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The role of trait emotional intelligence in diabetes self-management behaviors: The mediating effect of diabetes-related distress

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ABSTRACT

This article presents two studies about trait emotional intelligence (EI) and diabetes. The first study investigated whether the level of trait EI of people with diabetes differs from the non-diabetes population. The second study explored the impact of trait EI on diabetes-related distress and diabetes self-management behaviors.
Methods: In study 1, an existing database of 8532 members of a health insurance fund was analyzed through group comparisons to investigate whether the level of trait EI of people suffering from diabetes differs from the non-diabetes people sharing the same gender, age, education level and BMI. Study 2 consisted of a survey among 146 persons with diabetes to investigate the relations between trait EI, distress and diabetes self-management behaviors through regressions and mediation analyses.
Results: People suffering from diabetes had significantly lower levels of trait EI than controls, but this difference was essentially due to differences in gender, age, educational level and BMI. However, trait EI influenced diabetes self-management behaviors. This relationship was mediated by diabetes-related distress, which proved to be a better predictor of self-management behaviors than depression or anxiety.
Conclusion: These findings suggest that enhancing trait EI can be an appropriate way to reduce the distress associated with diabetes management and the risk of complications.

1. Introduction

Affective issues associated with diabetes, such as depression, anxiety, and diabetes-related distress, are gaining growing interest. This attention can be explained by the high prevalence of affective disorders among people with diabetes (Anderson, Freedland, Clouse, & Lustman, 2001; Grigsby, Anderson, Freedland, Clouse, & Lustman, 2002; Nicolucci et al., 2013) and by their impact on diabetes self-management, glycemic control, risk for complications, and mortality (Collins, Corcoran, & Perry, 2009; Park, Katon, & Wolf, 2013; Schmitt et al., 2017). The term “affective disorder” is used here to refer to an intense fear (stress or anxiety) or despair (depression), or something in between (distress), that people with diabetes can experience when facing the reality of having to deal with extensive self-care demands and risks of serious complications for the rest of their life.

Amongst the psychological comorbidities of diabetes, depression is the one that has received the most attention in the literature. Meta-analyses have shown that the prevalence of depression is twice or three times as high among people with diabetes than in the general population (Anderson et al., 2001; Roy & Lloyd, 2012). While suffering from depression is a challenge in itself, it is even more problematic in people with diabetes, because depression is associated with lower adherence to the diabetes treatment and with poorer glycemic control (Gonzalez et al., 2008; Lustman et al., 2000; Sumlin et al., 2014). As a consequence, it also increases the risk of diabetes complications and mortality (Black, Markides, & Ray, 2003; de Groot, Anderson, Freedland, Clouse, & Lustman, 2001). Several authors point out that in many cases, depressive symptoms originate in the context of the chronic disease (Fisher, Gonzalez, & Polonsky, 2014). Both the practical constraints of the daily self-management of the disease (e.g., dietary restrictions regarding sugar intakes, insulin injections, glucose monitoring) and the important risks of serious complications hanging over patient's head like a Damocles' sword (e.g., cardiovascular problems, nephropathy, retinopathy, neuropathy, or amputations), are generally considered as sufficient to explain the apparition of distress (Polonsky et al., 1995). The emotional burden associated with diabetes treatment or with the risk of serious complications is considered as a *diabetes-related distress* (Polonsky et al., 1995), which has been associated with poorer self-management behaviors (diet, physical activity, medication adherence) and, consequently, with poorer glycemic control (Pintaudi et al., 2015).

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In some cases, intense distress related to diabetes can lead to a major depression or to an anxiety disorder. Anxiety among people with diabetes has received less attention in the literature than depression, but several studies suggest that its prevalence and its consequences on self-management may be at least as much important as those of depression (Khambaty, Callahan, Perkins, & Stewart, 2016; Smith et al., 2013).

This has prompted several researchers to investigate the *relative* prevalence and consequences of depression, distress and anxiety among people with diabetes. A longitudinal study by Fisher, Glasgow, Mullan, Skaff, and Polonsky (2008) has shown that the prevalence of general anxiety disorders and depression were respectively 123% and 60% higher in people with diabetes than in the general population. The same study also revealed that diabetes-related distress persisted over the 18 months of the study, whereas anxiety disorder and major depression were more episodic (one episode among the three assessed periods). While diabetes-related distress was significantly associated with higher glycated hemoglobin (HbA1c), no significant correlation was found between the HbA1c and general anxiety disorder or major depression. While some studies did not find a connection between depression and glycemic control, others did find a relationship that disappeared when diabetes distress was controlled for (van Bastelaar, Cuijpers, Pouwer, Riper, & Snoek, 2011). Therefore, several authors suggest that diabetes-related distress may act as a mediator of the relationship between depressive symptoms and glycemic control (Aghili et al., 2016; Schmitt et al., 2015). Regardless of whether distress is a predictor (Fisher et al., 2008) or a mediator (Aghili et al., 2016; Schmitt et al., 2015; van Bastelaar et al., 2011), these studies converge in the sense that they lend support to the view that the relationship between diabetes-related distress and glycemic control is stronger than that of depression with glycemic control.

The detrimental effect of diabetes-related distress on diabetes self-management and glycemic control is even more serious when considering the prevalence of diabetes-related distress among people with diabetes. The Diabetes Attitudes, Wishes and Needs study (DAWN2) revealed that, among 8596 adults with diabetes, as much as 44.6% reported diabetes-related distress (Nicolucci et al., 2013). However, surprisingly few published studies have tried to identify the dispositional factors that may reduce or exacerbate the risk of diabetes-related distress. Amongst the factor that have been named as related to greater diabetes-related distress are younger age, lower levels of self-efficacy and less perceived health care support (Wardian & Sun, 2014). However, emotional intelligence, a dispositional factor that has been found to predict subjective and objective responses to a number of acute or chronic adverse situations over and above personality traits such as the big five, alexithymia, optimism, etc. (Andrei, Siegling, Aloe, Baldaro, & Petrides, 2016; Mikolajczak, Luminet, Leroy, & Roy, 2007; Mikolajczak, Luminet, & Menil, 2006; Mikolajczak, Petrides, Coumans, & Luminet, 2009; Mikolajczak, Roy, Luminet, Fillée, & de Timary, 2007), remains virtually unmentioned in the diabetes literature.

Emotional intelligence (EI) refers to the capacity to identify, understand, express or listen, regulate and use our own emotions and others' emotions (Mayer & Salovey, 1997; Petrides & Furnham, 2003; Saarni, 1990). Over the last decades, EI has been considered as a specific form of intelligence (e.g., Mayer & Salovey, 1997), a personality trait (e.g., Petrides & Furnham, 2001) or a mix of both (e.g., Bar-On, 2004). The tripartite model proposed by Mikolajczak et al. (2009) integrates these different conceptions by considering that EI encompasses three levels: knowledge, abilities and traits. The knowledge level refers to what people know about emotions and emotionally intelligent behaviors (e.g., Do I know which emotional expressions are constructive in a given social situation?). The ability level refers to the ability to apply this knowledge in a real-world situation (e.g., Am I able to express my emotions constructively in a given social situation?). The trait level refers to emotion-related dispositions, namely, the propensity to behave in a certain way in emotional situations (e.g., Do I typically express my emotions in a constructive manner in social situations?). These three levels of emotion-related individual differences are loosely connected (Cardoso-Seixas, 2016; Lumley, Gustavson, Ty, & Labouvie-Vief, 2005). In the current paper, we focus on the trait level and consider EI as a disposition that can be measured through self-report questionnaires (Petrides, Pita, & Kokkinaki, 2007).

Several instruments to measure trait EI have been developed, among which are the Trait Emotional Intelligence Questionnaire (TEIQue; Petrides, 2009) and the Profile of Emotional Competence (PEC; Brasseur, Grégoire, Bourdu, & Mikolajczak, 2013). The TEIQue is the most widely used instrument to assess trait EI. Moreover, Martins, Ramalho, and Morin (2010) showed that, among the questionnaires assessing EI as a trait, the TEIQue had the strongest association with *mental* health. Given the focus on diabetes-related *distress* in the second study, it seemed to be a particularly suitable instrument.

In two large-sample studies on EI and health (Mikolajczak et al., 2015), the PEC was found to be very complementary to the TEIQue. Both instruments predicted physical health (operationalized via medicine consumption, hospitalizations, and doctor consultations as registered on health insurance records), with the TEIQue performing slightly better than the PEC. However, the second study also showed that intrapersonal EI (i.e., identification, understanding, expression, regulation and use of one's own emotions) predicted physical health better than interpersonal EI (i.e., identification, understanding, expression, regulation and use of others' emotions). Because it also appeared that some dimensions of EI were more predictive of physical health than others, the PEC seems suitable to show where differences between diabetes and non-diabetes people lie, if they exist.

There are several reasons to hypothesize that EI is a relevant factor to diabetes, its management and its emotional consequences. In the general population, higher EI has been associated with healthier behaviors (Fernández-Abascal & Martín-Díaz, 2015; Saklofske, Austin, Rohr, & Andrews, 2007; Sygit-Kowalkowska, Sygit, & Sygit, 2015), better health (as evidenced by less drug consumption, fewer doctor visits and fewer hospitalizations (Mikolajczak et al., 2015); and less negative emotions such as anxiety (Killgore, Sonis, Rosso, & Rauch, 2016), depression (Gomez-Baya, Mendoza, Paino, & Matos, 2017; Lloyd, Malek-Ahmadi, Barclay, Fernandez, & Chartrand, 2012), or distress in the face of adversity (Armstrong, Galligan, & Critchley, 2011)). In clinical populations, the level of trait EI has been shown to be lower among people suffering from an inflammatory disease (such as rheumatoid arthritis, ankylosing spondylitis, or multiple sclerosis) compared to a control group (Costa, Petrides, & Tillmann, 2014). EI was also found to be significantly associated with self-management and well-being in chronic obstructive pulmonary disease (Benzo, Kirsch, Dulohery, & Abascal-Bolado, 2015). These findings suggest that EI could also be important for people with diabetes. Firstly, higher EI is expected to influence glycemic control: higher levels of EI have been shown to attenuate the neuroendocrine activation in stressful situations (Mikolajczak, Roy, et al., 2007), resulting in lower cortisol production. Given that increases in cortisol directly elevate blood sugar, EI should be an asset for people with diabetes. Secondly, higher EI is expected to reduce diabetes-related distress as well as depressive and anxiety symptoms. Indeed, EI has repeatedly been shown to decrease negative emotions in adverse circumstances (Mikolajczak et al., 2009), resulting in less anxiety and depression (Ciarrochi, Deane, & Anderson, 2002). Thirdly, diabetic patients with higher EI should be more able to face challenges associated with the daily treatment of diabetes. Studies have shown that trait EI is associated with less avoidant coping and more attempts to modify adverse situations (see Mikolajczak & Pena-Sarrionandia, 2015 for a meta-analysis), which should enhance disease management behaviors.

Despite the potential impact of emotional intelligence on diabetes self-management and glycemic control, only three studies have investigated EI in the context of diabetes. Zysberg, Bar Yoseph, and Goldman (2017) showed that ability EI among young adults with type 1 diabetes was associated with better levels of HbA1c and of blood sugar