

# Measurement equivalence of the food related lifestyle instrument (FRL) in Ireland and Great Britain

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## Abstract

The food-related lifestyle instrument (FRL) is tested for cross-cultural validity. Representative consumer samples from the UK 1998 ( $N = 1000$ ) and Ireland 2001 ( $N = 1024$ ) are compared using multisample confirmatory factor analysis with structured means. The results suggest that, in all five FRL domains, the measurement characteristics of the survey instrument were completely invariant across the two cultures. No indication was found of any bias. Regarding future applications of the FRL, it can be concluded that the instrument has identical measurement characteristics when applied to consumer populations from Ireland and the UK. Direct comparisons of raw scores and sample statistics between the two populations are valid without further correction. © 2003 Elsevier Ltd. All rights reserved.

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## 1. Introduction

Assessing the applicability of an instrument developed in one country to other countries requires the instrument to have adequate measurement equivalence. Various forms of measurement invariance have been used in testing cross-cultural validity. Measurement invariance refers to “whether or not, under different conditions of observing and studying phenomena, measurement operations yield measures of the same attribute” (Horn & McArdle, 1992). If there is little evidence supporting invariance then any conclusions drawn from cross-cultural comparisons of scale scores are either ambiguous or erroneous. Horn (1991) stated that “without evidence of measurement invariance, the conclusion of a study must be weak”.

The purpose of this paper is to assess the cross-cultural validity of the food-related lifestyle instrument (FRL) (Brunso & Grunert, 1995; Grunert, Brunso, & Bisp, 1997) across consumer samples from Ireland and the UK. The FRL contains 69 items which measure 23 food-related lifestyle dimensions in five major life do-

mains, including ways of shopping, cooking methods, quality aspects, consumption situations, and purchasing motives. Initial analyses of its cross-cultural validity (Grunert et al., 1997) came to positive conclusions, and the instrument has been successfully applied to various European and non-European food cultures (Askegaard & Brunso, 1999; Bredahl, Brunso, Grunert, & Beckmann, 1996; Bredahl & Grunert, 1997; Brunso, Bredahl, & Grunert, 1996; Brunso & Grunert, 1995; Brunso, Scholderer, & Grunert, in press; Grunert, Brunso, & Bisp, 1995a, 1995b, 1995c, 1997; Grunert, Brunso, & Bredahl, 1998; Grunert, Brunso, Bredahl, & Bech, 2001; Reid, Li, Bruwer, & Grunert, 2001; Scholderer, Brunso, & Grunert, 2002; Scholderer, Brunso, Grunert, Poulsen, & Thøgersen, in press).

In a recent re-analysis of all FRL surveys that were conducted in Europe up until 1998, Scholderer, Brunso, Bredahl, and Grunert (in press) found that the FRL was cross-culturally valid in terms of factor loadings, factor covariances, and factor variances, whilst item-specific means and item reliabilities were biased across cultures. In 2001, the first FRL survey in the Republic of Ireland was completed. After a short review of the theory underlying the FRL, we will test whether the measurement properties of the FRL are invariant across these two consumer populations. A comparison of Ireland

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with the UK is especially interesting because language-specific response style, often seen as the main source of bias in the comparison of survey data from different cultures (e.g., Berry, 1969; Hui & Triandis, 1985, 1989; Poortinga, 1989), can be held constant here.

### 1.1. Means-end theory of lifestyle

Lifestyle research in the attitudes, interests and opinions (AIO) tradition has often been criticized for its lack of theoretical foundation (Anderson & Golden, 1984; Lastovicka, 1982). Brunsø and Grunert (1995) have proposed a lifestyle definition that clearly breaks with the AIO tradition. Their framework is consistent with the means-end approach to consumer behavior (Olson & Reynolds, 1983). On the top level of their hierarchy, personal values are defined as abstract, trans-situationally aggregated cognitive categories. On the bottom level, product perceptions are defined as situation-specific input to a categorization process. Lifestyle is then defined as an intervening system of cognitive structures that link situation-specific product perceptions to increasingly abstract cognitive categories and finally to personal values.

In a recent extension, Brunsø et al. (in press) have elaborated the basic theory in a dual-process framework. The hardware of their system consists of declarative knowledge structures (categories, concepts, associative networks) and procedural knowledge structures (scripts and skills) that enable information processing on bottom-up as well as top-down routes. The bottom-up route is driven by external input (product perceptions), which is thought to trigger a hierarchical categorization process (activating declarative and procedural knowledge structures) that finally results in the activation of the most abstract conceptual level (personal values).

The top-down route is driven by stable individual differences in personal values. Individual differences in such super-ordinate goals imply individual differences in subordinate goals and behavior routines that are instrumental in their achievement. Finally, frequent activation of subordinate goals and behavior routines implies a higher frequency of observable behaviors that are instrumental as compared to behaviors that are not instrumental. A valid test of the model would have to establish that lifestyle, as defined above, completely mediates the relation between values and behavior. In a path model, this would imply that values predict lifestyle, and lifestyle predicts behavior, but that there is no direct effect of values on behavior when lifestyle is included in the model. Brunsø et al. (in press) could confirm the predictions of the model in a French consumer population. In a replication, Scholderer et al. (2002) applied the model to a consumer population from the UK, i.e. with a distinctly different cultural back-

ground. Again, the predictions of the model could be confirmed.

### 1.2. The FRL

The FRL instrument was the first lifestyle survey constructed according to means-end theory of lifestyle. Distinct parts of consumers' cognitive structure are expected to reflect the following life domains:

- *Ways of shopping* reflects consumers' shopping behavior for food with regards to whether their decision-making is characterized by impulse buying or by extensive deliberation, their tendency to read labels, their reliance on the advice of others, one-stop shopping versus specialty food shops and their use of shopping lists whilst shopping.
- *Cooking methods* examines such aspects as how products purchased are transformed into meals. How much time is used for the preparation of a meal and the extent to which the meal is planned. It investigates whether it is a social activity, or one characterized by family division of labor or if it is simply a woman's task.
- *Quality aspects* refers to attitudes to health, nutrition, freshness and the luxury attributes of a product.
- *Consumption situations* examines how meals and snacks are spread over the day and assesses the importance of eating out.
- *Purchasing motives* explores what consumers expect from a meal and the importance of these expectations. It also addresses its importance with social aspects, tradition and security.

### 1.3. Cross-cultural validity

The FRL was constructed with the explicit aim of being applicable to a broad range of (western) cultures. In the context of food-related lifestyles, culture is to be understood as *food culture*, defined as "a culinary order whose traits are prevalent among a certain group of people" (Askegaard & Madsen, 1998). Thus, food culture can be said to manifest itself in the consumption habits or—more broadly speaking—food-related lifestyles that are dominant within a certain group of people. In the construction of the FRL (for details, see Brunsø & Grunert, 1995; Grunert et al., 1997), nations were the putative groups across which applicability was desired. The rationale was to identify a limited number of dimensions that could be factor-analytically replicated across nations, enabling a comparison of cultures on the basis of the same dimensions, but allowing for different positions of cultures on these dimensions. Hence, the approach is equivalent to the one chosen by Hofstede (1980) for comparing cultures in general.

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