Personality and Individual Differences 49 (2010) 216–221

Contents lists available at ScienceDirect

Personality and Individual Differences

journal homepage: www.elsevier.com/locate/paid

Taxometric analysis of alexithymia in a general population sample from Finland

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ARTICLE INFO

Article history:
Received 26 August 2009
Received in revised form 17 March 2010
Accepted 25 March 2010
Available online 21 April 2010

Keywords:
Alexithymia
Taxometric analysis
TAS-20
Latent structure

ABSTRACT

Results from a recent taxometric investigation of the alexithymia construct, measured by the 20-Item Toronto Alexithymia Scale (TAS-20), with English-speaking samples in Canada provided evidence that alexithymia is best conceptualized as a dimensional rather than a categorical construct. The aim of the current investigation was to attempt to generalize the outcome of this earlier investigation by examining the latent structure of the alexithymia construct in a sample whose primary language was not English. A second aim was to examine the latent structure in men and women separately as some investigators propose that typological differences in the nature of alexithymia may differ by gender. The sample comprised 5194 (2377 men, 2817 women) residents of Finland who as part of a population-based health survey, supported by the Finnish government, had completed a Finnish-language translation of the TAS-20. Three non-redundant taxometric analyses were performed in the total sample and for men and women separately, using item sets from the TAS-20 as indicators. The outcomes of the taxometric analyses for all three samples were similar to those in the Canadian study. These findings provide further evidence that alexithymia is a dimensional construct.

1. Introduction

Alexithymia is a personality construct that is thought to reflect deficits in the cognitive processing and regulation of emotions (Lumley, Neely, & Burger, 2007; Taylor, Bagby, & Parker, 1997). The construct is defined by difficulties identifying and describing feelings, an impoverished fantasy life, and an externally oriented style of thinking (Nemiah, Freyberger, & Sifneos, 1976). Although this definition implies that alexithymia refers to a low degree of emotional awareness and capacity for imaginal activity, and thus exists on a continuum with higher degrees of emotional and imaginal functioning, the literature contains both categorical and dimensional conceptualizations of the construct. These opposing views are reflected in the theoretical discussions of the construct and by various instruments developed to measure alexithymia. Whereas some of these instruments dichotomize individuals into those with and without alexithymia (e.g., the Beth Israel Hospital Questionnaire (Sifneos, 1973) and the Diagnostic Criteria for Psychosomatic Research (Fava et al., 1995)), others measure alexithymia as a continuous variable (e.g., the Toronto Structured Interview for Alexithymia (Bagby, Taylor, Parker, & Dickens, 2006)), and still others, although assessing alexithymia as if the construct were continuous, use pre-defined and operationalized cut-off scores for identifying high and low alexithymic individuals (e.g., the 20-Item Toronto Alexithymia Scale (TAS-20) (Bagby, Parker, & Taylor, 1994; Bagby, Taylor, & Parker, 1994; Taylor et al., 1997)).

How one chooses to conceptualize and assess the observable characteristics and the latent components of constructs such as alexithymia, however, may not match the underlying structure of the construct (see e.g., Ruscio & Ruscio, 2002). As knowledge of the latent structure of clinical constructs such as alexithymia influences methods used for measurement, research strategies for investigation, interventions for treatment, and even theoretical development in attempts to explain the etiology, it is critical that empirical research be conducted to determine the "nature" (i.e., categorical *vs.* dimensional distribution) of the latent structure of hypothetical constructs. One method for assessing whether the nature of a construct is categorical or dimensional is taxometric analysis (Waller & Meehl, 1998). Parker, Keefer, Taylor, and Bagby

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doi:10.1016/j.paid.2010.03.038

(2008) recently applied various taxometric procedures to an English-speaking community, university student, and psychiatric outpatient samples in Canada, using the three factors (subscales) of the TAS-20 as indicators. Results from this investigation provided evidence that alexithymia is best conceptualized as a dimensional construct.

It might be argued that the outcomes from the Parker et al. (2008) study are "sample-dependent". The distribution of the indicators from which a dimensional structure was inferred, for example, was derived from an English language-version of the TAS-20, and the results may not be generalizable to non-English-speaking samples. Evaluating the dimensional nature of the alexithymia construct across different language groups is critical as some question the universality of the construct (Kirmayer, 1987). A similar argument might be made with respect to gender as others have reported that men and women score differently on measures of the alexithymia construct (e.g., Franz et al., 2007; Salminen, Saarijärvi, Äärelä, Toikka, & Kauhanen, 1999). Moreover, it has been suggested that alexithymia may present itself in qualitatively different ways for men and women (Moorman et al., 2008), opening the possibility that the dimensional findings reported by Parker et al. (2008), who combined men and women into single samples, might have masked typological distinctions between the genders. It is within the context of these limitations that the current investigation was conducted. More specifically, the aim was to determine if a dimensional structure could be recovered in a single (total) sample of Finnish-speaking persons and in separate samples of men and women. The study was conducted with a large community sample in Finland, in which the participants had completed a validated Finnish-language version of the TAS-20 (Joukamaa et al., 2001).

2. Method

2.1. Participants

The Finnish population sample was part of an epidemiological survey study, "The Health 2000 Survey", conducted in 2000–2001 (Aromaa & Koskinen, 2004). Statistics Finland planned the two-stage, stratified cluster sampling that included adults who were at least 30 years old and living in mainland Finland. Sampling was regionally stratified according to the five Finnish university hospital regions, each containing roughly one million inhabitants. Eighty health care districts, 16 from each university hospital region, were sampled as "clusters", and these clusters included 160 municipalities. The Social Insurance Institution of Finland selected by systematic sampling 8028 individuals and 6770 of these persons agreed to participate in a health examination; 6157 reported Finnish to be their native language. After the health examination the participants were given a package of questionnaires, which included the TAS-20; 5194 of the 6157 native Finnish speakers returned a fully completed TAS-20, the data from which served as the source of analyses for the current study. The mean age was 51.74 years (SD = 14.47, range of scores = 30–97). Of the respondents, 2377 were men (mean age = 50.90 years, SD = 13.69; range of scores = 30–97); 2817 were women (mean age = 52.45 years, SD = 15.07; range of scores = 30–94). Ten percent of the total sample (n = 529), 12.12% of the men (n = 288), and 8.56% of the women (n = 241) met the upper cut-off criterion for "high" alexithymia (i.e., TAS-20 total score $\geqslant$ 61).

2.2. Statistical procedures

As the primary goal of this study was to replicate the results of Parker et al.'s (2008) taxometric investigation, we followed, for the most part, the analytic procedures in that report. There were some exceptions (noted below).

2.2.1. Identification and verification of indicators for the taxometric analyses

We started with the premise that composite scores on the three TAS-20 subscales – difficulty identifying feelings (DIF), difficulty describing feelings (DDF), and externally oriented thinking (EOT) – could be used as taxometric indicators. Confirmatory factor analysis (CFA) of the current sample, however, revealed that the three-factor structure had only a marginal fit according to the Hu and Bentler (1999) guidelines [$\chi^2(167) = 5315.96$, $p < .01$, CFI = .84, TLI = .81, SRMR = .067, RMSEA = .077]. These results suggested a possibility that the three TAS-20 subscales might not be valid indicators of alexithymia for the taxometric analyses in the current sample.

We addressed this possibility by testing some alternative models using CFA. There is some evidence suggesting that a method variance factor comprised of reverse-keyed items might account for the marginal fit in our current sample (Bagby, Taylor, Quilty, & Parker, 2007). The results of the CFA in the current sample supported this potential interpretation, as an examination of parameter estimates and standardized residuals suggested that the largest sources of error contributing to the slightly compromised fit were method related, associated with underestimated correlations among the five reverse-keyed items. We therefore tested a model, which permitted the reverse-keyed items to cross-load onto a residual method factor. This analysis resulted in a considerably better fit in the full sample [$\chi^2(162) = 2901.65$, $p < .01$, CFI = .91, TLI = .90, SRMR = .047, RMSEA = .057], and separately for men [$\chi^2(162) = 1443.01$, $p < .01$, CFI = .91, TLI = .89, SRMR = .052, RMSEA = .058] and women [$\chi^2(162) = 1645.44$, $p < .01$, CFI = .91, TLI = .90, SRMR = .045, RMSEA = .057], compared to the fit without a modeled residual method factor.

There is a possibility that the TAS-20 items could be best represented as either a three-factor hierarchical model or a general factor nested model, which would also challenge the use of the three TAS-20 subscales as indicators of alexithymia, at least in this sample. We therefore tested these two models (with and without the residual method error). For these models, the maximum likelihood solutions contained boundary values (i.e., a zero disturbance term for the DDF factor in the hierarchical model; a zero uniqueness term for item #4 in the nested model) that compromised the interpretation of model fit and parameter estimates.

In sum, as the main reason for the "marginal fit" for the three-factor model in the current sample was method related, and because the conceptual three-factor model still held after controlling for method variance, and neither a three-factor hierarchical model nor a general factor nested model were interpretable, we considered the three TAS-20 subscales valid indicators of alexithymia.

The distribution parameters, reliability coefficients (Cronbach's α and mean inter-item correlations), and estimated indicator validities (in Cohen's d units) for the three indicators are displayed in Table 1. Indicator validities were estimated a priori, by computing effect sizes for mean differences between individuals scoring above and below the TAS-20 cut-offs for high and low alexithymia. Based on the desirable indicator validity estimates (i.e., a d unit $\geqslant$1.25), all three indicators were expected to differentiate well between potential taxon and complement (non-taxon) members. The magnitude of the indicator correlations was moderate to strong (averaging 0.44 in the total sample, 0.40 for men, 0.47 for women) and consistent with values reported by Parker et al. (2008). The magnitude of nuisance correlations was weak to moderate in the putative taxon group (averaging 0.20 in the total sample, 0.19 for men, 0.28 for women) and complement group (averaging 0.20 for the total