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Determinants of nutritional behaviour: a multitude of levers for successful intervention?

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Abstract

Nutritional behaviour is framed by biological, anthropological, economic, psychological, socio-cultural, and home economics related determinants and it is shaped by the individual situation. From a public health point of view, the outcome is often unsatisfactory, because it is associated with preventable cases of various diseases. This situation evoked the founding of the German Association for Nutritional Behaviour (Arbeitsgemeinschaft Ernährungsverhalten, AGEV) which celebrated its 25th anniversary within the scope of the 10th Food Choice Conference in the summer of 2002 with a plenary session on ‘Sensible policies for nutrition and life-style intervention’. One might assume that the many determinants of nutritional behaviour provide a whole set of means to intervene into people’s food choices. But closer deliberations make clear that there are two important aspects that tend to hinder dietary changes: on the one hand, nutritional behaviour is characterized by many conflicts of its related determinants. In order to cope with them, people develop individual guiding strategies for food choice situations which are quite stable as soon as they proved their suitability. On the other hand, any dietary modification leads to certain gains (like increased health), but losses, as well (like decreased palatability). Thus, a sustainable change can only be expected, if its gains are evaluated higher than its losses. These aspects need to be carefully considered when designing nutrition and life-style related intervention concepts.

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Introduction

For some decades, the identification of determinants of human nutrition behaviour has been a goal of many scientists of different disciplines. Among them, Kurt Lewin (1943, 1951) is regarded as a pioneer, who considered nutritional behaviour as a complex process involving cultural, social and psychological factors (Falk, Bisogni, & Sobal, 1996; Furst, Connors, Bisogni, Sobal, & Falk, 1996).

Up to now, many partial and holistic models have been published helping to understand and explain people’s nutritional behaviour (Behrman, Deolalikar, & Wolfe, 1988; Bodenstedt & Oltersdorf, 1983; Falk et al., 1996; Foley, Hertzler, & Anderson, 1979; Furst et al., 1996; Maurer & Sobal, 1995; Nestle et al., 1998; Popkin & Haines, 1981; Röder, 1998; Shepherd, 1990; Sims, Paolucci, & Morris, 1972; Sobal, Khan, & Bisogni, 1998;

Trémolières, 1972). “But we only know a small amount of what is to be known, and still cannot advise a parent about how to make his/her child like vegetables” (Rozin, 2002).

As the citation indicates, nutritional behaviour is not just studied for reasons of academic curiosity, but due to the unsatisfactory impact of many people’s behaviour on their health. This, however, has already been true in the late 1970s, when in Germany a group of scientists interested in nutrition behaviour research organized themselves as a corresponding association called AGEV (i.e. ‘Arbeitsgemeinschaft Ernährungsverhalten’ which means ‘Association for Nutritional Behaviour’). In 2002, AGEV celebrated its 25th anniversary within the scope of the 10th Food Choice Conference and held a symposium on ‘Sensible policies for nutrition and life-style intervention’. The presentations given in that symposium are published in this issue of *Appetite*.

The aim of the present paper is to introduce into the topic of the AGEV-Symposium and to give insight into the objectives and activities of AGEV.

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Determinants of nutritional behaviour

Nutritional behaviour is framed by a multilayer process including biological, anthropological, economic, psychological, socio-cultural, and home economics related determinants and it is shaped by the individual situation. In the following, a brief overview is given showing the impacts of a variety of determinants on nutritional behaviour.

Biological determinants

The biological determinants of nutritional behaviour can be subdivided into the physiological, patho-physiological and genetic. Among these, physiology provides the most basic determinants of nutritional behaviour. Humans need energy and nutrients for their metabolism in order to survive. As Kass put it: “Show us an animal that is not turning over foodstuff and we shall pronounce him dead. To live is to metabolize.” From a metabolic point of view, humans simply are what they have ingested before (Kass, 1994). But they are unable to perceive their specific needs and react accordingly. They only know the general and non-specific feelings of hunger or satiety—results of complex physiological processes which still are not fully understood (Booth, 1994; Haenel, 1981; Klaus, 2003).

Humans’ digestive physiology provides little restrictions to their food choices. They can select their food from a wide range of organic stuff, be it of plant origin or animal origin. Nevertheless, there are two important constraints that physiology imposes on nutritional behaviour, one referring to food quantity, the other to quality. Considering food quantity, it is obvious that the gastro-intestinal tract can only absorb a limited volume of food, even though the stomach is quite dilatible and can therefore serve as a food buffer. But this limitation forces humans to take up food—if possible—at least once a day, preferably more often. The quality related constraint that can be attributed to human physiology is caused by the fact that humans are monogastric. Thus, they can hardly make use of plants that have high fibre contents.

These nonetheless relatively soft physiological restrictions are intensified by a series of possible diseases, like infections (a simple flue, for instance, affecting the perception of the odour or taste of a food item), food intolerances or allergies, Crohn’s disease or diabetes.

In recent years, nutritional genomics is increasingly discussed (Desiere, German, Watzke, Pfeifer, & Saguy, 2002; Elliott & Ong, 2002), but no significant gene related determinants of nutritional behaviour have yet been detected, except for the well known influence of gender, the sensory sensitivity to specific chemical substances like phenylthiocarbamide (Schmid & Beauchamp, 1990) and possibly certain taste preferences (Davenport, 2001).

Thus, biology determines humans’ basic nutritional needs, but it hardly restricts their food choices (cf. Booth, 1994).

Anthropological determinants

The freedom in food choice that biology offers to man is a blessing as well as a curse. It helps to prevent starvation if a specific type of food is scarce, but it increases the occurrence of nutritional imbalances and intoxications (Kass, 1994; Leathwood, 1990; Rozin, 1998).

In contrast to many animals, the nutrition behaviour of humans is hardly determined by instincts, except for the sucking reflex of newborns or a general preference for sweet tastes as well as an aversion towards bitter tastes. Their food choice and food intake, other than digestion and metabolism, are cognitively controlled using an open and extendible information system (Kass, 1994; Rozin, 1976; Tolksdorf, 1976). In a process of trial and error man needed to learn which of the products provided by nature could serve as food and which not, sometimes with fatal consequences (Haenel, 1981). But humans are quite well equipped to evaluate unknown stuff that might prove to be food: with their senses they can explore its colour and shape, its firmness or crispness, its odour and finally its taste and even its sound, and they are able to memorize these perceptions and recall them, if necessary (Kass, 1994).

The freedom of food choice puts man into a conflict of food neophobia and neophilia. The first prevents from intoxications, but almost unavoidably leads to nutrition imbalances; while the latter prevents from imbalances, but increases the chance of intoxications. Research on the extent of food neophobia and neophilia in various populations revealed still in our days significant interpersonal as well as cross-country variations (Ritchey, Frank, Hursti, & Tuorila, 2003).

Economic determinants

Economists often assume that consumers are rational, “in that they pursue the best objectives for themselves subject to constraints of their environment” (Cowell, 1986). These restrictions primarily refer to the consumers’ budget, the goods and corresponding information available to them, and finally the prices at which the goods are offered.

According to neoclassical microeconomic theory, the demands for goods are interrelated due to the generally limited budget and may therefore not be considered separated from each other. Generally, there are two types of relations between goods: goods are either complements (like marmalade and bread) or they are substitutes (like butter and margarine) (Cowell, 1986).

Based on these assumptions, the main interest of neoclassical consumption theory refers to the interrelationship of prices, income and expenses or consumption, respectively. It rather considers the impact of changes in prices or income on consumption than the absolute amounts of certain goods demanded by consumers (Karg, 1973; Popkin & Haines, 1981; Röder, 1998). In most cases, market information available to the consumers is considered to be

perfect and in cross-sectional studies prices are often regarded as constants. Therefore, both are often neglected, leaving income or the budget, respectively, as the only external variable explaining a specific demand (Röder, 1998).

Thus, neoclassical consumption theory is hardly able to deal with non-economic phenomena in the context of consumption sometimes leading to inconsistencies when theoretical expectations are confronted with empirical results. So Deaton and Muellbauer (1980), for instance, admitted that “there are important explanatory variables other than prices and total outlay.”

The empirical importance of sociodemographic variables for the explanation of consumer behaviour, however, was already pointed out by early economists like Allen & Bowley (1935), Engel (1857), Sydenstricker & King (1921), or Prais & Houthakker (1955). But it took time for this knowledge to be generally recognized in economic theory (Buse, 1987). Now, it is quite common that socio-economic and -demographic determinants of consumption (especially household composition) are taken into account, e.g. by means of consumer unit scales (Capps & Havlicek, 1987).

Quite a setback to supporters of the neoclassical consumption theory occurred in the early 1980s, when it was experimentally proven, that consumers’ preferences depend on the way a decision problem is presented (Tversky & Kahneman, 1981). This means that consumers are actually unable to make rational decisions, which disproves one of the fundamental assumptions in neoclassical theory. “The modern consumer has lost credibility as a rational agent in the eyes of food theorists” (Douglas, 1984). But these findings did not lead to a complete rejection of the theory—it can still be found in recent economic publications. Psychological aspects, however, got increasingly important in economic demand models.

Marketing approaches in consumer economics, generally discard most of the key assumptions of neoclassical theory and shifted economists’ interests towards determinants of the demand for specific goods not just taking into account external factors (like prices, availability and certain marketing measures) but also internal ones (like socio-economic, demographic or psychological characteristics of the consumers) (Popkin & Haines, 1981). In time series analyses of food demand, sometimes expectations (e.g. regarding future price and income levels) and desires (e.g. regarding demanded quantities) are also taken into account (Karg & Lauenstein, 1976).

Psychological determinants

From a psychological point of view, (nutrition) behaviour is traditionally explained by the S–O–R model. This means, there is a set of external and internal factors (= Stimuli S), which persons perceive and process mentally (= Organism O) before they finally react with

a certain (nutrition) behaviour (= Reaction R). The mental processes involved are divided into activating ones (emotions, motives, attitudes) and cognitive ones (perceiving, thinking, learning) (Bänsch, 1995; Diehl, 1980; Shepherd, 1990).

Emotions partially promote a reaction by an individual (e.g. joy, interest), but partially also temper it (e.g. contentedness, sorrow) (Bänsch, 1995). In contrast to general consumer behaviour, however, nutrition has natural internal activating processes (hunger) and does not need external stimuli to initiate a reaction.

Motives are emotions with a certain orientation towards an action. They are needs, ambitions, wishes or yearnings that trigger a behaviour. There are plenty of motives that often compete when influencing people’s food choice, e.g. enjoying taste, relieving hunger, expressing fellowship, representing social status, maintaining health or fitness, saving money and sticking to habits (Bänsch, 1995; Connors, Bisogni, Sobal, & Devine, 2001; Pudel & Westenhöfer, 1998).

Finally, *attitudes* are a combination of motives and the assessment of the correspondence of certain objects with these motives (Bänsch, 1995; Foley et al., 1979; Shepherd, 1990). Closely related to the concept of attitudes are opinions, which are verbal expressions of attitudes (Halk, 1993). Attitudes used to be considered as important keys to understand people’s behaviour (Pudel & Westenhöfer, 1998). Now, however, it is disputed whether positive attitudes towards an object (like a certain food stuff) result in a corresponding object-related behaviour. Generally, attitudes were found to be only good predictors for cognitively well controlled behaviour (Kroeber-Riel & Weinberg, 1999), which usually is not true for nutrition.

Among the cognitive processes *perception* refers to the absorption, selection, organisation and interpretation of information. It provides a personal, non-objective image of the external reality. *Thinking*, the second cognitive process, means internal processing and mental generation of information. Other than perception, thinking is independent from external stimuli. Finally, *learning* is the process of mentally saving and retrieving information. Any behaviour that is not genetically determined is inescapably learnt, either by own experience or communications with trustworthy persons (Bänsch, 1995). In this context, an everyday activity like eating can be seen as a continuing process of learning. It is a recurring training by experiences with high frequency leading to a stable habitual behaviour (Pudel & Westenhöfer, 1998).

Besides the determinants provided by this traditional psychological approach others are also considered as important for the explanation of consumer and nutritional behaviour, respectively. Among them, for instance, are the following:

- values (Connors et al., 2001; Falk et al., 1996; Furst et al., 1996)

- trust (Frewer, Howard, Hedderley, & Shepherd, 1996)
- beliefs or expectations regarding the possible outcomes of a certain behaviour (Cardello, 2003)
- intentions (Ajzen & Fishbein, 1980; Bell & Meiselman, 1995; Krondl, 1990)
- involvement (Bell & Marshall, 2003).

On this conceptual basis, psychology of nutrition generally interprets a person's specific food choices as an individually optimized decision assessing all the advantages and disadvantages of motives or values relevant to the specific situation (Falk et al., 1996; Furst et al., 1996; Pudel & Westenhöfer, 1998).

Socio-cultural determinants

Nutrition has not yet received much recognition by sociologists, except for the aspect of food shortage and famine (Maurer & Sobal, 1995; Mennell, Murcott, & van Otterloo, 1994). Nevertheless, there is no doubt, that the social and cultural environment shapes (nutrition) behaviour (Rozin, 1998). Three types of groups influencing persons' behaviour can be distinguished:

- groups that persons belong to and in which they play their specific roles (e.g. the family and the circle of friends and colleagues)
- groups that persons do not belong to but where they would like to be accepted as members
- groups that persons do not want to be associated with, no matter whether they actually belong to or not.

Behaviour is influenced by the *norms* of these groups. Either one accepts the norms to be accepted as a member of the group (or at least be associated with the group) or one rejects the norms to be clearly dissociated from the group (cf. Bänisch, 1995).

There are some obvious examples for the effect of group norms on nutrition behaviour. On the one hand, they explain the presence of collective aversions (e.g. in the Western culture towards the pleasure of insects as food) and on the other hand, these norms make understandable why many adults learnt to enjoy bitter tastes (like those of asparagus, beer or vermouth) even though they had a natural aversion against bitterness (Diehl, 1980; Pudel & Westenhöfer, 1998).

Often, socio-cultural and psychological determinants of nutritional behaviour are interrelated: the sociological view of the influence of norms can psychologically be interpreted as learning from models. Therefore, some authors assume, psychological and social components of behaviour interact in an undissolvable manner and thus should be referred to as psycho-social determinants (Bänisch, 1995).

The following examples of nutrition related motives are to demonstrate the interconnection between psychological and socio-cultural determinants of food choice (cf. Diehl, 1980; Pudel & Westenhöfer, 1998):

1. *Identity*. Nutrition provides to oneself the impression of affiliation to a group which might for instance be defined by social stratum, regional provenance or nationality. Thus, a persistent retention of the dietary habits of migrants, for example, has often been observed (Bush, Williams, Anderson, Lean, & Bradby, 1995; Holm, 1995; Koctürk & Bruce, 1995).
2. *Communication*. Nutrition can serve as a means to express one's attitudes or one's membership of certain groups due to the symbolic meaning of many food stuffs. Caviar, for instance, is associated with affluence, champagne with festivity, wholegrain products with environmental and health consciousness, bread and water with asceticism, and bread and wine with Christianity (Barlösius, 1999).
3. *Community*. The earliest social rules known refer to the fair sharing of food which can be assured if the members of a group gather for common meals (Barlösius, 1999). As Trémolières (1972) put it: "The oldest and highest taboo of human society is that a solitary enjoyment is a sin. Enjoyment must help towards communication and communion." The close relationship of community and nutrition is shown by the word 'company' which is derived from the Latin words 'con' and 'panis' meaning 'bread partnership' (Rozin, 1998).
4. *Spirituality*. Nutrition is a widely used field for spiritually motivated regimentations. Examples are the rules of kosher meal preparation for the Jews, the taboos of pork and any alcoholic beverages for the Muslims or the diverse fasting commandments in many religious communities.

Motives like the ones mentioned lead to the development and maintenance of cuisines—which are culturally defined bodies of regulations on how to properly prepare dishes and arrange them to meals. Cuisines generally narrow the set of theoretically edible material to what is considered food and thus moderate the neophobia versus neophilia conflict in nutrition (Leathwood, 1990). But cuisines can also be interpreted as 'institutionalized nutritional wisdom' (Rozin, 1976), i.e. they are partly results of a process of bio-cultural evolution developing cultural responses to biological needs. This, for instance, explains the alkali treatment of maize in American Indian societies. The technique improves the bioavailability of niacin and the amino acid quality of the digestible protein fraction of maize and thus influences significantly the 'nutritional efficacy of maize diets' (Katz, 1982).

Home economics related determinants

Traditionally, providing food is one of the main tasks of households (Kutsch, 1997). In this context, households are often only considered as units of consumption, but there are also plenty of producing activities (Karg & Lehmann, 1991). Food stuffs purchased often do not directly provide

the utility consumers are seeking. In most cases, food is therefore processed, prepared, garnished and finally served before it is eaten (Popkin & Haines, 1981).

Therefore, as long as food consumption does not completely take place away from home, nutrition behaviour is affected by several household characteristics like available means of transportation and kitchen equipment as well as the household members' know-how regarding food acquisition, transportation, storage and preparation (Popkin & Haines, 1981). In this context, Lewin (1943) already emphasized the dominating role of the persons responsible for keeping the household whom he called 'gatekeepers'.

Even though these 'gatekeepers' play a major role in the process of food choice in households, they usually do not decide on their own. So, whenever food choice does not refer to a single person, conflicts arise concerning:

- individual food preferences
- symbolic meaning of union provided by common meals
- 'foodwork' (i.e. the work associated with meal preparation, including planning, purchasing, and cleaning up).

Therefore, observable food choices are often the results of formal or informal negotiations to mediate these conflicting motives (cf. Bove, Sobal, & Rauschenbach, 2003).

Situation-related determinants

Nutritional behaviour strongly depends on the individual situation which can be considered in a static or dynamic way. In the first case, an eating situation is regarded on its own independently of what happened before or might happen afterwards. In the second case, recent (eating) experiences and expectations concerning future events are also taken into account.

The main concern of a static approach to eating situations is availability which has several aspects influencing nutritional behaviour.

Firstly and most obviously, there is the availability of food (cf. Kass, 1994; Nestle et al., 1998), which depends on factors like season, climate, or economic development. Thus, the eating habits on vacation, for instance, almost inevitably differ from those of everyday life, especially if one is abroad (Pudel & Westenhöfer, 1998), simply due to the availability of new foods and dishes associated with a lack of availability of usual ones.

Yet food is not the only important aspect of availability. Nutrition does not just mean the consumption of food and dishes—it is also associated with the use of the scarce good of time. Thus, nutritional behaviour is influenced by time budgets—one's own as well as the ones of the persons who are to prepare the meal or with whom one intends to share the meal (Kutsch, 1997).

Still another aspect of availability in the context of nutrition refers to 'infrastructure' which means that some very simple properties of a situation like the presence of some kind of a stove or a table or the availability of crockery or cutlery may determine what is appropriate to be eaten or not (Bell & Meiselman, 1995; Tolksdorf, 1976).

With a dynamic approach to eating situations the aspects of satiation (quantitative aspect) and alternation (qualitative aspect) deserve specific attention. Regarding satiation makes clear that the amount of food one eats at a meal is influenced one's actual status of satiety which depends on the amount that one had with the previous meal. But there is also an impacts from the expectations concerning the next meal: the more food one expects to have for that meal the less will be chosen for the actual one and vice versa. Closely related to this aspect of satiation is the period of time between the meals. The influence of alternation is derived from the fact that people tend to avoid having the same or a similar kind of food or dish for two consecutive meals (Rogers & Blundell, 1990). So the recent experience of enjoying a sweet dish, for instance, favours the selection of a spicy dish for the next meal and the expectation of having a spicy dish for the next meal will bias the actual food choice towards a sweet one.

AGEV—a German association for nutritional behaviour

From a public health point of view, the determinants of nutritional behaviour have often led to unsatisfactory results (like the epidemic of obesity) which is not just true in the populations of Europe or North America, but increasingly also in developing countries like India (Mudur, 2003). This causes preventable cases of nutrition related diseases associated with avoidable suffering for the affected and their relatives as well as costs in the health services that could be saved.

Facing this situation, a group of scientist interested in nutrition behaviour research met in Münster (Germany) on January 15th, 1977, and later formed AGEV—a German association for nutritional behaviour. The association has an interdisciplinary orientation, which means it is not just interested in physiological or biochemical aspects of nutrition, but also in anthropological, psychological, sociological, economic, cultural or historical ones. Furthermore, despite of the fact that most of the AGEV members are Germans, the association is not just focussing on Germany, but has also an international perspective.

The activities of AGEV are aimed at

- accumulating knowledge on all aspects of human nutrition behaviour
- supporting the scientific exchange in nutrition research between natural, social and cultural sciences
- identifying innovative research areas and initiate corresponding work
- bridging the gap between science and practice.

These aims are pursued mainly by the organisation of regular (i.e. annual) scientific meetings and the publication of their outcomes. Now, AGEV can look back to a history of 25 meetings, with four of them held in an international context. Most recently AGEV dealt with topics like ‘Spatial (i.e. regional or ethnic) aspects of food habits’ or ‘Research, development and consumer acceptance of functional food’. One of the last such activities was a cooperation with the organizers of the 10th Food Choice Conference in Wageningen, the Netherlands (June 30th to July 3rd, 2002), which gave AGEV the chance to celebrate its 25th anniversary by holding a plenary session on ‘Sensible policies for nutrition and life-style intervention.’

Nutrition and life-style intervention

One might assume that the many determinants of nutritional behaviour that have been identified provide a whole set of means to intervene into people’s food choices. Shouldn’t it be possible to promote some of these determinants and inhibit some others, in order to make people choose the food, that—according to nutritionists—should be eaten for reasons of good health?

Even if physiological and anthropological determinants are considered as given and hard to be modified (maybe except by means of pharmacology), the determinants presented still leave many theoretical possibilities for measures of intervention. Here are just some examples:

- Considering economic food choice determinants one might want to increase the price ratio of unhealthy food (like fats, sweets and alcoholic beverages) and healthy food (like fruit and vegetables) applying different rates of taxes or subsidies.
- Based on psychological considerations, it might be wise to deal with people’s attitudes which ‘can be influenced by communication and education, and therefore [...] are essential for many nutrition education interventions’ (van Dillen, Hiddink, Koelen, de Graaf, & van Woerkum, 2002).
- Psycho-social strategies might lead to the selection of trustworthy celebrities serving as models for reasonable food choices.
- From a home economic perspective, the promotion of cooking skills might be helpful in order to enable people to quickly prepare palatable and healthful dishes.

Further deliberations, however, make clear that isolated measures might not be very effective. There are two important aspects to be considered: nutrition related conflicts as well as gains and losses associated with dietary changes.

Conflicts and coping strategies

If the different determinants of nutrition behaviour are regarded all together, it is getting obvious that there are many conflicts, like

- the dissonance of neophilia and neophobia
- the competition between different goods (food and non-food items) for the usage of scarce resources like time and money
- the variance of different nutrition related motives or values
- the contradictions of food and nutrition related information provided by scientists, public health organisations and industry
- the discordance of nutrition related norms of different groups a person belongs to or wants to be associated with
- the difference between gustatory requirements and actual cooking skills
- the inconsistency of the ideas of the composition and arrangement of a meal among the people who intend to share it.

To cope with these conflicts people develop individual strategies guiding them in food choice situations without the permanent necessity of regarding all aspects of these conflicts (cf. Douglas, 1984; Falk et al., 1996; Furst et al., 1996). Once established and proven to be appropriate, these strategies are quite stable. They lead to a habitual behaviour and to some extent shelter it from external interference. Thus, intervention measures either need to be compatible with existing nutrition guidance strategies or they need to support the building of new strategies in order to be adopted persistently.

Gains and losses from change

Every dietary change aimed at by measures of dietary intervention almost inevitably worsens a person’s subjective perception of at least one aspect of his or her nutrition. One is, for instance, requested to avoid a favourite dish and replace it by a more healthy, but less palatable one. This would decrease the overall palatability of a diet which could be interpreted as an individual loss which would be acceptable if there were a comparable gain. The gains of health-orientated dietary changes, however, are mostly related to the far future (e.g. extension of one’s lifespan), are uncertain (e.g. there are other possible causes of death besides nutrition related diseases) and hardly perceivable (e.g. the avoidance of a disease cannot be experienced). The corresponding losses, however, refer to the present, are certain und immediately perceivable. Therefore, losses induced by a dietary change are mostly considered as more severe than the corresponding gains, which favours the conservation of nutritional behaviour and hinders a sustainable success of many public health related intervention

measures. But even if gains and losses of change were judged as equivalent, **Kahneman and Tversky (1983)** found that people tend to have a loss aversion which ‘favours stability over change’.

Thus, intervention measures need to convince people that the modification of their diets provide substantially higher gains than losses. Usually, the dietary modification itself cannot provide these gains, which then need to be offered as part of the intervention measures (e.g. by means of social interaction).

Realization of food choice research

The nutrition related conflicts and their coping strategies as well as the gains and losses of dietary changes are examples of theoretical concepts developed to understand nutrition behaviour. The AGEV session of the 10th Food Choice Conference exemplarily provided insight into practical realizations of food choice research into nutrition and life-style intervention strategies. Details are presented in the following papers by Ulrich Oltersdorf (Impact of nutrition behaviour research on nutrition programs and nutrition policy), Ritva Prättälä (Dietary changes in Finland—Success stories and future challenges), and Unni Kjærnes (Experiences with the Norwegian nutrition policy).

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