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Behaviour problems of children with ASD and perceived stress in their caregivers: The moderating role of trait emotional intelligence?

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Abstract

Background: Psychological distress in caregivers of children with autism spectrum disorder (ASD) has been shown to vary according to characteristics of the care recipient, especially their behaviour problems. Trait emotional intelligence (TEI), which has been linked with subjective reports of distress in familial caregivers, has also been shown to predict behaviour problems in the care recipient. This study is, we believe, first to examine whether TEI might moderate the effect of child behaviour problems (CBP) on caregivers' psychological functioning. **Method:** A sample of 118 parents of children with clinically verified ASD was asked to complete an online survey assessing: (a) TEI, (b) CBP and (c) perceived stress scores (PSS). The SPSS PROCESS macro (model 1) with bootstrapping was used to determine whether CBP, though its interaction with TEI, might predict caregivers' PSS. **Results:** Data yielded a direct relationship between CBP and TEI, and caregivers' PSS; however, no interaction effect was observed. These data reflect the fact that caregivers of children with more behaviour problems are at greater risk for psychological distress, as are caregivers with lower TEI. The relationship between CBP and PSS, however, was not differentially affected by caregivers' TEI. **Conclusions:** These findings, which implicate lower TEI and greater CBP as risk factors for psychological maladjustment in caregivers of children with ASD, might inform the design and delivery of tailored stress management interventions.

Keywords: ASD; behaviour problems; caregiving; perceived stress; trait emotional intelligence

Behaviour problems of children with ASD and perceived stress in their caregivers: The moderating role of trait emotional intelligence?

Caregivers of children with a developmental disability (DD) such as ASD have been found to be at considerable risk for psychological distress. For example, in several recent studies, caregivers of children with ASD reported higher levels of negative affective symptoms such as perceived stress (Lovell et al., 2014), anxiety (Ruiz-Robledillo et al., 2013) and depression (Gallagher & Hannigan, 2014) compared with controls. However, individual difference variables, especially those related to caregivers' personal characteristics such as personal mastery (Cantwell et al., 2014), locus of control (Lloyd et al., 2009) and benefit finding (Kayfitz et al., 2010), have been shown to explain much of the variance in caregivers' subjective feelings of distress. Trait emotional intelligence (TEI), a constellation of personality dispositions concerning one's ability to identify and understand emotions (Petrides & Furnham, 2001), has also shown to be associated with caregivers' psychological adjustment to childhood ASD (Weaving et al., 2014). That caregivers' psychological well being might, at least to some extent, be influenced by their ability to identify and process emotional information has been evidenced in several other studies. For example, the correlation between alexithymia, a personality condition typified by difficulties identifying, labelling and understanding emotions, and TEI has been well documented (Parker et al., 2001). In the context of the caregiving experience, lower levels of alexithymia have been shown to predict more adaptive psychological functioning, as evidenced by reduced feelings of anxiety (Denninson et al., 2001), depression and burnout (Katsifaraki et al., 2014). Moreover, in other chronically stressed populations such as teachers (Ju et al., 2015) and mental health nurses (Por et al., 2011), and in otherwise healthy individuals (Kong et al., 2012), TEI was inversely related to reports of psychological distress. That higher levels of TEI might be predictive of better psychological functioning has also been demonstrated in a recent meta-analysis (Schutte et al., 2007) and large scale review (Martins et al., 2010).

Characteristics of the child with ASD, especially their behaviour problems, have been shown to predict caregivers' subjective feelings of distress (Gallagher & Whiteley, 2014; McStay et al., 2013). Most recently, Lovell et al (2015a) highlighted the positive relationship that exists between

CBP and perceived stress scores (PSS) in caregivers of children with ASD. Moreover, in a recent qualitative study, CBP was identified as one, if not the most, influential source of feeling stressed by caregivers of children with a DD (Griffith et al., 2013).

Personal characteristics of the care provider such as TEI have, along with characteristics of the care recipient, particularly their behaviour problems, been found to influence caregivers' subjective feelings of distress (Lovell et al., 2015; Weaving et al., 2014). However, whether the effect of CBP on caregivers' psychological functioning might be moderated by TEI has, we believe, not been examined. Several lines of evidence converge to suggest this might be the case. For example, TEI, which predicts psychological distress in caregivers of children with ASD (Weaving et al., 2014), has also been shown to be related to behaviour problems in the care recipient (Tsujino et al., 2007). For example, in a recent study by Aminabadi et al (2012), children whose parents reported higher levels of TEI displayed fewer behaviour problems during a routine dental examination. Moreover, along with other variables related to making sense of, describing and understanding emotions (e.g., alexithymia), TEI has been shown to moderate psychological responses to other stressful life events. For example, in a recent study involving professional nurses, higher levels of TEI attenuated the relationship between a range of occupational stressors and feelings of burnout (Ekermans & Brand, 2012). Moreover, in the context of the caregiving experience, other personality variables, particularly personal mastery, have been found to modify the relationship between CBP and reports of psychological distress (Mausbach et al., 2006).

Based on the evidence presented above, this study had two aims: (a) to examine the effect of TEI and CBP, and (b) their interaction, on caregivers' PSS. It was hypothesised that caregivers' PSS would be directly related to CBP and TEI, and the relationship between CBP and PSS would be moderated by TEI.

Methods

Participants & procedures

A sample of N=153 caregivers of children with clinically diagnosed ASD were recruited via adverts displayed in online caregiver support groups. ASD diagnosis was based on parent report only. Participants were recruited according to strict criteria including: (a) caring for at least one child between the age of 3-19 years, living at home full time, and with a clinical diagnosis of ASD, (b) not caring for another person, e.g., partner, parent, or friend with longstanding illness, (c) not managing other chronically stressful life events, which included bereavement, divorce and caring for another person with a chronic disease, and (d) not managing a serious medical condition (e.g., cancer, cardiovascular disease). The study and all its procedures were approved by the institutional ethics review board. Consenting participants were asked to complete an electronic survey assessing: (a) demographic (e.g., age, gender) and lifestyle (e.g., smoking, alcohol, exercise) characteristics, (b) CBP, (c) TEI and (d) PSS. Participants received no recompense for taking part. Of 153 participants recruited, N=3 were excluded for not yet receiving a clinical diagnosis with ASD, as was N=1 who reported caring for a child >19 years of age. Participants who failed to provide any survey data (N=10) were also removed, as were N=22 who failed to provide any responses to one or more questionnaire. Missing responses for survey items were replaced by the mean score for the relevant scale/subscale, with the requirement that no more than 10% of items for any scale/subscale could contain missing values (Abedutto et al., 2004). Statistical analysis was based on a final sample of N=118.

The sample was predominately female (94.0%), partnered (82.6%), with a mean AHI above the national average ($M = £59,175$, $SD = £74,323$). Age of the care provider ranged between 23 and 63 years ($M = 41.3$, $SD = 7.6$), age of child with ASD ranged between 3 and 19 years ($M = 9.8$, $SD = 4.4$), and most parents reported caring for at least one other child (77.4%). Parents had been providing care for an average, 4.4 years ($SD = 3.8$). Most caregivers were non smokers (82.8%), exercised at least twice per week (61.5%), slept an average, 6.3 hours per night ($SD = 1.3$) and consumed between

0 and 25 units of alcohol per week ($M = 3.3$, $SD = 5.3$). Sample characteristics are displayed in Table 1.

Table 1
Characteristics of the Sample (N = 118)

Gender (%)	
<i>Mother</i>	109 (94.0%)
<i>Father</i>	7 (6.0%)
Mean age (years)	41.3 (7.6)
Marital status (%)	
<i>Partnered</i>	95 (82.6%)
<i>Not partnered</i>	20 (17.4%)
Mean annual household income	£59175 (£74323)
Mean days exercising per week	2.2 (2.0)
Mean units of alcohol per week	3.3 (5.3)
Use of nicotine (%)	
<i>Smoker</i>	20 (17.2)
<i>Non smoker</i>	96 (82.8)
Mean hours of sleep per night	6.3 (1.3)
Total number of children (%)	
<i>1 child</i>	26 (22.6)
<i>2-3 children</i>	77 (67.0)
<i>4 or more children</i>	12 (10.4)
Mean age of child with ASD (years)	9.8 (4.4)
Mean age child with ASD was diagnosed (years)	5.4 (2.3)

Measures

Potential confounds

Data was collected on a range of variables that might be related to psychological distress in familial caregivers: age, socioeconomic and marital status, frequency of exercise, use of nicotine,

consumption of alcohol, sleep duration and total number of children. Data were also collected with respect to age of the child with ASD and age at diagnosis.

Psychological distress

Psychological distress was measured using the *Perceived Stress Scale* (PSS), a 10 item questionnaire that uses a 5 point Likert type scale to assess how overwhelming and uncontrollable participants perceived their life to be over the last month (Cohen et al., 1983). Total scores range between 0-40, with higher scores reflecting greater psychological distress. The PSS was shown to have good concurrent validity ($\alpha = .90$) in other recent studies involving caregivers of children with ASD (Lovell et al., 2015b); this was also the case in the current sample ($\alpha = .91$).

Child behaviour problems

Parents were asked to complete the *Strengths and Difficulties Questionnaire* (SDQ), a 25 item self report measure that uses a three point Likert type scale (0, *not true* - 2, *certainly true*) to quantify incidences of child conduct (e.g., often fights with other children), hyperactivity (e.g., restless, overactive, cannot sit still for long), emotional (e.g., nervous or clingy in new situations) and peer (e.g., generally liked by other children) problem behaviours over the last month (Goodman, 1997). A total score, which can be derived by summing scores from the four subscales, can range between 0-40, with higher scores reflecting more CBP. The SDQ, which was found to have good internal consistency ($\alpha = .76$) in a recent study involving familial caregivers (Gallagher & Hannigan, 2014), achieved adequate reliability in the current sample ($\alpha = .64$).

Trait emotional intelligence

The *Assessing Emotions Scale* (AES), a 33 item questionnaire which incorporates a 5 point item Likert type scale (1, *strongly disagree* - 5, *strongly agree*), was used to measure participants' trait emotional intelligence (Schutte et al., 2009). The AES, which has achieved excellent psychometrics ($\alpha = .92$) in other recent studies (Hofman et al., 2016), also achieved excellent

reliability in the current sample ($\alpha = .91$). Moreover, scores on the AES have been shown to positively correlate with other measures of emotional functioning such as emotional attention and clarity, and negatively correlate with alexithymia (Schutte et al., 2009).

Statistical analysis

A series of bivariate correlations were used to explore whether caregivers' PSS might be related potential confounds, CBP and TEI. Independent *t* tests were used to explore the effect of categorical variables, gender and marital status on caregivers' PSS. . The SPSS PROCESS macro (model 1) with bootstrapping, as per Hayes (2012), was used to explore the contribution of CBP and TEI, and their interaction, for caregivers' PSS.

Results

Preliminary analysis

Caregivers' PSS were unrelated to age, AHI, use of nicotine, total number of children, age of child with ASD, and age at diagnosis (all $ps > .07$). However, PSS scores were higher in caregivers who consumed more alcohol ($r = 0.26, p < 0.01$) and slept fewer hours ($r = -0.20, p = .04$). No effect of gender (stats) or marital status (stats) on caregivers' PSS was observed. As expected, PSS were higher in caregivers who reported lower TEI ($r = -0.41, p < .01$) and greater CPB ($r = .28, p < .01$). Table 2 presents means and standard deviations, and the range of scores for CBP, TEI and PSS.

Table 2

Means (Standard Deviations) and Range for CBP, TEI and PSS in the Sample

	Mean (SD)	Range
CBP	23.5 (6.0)	10-37
TEI	113.4 (15.8)	48-152
PSS	20.9 (8.0)	3-37

Moderation analysis

Moderation analysis with 5000 bootstrapping was used to determine whether TEI moderated the effect of CBP on caregivers' PSS. The model explained 28% of the variance in caregivers' PSS ($F(3,113) = 21.4, p < .01$), with CBP ($\beta = .30, t = 2.70, p < .01$) and TEI ($\beta = -.20, t = -2.78, p < .01$) emerging as unique predictors. No moderating effect of TEI on the CBP-PSS relationship was observed ($\beta = -.02, t = -1.35, p = .18$). These findings were unchanged following statistical adjustment for alcohol and sleep. Results from the regression analysis are presented in Table 3.

Table 3

Regression Analysis Predicting Caregivers' PSS

Variables	β
CBP	.30**
TEI	-.20**
CBP*TEI	-.02
R^2	.28
Overall model	$F(3, 113) = 21.4^{**}$

Note: * $p < .05$, ** $p < .01$

Discussion

This study is, we believe, first to examine the role of CBP and TEI, and their interaction, on PSS in caregivers of children with ASD. A direct effect of CBP on PSS was observed; caregivers of children with more behaviour problems were found to be at greater risk for psychological distress. These findings are commensurate with other recent studies involving familial caregivers, in which CBP was found to be associated with a range of psychological outcomes, including PSS (Gallagher & Whiteley, 2013; Lovell et al., 2015a, b). In addition, TEI was shown to be inversely related to

caregivers' PSS. These data resonate with other studies in which TEI, along with other personality variables related to problems identifying and describing emotions, e.g., alexithymia (Katsifaraki et al., 2014), predicted caregivers' subjective feelings of distress (Weaving et al., 2014). These findings are also in accord with a recent meta-analysis (Schutte et al., 2007) and large scale review (Martins et al., 2010), both of which highlighted the adaptive effect of TEI for psychological functioning in non-caregiving populations.

It was hypothesised that TEI might moderate the impact of CBP on caregivers' PSS; however, the CBP-PSS relationship did not vary according to caregivers' differing levels of TEI. These findings were surprising, especially in light of studies involving other stressed populations (e.g., nurses), in which higher levels of TEI attenuated the relationship between a range of occupational stressors and psychological symptoms such as burnout (Ekermans & Brand, 2012). Moreover, in the context of caring for a child with a DD, other personality variables such as personal mastery, which has been shown to be associated with TEI (Hoseinzadeh et al., 2013), were found to mitigate the relationship between CBP and caregivers' subjective feelings of distress (Mausbach et al., 2006). That TEI did not moderate the CBP-PSS relationship here might be explained by the fact we focussed on trait, rather than ability emotional intelligence (AEI). TEI, which describes ones self-perceived ability to identify and process emotions (Petrides & Furnham, 2001), has been found to be distinct from AEI, which pertains to applying and utilising emotion knowledge in emotional situations (Mayer & Salovey, 1997). Research has consistently reported on the poor concordance between TEI and AEI, thus suggesting these two constructs might be distinct (Brannick, Wahi, Arce, & Johnson, 2009; Qualter, Barlow, & Stylianou, 2011). Future research therefore might consider whether caregivers better able to apply and utilise emotional information in emotion loaded circumstances (i.e., when faced with child behaviour problems) display more adaptive psychological functioning.

That greater CBP and lower TEI emerged as risk factors for psychological distress has implications for future research. Psycho-behavioural interventions, especially those incorporating differential reinforcement (Braithwaite & Richdale, 2000; Nuzzolo-Gomez et al., 2002) and antecedent manipulations such as social stories (Scattone et al., 2002), have been found to be effective

for reducing behaviour problems in children with ASD. Future research might assess whether, by reducing CBP, psycho-behavioural interventions are also beneficial for improving caregivers' psychological functioning. In addition, TEI has also been shown to be amenable to change via psychological intervention. That is, after attending four 2.5 hour classes to increase their knowledge of TEI, and after reflecting on the application of TEI in their everyday lives, otherwise healthy undergraduate students reported improvements in their ability to both identify and manage emotional information (Neils et al., 2009). Moreover, positive psychological adjustments such as lower feelings of burnout and increased stress resilience have been observed in individuals who participated in a 10 hour intervention to increase TEI (Brackett & Katulak, 2006).

The findings of this study should be considered in the context of its limitations. First, owing to the cross sectional nature of the research, caution should be taken when interpreting the results. Moreover, the relationship between the behaviour problems of the care recipient and psychological distress in the care provider has been shown to be bi-directional. For example, research has shown how the psychological functioning of the care provider is associated with a range of care recipient quality of life outcomes, including behavioural problems (Crnic, Gaze, & Hoffman, 2005). Future studies might use longitudinal designs to confirm the direction of these relationships. Second, as a result of being sought from online support communities, the current sample might not be representative of the wider caregiver population. Consistently reported in the literature has been the inverse association that exists between social support and caregivers' subjective reports of distress (Lovell et al., 2012). As such, findings reported here should be interpreted with a caution. Moreover, as caregivers' psychological health varies according to child symptom severity (Benson, 2006), and as this was not assessed in the current study, additional caution is warranted. Moreover, despite some research suggesting that parental reports of ASD diagnosis are reliable (Rosenberg, 2009), failure to incorporate standardized assessments to verify ASD status was a notable limitation of the current study (Le Couteur et al., 2008).

In conclusion, CBP and TEI uniquely predicted caregivers' PSS; however, no moderating influence of TEI was observed. These data implicate higher CBP and lower TEI as risk factors for

psychological maladjustment in caregivers of children with ASD. Interventions that reduce CBP and increase TEI might be effective for ameliorating psychological distress in this group.

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Conflict of Interest

All authors declare no conflict of interest.

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