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Emotional intelligence modulates cortisol awakening response and self-reported health in caregivers of people with autism spectrum disorders



N. Ruiz-Robledillo, L. Moya-Albiol*

Department of Psychobiology, Faculty of Psychology, University of Valencia, Av. Blasco Ibañez, 21, Valencia, Spain

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ABSTRACT

Caring for people with autism spectrum disorders (ASDs) has negative consequences for caregivers' health. Specifically, caregivers of people with ASDs have been observed to have more somatic symptoms, poorer self-perceived general health, poorer social functioning and altered immune and endocrine systems. Various positive variables including emotional intelligence (EI) have been found to protect health in several populations, but no studies have previously analyzed the effect of EI in caregivers of people with ASDs. The present study aimed to analyze the association of the three components of EI (attention, clarity and repair) with self-reported health and cortisol awakening response (CAR) in caregivers of offspring with ASD. Attention was negatively associated and clarity positively associated with self-reported health. Clarity and repair were associated with a lower magnitude of CAR, estimated by the area under the curve with respect to ground (AUC_g). Moreover, CAR AUC_g was a mediator in the association of clarity and repair with self-perceived general health. These results confirm that EI components have different effects on health in caregivers of people with ASDs. EI should be included as a target of interventions to improve health in this population.

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1. Introduction

Caring for offspring with autism spectrum disorders (ASDs) has been related to negative consequences for the caregivers' health (Ruiz-Robledillo & Moya-Albiol, 2013). Specifically, high numbers of somatic symptoms, depression, anxiety and poorer self-perceived general health have been described in this population (Ruiz-Robledillo & Moya-Albiol, 2013). Caregiving is a source of chronic stress and, as a consequence, may lead to alterations in autonomic, endocrine and immune function (De Andrés-García, Moya-Albiol, & González-Bono, 2012; Lovell, Moss, & Wetherell, 2012a; Ruiz-Robledillo & Moya-Albiol, in press).

Previous studies have demonstrated that the health of caregivers of people with ASDs is affected by caregiving. Many studies have analyzed factors that could enhance these effects, such as the severity of autistic symptoms and behavioral problems of the care recipient (Barker et al., 2011; Davis & Carter, 2008) or other psychosocial variables, including social

* Corresponding author at: Department of Psychobiology, Faculty of Psychology, University of Valencia, Avenida Blasco Ibañez, 21, 46010 Valencia, Spain. Tel.: +34 963864635; fax: +34 963864668.

E-mail addresses: Nicolas.Ruiz@uv.es (N. Ruiz-Robledillo), Luis.Moya@uv.es (L. Moya-Albiol).

support or coping (Hastings et al., 2005; Lovell, Moss, & Wetherell, 2012b). In contrast, relatively little attention has been paid to psychological trait variables in caregivers that could protect against these negative effects on their health. However, recent research has pointed to several trait variables of caregivers that could minimize the impact of caregiving on their health. Specifically, positive variables such as resilience, hardiness or personal growth have been reported to have a positive effect, preventing health impairment in samples of caregivers (Phelps, McCammon, Wuensch, & Golden, 2009; Ruiz-Robledillo, De Andrés-García, Pérez-Blasco, González-Bono, & Moya-Albiol, 2014; Weiss, 2002). Nevertheless, other positive factors that could protect caregivers' health have yet to be evaluated, and these include emotional intelligence.

Emotional intelligence (EI) is defined as the ability of individuals to identify and manage their own emotions (Salovey, Mayer, Goldman, Turvey, & Palfai, 1995). Generally, three processes are included in EI: attention, the tendency to pay attention and think about emotions and feelings; clarity, the ability to understand one's own emotional states; and repair, the ability to regulate one's feelings, terminating negative emotions and/or prolonging positive ones. As emotions have been classically related to health status in several populations (Consedine & Moskowitz, 2007), EI could be a protective factor against health impairment. The few studies that have analyzed the association between EI and health have reported a positive relationship between these variables (Ciarrochi, Deane, & Anderson, 2002; Extremera & Fernández-Berrocal, 2002; Extremera & Fernández-Berrocal, 2006; Martins, Ramalho, & Morin, 2010; Schutte, Malouff, Thorsteinsson, Bhullar, & Rooke, 2007). Moreover, a meta-analysis demonstrated the protective effects of EI overall on several health domains, namely mental, psychosomatic and physical health (Schutte et al., 2007). However, the relationship with health outcomes seems to be different analyzing each component of EI separately (Ciarrochi et al., 2002; Extremera & Fernández-Berrocal, 2006). Specifically, in a sample of students, clarity and repair were related to better quality of life and psychological functioning, whereas attention to feelings was associated with poorer quality of life and psychological functioning (Ciarrochi et al., 2002). These different relationships were also found in studies conducted in other populations, for instance, middle-aged women (Extremera & Fernández-Berrocal, 2002).

Further, while the relationship between EI and self-reported health has been studied, to our knowledge, no studies have analyzed the association between EI and biological markers of health, such as the cortisol awakening response (CAR) in samples of informal caregivers. CAR is a measure of the activity of the hypothalamic–pituitary–adrenal (HPA) axis, which is the major endocrine system involved in stress response (Fries, Dettenborn, & Kirschbaum, 2009). Typically, levels of cortisol increase from awakening to approximately 30 min later, it having been proposed that an increase of 2.5 nmol/l is normal (Wust, Federenko, Hellhammer, & Kirschbaum, 2000). This response is modulated by several socio-demographic and psychosocial factors, including age, gender, phase of the menstrual cycle, smoking habit, and body mass index (Fries et al., 2009). Furthermore, CAR has shown to be altered under chronic stress, as in the case of people with a diagnosis of post-traumatic stress disorder or burnout, and also informal caregivers (De Vught et al., 2005; Moya-Albiol, Serrano, & Salvador, 2010; Ruiz-Robledillo & Moya-Albiol, 2013; Ruiz-Robledillo, González-Bono, & Moya-Albiol, in press). In relation to this, abnormalities in CAR could indicate altered HPA axis activity that, in turn, would imply adverse health outcomes. In this regard, only two studies have assessed the effect of EI as a mediator between stress and health outcomes (Mikolajczak, Roy, Luminet, Fillée, & de Timary, 2007; Salovey, Stroud, Woolery, & Epel, 2002). In the earlier study, high clarity and attention predicted lower cortisol reactivity to acute stress in a general population (Salovey et al., 2002), and in the second study, high EI overall was related to lower evening cortisol secretion in response to acute laboratory stress (Mikolajczak et al., 2007). However, both studies considered non-chronically stressed populations and analyzed evening cortisol but not CAR.

There is a lack of data on the potential protective effects of EI on health of caregivers of people with ASDs and, to our knowledge, no previous studies in this field have considered both self-reported and biological markers. In this context, the main aims of the present study consisted of assessing the association between components of EI (attention, clarity and repair) and both self-reported health and CAR. Overall, we expected self-reported health to be associated negatively with attention and positively with clarity and repair (Ciarrochi et al., 2002; Extremera & Fernández-Berrocal, 2006). The secondary aim was to assess whether CAR was a mediator between EI and self-reported health. Though there were no previous data on this in caregivers, we hypothesized that an altered HPA axis response would mediate the relationship between EI and caregivers' health as has been suggested in a previous study conducted with students (Mikolajczak et al., 2007).

2. Methods

2.1. Participants and procedure

The study was performed in Alicante and Valencia, two cities in the Region of Valencia (Spain). Caregivers were mainly recruited from members of two associations of relatives of people with ASDs: *Asociación Valenciana de Padres de Personas con Autismo* (APNAV) and *Asociación Asperger Alicante* (ASPALI). First, a meeting was conducted with caregivers to explain the aim of the research and the criteria for participation (being mother/father of an individual with a clinical diagnosis of an ASD (patients were diagnosed with ASD by clinical staff of the aforementioned associations following the DSM-IV-R criteria); living at home with the care recipient; and having been the primary caregiver (that is, the person with the greatest responsibility for the daily care and rearing of the child) for at least two years before the study). Of a total of 150 caregivers who attended, 68 parents of people with a diagnosis of ASD (26 men and 42 women) agreed to participate and met selection criteria. At this meeting, we conducted the first interview to collect general information about the participants and

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