L., Ewing, L. J., & Szumowski, E. K. (1994). Hard-to-manage preschool boys: Symptomatic behavior across contexts and time. *Child Development*, *65*(3), 836–851. https://doi.org/10.1111/j.1467-8624.1994.tb00787.x

Canino, G., & Alegria, M. (2008). Psychiatric diagnosis—Is it universal or relative to culture? *Journal of Child Psychology and Psychiatry*, *49*(3), 237–250. https://doi.org/10.1111/j.1469-7610.2007.01854.x

Chan, R. F.-Y., Qiu, C., & Shum, K. K.-M. (2021). Tuning in to kids: A randomized controlled trial of an emotion coaching parenting program for Chinese parents in Hong Kong. *Developmental Psychology*, *57*(11), 1796–1809. https://doi.org/10.1037/dev0001258

Chao, R. K. (1994). Beyond parental control and authoritarian parenting style: Understanding Chinese parenting through the cultural notion of training. *Child Development*, *65*(4), 1111–1119. https://doi.org/10.2307/1131308

Chao, R. K. (1995). Chinese and European American cultural models of the self reflected in mother's childrearing beliefs. *Ethos*, *23*(3), 328–354. https://doi.org/10.1525/eth.1995.23.3.02a00030

Chen, C. S., & Stevenson, H. W. (1989). Homework: A cross-cultural examination. *Child Development*, *60*(3), 551–561. https://doi.org/10.1111/j.1467-8624.1989.tb02736.x

Chen, J. J. L. (2005). Relation of academic support from parents, teachers, and peers to Hong Kong adolescents' academic achievement: The mediating role of academic engagement. *Genetic, Social, and General Psychology Monographs*, *131*(2), 77–127. https://doi.org/10.3200/MONO.131.2.77-127

Chen, X., Rubin, K., Liu, M., Chen, H., Wang, L., Li, D., Gao, X., Cen, G., Gu, H., & Li, B. (2003). Compliance in Chinese and Canadian toddlers: A cross-cultural study. *International Journal of Behavioral Development*, *27*(5), 428–436. https://doi.org/10.1080/01650250344000046

Chiang, T.-M., Barrett, K. C., & Nunez, N. N. (2000). Maternal attributions of Taiwanese and American toddlers' misdeeds and accomplishments. *Journal of Cross-Cultural Psychology*, *31*(3), 349–368. https://doi.org/10.1177/0022022100031003004

Child Assessment Service, Department of Health, HKSAR. (2007). *Attention deficit hyperactivity disorder*. https://www.dhcas.gov.hk/english/public_edu/files/SeriesII_ADHD_Eng.pdf

De Los Reyes, A., & Kazdin, A. E. (2005). Informant discrepancies in the assessment of childhood psychopathology: A critical review, theoretical framework, and recommendations for further study. *Psychological Bulletin*, *131*(4), 483–509. https://doi.org/10.1037/0033-2909.131.4.483

DuPaul, G. J., Power, T. J., Anastopoulos, A. D., & Reid, R. (1998). *AD/HD rating scale—IV: Checklists, norms, and clinical interpretation*. Guilford Press. https://doi.org/10.1177/0734282905285792

Freedman, D. G., & Freedman, N. C. (1969). Behavioural differences between Chinese-American and European-American newborns. *Nature*, *224*(5225), 1227. https://doi.org/10.1038/2241227a0

Fung, Li X., Ramírez, M. J., Lam, B. Y., Millana, L., & Fares-Otero, N. E. (2018). A cross-regional study of the reactive and proactive aggression of youth in Spain, Uruguay, mainland China, and Hong Kong. *Social Development*, *27*(4), 748–760. https://doi.org/10.1111/sode.12305

Golden, M., Montare, A., & Bridger, W. (1977). Verbal control of delay behavior in two-year-old boys as a function of social class. *Child Development*, *48*(3), 1107–1111. https://doi.org/10.2307/1128370

Gomez, R., & Vance, A. (2008). Parent ratings of ADHD symptoms: Differential symptom functioning across Malaysian Malay and Chinese children. *Journal of Abnormal Child Psychology*, *36*(6), 955–967. https://doi.org/10.1007/s10802-008-9226-8

Goodman, R. (1997). The strengths and difficulties questionnaire: A research note. *Journal of Child Psychology and Psychiatry*, *38*(5), 581–586. https://doi.org/10.1111/j.1469-7610.1997.tb01545.x

Gross, D., Fogg, L., Garvey, C., & Julion, W. (2004). Behavior problems in young children: An analysis of cross-informant agreements and disagreements. *Research in Nursing & Health*, *27*(6), 413–425. https://doi.org/10.1002/nur.20040

Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. The Guilford Press.

Hillemeier, M. M., Foster, E. M., Heinrichs, B., & Heier, B., & Conduct Problems Prevention Research Group. (2007). Racial differences in parental reports of attention-deficit/hyperactivity disorder behaviors. *Journal of Developmental and Behavioral Pediatrics*, *28*(5), 353–361. https://doi.org/10.1097/DBP.0b013e31811ff8b8

Ho, T. P., Leung, P. W. L., Luk, E. S. L., Taylor, E., Bacon-Shone, J., & Lieh-Mak, F. (1996). Establishing the constructs of childhood behavioral disturbances in a Chinese population: A questionnaire study. *Journal of Abnormal Child Psychology*, *24*(4), 417–431. https://doi.org/10.1007/BF01441565

Lai, K. Y. C., Luk, E. S. L., Leung, P. W. L., Wong, A. S. Y., Law, L., & Ho, K. (2010). Validation of the Chinese version of the strengths and difficulties questionnaire in Hong Kong. *Social Psychiatry and Psychiatric Epidemiology*, *45*(12), 1179–1186. https://doi.org/10.1007/s00127-009-0152-z

Lam, A. K. S., & Ho, T. (2010). Early adolescent outcome of attention-deficit hyperactivity disorder in a Chinese population: 5-year follow-up study. *Hong Kong Medical Journal*, *16*(4), 257–264. https://bit.ly/3q5WmrH

Lambek, R., Sonuga-Barke, E., Psychogiou, L., Thompson, M., Tannock, R., Daley, D., Damm, D., & Thomsen, P. H. (2017). The parental emotional response to children Index: A questionnaire measure of parents' reactions to ADHD. *Journal of Attention Disorders*, *21*(6), 494–507. https://doi.org/10.1177/1087054714539996

Leung, C., Leung, S., Chan, R., Tso, K., & Ip, F. (2005). Child behaviour and parenting stress in Hong Kong families. *Hong Kong Medical Journal*, *11*(5), 373–380. https://bit.ly/34wdgrb

Leung, P. W.-L., Chan, J. K. Y., Chen, L. H., Lee, C. C., Hung, S. F., Ho, T. P., Tang, C. P., Moyzis, R. K., & Swanson, J. M. (2017). Family-based association study of DRD4 gene in methylphenidate-responded attention deficit/hyperactivity disorder. *PLoS One*, *12*(3), 1–11. https://doi.org/10.1371/journal.pone.0173748

Leung, P. W. L., Hung, S. F., Ho, T. P., Lee, C. C., Liu, W. S., Tang, C. P., & Kwong, S. L. (2008). Prevalence of DSM-IV disorders in Chinese adolescents and the effects of an impairment criterion. A pilot community study in Hong Kong. *European Child & Adolescent Psychiatry*, *17*(7), 452–461. https://doi.org/10.1007/s00787-008-0687-7

Leung, P. W. L., Luk, S. L., Ho, T. P., Taylor, E., Mak, F. L., & Bacon-Shone, J. (1996). The diagnosis and prevalence of hyperactivity in Chinese schoolboys. *The British Journal of Psychiatry*, *168*(4), 486–496. https://doi.org/10.1192/bjp.168.4.486

Liu, L., & Wang, M. (2015). Parenting stress and children's problem behavior in China: The mediating role of parental psychological aggression. *Journal of Family Psychology*, *29*(1), 20–28. https://doi.org/10.1037/fam0000047

Luk, E. S. L., Leung, P. W. L., & Ho, T. P. (2002). Cross-cultural/ethnic aspects of childhood hyperactivity. In S. Sandberg (Ed.), *Hyperactivity and attention disorders of childhood* (2 ed., pp. 64–96). Cambridge University Press. https://doi.org/10.1017/CBO9780511544767

MacDonald, B., Pennington, B. F., Willcutt, E. G., Dmitrieva, J., Samuelsson, S., Byrne, B., & Olson, R. K. (2019). Cross-country differences in parental reporting of symptoms of ADHD. *Journal of Cross-Cultural Psychology*, *50*(6), 806–824. https://doi.org/10.1177/0022022119852422

Mann, E. M., Ikeda, Y., Mueller, C. W., Takahashi, A., Tao, K. T., Humris, E., Li, B. L., & Chin, D. (1992). Cross-cultural differences in rating hyperactive-disruptive behaviors in children. *American Journal of Psychiatry*, *149*(11), 1539–1542. https://doi.org/10.1176/ajp.149.11.1539

Markomichali, P. (2015). *Learning to wait: The development and initial evaluation of a training intervention designed to help impulsive preschool children at risk for ADHD learnt to wait for rewards*. [Doctoral dissertation, University of Southampton]. University of Southampton, School of Psychology. http://eprints.soton.ac.uk/id/eprint/374941

McGoey, K. E., DuPaul, G. J., Haley, E., & Shelton, T. L. (2007). Parent and teacher ratings of attention-deficit/hyperactivity disorder in preschool: The ADHD rating scale-IV preschool version. *Journal of Psychopathology and Behavioral Assessment*, *29*(4), 269–276. https://doi.org/10.1007/s10862-007-9048-y

Meltzer, H., Gatward, R., Goodman, R., & Ford, F. (2000). *The mental health of children and adolescents in Great Britain*. The Stationery Office. https://bit.ly/34kgePh

Meyer, B. J., Stevenson, J., & Sonuga-Barke, E. (2020). Sex differences in the meaning of parent and teacher ratings of ADHD behaviors: An observational study. *Journal of Attention Disorders*, *24*(13), 1847–1856. https://doi.org/10.1177/1087054717723988

Najman, J. M., Williams, G. M., Nikles, J., Spence, S., Bor, W., O'Callaghan, M., Le Brocque, R., Andersen, M. J., & Shuttlewood, G. J. (2001). Bias influencing maternal reports of child behaviour and emotional state. *Social Psychiatry and Psychiatric Epidemiology*, *36*(4), 186–194. https://doi.org/10.1007/s001270170062

National Institute for Clinical Excellence (NICE). (2000). *Guidance on the use of methylphenidate (Ritalin, Equasym) for attention deficit/hyperactivity disorder (ADHD) in childhood*. Report No. 13. NICE. https://www.nice.org.uk/guidance/ta98

Olivari, O. G., Tagliabue, S., & Confalonieri, E. (2013). Parenting style and dimensions questionnaire: A review of reliability and validity. *Marriage & Family Review*, *49*(6), 465–490. https://doi.org/10.1080/01494929.2013.770812

Pearson, E., & Rao, N. (2003). Socialization goals, parenting practices, and peer competence in Chinese and English preschoolers. *Early Child Development and Care*, *173*(1), 131–146. https://doi.org/10.1080/0300443022000022486

Polanczyk, G., de Lima, M. S., Horta, B. L., Biederman, J., & Rohde, L. A. (2007). The worldwide prevalence of ADHD: A systematic review and metaregression analysis. *American Journal of Psychiatry*, *164*(6), 942–948. https://doi.org/10.1176/ajp.2007.164.6.942

Polanczyk, G. V., Salum, G. A., Sugaya, L. S., Caye, A., & Rohde, L. A. (2015). Annual research review: A meta-analysis of the worldwide prevalence of mental disorders in children and adolescents. *Journal of Child Psychology and Psychiatry*, *56*(3), 345–365. https://doi.org/10.1111/jcpp.12381

Porter, C. L., Hart, C. H., Yang, C., Robinson, C. C., Olsen, S. F., Zeng, Q., Olsen, J. A., & Jin, S. (2005). A comparative study of child temperament and parenting in Beijing, China and the Western United States. *International Journal of Behavioral Development*, *29*(6), 541–551. https://doi.org/10.1080/01650250500147402

Posner, J., Polanczyk, G. V., & Sonuga-Barke, E. (2020). Attention-deficit hyperactivity disorder. *Lancet (London, England)*, *395*(10222), 450–462. https://doi.org/10.1016/S0140-6736(19)33004-1

Reid, R., & Maag, J. W. (1994). How many fidgets in a pretty much: A critique of behavior rating scales for identifying students with ADHD. *Journal of School Psychology*, *32*(4), 339–354. https://doi.org/10.1016/0022-4405(94)90032-9

Robinson, C. C., Mandleco, B., Olsen, S. F., & Hart, C. H. (2001). The parenting styles and dimensions questionnaire (PSDQ). In B. F. Perlmutter, J. Touliatos, & G. W. Holden (Eds.), *Handbook of family measurement techniques*: Vol. 3. *Instruments & index* (pp. 319–321). Sage.

Rutter, M., Tizard, J., & Whitmore, K. (1970). *Education, health and behaviour*. Longman.

Ryan, A. S., & Smith, M. J. (1989). Parental reactions to developmental disabilities in Chinese American families. *Child and Adolescent Social Work*, *6*(4), 283–299. https://doi.org/10.1007/BF00755222

Sonuga-Barke, E. J. S., Minocha, K., Taylor, E. A., & Sandberg, S. (1993). Inter-ethnic bias in teachers' ratings of childhood hyperactivity. *British Journal of Developmental Psychology*, *11*(2), 187–200. https://doi.org/10.1111/j.2044-835x.1993.tb00597.x

Stone, S. L., Speltz, M. L., Collett, B., & Werler, M. M. (2013). Socioeconomic factors in relation to discrepancy in parent versus teacher ratings of child behavior. *Journal of Psychopathology and Behavioral Assessment*, *35*(3), 314–320. https://doi.org/10.1007/s10862-013-9348-3

Taylor, E., Sandberg, S., Thorley, G., & Giles, S. (1991). *The epidemiology of childhood hyperactivity*. Oxford University Press.

Thompson, M. J. J., Au, A., Laver-Bradbury, C., Lange, A., Tripp, G., Shimabukuro, S., Zhang, J. S., Shuai, L., Thompson, C. E., Daley, D., & Sonuga-Barke, E. J. (2017). Adapting an attention-deficit hyperactivity disorder parent training intervention to different cultural contexts: The experience of implementing the New Forest Parenting Programme in China, Denmark, Hong Kong, Japan, and the United Kingdom. *PsyCh Journal*, *6*(1), 83–97. https://doi.org/10.1002/pchj.159

Wechsler, D. (2003). *Wechsler preschool & primary scale of intelligence—Third UK edition (WPPSI-III UK)*. The Psychological Corporation.

Weisz, J. R., Suwanlert, S., Chaiyasit, W., Weiss, B., Walter, B. R., & Anderson, W. W. (1988). Thai and American perspectives on over- and undercontrolled child behavior problems: Exploring the threshold model among parents, teachers, and psychologists. *Journal of Consulting and Clinical Psychology*, *56*(4), 601–609. https://doi.org/10.1037/0022-006X.56.4.601

Wu, P., Robinson, C. C., Yang, C., Hart, C. H., Olsen, S. F., Porter, C. L., Jin, S., Wo, J., & Wu, X. (2002). Similarities and differences in mothers' parenting of preschoolers in China and the United States. *International Journal of Behavioral Development*, *26*(6), 481–491. https://doi.org/10.1080/01650250143000436

Yeh, C.-H., Chen, M.-L., Li, W., & Chuang, H.-L. (2001). The Chinese version of the parenting stress Index: A psychometric study. *Acta Pædiatrica*, *90*(12), 1470–1477. https://doi.org/10.1080/08035250152708914

Yip, F. W. L., Zelman, D., & Low, A. (2019). How to improve parenting in Hong Kong by training: The 6As positive parenting program. *Public Administration and Policy*, *22*(1), 55–70. https://doi.org/10.1108/pap-04-2019-0003

SUPPORTING INFORMATION

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How to cite this article: Chan, W. W. Y., Shum, K. K.-m., & Sonuga-Barke, E. J. S. (2022). Attention-deficit/hyperactivity disorder (ADHD) in cultural context: Do parents in Hong Kong and the United Kingdom adopt different thresholds when rating symptoms, and if so why? *International Journal of Methods in Psychiatric Research*, *31*(3), e1923. https://doi.org/10.1002/mpr.1923