Research report

Could the Food Neophobia Scale be adapted to pregnant women?
A confirmatory factor analysis in a Portuguese sample

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Introduction

Food neophobia, defined as reluctance to eat unfamiliar foods, is an individual trait that influences food choices and consequently food acceptance and consumption (Pliner & Hobden, 1992). Food neophobia has been associated with the “Omnivore’s Dilemma”, in which humans must decide whether or not to consume novel foods; that is, they must weigh up the possible benefit of consumption (receiving valuable nutrition) against the possibility of harm (ingesting poisons or toxins) (Dovey, Staples, Gibson, & Halford, 2005).
In the broadly safe food environment of the 21st century, the protective function of neophobia is less salient than in the distant past. Rejection of new foods nowadays may have an adverse effect on food choices, compromising quality and variety of diet, particularly the consumption of fruit and vegetables, since in the modern environment food safety is mostly guaranteed (Cooke, Carnell, & Wardle, 2006; Cooke, Haworth, & Wardle, 2007; Pliner & Melo, 1997). According to previous literature, food neophobia, in general, tends to decline with age (Pliner & Melo, 1997), being minimal during the infancy, peaking around the age of 4, and gradually decreasing during adult life (Birch, 1999; Dovey et al., 2008). Food neophobia scores seem also to decrease with education. A higher education level probably enhances the access, experience and exposure to novel foods, and it could help to decrease the neophobic response (Tuorila, Lähteenmäki, Pohjalainen, & Lotti, 2001).

To assess food neophobia, Pliner and Hobden (1992) developed the Food Neophobia Scale (FNS), a validated psychometric instrument specifically designed to assess this reluctance to consume new foods (Pliner & Hobden, 1992). This scale is a self-administered ten-item questionnaire, where a lower score represents more willingness to try or choose new foods (food neophila) and a higher score represents those less willing to try new foods; more neophobic. The FNS is the most common measure used for assessing food neophobia and it has been widely used, but since the scale was originally developed using a sample of Canadian students (Pliner & Hobden, 1992), care must be taken in interpreting results from different populations. In order to allow for cross-cultural comparison, its psychometric properties need to be tested in different countries.

Several validation studies have been conducted to explore the properties of the FNS (Fernández-Ruiz, 2012; Ritchey, Frank, Hursti, & Tuorila, 2003; Schickenberg, Van Assema, Brug, & de Vries, 2008; Tuorila et al., 2001) and the results from these different studies suggest that the FNS is a valid tool for assessing food neophobia in different populations. The scale has been used to identify individuals with more neophobic traits, who might require proper intervention and medical advice, supporting its usefulness and importance.

To our knowledge, this scale has not been used in the Portuguese population, and most studies have been conducted among children (with a different FNS version) (Cooke, Carnell, & Wardle, 2006; Cooke, Haworth, & Wardle, 2007; Cooke, Wardle, & Gibson, 2003; Dovey et al., 2008; Falciaglia, Couch, Gribble, Pabst, & Frank, 2000; Flight, Leppard, & Cox, 2003; Galloway, Lee, & Birch, 2003; Koivisto & Sjödén, 1996, 1997; Monneuse et al., 2008; Mustonen, Oerlemans, & Sjödén, 1996, 1997; Monneuse et al., 2008; Mustonen, Oerlemans, & Sjödén, 1996, 1997; Monneuse et al., 2008; Mustonen, Oerlemans, & Sjödén, 1996, 1997; Monneuse et al., 2008; Mustonen, Oerlemans, & Sjödén, 1996, 1997; Monneuse et al., 2008; Mustonen, Oerlemans, & Sjödén, 1996, 1997; Monneuse et al., 2008; Mustonen, Oerlemans, & Sjödén, 1996, 1997). The FNS was back-translated into English by an independent native English speaker and professional translator (who was blinded to the original version) and it was compared with the original version of FNS to ensure equivalence between the two versions. Discrepancies were decided by unanimous agreement. Therefore, the instrument was piloted in a convenience sample (n = 10) to evaluate its cultural adaptation.

The P-FNS was self-administered and had as reference period the third trimester of gestation. The 10 items of the P-FNS appear in the same order as in the original version (see Appendix A.). Before analysis, the scores of 5 items marked with (R) were reversed to obtain ratings in the same direction (Pliner & Hobden, 1992). The total score could range from 10 to 70, as the original one.

Although pregnancy can be a sensitive period for more neophobic responses, the existing information is still very scarce, and to our knowledge no study has evaluated neophobia in pregnant women. Since neophobia might affect both the quality and variety of diet (Falciaglia et al., 2000), it seems relevant to explore food neophilia in pregnant women.

This study aims to translate, culturally adapt and test the psychometric properties of the FNS in a sample of Portuguese women who reported food neophobia during the last trimester of pregnancy. We also aim to identify clusters of food neophilia among pregnant women.

Methods

Participants

Participants were pregnant women who were in their final trimester of pregnancy (mean weeks of gestation was 36.62 (S.D. = 3.36) and mothers of newborns in the first week of life (n = 219). Pregnant women were consecutively approached between April–July 2011, before their attendance to medical visits in two hospitals from Porto (main public hospital and private antenatal clinic), and they were invited to take part in the baseline evaluation of the Taste intervention, included in the HabEat project that aims to determine factors and critical periods in food habit formation and breaking in early childhood in several European countries (more detailed information could be found at http://www.habeat.eu/). All participants signed an informed consent form to participate in the study. The research protocol was approved by the local ethical committee (Ethical committee of São João Hospital/University of Porto Medical School) and the study procedures complied with the Helsinki Declaration. Participants did not receive any financial support.

Data collection

Mothers self-completed questionnaires (including the FNS and other characteristics) on their convenience: during the visit or at home, reporting the questionnaire in the next visit or sending it by post (in a prepaid envelope).

The original FNS consists of 10 items with a 7-point rating scale ranging from (1) strongly disagree’ to (7) strongly agree’, with (4) corresponding to the neutral position ‘neither agree nor disagree’. The FNS, originally written in English, was translated into Portuguese by three health researchers, and the result was the Portuguese Food Neophobia Scale (P-FNS). This Portuguese version was back-translated into English by an independent native English speaker and professional translator (who was blinded to the original version) and it was compared with the original version of FNS to ensure equivalence between the two versions. Discrepancies were decided by unanimous agreement. Therefore, the instrument was piloted in a convenience sample (n = 10) to evaluate its cultural adaptation.

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The questionnaire administered during the recruitment process also provided socio-demographic information and maternal fruit and vegetable intake, obtained by a food frequency questionnaire (FFQ). The FFQ reported in this paper included one global item for fruits and one for vegetables, and 8 categories of frequency, ranging from less than 1 per week to 4 or more times per day. Educational levels were categorized into mandatory education (1–9
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