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## Research report

## Age- and gender-specific norms for the German version of the Three-Factor Eating-Questionnaire (TFEQ)



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## ARTICLE INFO

## Article history:

Received 2 June 2014

Received in revised form 4 March 2015

Accepted 8 April 2015

Available online 15 April 2015

## Keywords:

Normative data

Eating behaviour

Eating disorders

Cognitive restraint

Disinhibition

Three-Factor Eating Questionnaire

## ABSTRACT

The 'Fragebogen zum Essverhalten' (FEV) is the German version of the Three-factor-Eating-Questionnaire (TFEQ). This questionnaire covers three domains of eating behaviour ('cognitive restraint', 'disinhibition' and 'hunger') as well as common problems (e.g. craving for sweets). So far, there is a lack of normative data of the FEV especially for the middle-aged and older population. Aim of this study therefore was to provide age- and gender-specific norms of the FEV for the general population aged 40–79 years. We studied 3144 participants of the ongoing large community-based Leipzig Research Center for Civilization Diseases (LIFE) Health Care Study. We provided age- (four age groups: 40–49, 50–59, 60–69, and 70–79 years) and gender-specific percentile ranks and T-scores for the three domains of the FEV as well as age- and gender-specific frequencies of the common problems in eating behaviour. Females scored significantly higher than males in all three domains of the FEV ( $p < 0.001$ ). Older individuals showed significantly higher mean scores than the younger ones in the domain of cognitive restraint, but lower mean scores in disinhibition and hunger ( $p < 0.001$ ). 45.1% of the males and 69.9% of the females reported specific problems in eating. The main problem in both genders was craving for sweets (38.6%). Eating in response to stress was mostly reported in younger individuals. The present study offers current normative data for the FEV in the middle-aged and older general population that can be applied in clinical and non-clinical settings. Information on eating behaviour can be helpful in understanding body weight modulation, and thus, may help to improve interventional and preventive programmes for overweight, obesity, and eating disorders.

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## Introduction

Overweight, obesity, and also eating disorders are major public health problems. Recent data of the Body Mass Index (BMI) values in the German general population suggest that overweight and obesity is a common problem in the middle aged and older population. In Germany in 2013, regarding the age group of 45 to 49 years, 23.6% of the women and 46.1% of the men were overweight (BMI of 25 to 29 kg/m<sup>2</sup>) and another 11.4% and 16.8% respectively were obese (BMI > 30 kg/m<sup>2</sup>). Moreover, the prevalence rates were

even higher in the age group of 70 to 74 years as 39.2% of the women and 50.8% of the men of that age were overweight and 19.4% and 21.2% respectively were obese (Information System of the Federal Health Monitoring, 2013). Even though higher weight in older age can even be associated with better health outcomes such as reduced mortality (Flegal, Kit, Orpana, & Graubard, 2013), significantly increased weight is associated with serious public health concerns, particularly as it is an important risk factor for common non-communicable diseases like cardiovascular diseases, diabetes, depression, or cancer which cause high individual and socio-economic burden (World Health Organization, 2011).

Becoming overweight is influenced by various interacting factors, including genetic, socio-cultural but also behavioural ones. Renner et al., for example, identified several such factors which may cause

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daily food intake, including habits, needs, and hunger (Renner, Sproesser, Strohbach, & Schupp, 2012). There are a number of psychometric instruments which measure such behavioural-psychological aspects of eating behaviour. A widely used questionnaire is the Three-factor Eating Questionnaire (TFEQ), which was developed in 1985 by Stunkard and Messick. A German version of the TFEQ, the “Fragebogen zum Essverhalten” (FEV), was published in 1989 by Pudel and Westenhoefer (1989; Stunkard & Messick, 1985). The development of the TFEQ was based on results of several eating behaviour experiments which showed the phenomena of restrained and disinhibited eating in the 1970s and early 1980s.

Overall, the FEV covers three domains of eating behaviour (‘cognitive restraint’, ‘disinhibition’ and ‘hunger’) as well as common problems of eating behaviour (e.g. craving for sweets). ‘Cognitive restraint’ describes the degree of cognitive control in daily food intake, e.g. in order to control weight or to lose weight. ‘Disinhibition’ describes a loss of control in food intake and ‘hunger’ describes the susceptibility for internal or external hunger signs. Validation study has shown that it is a satisfactory valid, self-administered questionnaire (Pudel & Westenhoefer, 1989).

To the best of our knowledge, existing German normative data for the FEV are based on a representative sample from 1990 (age 14 to over 70 years) as well as on three convenient samples of younger subjects (mean age 24–44 years) with weight problems from 1989 (Pudel & Westenhoefer, 1989; Westenhoefer, 1992). Our study therefore aimed to provide more current age- and gender-specific

normative data for the FEV and particularly focused on a representative sample of middle-aged and older individuals (40–79 years).

## Methods

### Participants

Normative data were derived from the ongoing prospective cohort adult study of the Leipzig Research Center for Civilization Diseases (LIFE) in Leipzig, Germany (LIFE-Adult-Study). The aim of the study is to find causes for the development of important civilization diseases such as obesity, diabetes, cardiovascular diseases, dementia, or allergies. The baseline survey was conducted from November 2011 to November 2014 with a response rate of about 33%. Random proband sampling was performed by the city administration providing lists of addresses of registered residents. Citizens were contacted by an invitation letter containing an information leaflet about the study, a response form and a reply-paid envelope. Persons who did not respond within four weeks received a reminder letter. Non-responders were searched in public telephone directories and then contacted by phone. Persons who were interested to participate were scheduled for an appointment in the LIFE study centre.

Overall, the calculation of age- and gender-specific norms for the FEV was based on a first sample of 3144 participants aged 40–79 years who completed the FEV (data collection between November 2011 and January 2014). Figure 1 shows the sample attrition of the

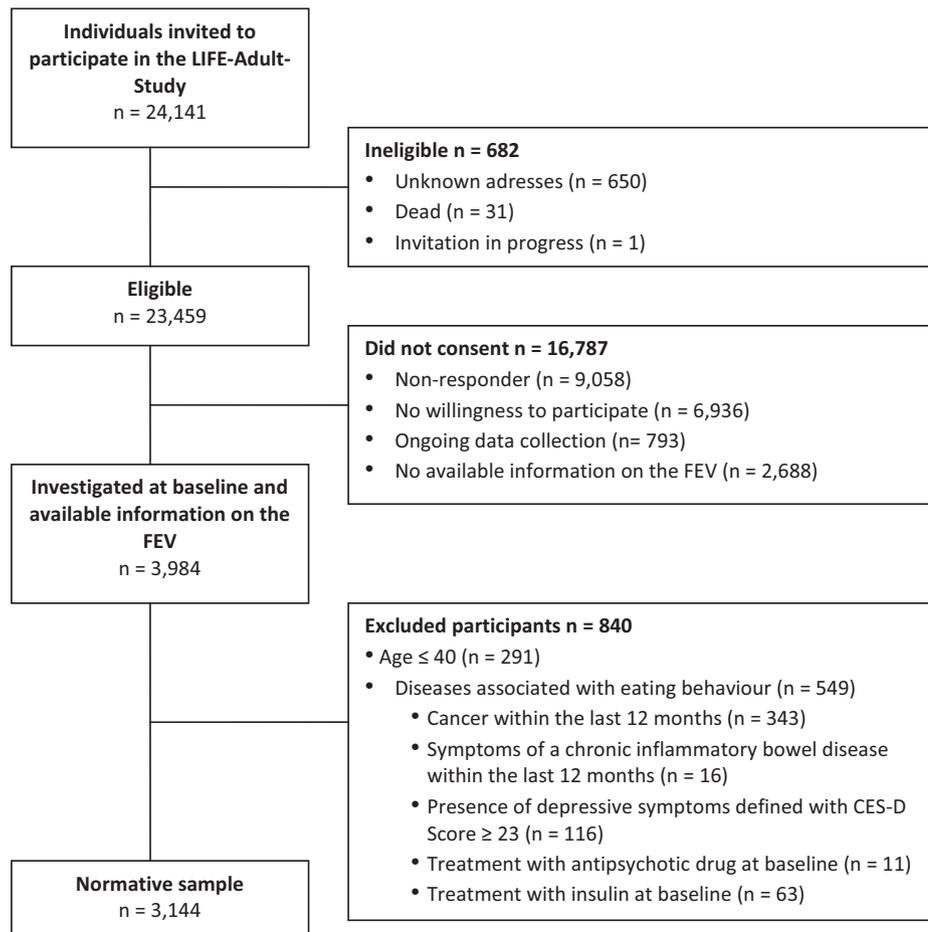


Fig. 1. Sample attrition and sample.

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