# ANALYSIS OF THE PSYCHOMETRIC PROPERTIES OF THE MBI-HSS' IN PORTUGUESE FIREFIGHTERS

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## 1. Background & Aim

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Burnout is a response to a long stressfully work conditions (Maslach, Schaufeli, & Leiter, 2001). It includes three dimensions: Emotional Exhaustion represents the lack of emotional, moral and psychological resources (Vicente, Oliveira, & Marôco, 2013); Depersonalization means an emotional detachment with stakeholders; and Personal Accomplishment is related with a decrease of the feelings of pleasure and professional efficacy (Marôco & Tecedeiro, 2009). Burnout symptoms are more frequent in specific jobs, like firefighters, because this kind of professionals are exposed to more stressful conditions than others (Cherniss, 1980). Firefighters need particular attention in terms of psychological support and counseling (Lourel, Abdellaoui, Chevaleyre, Paltrier, & Gana, 2008). Their job context needs various kinds of rescues and puts them in potentially stressful circumstances. With this kind of work some professionals can develop mental disorders (Bennett et al., 2005). The Maslach Burnout Inventory Human Services Survey (MBI-HSS; Maslach, Jackson, & Leiter, 1996), is an instrument that accesses the emotional reactions in the labor environment, giving a measure of burnout (Maslach & Leiter, 1997). It has 22 items, organized into three dimensions: personal accomplishment (eight items), depersonalization (five items) and emotional exhaustion (nine items). This instrument is the most common used survey to access professional burnout, but it was developed only for professions in which contact with other people represents an important part of the tasks (Taris, Schreurs, & Schaufeli, 1999). The MBI-HSS has several items referring to contact with other people, and this characteristic turns it in a special useful instrument to access burnout levels in human services professionals. We aimed to analyze, among a sample of firefighters, the psychometric properties of the MBI-HSS, using its Portuguese version (Pinto & Picado, 2011).

## 2. Methods

We inquired 381 firefighters, with mean age 32.2 years (SD=8.2), 83% were male, 57% without children, 50% were married or in a de facto relationship, 45% single and 5% were widow or divorced. At the education level, 57% had undergraduate education, 39% had graduate education and 4% had postgraduate education. Data was gathered between 2011 and 2013 and the firefighters fulfilled the Portuguese version of the MBI-HSS (Pinto & Picado, 2011), scored on a Likert-type scale of 7 points (0 – Never; 6 – Every day). The confirmatory factorial analysis (CFA) was performed with IBM SPSS AMOS® 22.0. Construct related validity was evaluated in its 3 facets (factorial, convergent and discriminant validity) as described by Marôco (2014). The ratio chi-square and degrees of freedom ($\chi^2$/df), goodness of fit index (GFI), confirmatory fit index (CFI), parsimony goodness of fit index (PGFI), parsimony confirmatory of fit index (PCFI) and root mean square error of approximation(RMSEA) were used to evaluate the goodness of the fit indices. The convergent validity was assessed with the Composite Reliability (CR) and the Average Variance Extracted (AVE), they were estimated as described in Fornell and Larcker (1981) being considered adequate values of AVE≥.5 and CR≥.7 according to the proposal by Hair, Black, Babin, and Anderson (2009). The discriminant validity was assessed by the comparison of the AVE of the factors with the squared correlation of the factors, as proposed by Fornell and Larcker (1981) and described in Marôco (2014). Discriminant validity is obtained when the AVE for every two scales is larger the squared Pearson correlation between the two scales.

## 3. Results

The original model showed poor fit to the data (Model 1), with $\chi^2$/df=3.210; GFI=0.864; CFI=0.860; PGFI=0.680; PCFI=0.741; RMSEA=0.076 (Marôco, 2014). A reduced model (Model 2) is proposed, the results from the CFA showed acceptable fit, with $\chi^2$/df=2.846; GFI=0.921; CFI=0.925; PGFI=0.668; PCFI=0.767; RMSEA=0.070. The CR values were high, 0.880 for emotional exhaustion, 0.764 for depersonalization, and 0.762 for professional accomplishment. The AVE revealed to be satisfactory in two factors 0.516 for emotional exhaustion, 0.538 for depersonalization, and unsatisfactory for professional accomplishment 0.395. With $AVE_{emotional\ exhaustion}$=0.516 and $AVE_{depersonalization}$=0.538 bigger than $r^2_{eed}$=0.25, the $AVE_{emotional\ exhaustion}$=0.516 and $AVE_{professional\ accomplishment}$=0.395 bigger than $r^2_{eepa}$=0.01 and $AVE_{depersonalization}$=0.538 and $AVE_{professional\ accomplishment}$=0.395 bigger than $r^2_{dpa}$=0.01.
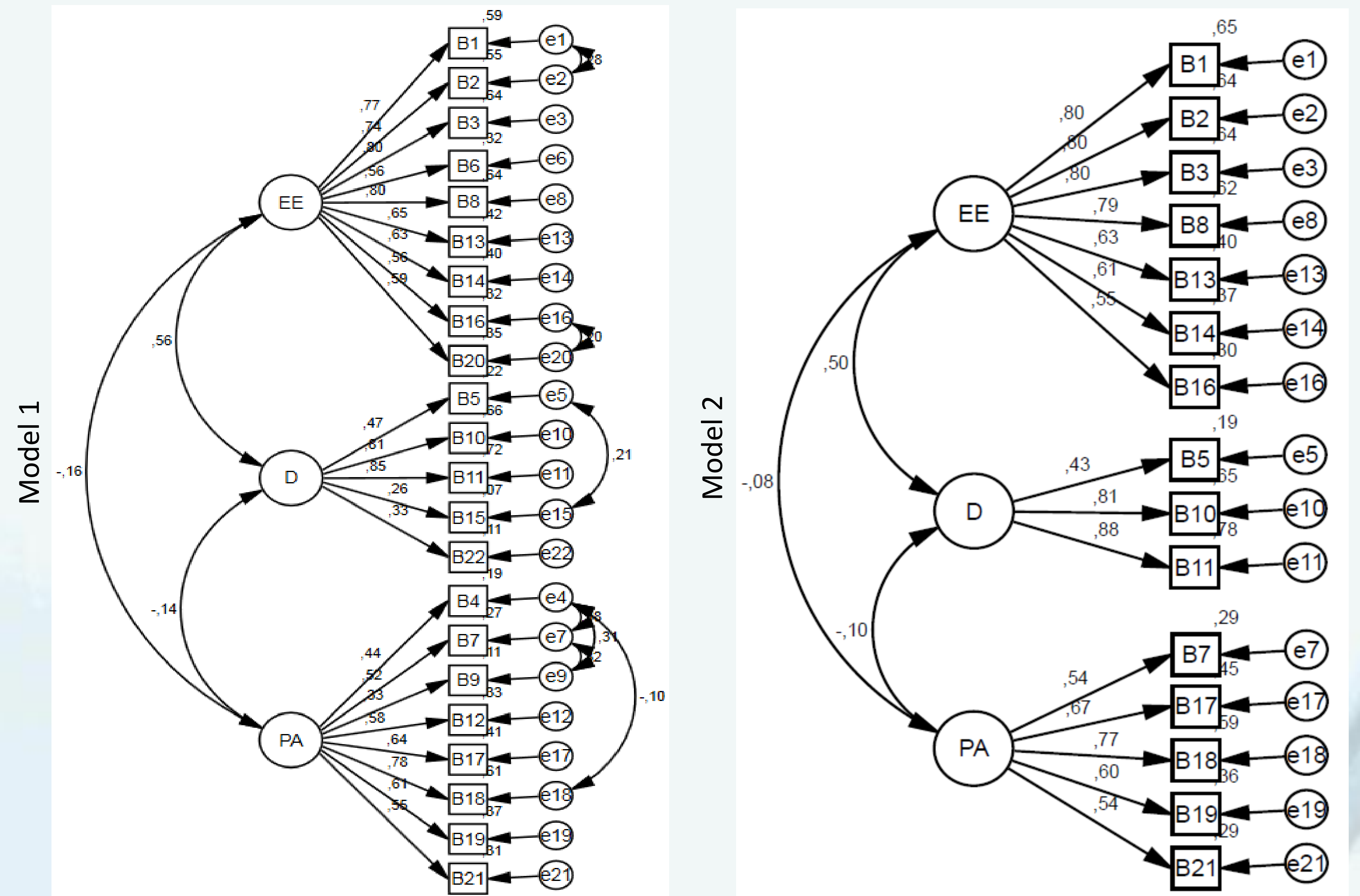


## 4. Discussion

The MBI-HSS after removing items 4, 6, 9, 12, 15, 20 e 22 produced data with factorial validity, convergent validity and discriminant validity. This proposed structure needs to be validated with an independent sample from the one gathered in this study. Some of the removed items don't apply, apparently due the fact that our sample showed low levels of disbelief with its work.

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