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**Social support mediates the relationship between dispositional gratitude and psychological distress in caregivers of autistic children**

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**Declarations**

Authors declare no conflict of interest. The research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors. The study received all necessary ethical approvals for it to take place in accord with the Faculty of Health and Life Sciences Ethics Committee, Northumbria University (reference: 23768), with all participants providing fully informed consent. Data are available in electronic repository and can be made available on request.

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**Social support mediates the relationship between dispositional gratitude and psychological distress in caregivers of autistic children**

Grateful caregivers report lower levels of psychological distress. Social support, engendered by gratitude and buffering against stress, might mediate this effect. Here we explored whether the protective psychological effect of dispositional gratitude might be mediated by increased social support. A sample of 126 caregivers of autistic children completed questionnaires assessing dispositional gratitude, social support and psychological distress. Gratitude inversely predicted psychological distress, as did social support after adjusting for gratitude. Gratitude positively predicted social support. Gratitude no longer predicted psychological distress after adjusting for social support. Indirect effects analysis revealed the gratitude-distress relationship occurred indirectly via social support. Grateful caregivers reported higher levels of social support, and this predicted lower psychological distress. Gratitude, relatively stable as a disposition, has a state component that is sensitive to change, and healthcare professionals might do well to recommend gratitude enhancing interventions for caregivers of autistic children.

**Key Words:** autism; caregiving; gratitude; social support; stress

## Introduction

A plethora of cross sectional research has reported on the negative psychological impact of caring for an autistic child. Indeed, anxiety and depression, as widely used indices of psychological distress, are typically elevated in this population compared with controls (Bonis et al., 2016; Kütük et al., 2021; Scherer et al., 2019; Schnabel et al., 2020). Not all caregivers, however, are affected the same, with much research dedicated to exploring whether certain subsets of caregivers are more or less likely, based on individual differences, to be at risk for psychological distress. Greater use of emotion focused, and less frequent use of problem focused, coping have been identified as risk factors for psychological distress in the context of caring for an autistic child (Dabrowska & Pisula, 2010; Lovell & Wetherell, 2015). Caregivers with an external locus of control, appraising the caretaking experience as beyond their ability to control, also tend to be more vulnerable to psychological distress, as do caregivers with less resilient personalities (Falk et al., 2014; Hamlyn-Wright et al., 2007; Kim et al., 2020). Caregivers higher in psychological resilience factors such as post-traumatic growth (PTG) and benefit finding, however, appear to be buffered against caregiving related distress. Indeed, while the caregiving experience is described by many parents as overwhelming, as the cause of significant burden, others report finding benefits such as increased compassion, greater family cohesion and increased empathy (Hillman & Anderson, 2019; Potter, 2016; Waizbard-Bartov et al., 2019). Lower levels of anxiety and depression, indicative of better psychological well-being, have been reported by caregivers of autistic children who were able, organically and with the aid of psychological intervention, to find these kinds of benefits (Bekhet et al., 2012; Hung-Chu et al., 2018; Lovell & Wetherell, 2020). Post traumatic growth (PTG), describing the ability to reframe stressful situations (i.e., caregiving) and view them through a positive lens, has been shown to be closely related to

benefit finding, and predicts lower psychological distress and better mental resiliency in caregivers of autistic children. (Chan et al., 2020; Qin et al., 2021).

Benefit finding and PTG are closely related with dispositional gratitude (Mols et al., 2009; Ruini & Vescovelli, 2013). Dispositional gratitude, as the ability to recognise the positive behaviours and efforts of others toward oneself, has been shown to be associated with better psychological well-being, as evidenced by reduced feelings of anxiety, in otherwise healthy samples and clinical populations (Krejtz et al., 2016; Yildirim & Alanazi, 2018). Studies involving high stress populations such as police officers have also highlighted the stress buffering effects of dispositional gratitude (McCaniles et al., 2018). To date, despite its soothing psychological effects in other high stress populations, researchers have failed to explore whether dispositional gratitude might protect against the negative psychological sequelae of caring for an autistic child. In fact, only one qualitative study, finding caregivers were indeed grateful for several aspects of caregiving, and one intervention study, finding parental satisfaction was higher in caregivers who penned gratitude diaries, have been conducted (Timmons et al., 2017; 2018). This study aims to fill this gap.

The ‘broaden and build’ model posits that grateful individuals are more likely to engage in positive behaviours, and this includes seeking out socially supportive others (Fredrikson, 2004). This model dovetails with the ‘find-remind-bind’ model, positing that grateful individuals are better able to recognise the altruistic acts of others and, by consequence, more likely to behave pro-socially (Algoe et al., 2012). This evidence seems to suggest this is indeed the case, with dispositional gratitude found to be positively associated, cross sectionally and longitudinally, with pro-social tendencies and perceived social support in a range of populations (Kong et al., 2015; Peng et al., 2018; You et al., 2022; Wood et al., 2008). Gratitude also seems to be an effective social lubricant for familial caregivers, helping

them forge new social connections. Indeed, feelings of being socially supported are typically higher, and size of social networks typically larger, in grateful caregivers (Lau & Cheng, 2017; Timmons et al., 2017). Qualitative research has also reported how social support is one aspect of the caretaking experience for which caregivers of autistic children feel especially grateful (Hermansyah et al., 2017). Benefit finding and PTG, as psychological resilience factors closely related to dispositional gratitude, have also been shown to be positively associated with pro-social tendencies in caregivers (Brand et al., 2016; Slattery et al., 2017).

The stress mitigating effects of social support are well documented in caregivers of autistic children. Indeed, a plethora of cross sectional, research has documented the inverse relationship that exists between social support and various stress markers in this population (Ault et al., 2021; Lovell & Wetherell, 2019; Robinson & Weiss, 2020). The palliative psychological effects of social support for caregivers have also been found not to depend on support type, with both informal i.e., family and friends) and formal (i.e., professional services) being equally beneficial (Oti-Boadi et al., 2020; Schiller et al., 2021). Several studies with other high stress populations, though not caregivers of autistic children, have implicated increased social support as one mediating pathway by which higher dispositional gratitude might be translated into lower psychological distress (McCaniles et al., 2018; Wood et al., 2008). Studies involving caregivers of autistic children, however, revealed the positive psychological effects of benefit finding, closely related to dispositional gratitude, did in fact occur indirectly via social support (Bekhet and Garnier-Villarreal, 2018). Hope, highly correlated with dispositional gratitude, was also found to protect against psychological distress in this same population, with social support mediating this effect (Ekas et al., 2016). It might be the case therefore, that dispositional gratitude, by increasing social support, protects against the negative psychological impact of caring for an autistic child, and this was explored here.

## Methods

### *Participants and Procedure*

*A priori* power analysis with GPower, with alpha level of .05 and power of .80, indicated 68 participants would be needed to detect a medium effect size ( $f^2 = 0.15$ ). A sample of 151 participants were recruited via adverts posted on caregiving support and information pages of social media sites. Participants were recruited according to strict inclusion criteria: a) aged >18 years, b) parenting at least one autistic child (aged 3-21 years and living at home full time) as clinically diagnosed by general practitioner or paediatrician, and c) not providing informal care for another person (e.g., partner, parent, other child, relative or friend) with chronic illness. Participants should also d) not currently be experiencing, or have in the last 12 months experienced, any chronically stressful life events such as bereavement and divorce. All participants provided fully informed consent to take part, and all study protocols were approved by the institutional ethics committee.

A total of 18 caregivers consented to take part but provided no data, and another five failed to provide enough data to be retained in the analysis. These participants were removed, as were two participants of children yet to be clinically diagnosed. Statistical analysis therefore, was conducted on a final sample of  $N=126$ . Most caregivers were female (94.4%), partnered (74.4%), employed (55.2%), and non-smokers (84.0%). Caregivers slept an average 6.3 hours per night ( $SD = 1.2$ ) and exercised an average two times per week ( $SD = 2.2$ ), with 32.8% reporting current use of anti-depressant medication. The average age of the autistic child was 11.4 years ( $SD = 4.7$ ) and average age at diagnosis was 7.0 years ( $SD = 4.2$ ). Most parents were caring for more than one child living at home (68.8%), with a small number caring for two or more autistic children living at home (12%).

### *Measures*

### *Potential Confounds*

Characteristics of the care provider (i.e., age, gender, relationship status, employment, exercise, smoking, alcohol, exercise, number of children living at home, number of autistic children, medication use and sleep duration) and care recipient (i.e., age now, age at diagnosis, functional stats) are known to be influential for caregivers' psychological well-being, and were collected to safeguard against spurious relationships emerging between study variables.

### *Dispositional Gratitude*

The Gratitude Questionnaire-Six Item (GQ-6) was used to assess dispositional gratitude (McCullough et al., 2002). Items are scored on a seven point Likert type scale (1 = *strongly disagree* - 7 = *strongly agree*), with total scores, calculated by summing across items after some reverse scoring (items two and six), ranging between 6-42. Higher scores reflect greater dispositional gratitude. Internal reliability ( $\alpha = .89$ ) for the GQ-6 was good in other recent studies (McCanlies et al., 2018), as was the case here ( $\alpha = .83$ ).

### *Social Support*

The 19-item Medical Outcome Study-Social Support (MOS-SSS) questionnaire was used to assess social support (Sherbourne & Stewart, 1991). The measure is composed of four subscales: emotional support (e.g., *someone you can count on to listen to you when you need to talk*), tangible support (e.g., *someone to take you to the doctor if needed*), affectionate support (e.g., *someone who shows you love and affection*) and positive social interaction (e.g., *someone to get together with for relaxation*). Items are scored using a five point Likert type scale (1 = *none of the time* - 5 = *all the time*). Subscale scores were all highly correlated (all  $r_s > .60$ , all  $p_s < .001$ ). Therefore, to safeguard against multi-collinearity, a composite score

was calculated by summing across all 19 items (Bedaso et al., 2021). Total MOS-SSS scores can range between 19-95, with higher scores reflecting greater perceived support. The MOS-SSS achieved excellent psychometrics ( $\alpha = .96$ ) in other recent studies of a similar nature (Park et al., 2019), as was the case in the current sample ( $\alpha = .96$ ).

### *Psychological Distress*

The 10 item Perceived Stress Scale (PSS) was used to quantify psychological distress (Cohen et al., 1986). All items are scored on a five point Likert type scale (0 = *never* - 4 = *very often*). Total PSS scores, generated by summing across all items, range between 0-40, with higher scores indicative of greater psychological distress. The PSS achieved good internal reliability ( $\alpha = .83$ ) in other recent studies with similar samples (Lovell & Wetherell, 2019), and reliability here was also good ( $\alpha = .87$ ).

### *Statistical Analysis*

A series of bivariate and, for categorical data, point bi-serial correlations were used to explore whether PSS scores might be related to potential confounds. A series of bivariate correlations were used to whether PSS scores might be related to gratitude and social support, with the SPSS PROCESS Macro, model 4 with bootstrapping (5000 iterations), as per Hayes (2012), used to assess the indirect effect of gratitude on PSS scores through social support.

## **Results**

### *Preliminary Analysis*

PSS scores were unrelated to all potential confounds (all  $ps > .17$ ) with the exception of sleep duration ( $r = -.29, p < .01$ ), relationship status ( $r = -.19, p = .03$ ) and number of autistic children ( $r = .23, p = .01$ ). Single parents and those sleeping fewer hours were more

likely to report psychological distress, as were those parenting more than one autistic child. There was also a trend for higher PSS scores in caregivers using anti-depressant medication ( $r = -.17, p = .06$ ) and exercising less frequently ( $r = -.17, p = .06$ ). Each of these variables were controlled in all subsequent analyses.

Bivariate correlation revealed gratitude to be positively related to social support ( $r = .55, p < .001$ ), and both gratitude ( $r = -.54, p < .001$ ) and social support ( $r = -.58, p < .001$ ) were inversely associated with PSS scores. A correlation matrix displaying relationships between study variables is presented in Table 1

INSERT TABLE 1 NEAR HERE?

### *Mediation Analysis*

The total effect of gratitude on PSS scores was significant ( $\beta = -.51, t = -7.14, SE = .07, p < .001$ ), as were relationships between gratitude and social support ( $\beta = 1.54, t = 7.32, SE = .21, p < .001$ ), and social support and PSS scores after adjusting for gratitude ( $\beta = -.14, t = -4.78, SE = .03, p < .001$ ). The direct relationship between gratitude and PSS scores remained significant after adjusting for social support ( $\beta = -.30, t = -3.81, SE = .08, p < .001$ ), but the magnitude of the relationship reduced by 41.2%, with confidence intervals not including zero ( $CI_{95} = -.32, -.11$ ). Results suggest the beneficial psychological effects of dispositional gratitude for caregivers of autistic children occurred indirectly via higher social support. The overall model accounted for 40.4% of the variation in caregivers' PSS scores ( $F(2, 122) = 41.4, p < .0001$ ). Figure 1 presents a path model displaying relationships between study variables.

INSERT FIGURE I NEAR HERE?

## Discussion

This study explored direct and indirect relationships between dispositional gratitude, social support and psychological distress in caregivers of autistic children, hypothesising that grateful caregivers, benefitting from increased social support, would be protected against psychological distress. Grateful and socially supported caregivers did indeed report lower levels of perceived stress. These findings are commensurate with those from other recent studies, some involving caregivers of autistic children, that highlighted social support and dispositional gratitude as protective factors for psychological distress (Ault et al., 2021; McCaniles et al., 2018; Robinson & Weiss, 2020; Yildirim & Alanazi, 2018). Grateful caregivers also reported feeling more socially supported here, and this also dovetails with findings from recent studies involving other familial caregivers (Lau & Cheng, 2017; Timmons et al., 2017). Findings reported here also support the ‘broaden and build’ and ‘find-remind-bind’ models, positing that grateful individuals are better at recognising the altruistic acts of others and, in reciprocation, behave more pro-socially. Here, in support of our original hypothesis, the protective psychological effect of dispositional gratitude occurred indirectly via increased social support. It would seem that dispositional gratitude helps caregivers of autistic children cultivate and strengthen social relationships, and this mitigates caregiving related distress. Benefit finding, closely related with dispositional gratitude, has also been shown to be associated with lower levels of stress in the context of caring for an autistic child, with this effects also occurring indirectly via increased social support (Bekhet & Garnier-Villarreal, 2018; Brand et al., 2016).

Findings reported here have implications for psychotherapeutic interventions and for informing decisions of healthcare professionals as they relate to supporting caregivers of autistic children. Gratitude, while relatively stable as a disposition, also has a state component that is amenable to change via intervention, and expressive writing interventions have been

found to be particularly effective for increasing feelings of gratitude. For example, the ‘three good things’ intervention, in which individuals express in writing three things for which they were grateful every day for three weeks, was found to be effective for increasing feelings of gratitude, with increased gratitude then predicting lower levels of stress (Lai & O’Carroll, 2017). Reflecting on the people in your life who are important and for whom you are grateful, and writing this down in a journal three times per week for three consecutive weeks, has also found to be advantageous, through boosting feelings of gratitude, for elevating state mood (O’Connell, et al., 2017). To date, only one study has explored whether increased feelings of gratitude, induced via intervention, might promote positive psychological changes in caregivers of autistic children. Caregivers were randomised to one of three groups, a control group directed to write letters about neutral topics or experimental group directed to write letters of gratitude to either a) someone who helped them in the past (general gratitude), or b) their autistic child (child gratitude). Groups, indistinguishable at baseline, were statistically differentiated on self-reported parental satisfaction across the follow up period, with caregivers in the experimental group, in the child gratitude condition, reporting greater feelings of parental satisfaction (Timmons et al., 2018). Caregivers of autistic children report feeling grateful for many aspects of the caretaking experience, particularly for inspiration, compassion, empathy and strength the child provides them, and healthcare professionals might encourage caregivers to express this in writing (Potter, 2016). Gratitude interventions, in the form of penning gratitude journals and diaries, have also been found to increase social belonging, and this might provide one mediating pathway, as it did in the current study, by which gratitude interventions promote positive psychological adjustments (Diebel et al., 2016). This might be the subject of future research.

It is important to consider findings reported here in the context of study limitations. This study was cross sectional in nature, not allowing for causal relationships to be

established, though previous research did find dispositional gratitude to be prospectively associated, several years later, with lower psychological distress (Wood et al., 2008). Recruitment for this study was done via social support groups online, and this might mean the current sample, already with social support in place, is not representative. Indeed, dispositional gratitude might be effective for alleviating caregiving related stress via augmenting current, and not developing new, social relationships, and this might be explored going forward. Whether the mediating effect of social support on the gratitude-distress relationship might vary as a function of pre-existing support might be explored in future research. In addition, problematic behaviours of the autistic child are known, along with other child characteristics such as autism severity and school status, to be influential for caregivers' psychological well-being, and these were not measured here. This represents a notable limitation of the study, as does autism diagnosis being confirmed by parent report only. Previous research, however, indicated that parents' reports of autism diagnosis are indeed reliable (Rosenberg et al., 2011). The study includes a number of strengths alongside its limitations, and these include a meaningful sized sample, mediation analysis and being first to explore how psychological distress might be influenced by dispositional gratitude in caregivers of autistic children.

In conclusion, caregivers of autistic children higher in dispositional gratitude, benefiting more from social support, were protected against psychological distress. Gratitude, while relatively stable as a disposition, also has a state component, and interventions that increase caregivers' state gratitude, achieved via expressing grateful thoughts and feelings in writing, have been shown to be effective for buffering against psychological distress. Healthcare professionals might signpost caregivers of autistic children to these gratitude enhancing interventions.

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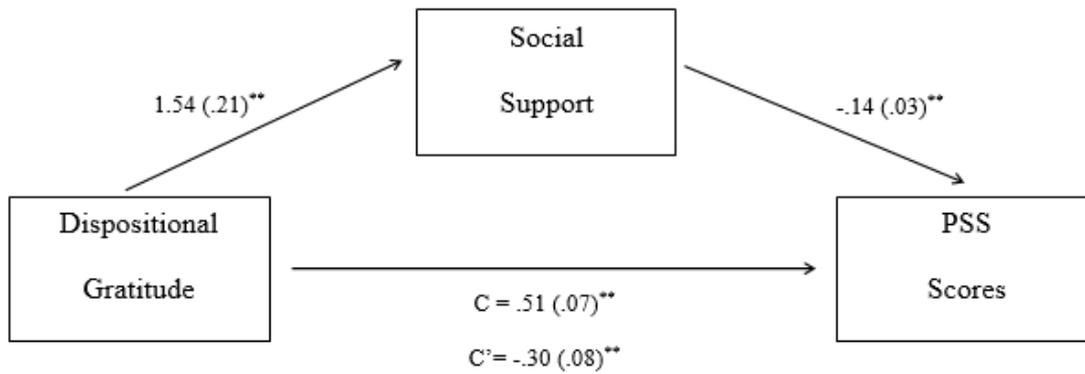
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Table 1.

Means and standard deviations for, and relationships between, study variables

	1	2	3	4	5	6	7	Mean	SD	Range
1. Gratitude	-							31.1	6.8	15-42
2. Social support: <i>Total</i>	.55**	-						57.6	19.1	20-92
3. Social support: <i>Emotional</i>	.55**	.90**	-					22.8	8.4	8-40
4. Social support: <i>Tangible</i>	.35**	.83**	.62**	-				12.7	5.1	4-20
5. Social support: <i>Affectionate</i>	.45**	.82**	.60**	.61**	-			10.4	4.0	3-15
6. Social support: <i>Social Interaction</i>	.52**	.87**	.68**	.64**	.77**	-		8.9	3.5	3-15
7. Perceived stress	-.54**	-.58**	-.54**	-.46**	-.48**	-.51**	-	21.6	6.4	5-39

\*\* $p < .001$



\*\* $p < .001$

Figure 1.

Path model displaying relationships between dispositional gratitude, social support and PSS scores