Parenting stress and coping across five countries

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Abstract

Purpose: The current report provided indicators of parenting stress and coping behaviours across five diverse countries (Bangladesh, Greece, Kenya, UK, Zambia). It was hoped that the use of a single procedure would provide needed data from low-to-middle-income countries, in comparison to the better studied higher-income countries.

Design: 200 parents of children diagnosed with ASD (40 in each country) completed a series of scales about their parenting stress and coping styles.

Findings: The results suggested more similarities than differences. Parenting stress was high in all countries, and highest in the UK. Pessimism was also high in low-to-medium-income countries, and lower in Greece and the UK. Passive appraisal was used most often as a coping style, with mobilising the family being used more than social support. Cross-country, the only difference was that the UK parents used seeking spiritual support less than other countries. Coping styles did not mediate the relationship between either ASD severity or behavioural problems and parenting stress.

Originality: These data suggest a degree of similarity across most aspects of parenting across diverse countries, although some atypical results from the UK may mean caution is needed in drawing generalised conclusions from such higher-income countries.

Keywords: parenting stress, coping style, ASD symptoms; behaviour problems; cross country; cultural differences.

Parenting stress is the perceived cognitive and emotional state arising from the challenges of parenting, and is often high for parents of children with Autism Spectrum Disorder (ASD; Barroso et al., 2018; Dabrowska & Pisula, 2010; Karim et al., 2025; Samuel et al., 2024; Uddin & Ashrafun, 2023). In fact, patenting stress is often reported as being greater for this population than for many other conditions (Joshua et al., 2019; Pastor-Cerezuela et al., 2021; Osborne & Reed, 2010). Such parenting stress covaries with a range of child characteristics, such as levels of behavioural problems (Postorino et al., 2019; Osborne & Reed, 2009a; Tomanik et al., 2004), and ASD symptom severity (Eisenhower et al., 2005; Hall & Graff, 2011; Pastor-Cerezuela et al., 2021). However, such data are often obtained from parents in higher-income countries, which account for less than 20% of the world's population (World Bank, 2015). Although more data are becoming available for low-to-middle income countries (Baloyi et al., 2024; Diana et al., 2025; Hossain et al, 2017; Joshua et al., 2019; Karim et al., 2025; Makino et al., 2021; Samuel et al., 2024; Uddin & Ashrafun, 2023), it remains difficult to draw conclusions that generalise across countries. To help address this knowledge gap, the present study provides exploratory investigation across five countries: the UK and Greece in Europe; Kenya and Zambia in Africa; and Bangladesh in Asia, using the same tools (Chee et al., 2024; Matson et al. 2017; Reed et al., 2024).

The current five countries represent an opportunity sample that allows comparison between countries that have some previous literature (e.g., Halki et al., 2024; Karim et al. 2025; Kiambati et al., 2025), but which are at different stages of ASD service development (Mustary & Reed, 2025; Reed et al., 2025). The European countries are both higher-income, with relatively well-developed ASD provision. A greater proportion of the population of Greece identifies with a religious belief (mainly Greek Orthodox), and such identification has been associated with higher levels of stigma around ASD (Gemegah et al., 2012; Veroni, 2019; see also Alhwaiti, 2024, and Joshua et al., 2019, for similar relationships in low-to-

middle income countries). Kenya represents a more diverse population, ethnically and religiously, than Zambia or Bangladesh, and the latter is culturally and religiously monolithic. While there are important contrasts between these countries, it is important to note that this is a cross-country study, and not a cross-cultural or cross-ethnic study. Several of these countries comprise diverse ethnic and cultural populations. However, a cross-country comparison is still important, as educational provision for neurodiverse individuals typically is organised at a country, not a cultural, level.

High levels of parenting stress have been noted for parents of children with ASD in studies conducted Bangladesh (Akter et al., 2020; Uddin & Ashrafun, 2023), Kenya (Kiambati et al., 2025; Masaba et al., 2021), and Zambia (Ncube, 2020). Indeed, this is noted across many low-to-medium income countries (e.g., Aktar et al., 2020; Ncube, 2020; Washington-Nortey & Serpell, 2021), and is true also of higher-income countries (Barroso et al., 2018; Pastor-Cerezuela et al., 2021). However, whether one set of parents display more stress than another is difficult to evaluate in the absence of direct comparison using the same instruments. Many findings from low-to-middle income countries are based on qualitative reports (e.g., Cloete & Obaigwa, 2019; Gona et al., 2016; Uddin & Ashafun, 2023), which, while insightful and helpful, do not always offer a chance for comparison with established psychometric assessments conducted in higher-income countries.

It may be that different cultural and familial perceptions/expectations impact parenting stress in low-to-medium income countries compared to higher-income countries (Baloyi et al., 2024; Joshua et al., 2019; Dyches et al., 2004; Matson et al., 2017; Rahman et al., 2021; Washington-Nortey & Serpell, 2021). For example, high proportions of parents in low-to-middle income countries note that the stigma is associated with having a child with ASD is a critical stressor (Ayyash et al., 2023; Nyoni, 2022; Samuel et al., 2024; Washington-Nortey & Serpell, 2021). In these countries, it is sometimes claimed that public and

professional knowledge remains poor (Ayyash et al., 2023; Nyoni, 2022; Uddin & Ashrafun, 2023), making access to resources difficult and increasing the childcare financial burdens (Cloete & Obaigwa, 2019; Dira et al., 2024; Gona et al., 2016; Haque et al., 2022; Masaba et al 2021). Of course, these issues also impact higher-income countries (Halki et al., 2024; Mustary & Reed, 2025; Reed et al., 2025). More floridly, there are sometimes reports of concerns about supernatural powers in low-to-middle income countries (Gona et al., 2016), although recent studies have not noted this concern when interviewing parents of children with ASD (Mustary & Reed, 2025). Given these possibilities, a within-study quantitative comparison of levels of patenting stress is one aim of the current study.

It has long been suggested that the impact of an event (a stressor) on perceived stress is mediated by coping strategies (Vernhet et al., 2019). Few studies have directly compared the presence and impact of coping styles across countries, which is a second aim of the current examination. It has been suggested that there may be differences in the coping strategies adopted in low-to-medium and higher income countries. Some reports note that parents from low-to-medium income countries use spiritual support as a coping strategy to a high degree (Ayyash et al., 2023; Diana et al., 2025). For example, this has been noted for mothers in Bangladesh (Karim et al., 2025), Indonesia (Daulay et al., 2025; Musayaroh et al., 2024), and in several African countries (Baloyi et al., 2024; Kiambati et al., 2025). However, such coping strategies are also reported in many higher-income countries, such as Greece (Halki et al., 2024), and the USA (Alhwaiti, 2024). Moreover, parents in low-to-medium income countries also report using a wide range of additional coping strategies (Karim et al., 2025), such as mobilising family support (Baloyi et al., 2024; Musayaroh et al., 2024), and social support (Karim et al., 2025; Kiambati et al., 2025). Thus, although some potential differences between countries in terms of coping strategies have been highlighted, there is a

great overlap, and, in fact, what appears to unite parents across countries is a call for more resources to help them cope (Dira et al., 2024; Mustary & Reed, 2025).

Beyond differences in the types of coping strategy employed, few data address how coping styles impact stress for different countries. Findings from the UK (e.g., Reed, 2020) and Greece (e.g., Ntre et al., 2022) are similar to one another, as well as to other higher-income countries (see also Alhwaiti, 2024; Benson, 2014). Cognitive reappraisal strategies appear to reduce stress levels (Ntre et al., 2022; Reed, 2020), but coping strategies that attempt to directly tackle to source of the felt stress increase stress levels. However, this also seems true of low-to-medium income countries (Ayyash et al., 2023; Musayaroh et al., 2024), but investigation of the impact of coping styles is not well advanced in the latter countries, and providing preliminary data on this aspect is a third aim of the current study.

Coping strategies directly related to the stressor (as opposed to those related to the person's feelings about the stressor), have been associated with greater levels of parenting stress for parents of children with ASD (Benson, 2014; Reed, 2020). Such coping strategies include 'disengagement' (strategies that avoid or deny stressors); 'distraction' (strategies directing thoughts away from stressors); and 'engagement' (strategies aimed directly at modifying stressors). For example, Obeid and Daou (2015) noted that 'disengagement' was harmful for the psychological wellbeing of parents of children with ASD, and several other studies have noted 'engagement' strategies are also negatively related to parenting stress (Pottie & Ingram, 2008; Shepherd et al., 2018). In contrast, coping strategies aimed primarily at parental reactions to stressors, such as 'cognitive reframing', that allow re-appraisal of the stressors, are associated with lower parenting stress (Benson, 2010; Dardas & Ahmad, 2015; Dunn et al., 2001; Musayaroh et al., 2024; Reed, 2020). However, the severity of child behaviour problems has been found to moderate the effectiveness of 'passive reappraisal',

which is more successful in reducing parenting stress when the child behaviour problems were not severe (Reed, 2020; Shepherd et al., 2018).

One area of importance to coping as a parent of a child with ASD in low-to-medium income countries is seeking social support to mitigate the effects of the stressor, which has been noted to produce benefits (Baloyi et al., 2024; Karim et al., 2025; Kiambati et al., 2025; Musayaroh et al., 2024; Reed, 2020; Zablotsky et al., 2013). An important aspect of this strategy concerns mobilising family support, which appears an often-used coping response for such countries (Joshua et al., 2019; Karim et al., 2025). Establishing a family routine has been found beneficial to stress in higher-income countries (Boyd, McCarty, & Sethi, 2014; Mirzaie, Jamshidian, & Hosseini, 2018), but the extent to which this occurs for low-to-medium income countries is not documented. It is currently unknown whether variance of routines differs across countries, and how this impacts the child. For instance, rigid observance of religious rituals may be differentially present in some counties (such as Greece and Bangladesh), which may be helpful for children with ASD. A strong routine that is tailored to the child with ASD can be helpful, but is not always possible to implement when other children, or unpredictable pressure on the family, are involved (Mirzale et al., 2018), and this may be an issue in lower-resourced countries (Diana et al., 2025; Mustary & Reee, 2025; Uddin & Ashrafun, 2023).

The current study will allow a first cross-country comparison of stress, coping, and their relationship, and provide much needed data on these import aspects of parenting wellbeing in relation to having a child with ASD in low-to-middle income countries. There are three exploratory aims of the current study: (1) the assess differences in levels of parenting stress across countries; (2) to assess differences in types of coping strategies across countries; and (3) to explore any relationships between coping style and stress. As the study

is exploratory in nature, and there are no specific hypotheses that could be reasonably supported based on the current data.

Method

Participants and Recruitment

Participants were recruited via advertising on social media groups, social media pages, and organisations working with people with ASD, in all five countries. The recruitment criteria were: having a child diagnosed with ASD using the DSM-5; being aged over 18 years old; having experience seeing or dealing with challenging behaviour; and being involved from diagnosis in the up-bringing of child with ASD. The exclusion criteria included any parent aged below 18 years; any comorbid psychiatric diagnosis; and only one parent per child was allowed to participate in the research. Ethical approval was obtained from the Psychology Department Ethics Committee of the University.

G-Power calculations indicated that for a medium effect size (r = .30), a rejection criterion of $p < .05$, and 80% power, that 67 participants would be needed for Pearson correlations. For an analysis of variance (ANOVA) between the five countries, with a medium effect size (f' = .25), rejection criterion of $p < .05$, and 80% power, 200 participants would be needed. For a multiple regression with three predictors, for a medium effect size (f^2 = .15), rejection criterion of $p < .05$, and 80% power, then 77 participants would be needed.

Two hundred participants (40 from each country) were given full information about the study, and agreed to participate. Of these participants, 196 (98%) completed the questionnaires; 2 participants from Zambia, and 2 from Greece, did not supply the full data set, and were excluded.

Family Characteristics/background: Of the participants, there were 134 mothers (62 fathers), with a mean age of 39.9 (SD $\pm$ 8.1; range 18 – 65) years. Of the sample: 26/183

(14%) were single; 141/183 (77%) were married; 10/183 (5%) were widowed; and 15/183 (8%) separated. The number of family members in the families of the participants were given as: 2 = 10/181 (6%), 3 = 38/181 (21%), 4 = 72/181 (40%), 5 = 39/181 (22%), 6/181 = 13 (7%), 7/181 = 4 (2%), 8 = 3/181 (2%), 10/181 = 2 (1%). The number of siblings of the child with ASD about whom the questions were answered were given as: 0/186 = 36 (19%), 1 = 84/186 (45%), 2 = 51/186 (27%), 3 = 11/186 (6%), 5 = 3/186 (2%), 6/186 = 1 (5%). Of the participants, 47/181 (32%) reported that a family member had a similar problem to ASD. The fathers' education was reported as: up to 16 years = 11/186 (6%); up to 18 years = 27/186 (15%); college/university = 98/186 (53%); postgraduate = 50/186 (27%). Mothers' educational levels were reported as: up to 16 years = 13/182 (7%); up to 18 years = 31/182 (17%); college/university = 110/182 (60%); and postgraduate = 28/182 (15%). The fathers' occupations were reported as: labourer/clerical = 35/188 (19%); skilled/technical = 27/188 (14%); managerial/professional = 105/188 (56%); and unemployed/houseworker/strike = 21/188 (11%). The mothers' occupations were reported as: labourer/clerical = 26/187 (13%); skilled/technical = 11/187 (6%); managerial/professional = 91/187 (49%); and unemployed/houseworker/strike = 59/187 (32%). The breakdown of the family demographics by country can be seen in Table 1, which shows significant differences in the: number of family members (lower in the European countries); parents who were married (lower in the UK); fathers' education (fewer degree level in Zambia and Grece), and in mothers' occupation (fewer skilled workers in Greece).

Table 1 about here

Children's characteristics: Of the 196 children with a DSM-5 ASD diagnosis about whom the questionnaires were completed, 150 (77%) were male, and they had a mean age of

8.9 (± 3.7; range = 3 – 16) years. Of the parents who responded to the question regarding whether their child had a medical condition other than ASD, 70/178 (40%) reported that this child also had a physical medical diagnosis, such as epilepsy, asthma, etc. The parents reported that they had first noticed an issue with their child when the child was 2.3 (± 1.9; range = birth to 9) years old; that a DSM-5 ASD diagnosis was received when the child was 3.8 (± 1.4; range = 1 – 9) years old; and a mean time from noticing to diagnosis of 1.4 (± 1.2; range = 1 – 7) years. The children's characteristics for each country can be seen in Table 2, and shows a difference in the child's age (younger in Greece).

Table 2 about here

Countries

Bangladesh is located in South Asia, covering an area of 147,570km^2. The population is over 163 million, and it is the eighth most populated country globally. Dhaka is the capital and primary urban centre, encompassing the greatest population. Bangladesh is the second largest economy in South Asia. Islam is the predominant religion in the country, with over 90% adherence. Education is divided into three sectors: primary encompasses the period from 6 to 11 years; secondary encompasses the period from 11 to 18 years; and tertiary encompasses universities and other institutions of higher learning. Every child is entitled to obtain free, compulsory education, with a fulfilment rate of over 80%. There are 33 schools specifically catering to individuals with ASD, with a collective student population of 4850.

Greece is in Southeast Europe, covering an area of 131,957km^2. It has a population of approximately 10 million individuals. Athens is the capital, political and administrative centre, and the most populous urban area. Greece has a democratic political system, and

status as an advanced high-income economy, being the second largest economy in the Balkans. The Greek Constitution acknowledges Eastern Orthodoxy as the predominant religion, but safeguards freedom of religious conviction. Ethnically, Greece exhibits a notable degree of homogeneity, and a significant majority of its indigenous populace employs Greek as their primary, or exclusive, means of communication. The system of compulsory education encompasses both primary schools and gymnasiums, and is mandatory for children aged four and above. Children commence their elementary education at the age of six, and continue their studies for a duration of six years. The commencement of enrolment at the gymnasium typically occurs at the age of 12, with a duration of three years.

Kenya is in East Africa, with an area of 582,646km^2, and population of 53 million. Nairobi is the capital and major urban centre. Economically, Kenya has a low ranking on the Fragile States Index, and faces challenges fulfilling fiscal responsibilities. There is a significant human diversity, with 42 ethno-racial and linguistic groupings who communicate in their native languages inside their own social groupings. English and Swahili are the designated official languages, with English extensively utilised in education and government The majority of individuals are Christian (85%), with Islam as the second most widely practiced religion (11%). Health care is low priority, but education is an inherent entitlement, and the education system is ranked as the most robust in Africa.

United Kingdom is located on the northwestern coast of Europe, encompassing the landmass of Great Britain, the northeastern region of Ireland, and smaller islands situated within the British Isles. The land area of is 242,500km^2, with a population of approximately 68 million. London is the capital, most populous city, and a prominent global financial centre. The UK has the fifth-largest economy globally. It is a democratic monarchy, with safeguarded religious freedom, although no one religion is practiced by more than 40% of the population. The UK comprises four constituent countries (England, Scotland, Wales, and

Northern Ireland), with devolved governments endowed with autonomy over health and education. Education is mandated for those between 5 to 16 years, with the onus of providing such education falling upon local authorities. The proportion of individuals in the UK possessing a university or college degree is 38%, representing the highest ratio among European nations. Universal healthcare is extended to all individuals who hold permanent residency in the UK, and is accessible without charge at the time of requirement. A developed social care structure is currently in place across all four nations of the UK.

Zambia is in southern Africa, covers 753,614km^2, with a population of 19 million. Lusaka is the capital city. Over 50% of the Zambian population live below the officially recognised national poverty threshold, and unemployment and underemployment are significant. The majority of individuals in rural areas engage in subsistence farming. Zambia is facing a widespread HIV/AIDS epidemic, with a prevalence of over 12%. Zambia exhibits a notable degree of racial and ethnic diversity, with over 70 ethnic groupings. The nation is legally designated as a Christian, but safeguards religious freedom. English is the official language used for government and education. The constitution guarantees rights to equitable and sufficient education.

Materials

All materials were translated into the local language, were necessary, and were delivered in that local language, if needed. For each country the questionnaires were translated from English to the needed language, and then were back translated by an independent person to the original translation who was competent in both languages to ensure that the translation did not affect the integrity of the checklist. Although there was no specific check for cultural appropriateness, people responsible for translation were native speakers of that language, and could have flagged any such problems. There were no items

that caused specific difficulties in terms of the language into which it was translated not having an appropriate term, or similar, to the English. However, some items did require several translation iterations to gain agreement about their meaning/connotations.

Demographic/Background Questions: There were a large number of questions relating to the gender and age of the parent completing the form, whether they were married, the number of family members, numbers of siblings of the child with ASD, and whether any family members had similar problems. They were asked about the father's and mother's educational levels and current occupations. In terms of the child, they were asked about their age, gender, when they first noticed a problem with the child, and when the diagnosis occurred.

Autism Behaviour Checklist (ABC; Krug, Arick, & Almond, 1980) is a widely used instrument, suitable from 18 months to 35 years. It contains a list of behaviours associated with ASD, which parents tick if they have ever been shown by the child. Each behaviour gives a weighted score indicative of ASD (4 indicates the highest predictor, and 1 the lowest). The behavioural descriptors are grouped into five symptoms areas: sensory, relating, body and object use, language, and social and self-help. The intra-rater reliability of the test is .94, and the intra-rater reliability agreement score is 95%. The internal reliability (coefficient alpha) ranged between .81 and .88 for the different countries.

Strengths and Difficulties Questionnaire (Parents; SDQ, Goodman, 2001**)** is a brief measure covering emotional symptoms, conduct problems, hyperactivity-inattention, and peer problems, as well as prosocial behaviour). It can be completed by parents, and comprises 25 items, describing positive and negative attributes of children and adolescents that can be allocated to 5 subscales. Each item is scored on a 3-point Likert scale, with higher scores on the prosocial behaviour subscale reflect strengths, whereas higher scores on the other four subscales reflect difficulties. The four subscales combine to provide an

internalising and externalising behaviour score. The internal consistency is moderate to acceptable across previous studies (.51 to .76), but test-retest reliability (.70 – .85) is acceptable (Goodman, 2001). The criterion validity was assessed, and found to be acceptable (Goodman, 2001). The internal reliability of the scale in the current study ranged from .68 to .88 for the different countries.

Questionnaire on Resources and Stress – Friedrich Short Form (QRS-F; Friedrich, Greenberg, & Crnic, 1983) is a measure of perceived stress about parenting, and explores the impact of a child's disability or illness on other family members. The QRS-F has been used to study stress in families of children with disabilities, including ASD. It contains 52 items, and assesses four factors: parent and family problems (stressful aspects of the impact of the child with disability on parents and the wider family), pessimism (parents' pessimistic beliefs about the child's future), child characteristics (features of the child that are associated with increased demands on parents), and physical incapacity (the extent to which the child is able to perform a range of typical activities). It is self-administered, and it has a true/false response format. It provides four factor scores, and a total scale score. Higher scores are taken to be indicative of greater distress within a family. The reliability of the total scale is .95 (Friedrich et al., 1983). The internal reliability was estimated at between .89 and .94 for the countries in the current study.

Family Crises Oriented Personal Evaluation Scales (F-COPES; McCubbin, Olson, & Laresen, 1981) is a 30-item scale identifying problem-solving attitudes and strategies employed by families to problematic situations. There are five sub-scales of different coping strategies: reframing (cognitively making events more manageable); passive appraisal (minimisation of responses to events); acquiring social support; seeking spiritual support, and mobilising family to acquire help. Each item is scored from 1 (strongly disagree) to 5 (strongly agree). The instrument has been used successfully in the relation to coping and

stress of parents of children with ASD. The internal reliability (Cronbach α) for the total scale is .86, and the sub-scales range from .63 to .86 (McCubbin et al., 1981).

Family Routines Inventory (FRI; Fiese, Tomcho, Douglas, Josephs, Poltrock, & Baker, 2002) assesses family routines and rituals. The FRI is a parent-report inventory, which measures 28 positive, strength-promoting, family routines. These are observable, repetitive behaviours, which involve two or more family members, and which occur with predictable regularity in the daily life of a family. It consists of two subscales: the frequency scale, and the importance scale, from which only the first was used in the current study, because of the already large number of questions that the parents had to answer. The frequency scale is rated on a four-point scale, ranging from 0 to 4, with a total frequency score range from 0 to 84. The FRI appears to be a reliable and valid measure of family cohesion, solidarity, order, and overall satisfaction with family life. It has adequate internal consistency (α= .67-.78; Sytsma et al., 2001), and the one-month test-retest reliability was estimated to be from .74 to .79.

Procedure

After having received information about the study, if parents wished to participate, they clicked a consent button, and were taken to the online survey. There was no set time limit to complete, but the survey generally took about 30min. Once completed parents were shown a debrief page on-screen. Prior to analyses, data were cleaned and screened for missing values and outliers. Missing data were replaced using the person-mean substitution method for any questionnaire measure where ≤ 10% of the items were missing (Hawthorne & Elliott, 2005). Visual inspection of histograms and Q-Q plots demonstrated the data were normally distributed on all variables.

Results

Overall Sample

Table 3 about here

Table 3 displays the means (standard deviation) for whole-sample parenting stress (QRS), perceived autism severity (ABC), child behaviour problems total (SDQ), child internalising problems (SDQi), and child externalising problems (SDQe). The Pearson correlations between the variables are also displayed. There were strong positive correlations between all variables. This pattern of relationships was also seen in each country separately, except for the UK, which did not show any relationship between autism severity and parenting stress (see also Table 5).

Parenting Stress

Table 4 about here

Table 4 shows the means (standard deviations) for parenting stress totals for each country, as well as mean (standard deviation) for the average response per item on each of the parenting stress subscales. These data reveal that total parenting stress was highest for parents in the UK. Parents in the UK also reported higher parenting stress than parents in other countries relating to all QRS subscales, except child related difficulties, and pessimism, which was highest in Bangladeshi parents. A two-factor mixed model ANOVA (country x stress type) conducted on the stress levels revealed significant main effects of country, $F(4,185) = 4.24$, $p < .001$, $\eta^2_p = .084$, and stress type, $F(3,555) = 592.60$, $p < .001$, $\eta^2_p = .762$,

as well as a significant interaction between the two factors, $F(12,185) = 9.56$, $p < .001$, $\eta^2_p = .171$. To test the differences between the countries, separate one-way ANOVAs were conducted for each stress type. The results are shown in Table 4, along with the subsequent post hoc analyses using Tukey's Honestly Significant Difference (HSD) tests. To test whether countries differed in terms of which stress type was rated higher in that particular country, one-way repeated-measures ANOVAs were performed on each stress type for each country separately. These revealed significant differences between the stress types for all countries, smallest $F(3,102) = 56.04$, $p < .001$, $\eta^2_p = .622$. Paired t-tests conducted on the stress types for each country, separately, using a Bonferroni correction ($p = .05/30 = .001$), revealed significant differences between stress types for parents in all low-to-medium-income countries (Bangladesh, Kenya, Zambia), with pessimism being highest, and physical problems lowest. For parents in Greece, pessimism was also high, as was child limitations. However, for UK parents the pattern was different, with stress due to physical limitations being lower than the others, but no other differences being significant.

Table 5 about here

When correlations between autism severity (ABC), as well as total behaviour problems (SDQ), and parenting stress were calculated for each country, using a Bonferroni correction ($p = .05/40 = .001$), quite different patterns of relationships were seen for each country (as indicated in Table 5). All relationships between autism severity, child behaviour problems, and stress types were significant for parents in Bangladesh. For parents in Zambia, autism severity only correlated with stress from family problems, and behaviour problems correlated with stress from pessimism and stress from child problems. For Kenyian parents, autism severity correlated with stress form pessimism and stress from child problems, and

behaviour problems correlated with stress from child problems. For parents in Greece, autism severity correlated with most stress types except physical limitations, but behaviour problems only correlated with child stress problems. In the UK, autism severity correlated with no aspects of stress, and behaviour problems correlated with pessimism.

Coping Strategies

Table 6 about here

Table 6 displays the whole-sample means (standard deviation and range) for the five coping strategies (FCOPES), and family routines (FBI), along with the Pearson correlations between these variables and parenting stress (QRS), perceived autism severity (ABC), child behaviour problems total (SDQ), child internalising problems (SDQi), and child externalising problems (SDQe). These data show that passive appraisal and mobilising family support tended to be used to a greater extent than the other strategies across the sample. A one-way ANOVA revealed a significant different between these scores, $F(4,712) = 9.78$, $p < .001$, $\eta^2_p = .052$. Paired t-tests with a Bonferroni correction ($p = .05/10 = .005$) revealed that passive appraisal was used more than all other strategies except mobilising family, and the mobilising the family was used more than social support. No other comparisons were significant.

Pearson correlations between coping strategies and parenting stress (QRS), autism Severity (ABC), and child behaviour problems (SDQ), revealed few significant relationships. The exceptions were negative relationships between both reframing and passive appraisal with autism severity; and negative relationships between spiritual support and parenting stress, autism severity, and child behaviour problems. However, this pattern was not displayed across all countries, as shown in Table 7.

Table 7 about here

There were no reported relationships between coping strategies and parenting stress (QRS), autism severity (ABC), and child behaviour problems (SDQ) for parents in Bangladesh or Kenya. For parents in Zambia, passive appraisal was positively associated with behaviour problems, and mobilising the family was negatively associated with child behaviour problems. For parents in Greece, passive appraisal wase positively associated with parenting stress, whereas spiritual support and mobilising family support were negatively associated with parenting stress. In the UK, passive appraisal was positively associated with parenting stress, and reframing was negatively associated with autism severity.

Table 8 about here

Table 8 shows the average response per item on each of the coping strategies for each country, as well as the results of one-way ANOVAs between countries for each scale and subscale are also shown (using a Bonferroni correction, $p = .05/6 = .008$). These data show that there were significant differences for each coping strategy across the countries, with parents in Bangladesh and Kenya using reframing more often than parents in other countries. Parents in Bangladesh used passive appraisal less than parents in other countries. Kenyan parents tended to use social support less than those in other countries. Zambian and Kenyan parents used spiritual support more often than parents in other countries, with this strategy not being utilised often by parents in the UK.

Further analysis determined any differences in the most used coping styles for each country. A two-factor mixed model ANOVA (country x coping style) revealed significant

main effects of country, $F(4,174) = 10.50$, $p < .001$, $\eta^2_p = .194$, and coping style, $F(4,696) = 16.28$, $p < .001$, $\eta^2_p = .086$, as well as a significant interaction between the two factors, $F(16,696) = 27.64$, $p < .001$, $\eta^2_p = .388$. Separate one-way repeated-measures ANOVAs performed on the stress types for each country revealed significant differences between the stress types for all countries, smallest $F(4,132) = 7.63$, $p < .001$, $\eta^2_p = .168$. Paired t-tests conducted on the stress types for each country, separately, using a Bonferroni correction ($p = .05/50 = .001$), revealed reframing was higher than all types, and passive appraisal lower than all types, for parents in Bangladesh. For parents in Zambia and Kenya using social support was lower than all other coping strategies. For parents in Grece reframing was used less than any other style, and mobilising the family used more than any other style. In the UK, seeking spiritual support and reframing were used less often than other strategies.

Coping as mediator between autism, behaviour problems and parenting stress

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Figure 1 about here

Figure 1 shows the results of an initial exploratory mediation analysis using PROCESS Model 4 (Hayes, 2023) for SPSS v26. The relationship between autism severity and passive appraisal was significant and positive ($\beta = -.033$, $t = 2.29$, $p = .025$; LL:UL = .004:.062), as was the relationship between autism severity and seeking social support ($\beta = -.065$, $t = 2.40$, $p = .018$; -.119:-.011). There were no other significant relationships between autism severity and the mediators. There was a significant negative relationship between passive appraisal and parenting stress ($\beta = -.683$, $t = 2.24$, $p = .029$ -1.293:-.074), and between spiritual support and parent stress ($\beta = -.583$, $t = 2.22$, $p = .030$ -1.110:-.058). No other mediator had a significant relationship with parenting stress. There was a significant

direct relationship between autism severity and parenting stress (*effect* = .108, $t = 3.21$, $p = .002$; .041:.176), which was not mediated by any coping styles.

Figure 2 about here

Figure 2 shows the results of an initial exploratory mediation analysis using PROCESS Model 4 (Hayes, 2023) for SPSS v26. The relationship between child behaviour problems and seeking social support was significant and negative ($\beta = -.067$, $t = 2.38$, $p = .020$; -.123:-.011). There were no other significant relationships between child behaviour problems and the mediators. There were no significant relationships between the mediators and parenting stress. There was a significant direct relationship between child behaviour problems and parenting stress (*effect* = .099, $t = 4.86$, $p < .001$; .058:.139), which was not mediated by any coping style.

Discussion

To current study collected cross-sectional data on stress and coping across five diverse countries, with the aim of allowing levels of parenting stress, the adoption of coping styles, and the impact of coping style on parenting stress, for parents of children with ASD to be compared across those countries. This study is one of the first explorations of these effects, and was conducted to help redress the imbalance in data on such topic from higher-income and low-to-middle income countries (Hossain et al, 2017; Makino et al., 2021). In particular, the study aimed to explore differences in levels of parenting stress and types of coping strategy across countries, and any differences in the relationships between coping style and stress. It was thought that cultural and familial perceptions and expectations may impact parenting stress and coping styles linked to having a child with ASD (Dyches et al., 2004;

Durkin et al., 2015; Matson et al., 2017; Rahman et al., 2019), and these data were the first exploration of that issue within a single study. However, given the exploratory nature, these findings should be regraded as tentative, and pointing to areas for further study.

The study replicated findings from higher-income countries showing that parenting stress for parents of children with ASD was high (Alhwaiti, 2024; Barroso et al., 2018; Dabrowska & Pisula, 2010; Osborne & Reed, 2010). In addition, not only did parenting stress appear high in the current samples from Greece and the UK (Osborne & Reed, 2010; Ntre et al., 2022), but similar high levels were reported in the samples from Bangladesh (Akter et al., 2020; Uddin & Ashrafun, 2023), Kanya (Kiambati et al., 2025; Masaba et al., 2021), and Zambia (Ncube, 2020). This corroborates several other examinations of parenting stress conducted in low-to-medium income countries (Aktar et al., 2020; Joshua et al., 2019; Ncube, 2020; Washington-Nortey & Serpell, 2021). The only cross-country difference of note was that overall parenting stress was highest in the UK, which also has the most developed level of ASD services (whether those two things are causally related or not cannot be determined from the current data set). Thus, there reasons to suspect that country is not a major factor in producing parenting stress, but that this may relate more to issues with child characteristics and perceived lack of resources, which are similar across countries irrespective of income level (Diana et al., 2025; Mustary & Reed, 2025)

The samples in all countries reported high levels of parenting stress as this related to pessimism. Although care is needed in generalising from a relatively small sample, pessimism was highest in Bangladesh, and lowest in Greece and the UK. This may reflect the presence of better developed health and social care in the higher-income countries, buffering (to some extent) against future concerns (Kiambati et al., 2025; Musary & Reed, 2025; Uddin & Ashrafun, 2023). Stress in the UK sample was more related to the impact of the child on the rest of the family than observed in other countries; although this association

that was also present in other countries, it occurred to a lesser degree. Physical limitations of the child did not appear to be a great source of stress for parents in any country, but this was most felt by parents in the UK. These latter two findings suggest that the social and physical limitations produced by the child with ASD were a greater source stress for those in the UK. It is difficult to know what factors contribute towards this perceived stress in the UK; perhaps people in the UK are less tolerant of such limitations and expect them to be rectified by a relatively well-developed health service (Mustary & Reed, 2025; Reed et al., 2024). Whatever the explanation, it may be that it is higher-income countries that are 'different' from most of the rest regarding the sources of parenting stress connected with ASD, and this suggests care is needed in extrapolating theories about family dynamics based on data only from such countries. Of course, this is speculative, and more data will be required.

There were cross-country differences indicated by the current data concerning whether parenting stress appeared to be related to autism severity or behaviour problems. Aspects of parenting stress (albeit different ones) were related to ASD severity for all countries, except for the UK sample. In contrast, behaviour problems were related to parenting stress for all the countries. An apparent lack of impact of ASD severity on parenting stress has previously been noted for the UK and also for the USA (e.g., Lecavalier et al., 2006; Osborne & Reed, 2009b; but see Eisenhower et al., 2005; Pastor-Cerezuela et al., 2016). Such a relationship was present for other countries, suggesting that ASD severity may have greater worldwide significance than it does for higher-income countries. It may be that greater knowledge about ASD in the UK mitigated stress connected to the symptoms of ASD per se. It has been found that public and professional knowledge about ASD is poor in low-to-medium income countries (Ayyash et al., 2023; Nyoni, 2022; Uddin & Ashrafun, 2023). Although this may also be perceived in higher-income countries (Halki et al., 2024; Mustary

& Reed, 2025), the current data support this as a factor contributing to stress in the former countries.

With regard to the coping strategies employed, ‘passive appraisal’ appeared to be the most often used, with ‘mobilising family’ being used more than ‘social support’. This supports previous findings from several separate low-to-medium impact counties (Ayyash et al., 2023; Diana et al., 2025; Joshua et al., 2019). There were negative relationships between both ‘reframing’, and ‘passive appraisal’, with autism severity; and negative relationships between ‘spiritual support’ and parenting stress, autism severity, and child behaviour problems. Such relationships have not been examined previously for low-to-medium income countries, and suggest that the worse the ASD severity, the harder these strategies are to adopt. The only cross-country differences apparent were that ‘reappraisal’ strategies were used less in higher-income countries (Greece, UK) than in low-to-medium-income countries (Bangladesh, Kenya, Zambia). This could reflect a greater reliance and expectancy of external support from better-developed services in the UK comparted to other countries (Reed et al., 2025). ‘Seeking spiritual support’ was used less in the UK than any other country. Given the relative lack of religiosity, and greater secular resources, in the UK this is not surprising. The higher levels of spiritually-based coping in countries accept the UK corroborates that such strategies are important to consider in most contexts in low-to-medium income countries (Ayyash et al., 2023; Baloyi et al., 2024; Daulay et al., 2025; Diana et al., 2025; Karim et al., 2025; Kiambati et al., 2025; Musayaroh et al., 2024), as well as in more religious higher-income countries like Greece and the USA (Alhwaiti, 2024; Halki et al., 2024). Thus, once again, the conclusion is that gross generalisation across categories such as low-to-medium versus higher income countries can obscure important differences between countries.

Although the mediation analysis was exploratory, and caution is needed in its interpretation given the sample size, the results did generate some interesting findings that are worthy of further exploration. The direct relationship between autism severity and parenting stress was significant, revealing higher ASD impairment predicted more parenting stress, aligning with prior research (Pastor-Cerezuela et al., 2016). However, counter to hypotheses, this effect was not mediated by any examined coping strategy or household routines. The direct relationship between child behavior problems and parenting stress was significant, indicating higher levels of child behavior issues predicted increased parenting stress. This aligns with a substantial literature documenting challenging behaviors among children with ASD commonly increase caregiver stress across cultural settings (Pastor-Cerezuela et al., 2016). However, as with autism severity, results indicated that none of the five examined coping strategies mediated the relationship between behavior and stress. This contrasts with some prior studies suggesting certain adaptive coping styles may buffer parenting stress for ASD caregivers (Zaidman-Zait et al., 2020).

The reasons behind the non-significant mediating effects are unclear. Potentially coping styles captured variance directly associated with behavior severity, overlapping rather than buffering impact. The restricted range and cultural specificity of coping measures may have obscured effects as well. It is also possible that child behavioral fluctuations superseded any usual benefits of routine. Replication with larger, more diverse groups, is warranted. To interpret the mediational findings related to coping and family routines appropriately, the study's limitations must be transparently acknowledged as well. The small convenience sample risks bias. Broader cultural contexts surrounding parenting an autistic child were unexamined. Such factors likely influence conceptualizations, responses to stressors, and perceived social support.

There are several limitations to the current study that need to be acknowledged. The sample size was relatively greater overall, but within each country this was only moderate. For example, the achieved power of correlations conducted between variables within each country ($p<.05$, $r=.3$) was 49%. The relatively small numbers of participants within each country precluded any more detailed analysis of the data, such as performing mediation analysis, multilevel modelling, or conduct of analyses to ensure measurement invariance of the variables across countries (Zhao et al., 2024). Analysing measurement invariance of scales across countries has been noted as of some importance to bolster cross-country comparisons in the context of ASD (Chee et al., 2024; Stevanovic et al. 2021). Many scales do not possess evidence relating to this construct (Stevanovic et al. 2021), and without knowing the degree of invariance, it can be hard to interpret any cross-country comparisons. The lack of ability to conduct meaningful measurement invariance does produce some caution in cross-country comparisons using these questionnaires. There were some differences in the demographics of the families in the sample (see Table 1). The impact of these differences on the data is unclear, but this could be further studied with greater sample numbers. Further study with greater numbers and statistical power would be useful. If future studies are to be conducted online to increase numbers, then incorporating some form of validity check for the data to guard against multiple submissions (Levi, Ridberg, Akers, & Seligman, 2022; Schneider, Ahuja, Dietch, Folan, Coleman, & Bogart, 2024). However, given the rate of response, and the targeted nature of the recruitment, this is not likely a factor in the current study, but studies with larger samples and broader sampling strategies could include such a validity check. Increasing the numbers of participants may also allow exploration at a cultural, rather than country, level – the two are not the same, and each country to greater or lesser extents contains multiple cultures.

It would also be useful to explore whether these findings would be replicated when using a different set of tools to explore these aspects of child and parent functioning and behavior. There is always the possibility that one or more of the questionnaires is not appropriate to a particular country (or culture within a country), and systematic replication with different tools would be helpful. The current study did not perform any explicit cultural validation of the questionnaires beyond the checks made in the translation process. It may be that different cultures within each country require different methods to assess the same construct, and future studies may examine this issue. One method that could be employed to achieve this analysis is through focus group interviews about the questionnaires within each country, or better, within each culture (see Mustary & Reed, 2025; Ntre et al., 2022). However, this would require a much greater sample size.

Notwithstanding these caveats, the current results do have some implications for clinical or family support interventions. It is clear that parents of children with ASD, across the world, experience high levels of parenting stress. Such parenting stress is known to be harmful to their wellbeing (Reed et al., 2016), but also to the progress of their child with ASD (Osborne et al., 2008). This implies that more resources need to be directed at supporting these parents. What these resources could be will depend on the level of support that is feasible in the country's economic circumstances, but it should noted that peer support can be effective in alleviating stress, is relatively cost free, and would certainly be acceptable given the reported coping strategies involving social support in the current results. It may be that community-based and community-initiated support systems would have greater chances of success given the relative failures of governments to implement or fulfil their espoused aims with regard to ASD.

These results allow a first comparison of such countries, and provide much needed exploratory data on these import aspects of parenting wellbeing in relation to having a child

with ASD. These data suggest a degree of similarity across most aspects of parenting across diverse countries, although some atypical results from the UK may mean caution is needed in drawing generalised conclusions from such higher-income countries. However, further inquiry is imperative exploring sociocultural determinants and processes that may exacerbate or mitigate how core features of ASD translate into caregiver outcomes over time and settings. Such knowledge can inform contextualized supports to aid diverse families navigating autism worldwide.

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Table 1: Mean (standard deviation) demographic characteristics of the parents in each country. Family = number of family members; Sibs = number of siblings; Married = percentage married; father degree – percent fathers with degree; Mother degree = percent others with degree; Father skill/prof = percent fathers in skilled or profession occupation; Mother skill/prof = percent mothers in skilled or profession occupation.

	Age	Family	Sibs	Married	Father degree	Mother degree	Father skill/prof	Mother skill/prof
Bangladesh	40 (8)	4.1 (0.9)	1.3 (1.0)	80%	97	87	76	86
Zambia	38 (9)	5.4 (1.7)	1.3 (1.2)	84%	60	63	73	88
Kenya	36 (8)	4.1 (1.2)	1.6 (1.1)	81%	85	76	82	83
Greece	39 (5)	3.8 (0.8)	0.9 (0.6)	91%	51	65	70	57
UK	46 (6)	3.8 (1.2)	1.2 (0.8)	52%	87	82	47	81
	F = 2.14	F = 10.53 *	F = 2.09	X^2 = 32.32 *	X^2 = 41.11 *	X^2 = 7.87	X^2 = 8.45	X^2 = 27.68 *

*p<.001

Table 2: D**emographic characteristics of the children in each country. Gender (male) = percentage male children in sample; Age = mean years (standard deviation; range) of sample.**

	N	Gender (male)	Age
Bangladesh	40	34 (85%)	9.7 (3.3; 5 – 16)
Zambia	38	27 (71%)	8.6 (4.1; 3 – 16)
Kenya	40	31 (78%)	9.1 (4.2 3 – 16)
Greece	38	31 (82%)	7.5 (3.4; 3 – 16)
UK	40	27 (68%)	9.3 (3.0; 4 – 16)
		$X^2 = 4.61$	$F = 5.34$*

*$p<.01$

Table 3: Means (standard deviation and range) for sample parenting stress (QRS), perceived autism severity (ABC), child behaviour problems total (SDQ), child internalising problems (SDQi), and child externalising problems (SDQe). Pearson correlations are also displayed.

	Mean (SD; range)	ABC	SDQ	SDQi	SDQe
QRS	29.5 (8.6; 5 – 48)	.438***	.462***	.472***	.388***
ABC	79.7 (35.9; 0 – 177)		.697***	.602***	.661***
SDQ	19.2 (6.8; 0 -24)			.907***	.840***
SDQi	9.3 (3.7; 0 – 17)				.608***
SDQe	9.9 (3.6; 2 – 19)				

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

Table 4: Means (standard deviations) for parenting stress total for each country, as well as mean (standard deviation) for the average response per item on each of the parenting stress subscales. Results of one-way ANOVAs between countries for each scale and subscale are also shown.

QRS	Total	Family impact	Pessimism	Child	Physical
Bangladesh	30.7 (8.2)	.52 (.22)	.83 (.14)	.61 (.17)	.12 (.09)
Zambia	28.7 (8.7)	.51 (.24)	.73 (.21)	.54 (.21)	.13 (.10)
Kenya	28.5 (8.9)	.48 (.24)	.72 (.22)	.59 (.18)	.14 (.11)
Greece	25.7 (3.0)	.40 (.29)	.62 (.22)	.54 (.21)	.18 (.09)
UK	33.8 (3.0)	.67 (.10)	.65 (.12)	.64 (.08)	.24 (.06)
ANOVA	$F = 5.12$ $p < .001$ $\eta^2_p = .10$ Tukey's HSD: UK > Z, K, G	$F = 7.81$ $p < .001$ $\eta^2_p = .145$ Tukey's HSD: UK > rest	$F = 7.65$ $p < .001$ $\eta^2_p = .142$ Tukey's HSD: B > K, G, UK	$F < 1$, NS	$F = 10.38$ $p < .001$ $\eta^2_p = .183$ Tukey's HSD: UK > rest

Table 5: Significant correlations between stress subtypes and autism severity (ABC) and total child behaviour problems (SDQ) for each country.

	Autism Severity (ABC)	**Behaviour Problems (SDQ)**
Family	Bangladesh (+ve) Zambia (+ve) Greece (+ve)	Bangladesh (+ve) UK (+ve)
Pessimism	Bangladesh (+ve) Kenya (+ve) Greece (+ve)	Bangladesh (+ve) Zambia (+ve) UK (+ve)
Child	Bangladesh (+ve) Kenya (+ve) Greece (+ve)	Bangladesh (+ve) Zambia (+ve) Kenya (+ve) Greece (+ve) UK (+ve)
Physical	Bangladesh (+ve)	Bangladesh (+ve) UK (+ve)

Table 6: Means (standard deviation and range) for sample coping strategies (FCOPES) and family routines (FBI), along with the Pearson correlations between these variables and parenting stress (QRS), perceived autism severity (ABC), child behaviour problems total (SDQ), child internalising problems (SDQi), and child externalising problems (SDQe).

Strategy	Mean (SD; range)	QRS	ABC	SDQ	SDQi	SDQe
Reframing	.68 (.18; .05 – 1.0)	-.134	-.258***	-.162	-.199	-.180
Appraisal	.71 (.18; .25 – 1.0)	.100	-.249***	-.158	.060	.247***
Social	.66 (.16; .20 – 1.0)	-.044	.131	.022	.032	.009
Spiritual	.64 (.24; .20 – 1.0)	-.311***	-.442***	-.430***	-.353***	-.445***
Mobilising Family	.75 (.17; .20 – 1.0)	-.189	-.058	-.174	-.174	-.177
Routines	.49 (.11; .25 - .79)	.154	-.190	-.100	-.110	-.223

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

Table 7: Significant correlations between coping types and total parenting stress (QRS), autism severity (ABC), and total child behaviour problems (SDQ) for each country. +ve = positive correlation; -ve = negative correlation.

	Parenting Stress (QRS)	Autism Severity (ABC)	Child Behaviour Problems (SDQ)
Reframing		UK (+ve)	
Appraisal	Greece (+ve) UK (+ve)		
Social			
Spiritual	Greece (-ve)		
Family	Greece (-ve)		Zambia (-ve)
Routines			

Table 8: Means (standard deviations) for average response per item on each of the coping strategies for each country. Results of one-way ANOVAs between countries for each scale and subscale are also shown.

	Reframing	**Passive**	**Social**	**Spiritual**	**Family**
Bangladesh	.89 (.11)	.54 (.14)	.67 (.12)	.69 (.17)	.74 (.16)
Zambia	.71 (.14)	.77 (.19)	.60 (.14)	.81 (.16)	.71 (.19)
Kenya	.81 (.14)	.71 (.18)	.55 (.16)	.77 (.19)	.76 (.21)
Greece	.49 (.12)	.73 (.13)	.75 (.16)	.64 (.17)	.86 (.13)
UK	.53 (.08)	.79 (.13)	.74 (.08)	.35 (.18)	.75 (.12)
ANOVA	$F = 53.94$ $p < .001$ $\eta^2_p = .549$ Tukey's HSD: B & K > Z > G & UK	$F = 14.93$ $p < .001$ $\eta^2_p = .253$ Tukey's HSD: B < rest	$F = 14.24$ $p < .001$ $\eta^2_p = .244$ Tukey's HSD: Z < B; K < rest	$F = 39.81$ $p < .001$ $\eta^2_p = .378$ Tukey's HSD: UK < rest; G & B < Z & K	NS

Figure 1: Schematic representation of mediation analysis relating autism severity (ABC) to parenting stress (QRS) mediated by five coping styles (FCOPES) and family routines (FBI).

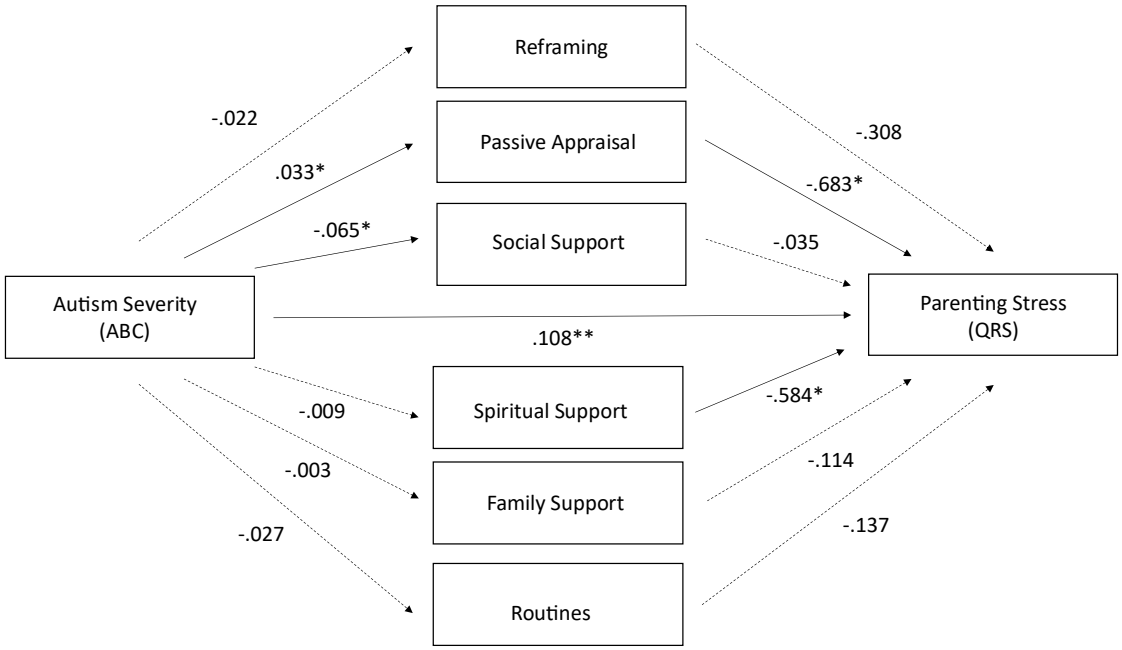

Figure 2: Schematic representation of mediation analysis relating child behaviour problems (SDQ) to parenting stress (QRS) mediated by five coping styles (FCOPES) and family routines (FBI).