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Research Report

## Food neophobia and associations with cultural diversity and socio-economic status amongst rural and urban Australian adolescents

Ingrid Flight, Phillip Leppard, David N. Cox\*

*Consumer Science Program, Commonwealth Scientific and Industrial Research Organisation (CSIRO) Health Sciences and Nutrition, PO Box 10041, Adelaide BC, SA 5000, Australia*

### Abstract

Exposure to diverse cultures and higher socio-economic status (SES) may increase knowledge of a wide variety of stimuli, including food, and be negatively associated with food neophobia. We contrasted questionnaire responses from two groups of Australian high school students (aged 12–18 years) from remote rural (rural,  $n = 243$ ) and cosmopolitan urban (city,  $n = 696$ ) locations to the food neophobia scale (FNS), familiarity with certain foods and willingness to try those foods. Cultural diversity measures and two SES scales were created.

City students were less food neophobic than rural students (mean FNS scores 29.35 versus 34.68,  $p < 0.001$ ). City students were also significantly more familiar with different foods and more willing to try unfamiliar foods, were of higher SES and had greater exposure to cultural diversity. However, the association between the FNS and familiarity with foods, willingness to try unfamiliar foods, SES, and exposure to cultural diversity, were only weak or moderate for both city and rural students.

Greater exposure to cultural diversity and higher SES has some influence on adolescents' responses to unfamiliar foods, but the relationship between these factors and the FNS score is tenuous.

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### Introduction

A balanced diet based on a wide variety of foods is generally considered to be a prudent diet for health (Drewnowski, Ahlstrom Henderson, Driscoll, & Rolls, 1997). However, the need to seek variety in our food contrasts with a concern about the unfamiliar and unknown. This situation is often described as 'the omnivore's dilemma' (Rozin & Vollmecke, 1986) and, as an evolutionary survival mechanism (avoiding toxins), the 'dilemma' generally manifests itself as avoidance of expected unpleasant tastes.

Recent literature (referenced in Tuorila, Lähteenmäki, Pohjalainen, & Lotti, 2001) has investigated such dilemmas through exploring food neophobia defined as a 'reluctance to eat and/or avoidance of novel foods' (Pliner & Hobden, 1992). There is considerable evidence that this personality trait affects willingness to consume certain new or novel foods.

Recently, Tuorila and colleagues (Tuorila et al., 2001) have suggested that food neophobia is individual and

accounts for a reluctance to choose new or unusual foods, independent of an individual's own culture. As far as we are aware, there is no information on food neophobia in Australia, which may be particularly interesting because of its multi-cultural population. Familiarity with foods can decrease neophobia (Pliner & Hobden, 1992), and Australia's cultural mix may have beneficial effects on reducing food neophobia due to a greater general exposure to so-called 'ethnic' foods. In the present study we hypothesised that greater exposure to cultural diversity is associated with lower food neophobia.

However, that cultural mix tends to be more pronounced in the more populated metropolitan areas than in rural areas. For example, in the 2001 census, in the location of our laboratory in metropolitan Adelaide, 15% of the total population spoke a language other than English at home compared with 8% living in the rural area north of Adelaide classified in the census as the Northern Statistical Division (Trewin, 2002, pp. 27–28). Tuorila and colleagues (Tuorila et al., 2001) found that in Finland food neophobia decreased with the increasing degree of urbanisation, and this may be the case in Australia. Those authors suggested, indirectly, that urban environments enhance access and exposure to

\* Corresponding author.

*E-mail address:* david.cox@csiro.au (D.N. Cox).

various stimuli, events and issues that may reduce general neophobia. Implicit in this suggestion is that reduction in general neophobia may be related to lower food neophobia as there is reasonable evidence that the FNS is correlated to a scale of general neophobia (Pliner & Hobden, 1992; Tuorila, Meiselman, Bell, Cardello, & Johnson, 1994); however there have been exceptions (Hursti & Sjöden, 1997).

Underlying food neophobia is the relationship between exposure and food acceptance (Birch, McPhee, Shoba, Pirok, & Steinberg, 1987; Mela, 1999) and the role of mere exposure (Eagly & Chaiken, 1993; Zajonc, 1968) which is considered to be a necessary requirement for learnt preferences (Mela, 1995). It is beyond the scope of this study to explore the detailed mechanisms of exposure (Birch et al., 1987) but rather the aim was to contrast hypothesised group differences in responses to the FNS from two environment/exposure locations (rural versus city). Therefore we hypothesised that urban subjects in comparison to rural subjects would have a lower food neophobia.

In a similar fashion, it is plausible that socio-economic status (SES) influences opportunity for exposure; for example, greater disposable income to eat outside the home, and greater educational status providing greater knowledge of cultural cuisines. There is considerable evidence that specific information increases willingness to try new foods (Martins, Pelchat, & Pliner, 1995; Pelchat & Pliner, 1995; Tuorila, Anderson, Martikainen, & Salovaara, 1998; Tuorila et al., 1994); however, general knowledge implicit in higher SES (education) has not yet been explored relative to FNS. Indeed, even in studies of nationally representative samples from, for example, Finland (Tuorila et al., 2001) and Sweden (Hursti & Sjöden, 1997), SES relative to FNS and willingness to try new foods was not reported. In the current study we sought to measure the SES of the parents of our adolescent respondents as parental influence has been observed to be an important influence on adolescents, reported frequency of consumption of common foods (Woodward et al., 1996). We therefore hypothesised that subjects with lower SES would have greater food neophobia.

Within a scenario of exposure from other cultures is the influence of 'important others', recognized in social cognitive models of food choice (Shepherd & Sparks, 1994), which would appear to be particularly important in adolescents' food choices (Shepherd & Dennison, 1996). Specifically, 'peer pressure' was found to be an important factor in adolescents' acceptance of fruit (Dennison & Shepherd, 1995) and adolescents' friends' usage was a significant factor for a range of common foods reported to be eaten outside the home by Australian adolescents (Woodward et al., 1996). In the present study, we hypothesised that adolescents (from an urban environment), exposed to greater 'cultural' cuisines through greater interaction with peers (and parents' peers) from diverse cultures, would have lower food neophobia.

In summary, in the present study it was hypothesised that background variables of location (rural versus city), SES and cultural interaction and diversity would influence food neophobia and willingness to try unfamiliar foods amongst adolescents.

## Method

### *Participants*

Subjects were high school students from one metropolitan school ('city') and two rural schools ('rural'), the latter both located approximately 250 km north of the metropolitan area in the Northern Statistical Division ('Northern area') of the state of South Australia. The population of the Adelaide metropolitan area (1826.9 km<sup>2</sup>) at the 2001 census was 1,073,882 (70% of the whole state) and the population of the Northern area (809,592.4 km<sup>2</sup>) was 77,918 (Trewin, 2002, pp. 16–17). The two locations thus represented a densely populated, urban environment and a sparsely populated, remote, rural environment. Data collection was administered by a high school student from each location, each of whom was trained through participating in a CSIRO-sponsored Student Research Scheme. School principals gave permission for every student at all three schools to be approached and be requested to complete a questionnaire. No participants received any payment. The general nature of the study was explained to the teachers who helped distribute the questionnaires and to the students in an introductory paragraph in the questionnaire. The study was approved by the CSIRO Health Sciences and Nutrition Human Experimentation Ethics Committee.

### *Instruments*

A questionnaire was developed containing the food neophobia scale (FNS) (Pliner & Hobden, 1992), demographic questions and a series of questions designed to elicit the level of exposure to cultural diversity. Also included was a list of foods acting as stimuli for questions concerning familiarity and willingness to try different foods (Tuorila et al., 2001). A copy of the questionnaire is available from the corresponding author upon request.

### *Food neophobia scale*

The FNS consists of ten questions on a 7-point bipolar scale, and respondents are asked to indicate the extent of their agreement with each item (endpoints: strongly disagree, strongly agree). The total score is calculated by summing the individual scores for each item, resulting in a possible range of 10–70. Scoring of five of the items were reversed (Pliner & Hobden, 1992).

Some modification of the FNS was required to account for Australia's multi-cultural population. Specifically, the term 'ethnic', which is not widely used nor particularly

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