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Review

A comprehensive meta-analysis of the relationship between Emotional Intelligence and health [☆]

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ABSTRACT

In everyday life, people have the notion that acknowledging and dealing effectively with emotions contributes to their wellbeing. A recent meta-analysis by Schutte, Malouff, Thorsteinsson, Bhullar, and Rooke (2007) indicated that Emotional Intelligence (EI) is associated with better health. Our purpose is to expand their work by including: (1) studies published after the date considered by them; (2) non-English studies; and (3) a cumulative meta-analysis to check for the sufficiency and stability in the history of this research domain. Based on 105 effect sizes and 19,815 participants, the results globally support previous findings. When measured as a trait, EI was more strongly associated with health ($\bar{r} = .34$) than when it was measured as an ability ($\bar{r} = .17$). The weighted average association with mental ($\bar{r} = .36$) and psychosomatic health ($\bar{r} = .33$) was higher, than the association with physical health ($\bar{r} = .27$). Within the trait approach, the TEIQue showed the strongest association with mental health ($\bar{r} = .50$), followed by the EQ-i ($\bar{r} = .44$), SEIS ($\bar{r} = .29$) and TMMS ($\bar{r} = .24$). Furthermore, the cumulative meta-analysis indicated that this line of research has already reached sufficiency and stability. Overall, the results are encouraging regarding the value of EI as a plausible health predictor.

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1. Introduction

In everyday life, people have the notion that acknowledging and dealing effectively with emotions contributes to their wellbeing. On the other hand, ignoring them or not dealing with them properly can deteriorate their welfare, especially if it happens on a regular basis. For example, the perspective of an exam or an interview can make us feel anxious and if we are not able to find ways to deal with these emotions, we might end up feeling truly ill.

Being able to recognize what we and other people feel, and finding ways to deal with those emotions is an important facet of what psychologists generally call Emotional Intelligence (EI). After almost 20 years of research in the field of EI, doubts still exist about its conceptualization and relevance in different life domains. Considered either as a set of interrelated abilities (e.g., Mayer & Salovey, 1997) or as a constellation of emotional self-perceptions within the lower levels of personality hierarchies (Petrides, Pita & Kokkinaki, 2007), EI has received divergent operationalisations,

either as a test of maximum performance (e.g., MSCEIT – Mayer-Salovey-Caruso Emotional Intelligence Test) or as a self-report questionnaire (e.g., TEIQue – Trait Emotional Intelligence Questionnaire), respectively. The lack of consensus endorsed the proliferation of many different instruments to measure this new construct, making it difficult to take confident conclusions about EI's real value and impact. One valuable way to put together disperse results from different studies is using meta-analysis, a rigorous quantitative approach which refers to the statistical integration of the results of independent studies, leading to conclusions that are more precise and more reliable than can be derived in any one primary study or in a narrative review (Johnson, Mullen, & Salas, 1995; Rosenthal & DiMatteo, 2001).

Three important efforts have been made in this direction in EI's domain. Van Rooy and Viswesvaran (2004) used this approach to analyze EI's construct validity and Van Rooy, Viswesvaran, and Pluta (2005) meta-analyzed its predictive validity concerning performance. More recently, Schutte et al. (2007) also used this approach to examine the relationship between EI and health, an area that had not received specific attention in the previous meta-analytic studies. Their undertaking showed that higher EI is linked with better health. However, since then, more studies have been published that would be includable in the analysis of this relationship, as well as non-English studies (e.g., Spanish),

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available both before and after their work. This has the advantage of increasing the sample size and, therefore, the statistical power of the meta-analysis, besides doing justice to those studies (Johnson, Scott-Sheldon, Snyder, Noar, & Huedo-Medina, 2008). Furthermore, to our knowledge, a cumulative meta-analysis has not yet been performed in this area. Mullen, Muellerleile, and Bryant (2001) defined *cumulative meta-analysis* as “the procedure of performing a (new) meta-analysis at every point during the history of a research domain” (pp. 1451). This procedure addresses the questions of sufficiency and stability in a specific area. The first one indicates whether a certain phenomenon is already established or needs additional studies and the second one indicates whether new studies would change the existing findings. This would give researchers the notion that more investigation is required in order to test the relationship between EI and health.

In summary, the purpose of this paper is to expand the findings of Schutte et al.'s (2007) work in three ways: (1) by including studies published after their meta-analysis; (2) by including non-English studies that became available both before and after their meta-analysis; and (3) by performing a cumulative meta-analysis.

2. Method

Since there are two distinct methods to measure EI (ability-based vs. personality-like trait) and so many different instruments, especially in the last case, it is important to investigate their relative value as a health predictor. Therefore, two separate meta-analyses were conducted: one considering the two distinct methods as different tasks (ability vs. trait) and another considering the specific instrument used as different tasks (e.g., EQ-i).

In order to compare the results with those found by Schutte et al. (2007), health was also categorized in three different types (physical, psychosomatic, and mental), using the same criteria. Studies that used measures related to mental disorders (e.g., depression) were integrated in the mental health category, those that assessed physical (medical) symptoms were classified as physical health (e.g., bodily pain) and studies that mixed both kinds of indicators were classified in the psychosomatic category (e.g., general health measures). Therefore, three separate meta-analyses were conducted to assess the relationship between EI and each health category.

When analyzing the studies, whenever multiple measures for the same variable were used (e.g., a measure of depression and a measure of anxiety to assess mental health; or two different trait questionnaires to measure EI) effect sizes were averaged to avoid biasing the results by deriving too many effect sizes from the same sample. However, when there was an ability test and a trait questionnaire to measure EI in the same study, only one of the effect sizes was considered in order to avoid mixing both constructs. The criterion used here consisted in selecting the operationalisation that was more difficult to find in the literature (i.e., ability measures) in order to guarantee a more balanced pool of results to analyze.

2.1. Meta-analytic procedures

This meta-analysis is based on Rosenthal and Rubin's techniques (1986), one of the approaches recommended by Johnson et al. (1995). Briefly, the procedure entails converting study outcomes to standard normal metrics (Zs associated with one-tailed probabilities for significance levels and Fisher's *r*-to-*Z* transformation for effect sizes), combining them to produce weighted means and examining them in diffuse and focused comparisons. Also, this approach provides a fail-safe number, which estimates the number of unretrieved studies and that were probably left in the file

drawer, because they did not show significant results ($p > .05$) and which could threaten the overall conclusions. In other words, it gives an approximation of the findings' resistance to the *file drawer problem* (Rosenthal & DiMatteo, 2001). Without this procedure it would lead to an overestimate of the number of significant results.

2.2. Literature search

Using all the standard literature search techniques, an exhaustive search was conducted for studies examining the link between emotional intelligence and health. Specifically *ABI/INFORM Global*, *Academic Search Complete*, *Business Source Complete*, *Economia Y Negocios*, *ERIC*, *Fuente Académica*, *Medline*, *Academic Search Alumni Edition*, *Business Source Alumni Edition*, *PsychArticles*, and *Google Scholar*, were searched using the following keywords individually and combined, in English, Portuguese, Spanish and French: *emotional intelligence*, *health*, *depression*, *anxiety*, *burnout* and *personality disorders*. These computer searches were supplemented by ancestry searches (scrutinizing the reference sections of relevant studies that have already been retrieved to locate earlier relevant studies) and descendency searches (scrutinizing Social Science Citation Index to retrieve subsequent relevant studies that have cited earlier relevant studies), and browsing through the past 19 years of social psychology journals.

Studies were included if they met the following criteria: (1) Studies that reported, or allowed the precise reconstruction of a precise statistical test of the link between EI and Health. Therefore, studies that simply reported that a non-significant or significant effect was found, without providing the statistical test, data with which the statistical test could be reconstructed or a precise probability value were excluded. (2) Studies that used adult or adolescent participants (11 years and above). (3) Studies that reported using at least one of the three relevant dependent measures (i.e., mental health, physical health or psychosomatic health). (4) Studies that used predictors specifically referred to as EI tests, precluding those that used other, although related constructs (e.g., social intelligence). (5) Studies that measured at least three or four dimensions of EI (even when using short versions). Therefore, studies that simply used one or two subscales of a complete measure of EI were not included (e.g., studies that simply measured *Emotional Perception* or *Emotional Management*).

As a result, the new literature search produced a total of 46 includable additional reports available as of January 2010, resulting in further $k = 63$ hypothesis tests for the relationship between EI and health. Adding these to the studies included in the original research (Schutte et al., 2007) – 35 studies, 44 effect sizes, 7898 participants – we assembled a total of 80 studies and 105 hypothesis tests, in the present paper. The total sample included 19,815 participants, with reported mean ages between 15 and 53 years. It should be noticed that for the sake of coherence regarding our inclusion criteria, one study integrated in the original meta-analysis was excluded from the present one. Specifically, the Humpel, Caputi, and Martin (2001) study was not considered here, because only one scale (Perception of emotions) of a complete measure of EI was used.

Also, in line with the original meta-analysis, three predictors were derived for each hypothesis test: gender was operationalised as either male (1), female (2) or both (0); age group was operationalised as either adults (1), adolescents (2) or both (0); finally, participants' origin was operationalised as either students (1), community (2) or both (0). Based on Schutte et al.'s (2007) results, it is expected that the magnitude of the relationship between EI and health will vary as a function of gender, but not as a function of age group and participants' profile (see Table 1 for the hypothe-

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