Predictors of Change in Children’s Internalising and Externalising Behaviour Before and During the Initial COVID-19 Lockdown in the UK and Turkey: A Cross-cultural Examination

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Research Article

Keywords: COVID-19, UK, Turkey, internalising, externalising, worry of infection, family coexistence, culture

Posted Date: January 7th, 2022

DOI: https://doi.org/10.21203/rs.3.rs-1184183/v2

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Predictors of Change in Children’s Internalising and Externalising Behaviour Before and During the Initial COVID-19 Lockdown in the UK and Turkey: A Cross-cultural Examination

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Conflict of interest: the authors report not conflict of interest

Acknowledgements: the authors would like to thank the families for their participation in the study
Abstract

Background: The COVID-19 pandemic has had a profound effect on the mental health and wellbeing of children and young people. Culture can influence emotional and behavioural responses to the pandemic and its consequences, but research is primarily focused on single culture experiences. The study examined the impact of caregiver emotional responses to the pandemic and the lockdown on child mental health and wellbeing in two culturally different countries that were severely affected by the pandemic: UK and Turkey.

Method: Participants were 1849 caregivers of children between 5- and 12-years old living in the UK (n= 995) and Turkey (n = 854), who completed a 20-min electronic survey on child and family wellbeing distributed via social networks during the initial phase of the COVID-19 lockdown (July and August 2020).

Findings: Worry of COVID-19 infection was higher amongst caregivers in the Turkish sample and it independently predicted change in children’s internalising behaviour in the Turkish sample only even after controlling for caregiver and child mental health, and caregiver perceived risk of COVID-19 infection. Caregivers in the UK sample reported more difficulty with family coexistence during the stay-at-home orders. However, difficulty with coexistence independently predicted change in children’s externalising and internalising symptoms before and during the lockdown in both samples. The study revealed cross-cultural differences in the predictors of change in children’s internalising and externalising behaviour before and during the initial national COVID-19 lockdown.

Keywords: COVID-19, UK, Turkey, internalising, externalising, worry of infection, family coexistence, culture
Introduction

The outbreak of COVID-19 saw a worldwide implementation of fierce social distancing measures including national lockdown and self-isolation. The United Kingdom (UK) and Turkey were amongst the most seriously affected countries worldwide (Worldometer Statistics, 2020). The COVID-19 lockdown has had an unprecedented impact on the psychological wellbeing of children and young people in both countries (Adibelli & Sümen, 2020; Creswell et al., 2021; Panchal et al., 2021), making the identification of the factors that predict it an important research and policy imperative. Because different countries reacted differently to the lockdown, cross-country generalisations about its impact should be avoided and more research on country-specific factors that may have influenced its effect is required to fully understand it (Fernandez Ruiz, 2021; Maaravi et al., 2021; San et al., 2021). Cultural factors can shape emotional and behavioural reactions to the pandemic and its consequences (Burkova et al., 2021). Western European cultures are known to promote individualist values of independence and self-reliance whereas the collectivist values of interdependence, compliance, and inhibition dominate in non-Western European cultures (Green et al., 2005). Because children are influenced by families which are nested within wider sociocultural systems of influence (Prime et al., 2020), the cross-cultural examination of caregiver emotional and behavioural reactions to the lockdown can reveal determinants of child mental health and wellbeing that are culture specific. Compared with the UK culture, which is more individualistic, the Turkish culture is relatively collectivist (Hofstede et al., 2005). The two countries offer a natural experiment to examine cultural variability in caregiver response to the COVID-19 pandemic and its impact on child mental health and wellbeing during and before the lockdown.

Worry of COVID-19 infection was a pandemic related challenge which while it encouraged adoption of preventive measures in some countries (Harper et al., 2020; Yıldırım et al., 2021), it was found to be associated with psychological distress in the population (Fitzpatrick et al., 2020; Kayis et al., 2021; Satici et al., 2020a). Additionally, caregiver fear of the threat posed by COVID-19 was associated with poor child mental health (Spinelli et al., 2020). Previous research suggests that perception of an imminent threat including illness related threat and associated worry is more acute in situations of low tolerance to uncertainty (Taha et al., 2014; Nabi & Myrick, 2019; Witte & Allen, 2000). Hofstede et al., (2005, p. 206) define tolerance to uncertainty as the extent to which the members of a culture feel threatened by ambiguous or unknown situations and their research has shown that there is a tendency for collectivism to be associated with less tolerance to uncertainty. Because the Turkish culture is based on collectivism, it is plausible that Turkish caregivers were more worried of
being infected compared to caregivers in the UK, a country which is culturally individualistic. Findings from two surveys carried out in Turkey link worry of COVID-19 infection with worry of uncertainty (Satici et al., 2020b; Pak et al., 2021). Additionally, a large survey of 15–25-year-olds found that worry of infection was higher in Turkey compared to migrant and non-migrant Austrians (Akkaya-Kalayci et al., 2020). To our best of our knowledge, we are not aware of studies which have examined caregiver worry of COVID-19 infection and its impact on children’s emotions and behaviour during the lockdown across cultures.

The lockdown was a public health measure adopted by many countries worldwide to mitigate the spread of the virus which led families to spend extended periods of time together in home confinement. Research to date, shows that families in several European countries (Italy, Spain, and Belgium; Orgilés et al., 2020; Stassart et al., 2021) and the UK (Morgül et al., 2020) struggled to cope with family coexistence. Additionally, in the UK, the families who struggled most were more likely to report that their children’s behaviour and emotional state had changed for the worse since the lockdown had started (Morgül et al., 2020). Because collectivism promotes interdependence in the family unit and strong family ties (Hofstede, 2001), it is plausible that the experience of coexistence during the lockdown amongst families in collectivist cultures may have not been perceived as challenging as amongst families in individualistic cultures, and as a result, was not a significant predictor of change in children’s outcomes during the lockdown. The cross-cultural examination of family coexistence difficulty and its effect on children’s emotional and behavioural outcomes will help understand better the influence of the lockdown on children’s mental health and wellbeing.

The present study

To understand better cultural influences on the impact of the COVID-19 pandemic and the lockdown on children’s mental health and wellbeing we compared caregiver worry of infection and family coexistence difficulty between caregivers in the UK and Turkey and examined their effect on children’s emotional and behaviour outcomes. Because caregiver mental health (Brown et al., 2020; Li & Zhou, 2021; Saddik et al., 2021; Westrupp et al., 2021), parenting stress (Babore et al., 2021; Brown et al., 2020; Lee et al., 2021; Spinelli et al., 2021; Provenzi et al., 2021; Cohodes et al., 2021), child emotional and behavioural difficulties (Raw et al., 2021), and risk of infection (Yıldırım et al., 2021; Yıldırım & Güler, 2021; 2020; Xin et al., 2020; Kim et al., 2020; Zhou et al., 2020) have been consistently associated with poor social and emotional wellbeing during the lockdown across different countries, the study accounted for their associated effects.
Methods

Participants and procedures

A total of 1849 caregivers between 18 to 61 years old living in the UK (n = 995; M_{age} = 39.16 years, SD = 5.62) and in Turkey (n = 854; M_{age} = 38.25 years, SD = 4.73) completed a 20-min electronic survey on child and family wellbeing distributed via social networks (e.g., Facebook, Instagram), e-mail, and messaging groups (e.g., Whatsapp) between the 14th of July 2020 and the 14th of August 2020. Survey development details can be found in Morgül et. al. (2020). The study was approved by the University of Roehampton Research Ethics Committee (PSYC 20/ 367). Participant characteristics are presented in Table 1. In the UK sample, caregivers were mostly of White ethnic background (91.9%), and in the Turkish sample of Turkish ethnic background (90.4%). Across both samples most caregivers were married (n_{UK}=738, 74.2%; n_{TR}=811, 95.0%), in employment (n_{UK}=724, 72.8%; n_{TR}=496, 58.1%), and had at least a university degree (n_{UK}=760, 76.4%; n_{TR}=665, 77.9%). Children were (n_{boysUK}= 546, 54.9%; n_{boysTR} = 423, 49.5%) between 5 to 12 years old (M_{ageUK} = 7.48 years; SD =2.05; M_{ageTR} = 7.86 years, SD=2.24). In the Turkish sample, most children were attending independent schools (49.1%) whereas in the UK sample the majority was attending state schools (89.5%).

Measures

Caregiver worry of COVID-19 infection and family coexistence difficulty: Caregivers answered four questions about worry of getting infected (e.g., Have you ever worried about being infected with COVID-19 during the recent coronavirus outbreak period?) using a five-point rating scale (1 = never thought about it - 5 = worried about it all the time). A total infection worry score was calculated by adding participant responses to the four questions (range: 4 - 20). Internal reliability of the total infection worry scores for each sample was good (Cronbach’s α = .87_{UK}; .91_{TR}). Caregivers indicated how difficult coexistence was on a 5-point rating scale (1=very easy - 5=very difficult).

Change in child emotions (internalising) and behaviour (externalising) before and during the lockdown: Caregivers indicated how much they thought their children’s emotions and behaviour changed during the lockdown by rating 23 emotional and behavioural symptom items on a five-point scale (1 = much less compared to before quarantine; 2 = somewhat less compared to before quarantine; 3 = stayed the same; 4 = somewhat more compared to before quarantine; 5 = much more
compared to before quarantine) (Morgül et al., 2020). To examine the proportion of children whose emotional and behavioural symptom-items changed, a categorical variable was created based on the child’s score (no change score = 1-3; change score = 4-5).

We used exploratory (EFA) and confirmatory factor analyses (CFA) in line with Worthington and Whittaker (2006) to create a total child emotional and behaviour change score before and during the lockdown. Each sample was randomly divided into two equal sub-samples. For each sample, we tested the factor structure on the first sub-sample using EFA and then replicated the structure in the second sub-sample using CFA ($n_{EFA, UK} = 507$, $n_{EFA, TR} = 438$; $n_{CFA, UK} = 488$, $n_{CFA, TR} = 416$). EFA was conducted using a principal axis factoring analysis on the first sub-sample to investigate the underlying factor structure of the 23 items. In both countries, the Kaiser-Meyer-Olkin (KMO$_{UK} = .93$; KMO$_{TR} = .93$) measure of sampling adequacy was above the commonly recommended value of .60 and the Bartlett’s test of sphericity was significant suggesting that the sample were appropriate for the factor analysis (Henson and Roberts, 2006). Preliminary correlation analysis showed that majority of the correlation coefficients of the items My child has no appetite, My child eats a lot, and My child is quiet were lower than the suggested minimum level of .30 (Table 2a & Table 2b) (Tabachnick & Fidell, 2007). Therefore, these three items were not used further in the analysis. The remaining 20 items were subjected to oblique promax rotation, since the factors were assumed to be correlated (Costello & Osborne, 2005). The items having factor loadings greater than .30 were retained in the factor structure (Tabachnick & Fidell, 2007; Worthington & Whittaker, 2006). Item communalities were above the accepted value of .40 (range: .45 to .85) (Osborne et al., 2008). The number of retained factors was based the Kaiser’s criterion (eigenvalues > 1.0) and inspection of the Cattell’s scree test (Tabachnick & Fidell, 2007). The EFA revealed 11 items with high loadings across both factors (range: .52 - .98) and samples explaining 69.2% and 68.6% of the total variance in the UK and Turkish sample, respectively (Table 3). The high factor loadings, communalities, and sample size corroborate the robustness of the EFA (Osborne & Costello, 2004).

CFA was conducted on the second sub-sample to identify the fit between our model based on the EFA results and the data of our second sub-sample. Various indices were used as standard measures of fit in CFA including the root mean squared error approximation (RMSEA), minimum discrepancy per degree of freedom (CMIN/DF), goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), normed fit index (NFI), the Tucker–Lewis Index (TLI) and comparative fit index (CFI). In general, threshold values of RMSEA less than .05 suggest “good” fit (Browne & Cudeck, 1992), values between .05 and .10 suggest “acceptable” fit (Browne & Cudeck, 1992; MacCallum et al., 1996), and
values larger than .10 suggest “bad” fit (Browne & Cudeck, 1992). CMIN/DF < 3 indicates an “acceptable” fit between hypothetical model and sample data (Kline, 2015) and CMIN/DF<5 indicating a “reasonable” fit (Marsh & Hocevar, 1985). GFI, AGFI, NFI, TLI and CFI > .9 indicate “good” levels of fit between data and model with more liberal criteria of .85 < GFI, NFI < .9 and .8 < AGFI < .9 indicating an acceptable model (Bentler, 1990; Cole, 1987; Marsh et al., 1988). In the CFA, a two-factor model based on data from 11 items showed an acceptable model fit in both countries (UK Sample: CMIN/DF = 3.62, GFI = .95, AGFI = .92, NFI = .96, TLI = .96, CFI = .97, RMSEA = .07; TR Sample: CMIN/DF = 4.48, GFI = .92, AGFI = .88, NFI = .93, TLI = .93, CFI = .95, RMSEA = .09).

According to broadband dimensions of emotional and behavioural difficulties in children and young people (Achenbach et al., 2016), in both samples, the six items loaded on Factor 1 reflected externalising symptoms and the five items on Factor 2 reflected internalising symptoms (Table 3). The items on each factor were summed up to create a total change score in internalising behaviour (range: 1 – 36; Cronbach’s α =.88UK; .90TR) and externalising behaviour (range: 1 – 30; Cronbach’s α =.92UK; .89TR) before and during the lockdown.

Covariates

Sociodemographic information and perceived COVID-19 infection risk: The first part of the survey included children’s and families’ sociodemographic characteristics (e.g., participant age, marital status, education level, ethnicity and child age, gender, school type) and questions about housing conditions (e.g., outdoor access, number of rooms and number of people living-in at home during quarantine). Caregivers indicated their COVID-19 risk status on a single multiple-choice question of four options (1= low risk: I do not know anyone who belongs to a risk group or There are friends/family being at-risk group, but not living with them; 2 = high risk: I belong to an at -risk group or People belonging to an at - risk group live with me).

Caregiver mental health: Caregivers completed the 21-item Depression, Anxiety, and Stress Scale (DASS-21; Lovibond & Lovibond, 1995). It includes three 7-item subscales that measure the emotional states of depression, anxiety, and stress rated on a 4-point scale (0 = did not apply to me at all - 3 = applied to me very much, or most of the time). The total score was calculated by adding the subscale scores (range: 0 – 63). High levels of internal consistency reliability were detected in both samples (Cronbach’s α =.94UK; .94TR).
**Parenting stress:** Caregivers completed the 18-item *Parental Stress Scale* (PSS; Berry & Jones, 1995). It comprises four subscales that examine parenting stressors (6 items), loss of control (3 items), satisfaction (3 items), and rewards (6 items) rated on a 5-point scale (1 = *strongly disagree* - 5 = *strongly agree*). Eight items are reverse scored. A total score is generated by adding the subscale scores (range: 18 – 90) and internal reliability was good in both samples (Cronbach’s α = .88 UK; .83 TR).

**Child emotional and behavioural difficulties:** Caregivers completed the parent-reported version of the 25-item *Strengths and Difficulties Questionnaire (SDQ)* (Goodman, 2001) developed for children between 4 and 17 years old. It comprises five subscales (emotional symptoms, conduct problems, hyperactivity, peer problems, and pro-social behaviour) of five items each rated on three-point scale (0 = *not true* - 2 = *certainly true*). A total difficulty score (range: 0-40) is generated by adding all the subscales, except for the pro-social behaviour scale. Internal reliability of the total scores for each sample was good (Cronbach’s α = .87 UK; .78 TR).

**Translation of instruments**

The Turkish versions of the SDQ and DASS-21 are publicly available at https://www.sdqinfo.org/py/sdqinfo/b0.py and https://toad.halileksi.net/olcek/depresyon-anksiyete-stres-21-olcegi, respectively. The remaining instruments were translated into Turkish from the original language (English) by the first author who is a native Turkish speaker and fluent in English, and they were checked for accuracy in meaning and cultural sensitivity by a translator who is a native English speaker and fluent in Turkish. Discrepancies were discussed and resolved by joint agreement of both translators.

**Data analysis**

Statistical analyses were performed using the IBM SPSS 26 (Statistical Package for the Social Sciences) and AMOS 18 (Analysis of Moment Structures). Because of missing data on a few emotional and behavioural symptom-items (≤5% of values were missing across 23 symptom-items), multiple imputation was performed using the Markov Chain Monte Carlo procedure in SPSS (Graham, 2012). Imputation of missing values was performed for symptom-items only. A preliminary screening of the data revealed no issues with multicollinearity, outliers, and normality (Tabachnick & Fidell, 2007). No collinearity was detected via variance inflation factor (VIF < 5) (Becker et al., 2015). The outliers
were tested, and no extreme values were identified, thereby no case was removed from the sample. To check for the assumptions of normality, skewness and kurtosis values were calculated for each of the study variables. Except for the kurtosis and skewness value of outdoor access, which is considered acceptable according to Hair et al. (2010) and Byrne (2010), none of the variables presented extreme skewness and kurtosis values falling outside the proposed threshold of ±2, suggesting a normal distribution for the study variables (George & Mallery, 2010).

For comparisons between the two samples, we used one-way analysis of variance (ANOVA) and independent groups t-tests for continuous variables, and Chi-squared tests for categorical variables. Differences were considered statistically significant at $p < .05$. Pearson correlations were calculated to analyse the relationship between the study variables. Hierarchical multiple regression analyses were used to examine the independent contribution of worry of infection and family coexistence difficulty to children’s externalising and internalising behaviour change before and during the lockdown.

Results

Between-country differences in participant characteristics

Differences are presented in Table 1. Compared to the caregivers in the Turkish sample, caregivers in the UK sample were older, and more likely to have a job, be lone/never married, belong to a small household (1-2 members), and live in houses with fewer rooms. No significant differences were found in level of education. Compared to children in the Turkish sample, children in the UK sample were older, more likely to be boys, and attend state schools. Children in the UK sample were reported to experience more behaviour and emotional difficulties than children in the Turkish sample. Additionally, caregivers in the UK sample reported more stress related to their parenting role. Caregivers in the Turkish sample were more likely to belong to a high-risk group for COVID-19 infection and to worry about getting infected, but less likely to have trouble with coexistence than caregivers in the UK sample. The proportion of caregivers who were married and had a higher education in the study samples was higher than in the national population of each country. The Turkish sample had a higher proportion of caregivers in employment and whose children attended private schools than the national population.
Table 4 presents differences in internalising and externalising behaviour before and during the lockdown between the two samples. There were no significant differences across samples in the total internalising behaviour change score. However, nearly one in two caregivers across both samples (range: 40% - 57%) reported significant change in children’s internalising symptoms. Additionally, compared to before the lockdown, children in the UK sample were reported to be more restless, and children in the Turkish sample more anxious. Although caregivers in the UK sample were slightly more likely than caregivers in the Turkish sample to report change in children’s externalising behaviour, around one in two caregivers across both samples (range: 48% - 57%) reported that their children were more argumentative, angry, and irritable during the lockdown than before.

Correlations between the study variables

Correlations are presented in Table 5. In both samples, increased change in internalising and externalising behaviour was associated with increased levels of family coexistence difficulty (Int: r<sub>UK</sub> = .40, r<sub>TR</sub> = .24; Ext: r<sub>UK</sub> = .44, r<sub>TR</sub> = .30), child emotional and behavioural difficulties (Int: r<sub>UK</sub> = .41, r<sub>TR</sub> = .26; Ext: r<sub>UK</sub> = .46, r<sub>TR</sub> = .31), caregiver mental health (Int: r<sub>UK</sub> = .25; r<sub>TR</sub> = .19; Ext: r<sub>UK</sub> = .36, r<sub>TR</sub> = .23) and parenting stress (Int: r<sub>UK</sub> = .26, r<sub>TR</sub> = .12; Ext: r<sub>UK</sub> = .35, r<sub>TR</sub> = .25). In the UK sample, more change in both internalising and externalising behaviour was associated with no higher education (r<sub>Int</sub> = -.12; r<sub>Ext</sub> = .10) and ethnic minority background (r<sub>Int</sub> = .07; r<sub>Ext</sub> = .09). Additionally, externalising behaviour change was associated with caregiver lone/never married (r<sub>UK</sub> = -.07) and caregiver young age (r<sub>UK</sub> = -.07). In the Turkish sample, more change in both internalising and externalising behaviour was associated with older age in children (r<sub>Int</sub> = .10), more change in internalising behaviour was associated with higher infection worry (r<sub>TR</sub> = .10), and more change in externalising behaviour with lack of outdoor access (r<sub>TR</sub> = -.07).

Association of caregiver reported change in children’s internalising and externalising behaviour during the lockdown with caregiver worry of COVID-19 infection and family coexistence difficulty

To identify the independent impact of worry of COVID-19 infection and family coexistence on children’s internalising and externalising behaviour change before and during the lockdown two hierarchical multiple regressions were conducted for each sample. Variables were included in the regressions if they were significantly associated with either internalising or externalising behaviour change in either country (Table 5). We entered the sociodemographic variables in the first step, caregiver mental health and parenting stress variables in the second step, child emotional and
behavioural difficulties in the third step, and caregiver response to COVID-19 pandemic variables in the fourth step.

A shown in Table 6, higher levels of worry of infection was significantly associated with more internalising behaviour during the lockdown, even after accounting for the effects of sociodemographic characteristics, caregiver reported COVID-19 infection risk, caregiver mental health and parenting stress, and child emotional and behavioural difficulties (Step 4). Caregiver mental health and child emotional and behavioural difficulties were significant predictors of children’s internalising behaviour change score in both samples while child age was as significant predictor in the Turkish sample only. In the Turkish sample, caregiver reported risk of infection stopped being a significant predictor of children’s internalising behaviour change score (Steps 1-3) when worry of infection was entered into the regression (Step 4). The model (Step 4) explained 23% and 11% of the variance in the UK and Turkish sample, respectively.

The regression analyses presented in Table 7, showed that more family coexistence difficulty was significantly associated with more externalising behaviour during the lockdown, even after controlling for the effects of sociodemographic characteristics, outdoor access, caregiver mental health and parenting stress, and child emotional and behavioural difficulties (Step 4). As well as family coexistence difficulty, child emotional and behavioural difficulties were a significant predictor of children’s externalising behaviour change score. Parenting stress, which was a significant predictor of change in children’s externalising score during the lockdown in both samples (Step 3), stopped being significant after family coexistence difficulty entered the regression (Step 4). The model (Step 4) explained 29% and 16% of the variance in children’s externalising behaviour change score in the UK and Turkish sample, respectively.

**Discussion**

Nearly half of the parents across both samples reported that the children’s internalising and externalising behaviour deteriorated significantly during the lockdown. This finding is in line with international literature which showed that children’s mental health and wellbeing got significantly worse during the lockdown (Christner et al., 2021; Feinberg et al., 2021). The children in the UK sample were overall slightly more impacted as their externalising behaviour change mean score was higher, and more caregivers in the UK than in Turkey reported change across all externalising
symptoms. Previous research on the prevalence of childhood mental health problems across European countries found that behaviour problems were less likely to be reported in Turkey (Husky et al., 2018; Kovess-Masfety, 2016). Because collectivist child socialisation goals aim to promote obedience (Louie et al., 2015) they may translate to lower rates of externalising behaviour. Hence, the differences may reflect genuine prevalence rates. Nevertheless, the range of the percentage of parents reporting change in how much children were irritable, argumentative, and angry was reflecting approximately one in two caregivers across both samples. This finding shows that the behaviours that were a major cause of concern for caregivers during the lockdown across both countries were the same and suggest that culture may not determine the type of challenging behaviour caregivers had to grapple with during the lockdown. Although, frustration as an emotional response to the lockdown has been reported often in western and non-western samples (Fernandez Ruiz, 2021; Tiwari et al., 2021) the proportion of caregivers who reported frustration in the UK sample was double the proportion of caregivers in the Turkish sample. The difference could reflect differences in the conceptual understanding of the term ‘frustration’, but further research is required to verify this assumption.

Caregivers in the Turkish sample were significantly more likely to report that they were worried of COVID-19 infection. To our knowledge, our study is the first to provide empirical evidence in support of the hypothesis that in collectivist cultures worry of COVID-19 infection might have been more prominent than in individualistic cultures. Previous research by Hofstede et al., (2005) has linked collectivism with less tolerance to uncertainty. The uncertainty created by the fast spread of the infection and public handling of the crisis during the initial period of the pandemic in Turkey (Pak et al., 2021; San et al., 2021) may have caused caregivers in Turkey to experience high levels of worry of COVID-19 infection. Additionally, our study showed that worry of COVID-19 infection was an independent predictor of change in children’s internalising behaviour before and during the lockdown in the Turkish sample, even after controlling for caregiver and child mental health and higher infection chance. This finding further emphasises the role of fear of COVID-19 infection that has been identified in Turkey to be an important predictor of psychological outcomes during the pandemic (Satici et al. 2020a; Kayis et al., 2021). Furthermore, it proposes that different pathways to child internalising difficulties are at work across different cultural contexts. Arguably, efforts to understand how the lockdown has impacted child mental health and family wellbeing across the globe should be informed by culturally sensitive research which considers the effects of the sociocultural context. Finally, our findings propose that public health strategies should aim to reduce worry and social panic in the face of imminent health crisis. In line with Huang et al., (2020) collectivism on its own is enough to encourage uptake of preventive practices.
Caregivers in the Turkish sample reported significantly less difficulty with family coexistence which can be attributed to its collectivist orientation that values interdependence and close-knit family ties (Kuşdil & Kağıtçıbaşı, 2000). Because interdependence in the family unit cultivates a sense of belongingness and purpose (Hofstede, 2001) spending time with the family during the lockdown may have not influenced families in collectivist societies as dramatically as in individualistic societies. Additionally, because collectivism promotes a strong sense of responsibility for the community and maintenance of social order it encourages high adherence to prevention measures (Cukur et al., 2004; Germani et al., 2020; Huang et al., 2020; Maaravi et al., 2021). The lockdown was one of the various public health measures that countries used to mitigate the spread of the virus. Families in collectivist cultures may have perceived the confinement yet another prevention strategy to adhere to and as a result were more tolerant to its impact. Another plausible explanation is that caregivers reported less difficulty because the children in the Turkish sample had fewer behaviour difficulties. Nevertheless, family coexistence difficulty made a unique contribution to the prediction of negative change in both internalising and externalising behaviour in both samples even after accounting for the effects of children’s emotional and behavioural difficulties. This finding supports the notion that collectivism may not buffer the harmful effects of the family coexistence imposed by the increases time at home as a result of stay-at-home orders.

Limitations

The cross-sectional design did not allow to examine the long-term impact of the lockdown in children’s internalising and externalising behaviour. Additionally, changes in children’s symptoms were based only on perceived parental report. Majority of participants were female university graduates. Additionally, half of the Turkish children were primarily attending private schools, which is not representative of the national population. Therefore, generalisation of the findings should be approached with caution. The study did not use any measures to examine collectivism vs individualism, and tolerance of uncertainty. Replication studies should include a longitudinal design, multi-informant methods of assessing children’s emotional state and behaviour and measures that capture cultural orientation.
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Table 1

Between-country Differences by Participant Characteristics

| Sociodemographics          | UK (n=995) | Turkey (n=854) | Test  | National Statistics |
|----------------------------|------------|----------------|-------|---------------------|
| Mother[^a^]                 | 982 (98.7) | 848 (99.3)     | 1.65  | 50.2 75.5           |
| Married[^b^]                | 738 (74.2) | 811 (95.0)     | 146.19*** | 42 43.4         |
| Higher education[^c^]       | 760 (76.4) | 665 (77.9)     | .28   | 40   43.4          |
| In employment[^d^]          | 724 (72.8) | 496 (58.1)     | 24.05*** | 75.2 45.8       |
| Boys                       | 546 (54.9) | 423 (49.5)     | 5.33* | 50   45.8        |
| State School[^e^]           | 891 (89.5) | 403 (47.2)     | 405.6*** | 91   94.8       |
| Housing Conditions          |            |                |       |                    |
| Small family[^f^]           | 57 (5.7)   | 17 (2.0)       | 29.23*** |                |
| Few rooms[^g^]              | 54 (5.4)   | 9 (1.1)        | 222.73*** |                |
| Outdoor access[^h^]         | 914 (91.9) | 777 (91.0)     | .45   |                    |
| Age                        | M (SD)     | M (SD)         | t     |                    |
| Caregiver                  | 39.16 (5.6)| 38.25 (4.7)    | 3.73*** |                |
| Child                      | 7.48 (2.1) | 7.86 (2.2)     | 3.78*** |                |
| Mental health and wellbeing|            |                |       |                    |
| Caregiver mental health (DASS) | 15.00 (11.84) | 15.63 (10.29) | -1.22 |           |
| Parenting stress (PSS)     | 42.71 (10.1)| 40.17 (8.8)   | 5.80*** |            |
| Child behaviour and emotional difficulties (SDQ) | 12.87 (7.2) | 10.92 (5.2) | 6.75*** |         |
| Response to COVID-19 and infection risk |     |                |       |                    |
| Coexistence difficulty     | 3.19 (1.1) | 2.93 (1.2)     | 4.97*** |                |
| Infection worry            | 12.11 (3.3)| 13.90 (3.1)    | 11.83*** |              |
| Low infection risk group[^i^] | 798 (80.2)  | 637 (74.6)    | 8.33**  |            |

Note:
[^a^] Mother/Father vs caregiver/step-parent.
[^b^] Married vs widowed/divorced/separated/never married.
[^c^] No qualifications vs non-higher education (up to high school at 16 years and college education) or higher education/postgraduate.
[^d^] In employment vs not in employment/lost job due to COVID-19
[^e^] State school vs independent school
[^f^] Small family (1 or 2 members) vs medium (3 or 4 members) or large (more than 5 members)
[^g^] Fewer rooms (1 or 2 rooms) vs average (3 or 4 rooms) or more (equal or more than 5 rooms)
[^h^] Outdoor access vs. no outdoor access
[^i^] Low-risk (not know anyone at risk/household member not at risk) vs high-risk (I am at risk/member of household at risk).
[^j^] UK stats: [https://www.ons.gov.uk/](https://www.ons.gov.uk/); Turkish stats: [https://www.tuik.gov.tr/Home/Index](https://www.tuik.gov.tr/Home/Index)

*p < .05, **p < .01, ***p < .001.
|       | 1     | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Worried              |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Restless             | .51** |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Anxious              | .69** | .62** |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Sad                  | .50** | .53** | .62** |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Nightmares           | .29** | .29** | .39** | .41** |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Reluctant            | .39** | .47** | .48** | .53** | .33** |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Lonely               | .35** | .45** | .45** | .52** | .31** | .46** |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Unhappy              | .52** | .57** | .66** | .59** | .40** | .50** | .55** |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Nervous              | .55** | .48** | .70** | .56** | .41** | .53** | .49** | .76** |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Argue                | .38** | .49** | .46** | .50** | .26** | .51** | .42** | .54** | .48** |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Quiet                | .19** | .21** | .26** | .28** | .26** | .31** | .24** | .30** | .32** | .16** |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Cries easily         | .38** | .43** | .45** | .51** | .32** | .43** | .39** | .54** | .51** | .52** | .28** |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Angry                | .44** | .53** | .52** | .53** | .33** | .50** | .42** | .58** | .51** | .75** | .19** | .63** |       |       |       |       |       |       |       |       |       |       |       |       |
| Frustrated           | .48** | .56** | .56** | .57** | .35** | .54** | .45** | .62** | .55** | .67** | .23** | .62** | .80** |       |       |       |       |       |       |       |       |       |       |       |
| Bored                | .34** | .44** | .38** | .45** | .21** | .42** | .50** | .46** | .40** | .50** | .22** | .41** | .46** | .51** |       |       |       |       |       |       |       |       |       |       |
| Irritable            | .44** | .57** | .52** | .57** | .32** | .54** | .45** | .59** | .50** | .71** | .22** | .59** | .75** | .75** | .59** |       |       |       |       |       |       |       |       |       |
| No appetite          | .07*  | .04   | .08   | .08*  | .05   | .03   | .05   | .10** | .12** | -.01  | .19** | .07*  | .07*  | .06   | .06   | .07*  |       |       |       |       |       |       |       |
| Concent. diff.       | .34** | .40** | .38** | .41** | .22** | .48** | .35** | .44** | .43** | .23** | .40** | .45** | .49** | .45** | .53** | .13** |       |       |       |       |       |       |       |
| Afraid infect.       | .46** | .23** | .44** | .31** | .22** | .23** | .28** | .36** | .41** | .19** | .18** | .26** | .26** | .22** | .22** | .12** | .21** |       |       |       |       |       |       |
| Dependent            | .35** | .35** | .40** | .33** | .28** | .33** | .32** | .40** | .42** | .30** | .19** | .37** | .37** | .39** | .31** | .38** | .11** | .39** | .32** |       |       |       |       |
| Behavior. diff.      | .34** | .47** | .46** | .43** | .32** | .43** | .35** | .51** | .46** | .55** | .21** | .48** | .61** | .58** | .39** | .60** | .09** | .44** | .20** | .38** |       |       |
| Eats a lot           | .02   | .08*  | .08*  | .08*  | .06*  | .11** | .08*  | .11** | .10** | .16** | -.03  | .16** | .14** | .14** | .14** | .11** | -.39** | .16** | .05   | .10** | .12** |       |
| Worry if we leave home | .30** | .25** | .36** | .24** | .32** | .23** | .19** | .32** | .37** | .21** | .17** | .29** | .29** | .28** | .14** | .25** | .07*  | .23** | .35** | .42** | .30** | .08* |

*p < .05; **p < .01.
Table 2b

Correlations Between the Internalising and Externalising Symptom Items in the Turkish Sample

|   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 1. Worried | - |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 2. Restless | .77** | - |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 3. Anxious | .66** | .71** | - |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 4. Sad | .60** | .63** | .60** | - |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 5. Nightmares | .32** | .34** | .30** | .34** | - |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 6. Reluctant | .47** | .48** | .42** | .49** | .42** | - |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 7. Lonely | .34** | .37** | .34** | .44** | .34** | .51** | - |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 8. Uneasy | .59** | .63** | .62** | .58** | .39** | .56** | .59** | - |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 9. Nervous | .58** | .60** | .55** | .60** | .43** | .58** | .51** | .65** | - |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 10. Argue | .43** | .43** | .37** | .47** | .34** | .51** | .42** | .46** | .67** | - |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 11. Quiet | .15** | .18** | .20** | .20** | .26** | .26** | .28** | .28** | .20** | .18** | - |    |    |    |    |    |    |    |    |    |    |    |    |
| 12. Cries easily | .37** | .35** | .31** | .39** | .30** | .36** | .32** | .38** | .48** | .54** | .31** | - |    |    |    |    |    |    |    |    |    |    |    |
| 13. Angry | .47** | .46** | .42** | .52** | .35** | .49** | .42** | .49** | .69** | .74** | .20** | .66** | - |    |    |    |    |    |    |    |    |    |    |
| 14. Frustrated | .41** | .43** | .43** | .49** | .33** | .44** | .46** | .54** | .48** | .52** | .29** | .46** | .57** | - |    |    |    |    |    |    |    |    |    |
| 15. Bored | .47** | .43** | .39** | .43** | .23** | .41** | .45** | .44** | .47** | .40** | .12** | .32** | .42** | .38** | - |    |    |    |    |    |    |    |    |
| 16. Irritable | .50** | .51** | .45** | .53** | .38** | .50** | .42** | .50** | .69** | .71** | .20** | .56** | .75** | .54** | .52** | - |    |    |    |    |    |    |    |    |
| 17. No appetite | .15** | .13** | .14** | .12** | .18** | .22** | .21** | .22** | .17** | .23** | .31** | .26** | .20** | .31** | .17** | .24** | - |    |    |    |    |    |    |
| 18. Concent. diff. | .32** | .34** | .36** | .34** | .32** | .54** | .35** | .37** | .42** | .44** | .23** | .39** | .46** | .40** | .38** | .50** | .30** | - |    |    |    |    |    |
| 19. Afraid infect. | .41** | .41** | .49** | .33** | .24** | .36** | .26** | .49** | .38** | .33** | .28** | .23** | .33** | .38** | .24** | .35** | .22** | .31** | - |    |    |    |
| 20. Dependent | .28** | .32** | .34** | .32** | .33** | .32** | .33** | .40** | .40** | .39** | .26** | .37** | .41** | .42** | .30** | .42** | .22** | .38** | .38** | - |    |    |
| 21. Behavior. diff. | .33** | .37** | .37** | .35** | .36** | .41** | .35** | .41** | .50** | .56** | .31** | .50** | .55** | .46** | .28** | .54** | .25** | .44** | .39** | .52** | - |    |
| 22. Eats a lot | .05 | .06* | .08* | .04 | .07 | .10** | .07* | .07* | .08 | .12** | .14** | .09** | .11** | .14** | .06 | .07 | .20** | .11** | .13** | .18** | .18** | - |
| 23. Worry if we leave home | .30** | .34** | .41** | .29** | .31** | .30** | .25* | .42** | .31** | .31** | .29** | .27** | .31** | .41** | .20** | .31** | .19** | .25** | .47** | .49** | .42** | .14** | -

*p < .05; **p < .01
### Table 3

**Factor Loadings**

|                               | **UK** (n=995) |                     | **TR** (n=854) |                     |
|-------------------------------|----------------|---------------------|----------------|---------------------|
|                               | Factor 1 | Factor 2 | Communalities | Factor 1 | Factor 2 | Communalities |
| My child is worried           | .78      | .54      | .81           | .81      | .65      |               |
| My child is restless          | .63      | .55      | .87           | .87      | .74      |               |
| My child is anxious           | .98      | .82      | .83           | .83      | .67      |               |
| My child is sad               | .52      | .51      | .61           | .61      | .54      |               |
| My child is uneasy            | .53      | .61      | .68           | .68      | .60      |               |
| My child argues with the rest of the family | .83 | .61 | .81 | .63 |               |
| My child cries easily         | .65      | .49      | .72           | .72      | .52      |               |
| My child is angry             | .95      | .80      | .96           | .96      | .85      |               |
| My child feels frustrated     | .80      | .75      | .50           | .50      | .45      |               |
| My child is irritable         | .79      | .76      | .75           | .75      | .69      |               |
| My child has behavioural problems | .65 | .49 | .60 | .49 |               |

|                                  | UK          | TR          |
|----------------------------------|-------------|-------------|
| Eigenvalues                      | 6.42        | 6.38        |
| Variance %                       | 58.39       | 58.01       |
| Cumulative %                     | 58.39       | 58.01       |
|                                  | 69.17       | 68.55       |

*Note: Kaiser-Meyer-Olkin measure of sampling adequacy: (.96UK & .95TR; Bartlett’s test of sphericity p=.00 both for UK & TR factor loadings < .32 are suppressed)*
Table 4

*Between-country Differences in Caregivers’ Perception of Change in Children’s Internalising and Externalising Behaviour Before and During the Lockdown*

|                          | UK (n=995) | Turkey (n=854) | Test |
|--------------------------|------------|----------------|------|
| **Internalising symptoms** |            |                |      |
| My child is worried      | 520 (52.3) | 467 (54.7)     | 1.08 |
| My child is restless     | 529 (53.2) | 408 (47.8)     | 5.34*|
| My child is anxious      | 449 (45.1) | 445 (52.1)     | 8.97**|
| My child is sad          | 430 (43.2) | 363 (42.5)     | 0.95 |
| My child is uneasy       | 423 (42.5) | 343 (40.2)     | 1.045|
| **Total internalising behaviour change score** | 17.40 (4.0) | 17.07 (3.9) | 1.81 |

| **Externalising symptoms** |            |                |      |
| My child argues with the rest of the family | 567 (57.0) | 401 (47.0) | 18.53***|
| My child cries easily     | 377 (37.9) | 253 (29.6)    | 13.97***|
| My child is angry         | 485 (48.7) | 391 (45.8)    | 1.61 |
| My child feels frustrated | 614 (61.7) | 287 (33.6)    | 145.26***|
| My child is irritable     | 569 (57.2) | 412 (48.2)    | 14.76***|
| My child has behavioural problems | 262 (26.3) | 171 (20.0) | 10.20***|
| **Total externalising behaviour change score** | 21.26 (4.6) | 20.00 (4.2) | 6.16***|
**Table 5**

**Correlations Between Study Variables and Change in Children’s Internalising and Externalising Behaviour Before and During the Lockdown in the UK and Turkey**

| UK | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|----|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|
|    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 1. Internalising behaviour | - | .73** | - | .01 | - | .06 | - | .12** | - | .02 | .07** | .01 | .01 | .03 | .01 | .06 | .27** | .26** | .41** |
| 2. Externalising behaviour | .64** | - | -.07* | - | .07* | - | .10** | .00 | .09** | .01 | -.02 | -.05 | .00 | -.05 | .29** | .35** | .46** | .02 | .02 |
| Caregiver characteristics |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 3. Age | .01 | -.05 | - | .07* | .27** | .07* | -.02 | .28** | .05 | .21** | -.01 | .03 | -.14** | -.04 | -.13** | .00 | .06 | -.04 |
| 4. Marital status | -.09** | -.05 | -.01 | - | .18** | .01 | .00 | -.06 | .03 | .16** | .22** | .03 | -.13** | -.06 | -.19** | -.05 | .08* | -.06 |
| 5. Education level | .02 | .01 | .10** | .01 | - | .13** | -.04 | -.09** | .03 | .12** | -.10** | -.03 | -.13** | .01 | -.25** | -.12** | .02 | -.04 |
| 6. Employment status | -.04 | -.04 | .18** | .04 | .28** | - | -.05 | -.01 | -.01 | .13** | -.03 | .06 | -.08* | .01 | -.06 | -.08* | .07 | -.01 |
| 7. Ethnicity | -.01 | -.02 | .08* | .03 | .04 | .02 | - | -.02 | -.01 | .10** | .09** | .03 | .06 | .05 | .08* | .05 | -.05 | -.01 |
| Child characteristics |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 8. Age | .10** | .02 | .38** | -.10** | -.08* | .02 | .01 | - | -.02 | .06 | .10** | .06 | .04 | .02 | .11** | .04 | .00 | -.01 |
| 9. Gender | -.02 | .00 | .02 | -.04 | -.01 | -.01 | .03 | -.01 | - | .02 | -.01 | -.01 | -.01 | -.03 | -.01 | -.08* | -.01 | -.01 |
| Housing conditions |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 10. Number of rooms | .06 | .02 | .14** | .04 | .18** | .10** | -.01 | .12** | .04 | - | .29** | .33** | -.14** | -.06 | -.10** | -.01 | -.02 | -.13** |
| 11. Household members | .01 | .03 | -.06 | .20** | -.08* | .06 | .02 | .10** | .05 | .18** | - | .12** | .02 | .06 | .04 | .08* | .00 | .01 |
| 12. Outdoor access | -.05 | -.07* | -.04 | .00 | .03 | .00 | -.03 | -.01 | -.01 | .18** | .07 | - | -.07* | -.05 | -.01 | -.04 | .02 | -.04 |
| Mental health and wellbeing |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 13. DASS total | .19** | .22** | -.10** | -.07* | -.10** | -.14** | -.01 | -.02 | .03 | -.10** | .07* | -.02 | - | .53** | .45** | .05 | .13** | .33** |
| 14. Parenting role stress | .12** | .25** | -.16** | -.05 | .03 | -.09* | .03 | -.07* | -.01 | -.03 | .14** | -.04 | .47** | - | .49** | .00 | -.02 | .46** |
| 15. SDQ total | .22** | .31** | -.08* | -.10** | -.10** | -.11** | -.04 | .05 | -.16** | -.11** | .02 | -.06 | .39** | .42** | - | .14** | .05 | .40** |
| Response to COVID-19 and infection risk |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 16. Infection risk | .10** | .04 | .01 | -.07* | .05 | .11** | .03 | .03 | .04 | .04 | .11** | .03 | .10** | -.01 | .07* | - | .19** | .02 |
| 17. Infection worry | .14** | .05 | .03 | -.01 | -.01 | .01 | .00 | .05 | .05 | -.01 | -.04 | -.02 | .14** | .00 | .05 | .12** | - | .06 |
| 18. Coexistence difficulty | .24** | .30** | .00 | -.08* | -.02 | -.09* | .03 | .00 | .02 | -.02 | .11** | -.06 | .28** | .37** | .25** | .05 | .09* |CLU

*p ≤ .05; **p ≤ .01.
Table 6
Summary of Regression Analysis of Children’s Internalising Behaviour Change Before and During the Lockdown in the UK and Turkey

|                               | UK (n=995) | TR (n=854) |
|-------------------------------|------------|------------|
|                               | B   | SE_B | β    | R²   | ΔR² | ΔF | B   | SE_B | β    | R²   | ΔR² | ΔF |
| **Step 1**                    |     |      |      |      |     |    |     |      |      |      |     |    |
| Marital status                | -.40 | .30  | -.04 | .02  | .64 | .07 | -1.30 | .64  | .07* | .30  | .32 | .03 |
| Education level               | -.91 | .29  | -.10* | .28  | .10* | .10 | .30  | .32  | .03  | .05  | .45 | .00 |
| Ethnicity                     | .94  | .46  | .07  | .03  | .17 | .10 | -0.05 | .45  | .00  | .17  | .06 | .10* |
| Child age                     | -.03 | .06  | -.02 | .06  | .06 | .09* | .17  | .06  | .10* | .17  | .06 | .10* |
| Infection risk                | .47  | .33  | .05  | .37  | .07 | .17 | .82  | .31  | .09** | .82  | .31 | .09** |
| **Step 2**                    |     |      |      |      |     |    |     |      |      |      |     |    |
| Marital status                | -.13 | .29  | -.01 | .28  | .10 | .10 | -1.10 | .63  | .06  | .42  | .31 | .05 |
| Education level               | -.85 | .28  | -.09** | .44  | .05 | .05 | -.04 | .44  | .00  | .19  | .06 | .11** |
| Ethnicity                     | .62  | .44  | .05  | .53  | .31 | .06 | -.04 | .44  | .00  | .19  | .06 | .11** |
| Child age                     | -.05 | .06  | -.03 | .06  | .06 | .09  | -.04 | .44  | .00  | .19  | .06 | .11** |
| Infection risk                | .41  | .31  | .04  | .68  | .30 | .08** | .68  | .30  | .08** | .68  | .30 | .08** |
| DASS total                    | .06  | .01  | .17** | .06  | .02 | .17** | .06  | .02 | .17** |
| Parenting stress              | .07  | .01  | .18*** | .02  | .02 | .04  | .02  | .02 | .04  | .02  | .02 | .04  |
| **Step 3**                    |     |      |      |      |     |    |     |      |      |      |     |    |
| Marital status                | .15  | .28  | .02  | .88  | .62 | .05 | .53  | .31  | .06  | .17  | .06 | .10** |
| Education level               | -.25 | .28  | -.03 | .53  | .31 | .06 | -.04 | .44  | .00  | .19  | .06 | .11** |
| Ethnicity                     | .47  | .42  | .03  | .00  | .44 | .00  | .00  | .44  | .00  | .19  | .06 | .11** |
| Child age                     | -.09 | .06  | -.04 | .17  | .06 | .10** | .17  | .06 | .10** | .17  | .06 | .10** |
| Infection risk                | .15  | .30  | .02  | .62  | .30 | .07** | .62  | .30  | .07** | .62  | .30  | .07** |
| DASS total                    | .03  | .01  | .10** | .05  | .02 | .13*** | .05  | .02 | .13*** | .05  | .02 | .13*** |
| Parenting stress              | .02  | .02  | .05  | -.01 | .02 | -.01 | -.01 | .02 | -.01 |
| SDQ total                     | .18  | .02  | .33*** | .11 | .03 | .15*** | .11 | .03 | .15*** | .11 | .03 | .15*** |
| **Step 4**                    |     |      |      |      |     |    |     |      |      |      |     |    |
| Marital status                | .12  | .27  | .01  | .73  | .61 | .04 | -.73 | .61  | .04  | .54  | .31 | .06 |
| Education level               | -.28 | .27  | -.03 | .54  | .31 | .06 | -.10 | .43  | .01  | .16  | .06 | .09** |
| Ethnicity                     | .48  | .41  | .03  | .10  | .43 | .01  | .10  | .43  | .01  | .16  | .06 | .09** |
| Child age                     | -.06 | .06  | -.03 | .16  | .06 | .09** | .16  | .06 | .09** | .16  | .06 | .09** |
| Infection risk                | .14  | .30  | .01  | .47  | .30 | .05  | .47  | .30  | .05  | .47  | .30 | .05  |
| DASS total                    | .02  | .01  | .07** | .04  | .02 | .10  | .04  | .02 | .10  | .04  | .02 | .10  |
| Parenting stress              | -.01 | .02  | -.03 | -.02 | .02 | -.05 | -.02 | .02 | -.05  | -.02 | .02 | -.05 |
| SDQ total                     | .15  | .02  | .27*** | .10 | .03 | .14*** | .10 | .03 | .14*** |
| Infection worry               | .02  | .04  | .01  | .11  | .04 | .09** | .11  | .04 | .09** | .11  | .04 | .09** |
| Coexistence difficulty        | .99  | .12  | .27*** | .61  | .12 | .18*** | .61  | .12 | .18*** | .61  | .12 | .18*** |

*p < .001, **p < .01, *p < .05 (2-tailed)
Table 7
Summary of Regression Analysis of Children’s Externalising Behaviour Change Before and During the Lockdown in the UK and Turkey

| Step | B     | SE_{B} | β     | R^2  | ΔR^2 | ΔF  | B     | SE_{B} | β     | R^2  | ΔR^2 | ΔF  |
|------|-------|--------|-------|------|------|-----|-------|--------|-------|------|------|-----|
| 1    |       |        |       |      |      |     |       |        |       |      |      |     |
| Caregiver age | -0.03 | 0.03   | -0.04 | 0.02 | 0.02 | 4.57 |       |        |       |      |      |     |
| Marital status | -0.62 | 0.34   | -0.06 | 0.02 |      |      | -0.74 | 0.69   | -0.04 |      |      |     |
| Education level | -0.77 | 0.35   | -0.08* | 0.02 |      |      | 0.21  | 0.34   | 0.02  |      |      |     |
| Ethnicity | 1.32   | 0.53   | 0.08* | 0.02 |      |      | -0.09 | 0.49   | -0.01 |      |      |     |
| Outdoor access | -0.81  | 0.54   | -0.05 | 0.02 |      |      | -1.07 | 0.50   | -0.07* |      |      |     |
| 2    |       |        |       |      |      |     |       |        |       |      |      |     |
| Caregiver age | -0.01  | 0.03   | -0.01 | 0.02 |      |      | -0.01 | 0.03   | -0.01 |      |      |     |
| Marital status | -0.31  | 0.32   | -0.03 | 0.02 |      |      | -0.35 | 0.66   | -0.02 |      |      |     |
| Education level | -0.79  | 0.33   | -0.08* | 0.02 |      |      | 0.25  | 0.33   | 0.03  |      |      |     |
| Ethnicity | 0.94   | 0.50   | 0.06  | 0.02 |      |      | -0.10 | 0.47   | -0.01 |      |      |     |
| Outdoor access | -0.46  | 0.51   | -0.03 | 0.02 |      |      | -0.90 | 0.48   | -0.06 |      |      |     |
| DASS total | 0.05   | 0.01   | 0.12*** | 0.02 |      |      | 0.06  | 0.02   | 0.14*** |      |      |     |
| Parenting stress | 0.13   | 0.02   | 0.29*** | 0.02 |      |      | 0.08  | 0.02   | 0.18*** |      |      |     |
| 3    |       |        |       |      |      |     |       |        |       |      |      |     |
| Caregiver age | 0.00   | 0.03   | 0.00  | 0.02 |      |      | -0.01 | 0.03   | -0.02 |      |      |     |
| Marital status | 0.05   | 0.31   | 0.01  | 0.02 |      |      | -0.10 | 0.65   | -0.01 |      |      |     |
| Education level | -0.06  | 0.32   | -0.01 | 0.02 |      |      | 0.44  | 0.33   | 0.04  |      |      |     |
| Ethnicity | 0.75   | 0.47   | 0.05  | 0.02 |      |      | -0.03 | 0.46   | 0.00  |      |      |     |
| Outdoor access | -0.69  | 0.48   | -0.04 | 0.02 |      |      | -0.75 | 0.47   | -0.05 |      |      |     |
| DASS total | 0.02   | 0.01   | 0.05  | 0.02 |      |      | 0.03  | 0.02   | 0.08* |      |      |     |
| Parenting stress | 0.07   | 0.02   | 0.16*** | 0.02 |      |      | 0.05  | 0.02   | 0.10*** |      |      |     |
| SDQ total | 0.22   | 0.02   | 0.35*** | 0.02 |      |      | 0.19  | 0.03   | 0.23*** |      |      |     |
| 4    |       |        |       |      |      |     |       |        |       |      |      |     |
| Caregiver age | -0.01  | 0.02   | -0.01 | 0.02 |      |      | -0.03 | 0.03   | -0.03 |      |      |     |
| Marital status | 0.03   | 0.30   | 0.00  | 0.02 |      |      | 0.06  | 0.64   | 0.00  |      |      |     |
| Education level | -0.10  | 0.31   | -0.01 | 0.02 |      |      | 0.46  | 0.32   | 0.05  |      |      |     |
| Ethnicity | 0.75   | 0.46   | 0.05  | 0.02 |      |      | -0.15 | 0.45   | -0.01 |      |      |     |
| Outdoor access | -0.63  | 0.46   | -0.04 | 0.02 |      |      | -0.65 | 0.46   | -0.05 |      |      |     |
| DASS total | 0.01   | 0.01   | 0.02  | 0.02 |      |      | 0.02  | 0.02   | 0.06  |      |      |     |
| Parenting stress | 0.03   | 0.02   | 0.07  | 0.02 |      |      | 0.02  | 0.02   | 0.04  |      |      |     |
| SDQ total | 0.19   | 0.02   | 0.29*** | 0.02 |      |      | 0.17  | 0.03   | 0.21*** |      |      |     |
| Coexistence difficulty | 1.20   | 0.13   | 0.29*** | 0.02 |      |      | 0.77  | 0.12   | 0.21*** |      |      |     |

*p < .001, **p < .01, *p < .05 (2-tailed).
