Increasing emotional intelligence to decrease healthcare expenditures: How profitable would it be?

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A B S T R A C T

While numerous studies document the impact of emotional intelligence on health, no study has estimated the associated economic impact. As a result, the return on investment that could be expected from investing in improving emotional intelligence is unknown, and emotional intelligence research does not always make the expected impact on public policies. In this study, we examine how profitable it would be for governments or insurances to invest in improving people's emotional intelligence (EI). 9616 members of a Mutual Benefit Society completed a measure of EI that we coupled with their healthcare expenditures. Results first show that every 1% increase in intrapersonal EI corresponds to a 1% decrease in healthcare expenditures. Findings also show that the return on investment of increasing intrapersonal EI would vary as a function of people's educational level: the lower the level of education, the higher the expected return.

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Although everyone experiences emotions, people markedly differ in the ways and the extent to which they deal with intrapersonal or interpersonal emotional information (Mayer & Salovey, 1997; Petrides & Furnham, 2003; Saarni, 1990). The concepts of "emotional competence" (EC), "emotional intelligence" (EI) or "emotional skills" (ES) have been proposed to account for this idea. The term emotional intelligence (EI) is the most common to designate these individual differences, hence its use here.

Over the past two decades, emotion-related individual differences have been conceptualized as abilities (see e.g., Mayer & Salovey, 1997), traits (see e.g. Petrides & Furnham, 2001) or a mix of both (see e.g., Bar-On, 2006). This has led to different important lines of research and to some debates on the status of emotional intelligence as being a set of traits (best assessed via personality-like tests) or abilities (best assessed via intelligence-like tests). These debates between traits and ability conceptions of EI have resulted in an integrative model encompassing 3 levels: knowledge, abilities and traits (Mikolajczak, Petrides, Coumans & Luminet, 2009). 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 focus here is not

on what people know but on what they can do: Even though many people know that they should not shout when angry, many are simply unable to contain themselves. The trait level refers to emotion-related dispositions, namely, the propensity to behave in a certain way in emotional situations (Do I typically express my emotions in a constructive manner in social situations?). As the foregoing illustrations should have made obvious, these three levels of emotion-related individual differences are loosely connected (Cardoso-Seixas, 2016; Lumley, Gustavson, Partridge, & Labouvie-Vief, 2005). In the current paper, we focus on the trait level.

An impressive body of literature indicates that the level of EI has a significant impact on psychological, social and physical adjustment. At the psychological level, higher EI is for instance associated with greater well-being (e.g. Austin, Saklofske, & Egan, 2005), greater life satisfaction (e.g., Di Fabio & Saklofske, 2014) and decreased psychological disorders (e.g. Petrides, Pérez-González, & Furnham, 2007). At a social level, higher EI is associated with increased social support (e.g., Mikolajczak, Luminet, Leroy, & Roy, 2007) and better quality social and marital relationships (e.g., Malouff, Schutte, & Thorsteinsson, 2014; Petrides, Sangareau, Furnham, & Frederickson, 2006; Schutte et al., 2001). At the physical level, higher EI is linked to better physical health, both subjectively reported (see Martins, Ramalho, & Morin, 2010 for a meta-analysis) and objectively measured (Mikolajczak et al., 2015). In two studies conducted on > 10.000 members of the largest Mutual Benefit Society in Belgium, Mikolajczak et al. (2015) showed that higher levels of EI are associated with less drug consumption and fewer doctor consultations and hospitalizations, even when controlling for other predictors of healthcare

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use such as age, sex, level of education, body mass index, diet habits, physical activity, drinking and smoking habits and social support. This relationship is not surprising as prior research already demonstrated that EI is related to more preventive health behaviors (e.g., physical activity, healthy eating) and less risk-taking behaviors (e.g., traffic and substance risk taking) (Fernández-Abascal & Martín-Díaz, 2015; Jacobs, Wollny, Sim, & Horsch, 2016; Saklofske, Austin, Galloway, & Davidson, 2007).

Although the studies cited above are correlative, several controlled trials have shown that emotional intelligence is causally involved in these outcomes: when EI is enhanced through training, psychological, physical and social adjustment improve (e.g., Karahan & Yalcin, 2009; Kotsou, Nelis, Grégoire, & Mikolajczak, 2011; Nelis et al., 2011). It is also noteworthy that EI cannot be reduced to (inversed) neuroticism nor to a simple combination of the big five factors of personality. Numerous studies have shown that EI has incremental validity to predict psychological, social and physical adjustment over and above the Big Five (e.g., Lopes, Salovey, & Straus, 2003; Mikolajczak, Roy, Luminet, Fillée and de Timary, 2007; Petrides et al., 2007; see Andrei, Siegling, Aloe, Baldaro, & Petrides, 2016, for a meta-analysis).

Based on previous correlative and experimental evidence supporting the impact of EI on health, this study aimed to contribute to the estimation of the profitability of improving EI in order to reduce healthcare expenses. First, we aimed to estimate the impact of EI on healthcare expenditures in order to determine, for instance, to what extent it would be profitable to include EI training courses in regular school curricula or to invest in community EI training. A related and secondary goal was to determine if there were categories of people whom it would be more profitable to target (e.g., in terms of education level, age, sex).

1. Method

1.1. Participants and procedure

The study was conducted in collaboration with the largest Mutual Benefit Society in Belgium (namely the Mutualité Chrétienne – Christelijke Mutualiteit, abbreviated in MC-CM, which insures 42% of the Belgian population, irrespective of religious affiliation[1]). The study protocol as well as the information and written consent documents were approved by the Ethical Committee of the Psychology Department and by the Law Department of the MC-CM. A sample of 200.000 adults (between 18 and 80 years old) was extracted from the MC-CM database so as to form a stratified sample on age, sex and socio-economic status. Participants were contacted by email and invited to participate in a study on emotions and health. The cover letter specified how personal data would be handled and automatically anonymized. Participants were informed that they would be asked only at the end of the survey whether they consented (or not) to couple their answers with their data in possession of the MC-CM. Among the 200.000 subjects, 16.999 answered the whole questionnaire and gave their consent for coupling it with the data in possession of the MC-CM. We stopped the data collection two months after sending the email. Among the respondents, 9616 subjects were members of the MC-CM for the whole period under study (2001 − 2012). The final sample thus consisted of these 9616 subjects ($M_{age} = 56.53$, $SD = 13.3$; 59% female). Compared to the contacted sample, women, seniors and Dutch-speakers are overrepresented in the final sample. Sex, age and language were thus included in the models. As only age turned out to be a significant predictor of healthcare expenditures, only age was kept in the final models. Note that a portion of the data collected within the framework of this study has already been published.[2] The research question and dependent variables are different, however.

1.2. Measures

1.2.1. Demographics

Participants were asked to indicate their age, sex and level of education (*primary school*, *junior high school*, *high school*, *college*, *university* [*master*], *post-graduate* [Ph.D., MBA]).

1.2.2. Emotional intelligence

Emotional intelligence was assessed with the *Profile of Emotional Competence* (PEC; Brasseur, Grégoire, Bourdu, & Mikolajczak, 2013). This 50, five-point item (from *strongly disagree* to *strongly agree*) measure was designed to evaluate the five core emotional competencies separately, distinctly for one's own and others' emotions. It thus provides 10 subscores (identification of one's emotions, identification of others' emotions, understanding of one's emotions, understanding of others' emotions, expression of one's emotions, listening to others' emotions, regulation of one's emotions, regulation of others' emotions, use of one's emotions, use of others' emotions), forming 3 global scores: an intrapersonal EI score (= mean of the five intra-personal subscales; $\alpha = 0.86$), an interpersonal EI score (= mean of the five inter-personal subscales; $\alpha = 0.89$) and a total EI score (= mean of intra- and inter-personal scores; $\alpha = 0.92$). Examples of items are "*during an argument, I can't identify whether I am sad or angry*" and "*my emotions inform me of what is important to me*".

1.2.3. Healthcare expenditures

Participants' consent for coupling the data allowed us to retrieve the healthcare expenditures from the MC-CM records, for each respondent over the last 12 years.[3] In Belgium, the cost of a medical act is distributed as follows: (1) the share paid by the Mutual Benefit Society (i.e. in other words, by the state), (2) the share paid by the patient (i.e. a lump sum determined for each medical act, plus any supplementary fees if the patient sees a doctor who charges more than the officially approved tariffs). Because we were interested in the financial implications of EI for governments, in this paper we focused on the share paid by the mutual benefit society. This has the additional advantage of not being biased by whether the consultation/act was charged at the officially approved tariffs or not, since the share paid by the Mutual Benefit Society remains constant in both cases.

1.3. Modelling and analyses

Given that inter-personal EI does not significantly predict lower healthcare expenditures when intra-personal EI is controlled for (see Mikolajczak et al., 2015), the following section will focus on intra-personal EI only. For the reason mentioned previously, sex, age and language were at first included in the models; sex and language were then removed because they were not significant predictors.

Both the dependent variable (*Exp*, expenditures) and the independent variable (EI scores) are considered hereafter after a logarithmic transformation in order to obtain the elasticity coefficient. In Economics, elasticity is a relative measure of how responsive one economic variable is to the change of another. It is used to answer questions such as "Other things being equal, if I lower the price of my product, how responsive will be my sales?" Elasticity can be quantified as the ratio of the percentage change in one variable to the percentage change in another variable, when the latter variable has a causal influence on the former. Contrary

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[1] 98% of the Belgian population is affiliated to a mutual benefit society (it is compulsory in Belgium).
[2] Mikolajczak et al. (2015). A nationally representative study of emotional competence and health. *Emotion*, *15*, 653–567.

[3] The choice of the period is determined by the fact that when we started collaborating with the MC-CM in 2010, we decided to couple people's answers to the questionnaire with health-related consumption over the last ten years (thus starting from 2001). We kept the same starting base (2001) for the next studies, hence the twelve-year period (2001–2012) for this study conducted in mid-2013.