Psychiatry Research 255 (2017) 292–296

Contents lists available at ScienceDirect

Psychiatry Research

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

Is the Questionnaire of Cognitive and Affective Empathy measuring two or five dimensions? Evidence in a French sample

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ARTICLE INFO

Keywords:
Empathy
Cognitive Empathy
Affective Empathy
Factor Analysis

ABSTRACT

Although many instruments measure empathy, most of them focus on specific facets (e.g., Spreng et al., 2009) or specific contexts (e.g. Wang et al., 2003) of empathy. For this reason, the Questionnaire of Cognitive and Affective Empathy (QCAE; Reniers et al., 2011) was recently built to grasp the general construct of empathy through its Affective-Cognitive duality, although not providing clear-cut results about the bidimensionality of the scale. In this study, Confirmatory Factor Analyses were conducted on the responses of 418 adults on the French QCAE (backtranslated for this study). A total of 8 models were tested – including the models of the original investigation. The 5-correlated factors model had the best fit, and the pattern of correlations between the factors did not support the Cognitive-Affective distinction. The QCAE is discussed as showing signs of psychometrical robustness, but also as a tool that is more 5-dimensional than bidimensional.

1. Introduction

Although empathy has many definitions, it is generally defined as the ability – or the set of abilities – involved in the understanding and to experiencing of other people's emotional experience (Reniers et al., 2011). While high empathy is often linked with a range of prosocial behaviors (Eisenberg and Miller, 1987), low empathy is frequently associated with psychiatric disorders, notably psychopathic (Blair, 2005) and autistic (Baron-Cohen and Wheelwright, 2004) disorders. Because of the large array of behaviors associated with empathy – leadership (Kellett et al., 2006), quality of patient-practitioner interactions (Rakel et al., 2011), clinical competence (Hojat et al., 2004), etc. – measuring empathy is of direct interest to researchers and practitioners of many fields (health psychology, clinical psychology, social psychology, occupational psychology, etc).

Because of its multidimensional nature (Blair, 2005; Reniers et al., 2011), there are several instruments to measure empathy. However, most of the tools that are currently used evaluate either a global component of empathy, or specific components of this construct. The first scale that was developed was the Hogan Empathy Scale (HES; Hogan, 1969), which aimed at measuring social self-confidence, even-temperedness, sensitivity, and nonconformity. However, the structural validity of the scale was not clearly established and some authors (Spreng et al., 2009) suggested that it actually measured social skills, more than empathy per se. The Interpersonal Reactivity Index (IRI; Davis, 1983) assesses four components of empathy: Perspective taking, fantasy, empathic concern and personal distress. However, it was criticized, as some of the subscales are actually more related to imagination than on empathic skills (Baron-Cohen and Wheelwright, 2004). More questionnaires of empathy exist, but these tools either measure the expression of empathy in specific contexts – such as clinical empathy (Hojat et al., 2004) or ethnocultural empathy (Wang et al., 2003) – or specific subfactors of empathy – such as the Toronto Empathy Questionnaire (TEQ; Spreng et al., 2009), which measures empathy considered as the outcome of a primarily emotional process.

1.1. Development of the QCAE

Facing such proliferation of tools, Reniers et al. (2011) proposed to develop a consensual questionnaire based on previous scientific results

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http://dx.doi.org/10.1016/j.psychres.2017.05.047
Received 28 October 2016; Received in revised form 3 April 2017; Accepted 30 May 2017
Available online 30 May 2017

from behavioral and neurocognitive studies. They especially considered the distinction between Cognitive and Affective Empathy, previously suggested by Blair (2005). Cognitive Empathy refers to the theory of mind and the ability of individuals to represent the mental state of others; Affective Empathy involves both emotional and motor response to the emotional states and feelings of others (Blair, 2005). Cognitive Empathy supposes that visual, auditory, or situational information is processed in order to represent another person's cognitive and emotional state, while Affective Empathy involves the automatic recognition of others' emotions, based on their emotional expressions – facial expressions, body gestures, and voice prosody (Reniers et al., 2011).

Based on this theoretical distinction, a two-factor model of empathy was investigated on previously developed questionnaires by Reniers et al. (2011), leading to the development of the Questionnaire of Cognitive and Affective Empathy (QCAE). More specifically, the QCAE was developed with items derived from validated previous questionnaires, notably the Empathy Quotient (Baron-Cohen and Wheelwright, 2004), the HES (Hogan, 1969), the Empathy subscale of the Impulsiveness-Venturesomeness-Empathy Inventory (Eysenck and Eysenck, 1978), and the IRI (Davis, 1983). After expert raters classified the items as either Cognitive or Affective Empathy items, a first version of the QCAE – including 65 items – was then built using a 4-point Likert scale response format (from strongly disagree to strongly agree).

A study was conducted to test the factor structure of this first scale. After conducting a Principal Components Analysis (PCA), the authors conserved 5 factors, based on their contribution to the item variance: Perspective taking, Online Simulation, Emotion Contagion, Peripherical Responsivity and Proximal Responsivity. Perspective Taking corresponds to the ability of putting oneself in another person's position (e.g. "I am good at predicting how someone will feel"); Online Simulation corresponds to the determination to understand another person's feeling (e.g. "I sometimes try to understand my friends better by imagining how things look from their perspective"); Emotion Contagion corresponds to the automatic echoing of other people's feelings (e.g. "People I am with have a strong influence on my mood"); Peripheral Responsivity corresponds to the affective involvement when observing other people's feelings in a detached context (e.g. "I often get deeply involved with the feelings of a character in a film, play, or novel."); Proximal Responsivity corresponds to the affective involvement when observing other people's feelings in a close social context (e.g. "I often get emotionally involved with my friends' problems.").

Based on the identification of these 5 factors, the authors developed a final version of the QCAE. Using parceling, Confirmatory Factor Analyses were conducted on a second sample, supporting structures with 5 factors, with or without Cognitive Empathy and Affective Empathy as correlated second order factors. Perspective Taking and Online Simulation were included as subfactors of Cognitive Empathy; Emotion Contagion, Peripheral Responsivity and Proximal Responsivity were included as subfactors of Affective Empathy.

1.2. Structure uncertainties

The QCAE distinguishes itself from other empathy measures by its dimensionality (Reniers et al., 2011), with, theoretically at least, a distinction between two higher order factors of Cognitive and Affective Empathy, and a total of five subcomponents. However, it should be noted that the results of the original study did not rule in favor of a structure with 2 s order factors, for three reasons: (1) A 5-factor – not a 2-factor – structure naturally emerged from the PCA in the first sample; (2) in the second sample, the fit of the model *without* second order factors was actually better than the fit of the model with second order factors; (3) even though the fit indices of the theoretical 5 factors model with second order factors was still considered acceptable, the authors indicated that, in order to solve a negative variance problem, an inequality constraint was added to the model: In spite of constrained estimation being a frequent strategy in such cases, we should note these issues have various causes, including model misspecification (Chen et al., 2001). These three results clearly question the Cognitive-Affective second order factors, and encourage replications and further investigations of the dimensionality of the QCAE.

1.3. Objectives

As empirical research did not previously point to critical cultural specificities in the measure, structure or expression of empathy in French-speaking cultures (Berthoz et al., 2008; Lepage et al., 2009), we decided to investigate – for the first time in a French-speaking sample – the structure of the QCAE.

The aim of this study was to build a French translation and adaptation of the QCAE, and to further investigate its factor structure, in order to verify the structure of the questionnaire that was originally found by the authors, thus advancing the understanding of the structure of Cognitive and Affective Empathy. We investigated the factor structure of the French QCAE using procedures that replicate those used in the second study of the original article, hypothesizing that similar results will be observed. We also went further in the structural analysis of the French QCAE by testing 6 additional relevant models and by comparing their fit with the fit of the models that were originally investigated.

2. Method

2.1. Participants

Participants were recruited both online through social media advertising and through advertisement in classes of Universities in France. Only proficient French speakers were invited to participate. After being presented with an informed consent form, all participants were administered the QCAE online. The participants were not offered any course credit or compensation for responding. A total of 418 French-speaking adults (275 females and 143 males, M_{age} = *26.1*, SD_{age} = 8.2) participated in the study, with ages ranging between 18 and 60. Most participants (n = 324) identified themselves as students, among which 186 and 56 of them identified themselves respectively as Medicine and as Psychology students.

2.2. Instrument

The French QCAE is a 31-item questionnaire intended to measure 2 facets and 5 subfacets of empathy. To maintain semantic and conceptual equivalence, the French translation of the QCAE was achieved through a backward translation procedure. More specifically, a first bilingual psychologist translated the QCAE items from English into French, and then, these translated items were back-translated into English by a second bilingual psychologist. They then resolved the disparities and settled on a final translated version.

Satisfactory Cronbach's α coefficients were observed – especially considering the small number of items for Emotion Contagion, Peripheral Responsivity and Proximal Responsivity – and similar to the original version: 0.89 (95% CI [0.88,0.91]) for Perspective Taking (0.85 in the original article), 0.84 (95% CI [0.81,0.86]) for Online Simulation (0.83 in the original article), 0.74 (95% CI [0.70,0.78]) for Emotion Contagion (0.72 in the original article), 0.62 (95% CI [0.57,0.68]) for Peripheral Responsivity (0.65 in the original article), and 0.71 (95% CI [0.67,0.76]) for Proximal Responsivity (0.70 in the original article). We should however note that the assumption of tau-equivalence, made by Cronbach's α, which we tested using Zhang and Yuan's (2016) 'coefficientalpha' package and procedure, revealed significant (all $p < 0.05$) violations of tau-equivalence for all subscales.

McDonald's ω_h (Dunn et al., 2014; McDonald, 2000) is an alternative to Cronbach's α that is more robust the violation of tau-equivalence (Zhang and Yuan, 2016). It was consequently also used: All