 Consuming and Communicating Fruit and Vegetables

A Nation-Wide Food Survey and Analysis of Blogs among Swedish Adults

ANNA-MARI SIMUNANIEMI
Dissertation presented at Uppsala University to be publicly examined in B21, BMC, Husargatan 3, Uppsala. Friday, September 30, 2011 at 13:00 for the degree of Doctor of Philosophy. The examination will be conducted in English.

Abstract


The aim of this thesis was to investigate fruit and vegetable (F&V) consumption among Swedish adults and to use F&V-related perceptions for audience segmentation. Further, the aim was to identify motives and approaches of F&V bloggers, as well as to analyze F&V-related online discourses.

F&V consumption and related perceptions were surveyed using a questionnaire among a random sample of Swedish adults (18-84y; final response rate 51%; n=1 304). F&V consumption was measured using a self-administered pre-coded 24-h recall and FFQ. The average consumption was close to the recommendations. Women in general and men born outside Sweden as well as the physically active respondents consumed the most F&V. The respondents were divided into two clusters based on their F&V-related perceptions. Positive cluster with more women and higher mean age consumed more F&V, whereas Indifferent cluster experienced more practical, habitual as well as external problems with F&V consumption. Cluster analysis is an example of audience segmentation for communicative purposes.

A sample of 50 lay-people blogs with F&V-related content were analyzed with a qualitative content analysis. Two-dimensional categories – level of dietary influential purpose and source of experience – were used to identify blogger ideal types. Exhibitionist with a passive level of dietary influence and lived experiences was the most common type. Persuaders use lived experiences to actively influence their readers, whereas Authorities try to influence mediating others’ experiences. The Mediator is described as a neutral observer. Understanding the role of blogs in everyday communication is important for targeting health messages. A critical discourse analysis was applied to Persuader bloggers’ texts (n=12). Three F&V-related discourses were identified: normative consumption, authentic consumption and altruistic consumption. This analysis is useful for the last process of dietetic communication, namely tailoring the messages.

The present four studies approach dietetic communication processes from a research perspective. However, a further step might be to apply these to a health promotion initiative starting from an identified diet-related problem (e.g. low F&V consumption) through audience segmentation (e.g. through cluster analysis) and targeting a relevant channel (e.g. through blogs) finally to tailor the message (e.g. findings from discourse analysis).

Keywords: fruit and vegetables, 24-h recall, food frequency questionnaire, discourse analysis, cluster analysis, communication, blogs

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The more you think, the more you realize that there is no simple answer.
-Winnie-the-Pooh (A. A. Milne)
This thesis is based on the following studies, which are referred to in the text by their Roman numerals.


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### Abbreviations

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<thead>
<tr>
<th>Acronym</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>ADA</td>
<td>The American Dietetic Association</td>
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<td>ANOVA</td>
<td>Analysis of variance</td>
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<td>CDA</td>
<td>Critical discourse analysis</td>
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<tr>
<td>CI</td>
<td>Confidence interval</td>
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<tr>
<td>DRF</td>
<td>Swedish Association of Clinical Dietitians (Dietisternas Riksförbund)</td>
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<td>EU</td>
<td>European Union</td>
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<td>FFQ</td>
<td>Food frequency questionnaire</td>
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<td>F&amp;V</td>
<td>Fruit and vegetables</td>
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<td>OR</td>
<td>Odds ratio</td>
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<td>PA</td>
<td>Physical activity</td>
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<td>SNO</td>
<td>Swedish Nutrition Recommendations Objectified</td>
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<td>WHO</td>
<td>World Health Organization</td>
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Introduction

The importance of dietary habits for both individual and public health is acknowledged by researchers and nutritional authorities worldwide. According to the World Health Organization (WHO), four of five main disease burdens in the Western world – namely high blood pressure, high cholesterol, obesity, and low fruit and vegetable (F&V) consumption – are closely related to unfavorable dietary habits (Ezzati et al. 2002). Also the Swedish Government has raised healthy dietary habits and food as one of eleven key areas of the public health policy (En förnyad folkhälsopolitik [The re-newed public health policy] 2007/08:110). One food group frequently mentioned in these documents and policies is F&V, whose particular role in public health nutrition is more thoroughly presented below.

The positive health effects of F&V are widely recognized, and increasing F&V consumption is an internationally robust dietary guideline. At the time of the start of the present research project, there was a large body of research suggesting that F&V consumption was reported as low in most populations. However, the latest nationwide dietary survey among Swedish adult population dated from over a decade ago (Dietary habits and nutrient intake in Sweden 1997-98. The second national food consumption survey. 2003), and in combination with that there was a need to conduct an up-to-date cross-sectional survey on the current F&V consumption.

The increase in social media has made bloggers with non-expert background potential opinion leaders for their readers also in health- and diet-related issues. Through their blog texts they can influence social norms about dietary behavior, which in turn influences individual behavior indirectly (Hornik & Kelly 2007). However, little research had been devoted to understanding different types of blogs and how the lay public uses them for dietetic communication. Particularly, it was interesting to investigate who has adopted the new online media to communicate F&V and for what purposes and, further, how F&V are presented and discussed online. Knowing how laypeople represent F&V-related issues in an online setting where nutritional professionals or authorities are not in charge of the communication is important for creating more effective and trustworthy dietetic communication.

Methodologically, the present thesis has two parts, F&V consumption (Paper I-II) and online dietetic communication about F&V (Paper III-IV). Together, these consequently follow four processes of dietetic communica-
tion (presented in Table 1). Paper I identifies and describes the research problem (F&V consumption). Paper II shows an example of audience segmentation through cluster analysis. Paper III analyzes motives of F&V bloggers to gain understanding of one potential channel, weblogs, for targeting dietetic communication. Finally, the F&V-related online discourses identified in Paper IV might be useful in identifying new challenges and needs for tailoring future diet-related messages.

Food, consumption and communication

The concept of consumption is important for the theoretical framing of the present thesis. Consumption practice has become a central focus of contemporary everyday life, which enhances the role of lifestyle as a basis of social identity (Warde 1997). According to Warde, personal dietary choices are enhanced by growing demands on self-discipline in dietary matters, and an individual is seen as increasingly responsible for his or her personal health. However, collective reinforcement or social support is needed to maintain a dietary regime, and food actually is more firmly socially embedded than many other items of consumption. Diet-related stylization, a kind of discipline or regulation over self-presentation through consumer practice (Warde 1997), occurs for example in group memberships and mass media circulation of dietary trends. Following a dietary trend or participating in on-going media debates offers social meaning, a known standard of behavior and a sense of belonging, although more dynamic in character than other communities. While stylization partly increases social differentiation by creating a plurality of identifiable, internally homogeneous style groups, there are also counter-tendencies suggesting that social rules would be less predictable and less enforceable today than in the past. This leads to more variation in individual dietary practices and a more casual attitude in relation to official nutritional guidelines. Dietary concerns vary from one individual to another, and expert dietary guidelines are followed unsystematically depending on the specific life situations. It is also undeniable that there is now more diet-related information available than any individual can handle, leading to an incentive for people to talk with each other about their food consumption (Halkier 2010). Consumption has thus become a collective process, where none of us knows everything but each of us knows something, and by putting these pieces together people can combine their skills (Jenkins 2006).

Another interesting illustration of the philosophy behind the present thesis comes from a cultural theorist Barthes (1979). He has said that food is not only a collection of products that can be used for statistical or nutritional studies but that food is also, at the same time, a system of communication, a body of images, a protocol of usages, situations, and behavior. Food is a fundamental resource to health, and health promotion actions should aim at
making healthy dietary behaviors favorable to different consumer groups. To change dietary behavior is complex, and only identifying the risk behavior, e.g. low F&V consumption, based on authority-led criteria is not enough. Thus, dietetic professionals need to identify reasons for why people engage in dietary risk behaviors, and what issues they personally regard as relevant.

The Internet has become increasingly important as a means of communication and a source of health information. These new media both enhance the interactive character of communication and facilitate the expression of users’ opinions on topics, and they are able to speed up the dissemination of information (Ahlqvist et al. 2008; Minol et al. 2007). Internet technology and several applications of social media are today undeniably a part of everyday life processes. Social dimensions of this new media technology have attracted more interest in the last few years particularly among young generations (Ahlqvist et al. 2008). Emergence of health-related presentations on the Internet, i.e. ‘e-scaped medicine,’ may lead to more diffuse, complex, and varied forms of medical discourses that can meet the preferences of varied audiences (Nettleton 2004). Modern media presentations individualize and privatize the responsibility for doing something about diet-related issues (Halkier 2010). Thus, the effectiveness of diet-related communication will depend on an expanded understanding and respect for the multiple factors that drive human behavior (Goldberg 2000), including dietary habits.

It is not unusual for traditional food consumption routines and existing dietary guidelines to be questioned in the media, and experiential knowledge from laypeople may be accessed online alongside biomedical knowledge from health professionals (Fox 2011b). During the recent years, discussions on consumption of food particularly in relation to their carbohydrate and fat content have frequently been on the media agenda in Sweden and other Western societies. Among other food groups, the role of F&V as a part of a healthy diet has been both promoted and questioned in these media representations.

Public health nutrition and dietetics

One of the best-known definitions of health from the Ottawa Charter for Health Promotion says that health is a resource for everyday life and not the object of living (WHO 1986). Health is a positive concept emphasizing social and personal resources, as well as physical capacities created and lived by people in the settings of everyday life. Health promotion is not just the responsibility of the health sector, but goes beyond healthy lifestyles to wellbeing. Health promotion is a process of enabling people to increase control over, and to improve, their health. It should be carried out by and with people, not on or to people (WHO 1997). Both traditional and new commu-
communication media can support this process if nutritional professionals can understand their nature and apply them optimally.

Good nutrition in an everyday meaning is more than physiological needs of nutrients or an objective biomedical truth. Crotty (1995) defines good nutrition as an agreed-upon activity, created by people in an everyday context, not by ‘scientific facts.’ She claims that no health promotion campaign can take all known facts into account, but people select the facts to be used and how they will be applied in a social action. Crotty also reminds us that using diet-related knowledge involves judgments and ethical considerations, and values of professionals should not be seen as more correct than those employed by non-experts.

The present thesis project started from the principles of public health nutrition, which in Lawrence & Worsley’s (2007) words is a discipline drawing from the nutrition science with a public health orientation. Public health nutrition has long worked for expert-led guidelines to target both the general population and some (socio-demographic) subgroups. Nutritional authorities have published dietary guidelines for healthy dietary habits (Dietary guidelines for Americans 2010; Enghardt Barbieri & Lindvall 2005; Nordic Nutrition Recommendations: Integrating nutrition and physical activity 2004). These guidelines are set by groups of nutritional experts based on their best scientific knowledge. However, some of the guiding principles of public health nutrition are democracy, good governance, and participation. This means that one challenge of practical public health nutrition is to engage with and include consumers in public health efforts and to develop positive responses to individualist philosophies in order to promote the public good.

Fruit and vegetables in public health nutrition

It is widely recognized that F&V consumption is a matter of public health (Ezzati et al. 2002). There is a large body of mostly epidemiological and observational cohort studies on adverse associations between F&V consumption and risk for many chronic diseases (Food, Nutrition, Physical Activity, and the Prevention of Cancer: a Global Perspective 2007). According to previous studies, low intake of F&V is estimated to cause about 19% of gastrointestinal cancer, 31% of ischemic heart disease and 11% of stroke worldwide (Guilbert 2003). There have been different estimates of how much the cancer incidence could be prevented by increased F&V consumption in different populations, varying between 19 and 32% (Grundgaard et al. 2003; Hoffmann et al. 2003). Although recent meta-analyses suggest more modest estimates of the protective role of F&V in cancer (Key 2011; Soerjomataram et al. 2010), at least populations with low average intakes of F&V could benefit from increased consumption (Key
 Particularly berry fruits have been suggested as potentially cancer preventive (Seeram 2008).

Besides associations with cancer prevention, a diet rich in fruit and berries is also associated with less atherosclerosis in the carotid artery, particularly in elderly men (Ellingsen et al. 2008). Consumption of green leafy vegetables is associated with reduction in risk of type 2 diabetes (Carter et al. 2010), and high F&V consumption is associated with better self-reported physical functional health (Myint et al. 2007).

In dietary guidelines from the nutritional authorities, positive effects of frequent F&V consumption are generally recognized. The latest dietary guidelines for Americans highlight the importance of F&V, not only for their positive health but also due to environmental effects (Dietary guidelines for Americans 2010). Also, in the Nordic Nutritional Recommendations, a high and varied consumption of F&V is desirable (Nordic Nutrition Recommendations: Integrating nutrition and physical activity 2004). Authorized bodies worldwide recommend eating at least 400 g of F&V per day (Ezzati et al. 2002; Food, Nutrition, Physical Activity, and the Prevention of Cancer: a Global Perspective 2007), which is equivalent to approximately five portions (Ashfield-Watt et al. 2004). The National Food Administration in Sweden has translated nutrition recommendations into more practically applicable food group levels (Enghardt Barbieri & Lindvall 2005). These Swedish Nutrition Recommendations Objectified (SNO) state that the recommended intake of 500g of F&V per day can be reached by consuming 2-3 pieces (á 100g) fruit and 2-3 portions vegetables every day combined with 3-4 glasses (á 200ml) juice per week.

The latest nationwide food consumption survey from 1997 among Swedish adults (n=1 215, response rate 60 %) showed that average total F&V consumption excluding potatoes was around 4 times/day among women and 2.8 times/day among men (Dietary habits and nutrient intake in Sweden 1997-98. The second national food consumption survey. 2003). In another less comprehensive survey from the Swedish National Institute of Public Health in 2006, only 12% of women and 4% of men between 18 – 84 years reported consumption of five or more F&V portions per day (Boström & Nykvist 2006). Also, an updated survey of F&V consumption trends between 2007-2010 in Swedish counties and municipalities showed very low compliance with F&V recommendations: only 13% of women and 5% of men reported consumption of at least 500g of F&V per day (Frukt- och grönsakskonsumtion i Sverige. Utdrag från den nationella folkhälsoenkäten över läns- och kommundata 2007-2010 [Fruit and vegetable consumption in Sweden. An extract from the national public health survey on the county and municipal data 2007-2010] 2011).

Socio-demographic differences in F&V consumption have engaged a number of researchers, and there is extensive literature on factors associated with F&V consumption in different populations. It has become almost an
accepted fact that men generally consume less F&V than women do (Baker & Wardle 2003; Boström & Nykvist 2004; Dehghan, Akhtar-Danesh & Merchant 2011; Johansson et al. 1999; Prättälä et al. 2007). Dietary habits seem also differ across age groups, with F&V consumption generally being higher among older age groups (Dehghan, Akhtar-Danesh & Merchant 2011). Particularly women in the age range of 50-60 years tend to have healthier food habits than younger women (Lallukka et al. 2007). F&V consumption is also often associated with socioeconomic status. Individuals with low socioeconomic status tend to consume less F&V (Giskes et al. 2002; Hare-Bruun et al. 2011; Riediger, Shooshtari & Moghadasian 2007), whereas individuals with high education more often also prefer F&V (Casagrande et al. 2007; Deshmukh-Taskar et al. 2007; Lallukka et al. 2007; Prättälä et al. 2007).

Mechanisms behind the potentially protective role of F&V against chronic diseases remain partly unexplained. Even large epidemiological observational studies can only show associations but not causal relations between life-style factors and diseases. A recent follow-up survey linked intake of F&V to lower mortality rates through serum α-carotene concentrations (Li et al. 2010), and high antioxidant content partly explains the health benefits of green leafy vegetables, for instance (Carter et al. 2010). However, Carter et al. remind us that results from several supplement trials have not led to clear results on their preventive effects. Thus, there is stronger evidence for beneficial effects of ‘foods,’ such as F&V, rather than isolated nutrients. Research also shows that the observed positive health effects associated with F&V may partly result from overall healthy life-styles. For instance, physically active Norwegian women have a higher intake of F&V (Hjartaker & Lund 1998). High F&V consumption is also associated with being overall more health conscious (Pollard et al. 2002). The observed positive health effects of F&V may partly be explained by related confounding lifestyle habits such as smoking or alcohol use, which are associated with low F&V consumption (Key 2011; Serdula et al. 1996).

Despite the almost universal recommendations for increasing F&V consumption, F&V consumption has remained low among many population groups. Undeniably there are multiple reasons for individuals not to follow official nutritional guidelines. One explanation suggested by King is the confusion resulting from the constant stream of conflicting dietary information through different media channels (King 2007). The general evidence-based advice from nutritional authorities may not be adequately individualized to address personal health concerns and life situations. King also points out that failure to consider socio-cultural influences on food habits in generic nutritional guidelines decreases compliance with them.
Fruit and vegetable consumption as a social action

Individual food preferences are not formed in a social vacuum (Germov & Williams 2008). Social drives guiding food choices are based on cultural, economic and political factors. In other words, dietary choices and food consumption are about much more than satisfying our physiological needs. F&V consumption is associated with supportive social norms, e.g. family and co-workers eating F&V every day, as well as with social networks (Bogers et al. 2004). There is strong evidence for social support as well as self-efficacy and knowledge as predictors of higher F&V consumption (Lechner, Brug & De Vries 1997). Much of the diet-related information is obtained through informal sources, such as family, friends or other associates in social groups (Jarlbro 1999). With this in mind, it seems natural that discourses on food and nutrition are taking its place in online forums of social media, such as weblogs.

Katz, Lewin and Hamilton (1963) state that while the mass media are efficient in making people aware of a topic, e.g. F&V consumption, interpersonal communication is still important for acceptance. When consumers today want to find health- or diet-related information, it is common to read someone else’s commentary or experience about health issues on an online news group, website, or blog or go online to find someone who might have health concerns or experiences similar to theirs (Fox 2011b). In the US, every fifth adult has looked for information related to their weight, diet, exercise routines or some other health indicators or symptoms online.

At least researchers in media and communication studies, sociology, psychology and cultural studies have studied consumers’ presentations of diet and health in different media. For example, Sandberg (2004) studied discourses on overweight and obesity in Swedish daily newspapers. She identified several dichotomous themes such as us – them, the bad – the good, nature – culture and hedonism – asceticism. The messages were often contradictory and difficult to interpret. Instead of only obesity-related media presentations, Madden and Chamberlain (2004) identified all kinds of nutritional health messages in women’s magazines. They saw that the food was framed as a source of health or ill health because of their role in bodily systems. In recent years, there have also been some studies on health-related presentations in new online media. One example is a study by Riley, Rodham and Gavin (2009) which explored the role of online discussions on anorexia nervosa-related discussion forums. Another example is a study by Sneijder & te Molder (2009), where the aim was to analyze the construction of identity in an online forum on veganism. As these examples show, the research so far has focused on a particular group of patients (e.g. eating disorders) or on an alternative diet (e.g. veganism). However, there was no previous research on particularly how F&V are discussed and approached among laypeople in online settings.
Health and dietetic communication

Health communication theories are based on different traditions, according to Craig (1999). The rhetorical tradition theorizes health communication as a practical art of persuasive discourse, and it particularly appeals to the common everyday discourse. It is regarded as well suited to studies of the communicative framing of values (Barrow & Mattson 2003).

Dietetic communication is an interdisciplinary research field with its background from nutritional and dietetic studies as well as practices of health communication and media research. To understand the background and development of dietetic communication, there is a need to introduce the reader to some related theoretical foundations.

Health communication focuses on the relationships between communication and health, health attitudes and beliefs, and health behavior (Welch Cline 2003). It is a key strategy to inform the public about health concerns and to maintain important health issues on the public agenda, in order to promote health on both individual and population levels (WHO 1998). The US Department of Health & Human Services highlights the necessity of health communication in improving public health (Health Communication 2011):

the study and use of communication strategies to inform and influence individual and community decisions that affect health. It links the fields of communication and health, and is increasingly recognized as a necessary element of efforts to improve personal and public health.

Further, interactive health communication is interaction of an individual through an electronic device or communication technology to access or transmit health information or to receive guidance and support on a health-related issue (Robinson et al. 1998). Health communication can take many forms, from mass media and multimedia communications, which entails that health communication is becoming an increasingly important element to achieving greater empowerment of individuals and communities (WHO 1998).

Communication in the medialized society

According to Tufekci (2008), people have always been interested in what other people do, wear, read, listen to, and so on. Much of that information is today available with the click of a mouse, or in Tufekci’s words: “it is almost as if we have come full circle back to the village where everyone potentially knows your business.” Thompson describes the world we live in today as a medialized society, where the mass media play a central role in our daily activities (Thompson 1995). By this he means that people cannot experience
everything personally, but significant parts of understandings are based upon media representations of information, experiences and discourses. Social trends and cues are cultivated at a distance and consumed through different media channels. Different media can be described as one of the main culture producers of our time, because they mediate conceptions, values, and ideas as well as shaping our sense of what is important to think about (Barrow & Mattson 2003; Lien, Lytle & Komro 2002). Media influence the public agenda by reporting on some topics and thereby creating alarm and public awareness (Sandberg 2010).

The mass media have long played an active part of communicating health and diet. Traditionally, the news media have had a central agenda-setting function in society, referring to the ability of news media to influence the public’s issue priorities (Fleming 2010; McCombs & Shaw 1972). However, in line with technological developments and increased use of social media, the agenda-setting role of traditional mass media has been changing due to unlimited information stream online and unfiltered expressions of Internet users (Fleming 2010). The agenda-setting framework with news media influencing the public agenda is increasingly challenged by the audience-driven framework, where the audience influences the media agenda (Uscinski 2009). A shift away from traditional mass media where the information was controlled by the creator, i.e. journalists and the broadcasting companies, towards the lay audience being increasingly in charge of the communication, may account for the questioning of the objectivity of the press and the filtering of facts according to personal values and interests. Creating and consuming the Internet content are now more overlapping activities, and people are switching between these two roles. Anyone with online access can publish and distribute any kind of information without any constraint. Recent developments in media point to increasing individuation in the delivery and reception of information. In other words, media consumption has become more personalized.

Internet-based resources can be understood as a hybrid channel that combines elements of both interpersonal and mass communication (Cassell, Jackson & Cheuvront 1998). The model of a two-step flow of communication is a classic theory of mass media communication, which represents the tendency to consult friends and neighbors before media and other authoritative sources when looking for information on a given topic (Katz & Lazarsfeld 1955). According to this model, ideas first flow from the mass media to a handful of individuals, so-called opinion leaders, who are perceived as authorities or simply well informed in the topic. These opinion leaders distribute information and opinions further to less active population groups. However, in recent years the Internet has taken on an increasingly important role as a health information source far ahead of traditional opinion leaders, such as friends and family or even other mass media (Case et al. 2004). Case, Allard & Kelly call this change ‘a mutation of the two-step
flow hypothesis,’ because in many cases the Internet has become the first choice for finding out about a certain topic, as well as a channel for discussing these topics with other persons in online environment. Thus, opinion leadership has changed due to both authoritative and more interpersonal sources being readily available for all Internet users.

Terry (2009) defines social media as user-generated Internet content, distinct from traditional print and broadcast media. Information seeking online is not a passive one-way process from the information sender to the receiver, but it should be framed as a communication process rather than pure information dissemination or education (Cline & Haynes 2001). In the online environment, people exchange information, ask for help, discuss problems, and share experiences with others who have understanding of what someone is going through (Lowry et al. 2002). People communicate with strangers they may not know in real life but who nonetheless can have a significant influence on their lives. Laypeople seek and even have more trust in experiential information from peers, rather than research-based information from authorities, because there are no clear standards on how information should be conveyed to consumers (Eysenbach 2008).

One form of social media is a blog, an online diary where people can write their thoughts and allow readers to interact with what they publish. From a technical point of view, there is no difference between a blog and a web page, although blogging is perceived as more dynamic than maintaining a personal web page (Zeng & Harris 2005). From a usability point of view, a blog is more frequently updated than traditional homepages, and the updates, called *posts* or *entries*, are presented in a reverse chronological order (Chesney & Su 2010). The term blogosphere refers to the part of the Internet that consists of all blogs.

Blogs enable people to utilize public web spaces to manage and share their own information and experiences (Adams 2010). In blogs, readers look for confirmation of their perceptions and behavior, and they can feel relieved to find support in online environments. Individuals turning to the Internet for health- and diet-related information are likely to end up on some blogs, which have a potential to be an important information and communication tool for today’s consumers (Thackeray et al. 2008). With blogs and other social media applications, the line between producers and information users becomes blurred (Adams 2010). Bloggers challenge traditional journalistic standards with principles such as a dialogue with the audience, transparency in the reporting process, and participatory news production (Domingo & Heinonen 2008). This democratization of ‘produsage’ (Fuchs 2011), mixed roles of production and use of online content, can also make blogs more difficult to interpret. Blogs and other social media are not identical to any other forms of mass media, such as newspapers, advertisements, or documentaries.
Blogs originated in the late 1990’s as a way to share information or common interest on a topic (Glynn et al. 2005). In the early days of blogging, the bloggers were web-savvy individuals working in the technology industry. Since then, a number of blog portals offer easy-to-use editing tools to create a blog for anyone without previous coding experience. For a few years ago in the US, 41% of so-called e-patients, i.e. persons looking for health related content on the Internet, had read someone else’s commentary or experience about health or medical issues on an online news group, website, or blog (Thomas 2008). In recent years, the number of bloggers has increased dramatically. A Swedish report from 2010 showed that about 5% of all adults actively maintain a blog, which corresponds to 500 000 individuals (Findahl 2010). Swedish women are more active bloggers than men (11% vs. 4%, respectively). The most active age group for posting health-related comments and entries on social media and blogs are 16-45-year-olds. More specifically, two of three 16-25-year-old Swedish women maintain a blog, and three of four women of a similar age read their entries.

All interpersonal relations are potential communication networks, and an opinion leader can be thought of as a group member playing a key communication role (Tanis 2008). De Laat has described bloggers as exhibitionists who expose intimate details of their lives on purpose to their readers, who thus engage in voyeurism of a kind (de Laat 2008). Popular bloggers whose texts are followed and commented on by a large number of readers could potentially act as opinion leaders. However, the role and motives of bloggers for writing about diet-related issues and particularly about F&V had not been properly studied before the present thesis was launched. Thus, blogs as a communication forum for diet-related issues constitute a new research area within communication and media studies.

**Dietetic communication**

Dietetics is both a professional and a research discipline, which involves translating nutritional science and evidence-based guidelines into more individually acceptable practices. The American Dietetic Association, ADA, and the Swedish Association of Clinical Dietitians, DRF, have approached dietetics mainly from the perspective of clinical settings. According to definitions from these professional organizations, dietetics is integration and application of different disciplines such as nutrition, biochemistry, physiology, food science, management, and behavior science as well as communication to achieve human health (DRF 2010; Scope of Dietetics Practice Framework Sub-Committee of the Quality Management Committee. Definition of Terms List 2011).

Health communication or clinical dietetics alone does not cover the interdisciplinary focus of the present thesis, which belongs to a research field that combines both communication and dietetics. This field is hereafter called as
dietetic communication. It can be perceived as a specific niche within the broader discipline health communication because it applies research methods and approaches of health communication in a particular setting of dietetics. No generally adopted definition of dietetic communication exists as yet, and the definition used in the present thesis was developed by the author based on personal communication with other researchers (Fjellström 2010). In the present thesis, dietetic communication is regarded as all kind of communication in the field of dietetics, including communication in clinical settings, as a research field as well as an every-day diet-related communication between laypeople. Dietetic communication can focus on how certain foods and dietetic issues are at the center of attention in society as well as how and by whom nutritional issues and healthy foods are communicated in society and perceived among different populations and professions.

Professionals with nutrition scientific competence are not necessarily experts in making judgments about the application of their knowledge in consumers’ everyday life. Effective dietetic communication using modern communication channels is important for promoting public health. Kjellberg (2010) writes in her dissertation that knowledge is nowadays perceived as socially constructed, and even the construction of scientific knowledge involves more actors than researchers. Murray-Johnson & Witte (2003) point out that communication designers need effectively to reach their target audience and get them to listen to their messages. What the communicators say is as important as how they say it, and health-information providers need to do a better job of marketing the messages. If customer needs and understandings are not properly known, there is a risk of making false assumptions that could lead to little attention being paid to the messages (Hellyer & Haddock-Fraser 2011).

Principles of effective dietetic communication are in many aspects close to social marketing theories. According to Kotler & Lee, social marketing is the use of marketing principles and techniques to influence a target audience to voluntarily accept, reject, modify, or abandon a behavior (Kotler & Lee 2007; Kotler & Lee 2008). It seeks to influence social behaviors to benefit the target audience and the society, building marketing campaigns from the bottom-up perspective. Marketing analysis and planning are relevant in all situations where one can identify an organization, a client group, and products in a broad sense (Kotler 1972). In the settings of healthcare and public health nutrition, social marketing can be perceived as the application of commercial marketing techniques to the development and implementation of health interventions that influence the attitudes, knowledge, and behavior of the target audiences towards improving individual and community health status (Kotler & Lee 2007). Thus, consumers’ wants, attitudes, and habits towards the product, e.g. F&V consumption, must be studied, and the communication channels should be designed to appeal to the target group. In this sense, healthy dietary habits should be perceived as the product, and they
should be promoted using the same social marketing principles as with any other product.

Kotler & Lee (2007) have described the process of marketing planning in the public sector. Although this model may be a simplification of the complexity of real communication, it still gives an idea of what different processes are involved and is worth being presented here. According to this rather linear model of Kotler & Lee, a health communication process begins with analyzing the current situation and environment, moves on to establish marketing objectives and goals, identifying target audiences, determining a desired positioning, and finally, designing a strategic marketing mix. Due to individual needs, health communicators should divide their target population into market segments to choose one or more segments for more concentrated actions. These principles can be transferred into processes in dietetic communication that are related to the audience, channel, and message considerations. Table 1 presents a scheme of these processes. The table is a modification of a model presented by Rimal & Adkins (2003). The first step in the process, problem identification, has been added by the present author. Before any communication project can be planned and implemented, there must be a clear understanding of which diet-related issue is the key problem that needs to be addressed. The next process in the model is audience segmentation. Audience segmentation is based on the assumption that different subgroups possess different characteristics that make them more or less likely to pay attention to, process, and be influenced by different diet-related messages. The challenge for those responsible for the planning is to find the fewest number of messages and communication channels required for effective information dissemination and, on the other hand, to form homogeneous audience groups or clusters. After the audience segmentation, the third process is to strategically select one or more communication channels to reach the identified audience segments. This process is known as targeting. Finally, the fourth and last process of this dietetic communication model is called tailoring. The messages delivered need to meet the target individuals’ needs, interests, abilities, and motivations.

Each paper in the present thesis is related to one of these dietetic communication processes, as presented in Table 1.
Table 1. Processes of dietetic communication.

<table>
<thead>
<tr>
<th>Process</th>
<th>Description</th>
<th>Related paper in the thesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Problem identification</td>
<td>Identifying and describing the diet-related problem</td>
<td>Paper I</td>
</tr>
<tr>
<td>2. Segmentation</td>
<td>Dividing audience members according to some meaningful criteria, e.g. perceptions or socio-demographic characteristics</td>
<td>Paper II</td>
</tr>
<tr>
<td>3. Targeting</td>
<td>Selecting the proper communication channel based on audience characteristics, e.g. media use</td>
<td>Paper III</td>
</tr>
<tr>
<td>4. Tailoring</td>
<td>Crafting health messages to reflect audience characteristics, needs, wishes and attitudes</td>
<td>Paper IV</td>
</tr>
</tbody>
</table>

Modified from Rimal & Adkins (2004)

The American Dietetic Association (ADA) states in the position paper on communicating food and nutrition information that nutrition professionals are responsible to communicate unbiased health information that is culturally sensitive, scientifically accurate, medically appropriate, and feasible for the target audience (ADA 2007). The growing risk of misinformation about food, nutrition and health, along with scientifically established information due to increased online communication, also concerns the ADA (2006). Advances in communication media, especially in the multimedia and new information technology, continue to improve laypeople’s access to health information (Nutbeam 1998). In this respect, dietetic communication becomes an increasingly important element in achieving greater empowerment of individuals and communities. This suggests shifting research focus from pure information content to latent messages and meanings. In other words, tackling food and culture in the present context involves not just what is being talked about but the way it is being talked about (Murcott 2003). Blogs are named as a potential channel to deliver specialized information to a large number of people (ADA 2006). For nutritional professionals this offers a challenge to find ways of co-operation in order to promote the desired F&V choices but also to understand myths, interpretations or even misconceptions related to the topic. Blogs make a good research object and show the social construction of reality and special issues from a non-expert point of view.
Aims

The four studies in the present thesis with F&V consumption in focus were each related to one of the processes of dietetic communication: problem identification, segmentation, targeting and tailoring, respectively. To chronologically follow these processes, the first aim was to investigate F&V consumption among Swedish adults. The second aim was to use F&V-related perceptions for audience segmentation. Further, an aim was to identify motives and approaches of F&V bloggers to deepen understanding of blogs as a potential channel for targeting dietetic communication. And finally, the last aim was to analyze F&V-related online discourses from the perspective of tailoring dietetic communication messages.

The specific aims for each paper were:

- **Paper I:** To investigate how consumption of different F&V types is related to demographic factors such as age, gender, education, and country of birth among Swedish adults.
- **Paper II:** To segment consumers into clusters based on individual F&V-related perceptions, and to describe these clusters with respect to background variables.
- **Paper III:** To study the nature of blogs with F&V-related content and the producers, bloggers, behind them.
- **Paper IV:** To identify F&V-related discourses in a sample of blogs with dietary influential purposes.
Methods

The same semi-structured questionnaire was used to collect data in Papers I and II (Appendix 1). Different parts of the questionnaire were statistically analyzed in each study. In Paper III, the data consisted of a selected sample of F&V-related blogs that were authored by individuals without formal nutritional education. These blogs were analyzed using a qualitative content analysis. Paper IV included a theoretically selected subsample of blogs identified in Paper III. The texts were analyzed a critical discourse analysis. The number of respondents, type of data and data analysis methods for each study are presented in Table 2.

Table 2. Respondents, type of data and analysis methods in each study.

<table>
<thead>
<tr>
<th>Paper</th>
<th>Respondents or material</th>
<th>Type of data</th>
<th>Type of analysis</th>
<th>Main analysis methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>1304 adults</td>
<td>questionnaire</td>
<td>quantitative</td>
<td>Descriptive statistics; t-tests; ANOVA</td>
</tr>
<tr>
<td>II</td>
<td>1304 adults</td>
<td>questionnaire</td>
<td>quantitative</td>
<td>Two-step cluster analysis; binary logistic regression; t-tests; chi-square</td>
</tr>
<tr>
<td>III</td>
<td>50 bloggers</td>
<td>blog texts</td>
<td>qualitative</td>
<td>Qualitative content analysis</td>
</tr>
<tr>
<td>IV</td>
<td>12 blogs</td>
<td>blog texts</td>
<td>qualitative</td>
<td>Critical discourse analysis</td>
</tr>
</tbody>
</table>

Data collection and respondents

Data collection - Questionnaire (Paper I and II)

The questionnaire used in Paper I and II consisted of a 13-item self-administered pre-coded 24-h recall and a 12-item food frequency questionnaire (FFQ). Both the self-administered pre-coded 24-h recall and FFQ were based on a validated questionnaire (Kristjansdottir et al. 2006). Level of physical activity (PA) was measured by asking how many hours per week
the respondents engage in exercise that causes them to perspire or become breathless.

The pre-coded 24-h recall included three questions on F&V juice (reported as number of glasses à 2 dl), seven questions on fresh, frozen, canned and dried fruits (number of different fruits or dl), one question on berries (dl), and four questions on different types of vegetables, including salad or fresh vegetables, cooked and canned vegetables, as well as beans and lentils (dl). One glass of juice, one whole fruit (such as apple, banana or orange) or 1 dl fruit or vegetables was reported as one portion. A separate item asked about consumption of potatoes, which was not included in the analyses of vegetable consumption.

The FFQ included eight response categories from 1 = ‘never’ to 8 = ‘more than twice a day’, but due to a low number of respondents in the most extreme categories, they were combined with the category next to them and the scale was thus reduced in width to a 6-level scale. There was a separate item for fresh, frozen, canned or dried fruit each as well as for fruit juice and berries. Vegetable items included salad and other raw vegetables, cooked and canned vegetables, beans and lentils, vegetable juice as well as a separate item for potatoes (excluded from total vegetable consumption).

F&V-related perceptions were measured with 19 items rated on a 5-level Likert scale (from 1 = ‘fully agree’ to 5 = ‘fully disagree’). In order to let the respondents describe the factors that prevent or promote F&V consumption with their own wordings, open-ended items were included in the questionnaire.

An age-group-stratified, geographically representative random sample of Swedish inhabitants (n=2604, 18-84y) with an equal number of women and men was selected from the register of Swedish National Tax Agency. These respondents were sent a questionnaire enclosed with an invitation letter in June 2007. The respondents could choose between a pen-and-paper and a web-based questionnaire. A few weeks after the first circular, a reminder letter was sent to the non-responders. To further increase the response rate, the second reminder was sent to all non-respondents in January 2008. The final number of responses was 1 304 yielding the total response rate of 51%.

Data collection – Online search (Papers III and IV)

F&V-related blog entries from laypeople blogs were searched with the Google search engine. Swedish probing terms meaning “fruit OR vegetables”, “fruit OR vegetables blog”, and “fruit OR vegetables AND blog” were included in the search bar. The searches resulted in a high number of results of which separate blog entries matching the predefined selection criteria were selected. Only blog entries with F&V-related content that were authored by private persons for obviously non-commercial purposes were included. The blogs that clearly prohibited use for research purposes were
excluded from the analysis. The final number of analyzed blog entries in Paper III was 205 from fifty separate blogs. The data in the Paper IV consisted of a strategically selected subsample of blog texts identified in Paper III (n=12). The data collection process for online studies is presented in Table 3.

Table 3. Data collection for the blog studies.

<table>
<thead>
<tr>
<th>Search 1</th>
<th>Search 2</th>
<th>Search 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Search terms</strong></td>
<td>“fruit OR vegetables”</td>
<td>“fruit OR vegetables blog”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A total of &gt;1.2 million hits</td>
</tr>
<tr>
<td><strong>Exclusion criteria</strong></td>
<td>Not a blog; Duplicated findings; Page not found; Blog maintained for commercial purposes; Fruit and vegetables presented from a non-food perspective (e.g. as art)</td>
<td></td>
</tr>
<tr>
<td><strong>Final number of selected blogs and entries</strong></td>
<td>50 blogs; 205 blog entries</td>
<td></td>
</tr>
</tbody>
</table>

Data analysis

Statistical analysis (Paper I and II)

All statistical analyses in Paper I and II were performed using the latest version of SPSS (SPSS 16.0 2008). Open-ended answers on determinants of F&V consumption were analyzed using NVivo 8 software (NVivo 2008).

In Paper I, the analyses were undertaken separately for women and men as well as for different demographic groups. Means and 99 % confidence intervals [99 % CIs] were calculated for daily F&V consumption (portions / day). Outliers with extremely high reported consumption (> 15 F&V portions per day) were excluded from the analyses. Two-sample t-tests and one-way ANOVA were used to compare mean F&V consumption from the self-administered pre-coded 24-h recall between subgroups. Differences between the subgroups were analyzed using Tukey’s post-hoc test, and the Mann-Whitney test was used to analyze consumption data from the FFQ. Due to a large number of significance tests conducted, a two-sided P-value <0.01 was considered statistically significant throughout the study.

In Paper II, a two-step cluster analysis starting with a hierarchical clustering using Ward’s method and followed by a nonhierarchical K-means clustering (Hair et al. 2010) was performed to identify consumer groups based on perceptions of F&V. Only respondents who answered all 19 perception variables were included (n=1 191). A binary logistic regression was conducted to describe the relative importance of perception variables in determining cluster membership. Odds ratios (OR) and 95% confidence intervals
(95% CI) were also reported. F&V consumption between the clusters was compared using t-tests. Statistical significance was accepted at the level of P<0.05.

Qualitative content analysis (Paper III)
In Paper III, each bloggers’ gender and age were identified when such information was available. The qualitative content analysis of the weblog contents started with thoroughly reading and re-reading each blog entry separately with an open attitude. The text was allowed to give an impression of the bloggers’ purposes and the approaches to F&V. Abductive data analysis described by Alvesson & Sköldberg (2008) was used which means that literature on applicable theories was read in parallel with the analysis to successively develop the empirical material. During the analysis process, a theory of ideal types was found to be a suitable theory for the presentation of different blogger ideal types. The ideal type typology is originally derived from Weber’s theory on ideal types (Burger 1976), but more practical applications from Eneroth (1984) and Melin-Higgins (1996) were used as sources of inspiration in Paper III.

The blog texts were at first coded using open coding (Flick 2006), and the resulting codes were combined into two dimensional categories. Two subcategories were identified for each dimension. The first author carried out the preliminary analysis, but to improve inter-rater coding reliability and confirm the findings all authors also coded a subsample of the blogs. After discussions within the research team, full consensus was reached between the researchers on categorizing the bloggers into the blogger ideal types. NVivo 8 software was used as a data management and analysis tool.

Critical discourse analysis (Paper IV)
A discourse has been defined in many ways. Widdowson refers to a discourse as a complex of communicative purposes which underlies the text and motivates both its production and interpretation (Widdowson 2010). From that perspective, a text only exists in a context as a reflection of discourse. A critical discourse analysis (CDA) inspired by Fairclough focuses on the one hand on the connections between social and cultural structures and processes, but also on the properties of text on the other hand (Fairclough 2003; Fairclough 2010; Fairclough & Wodak 2010). Adopting critical goals means aiming to make clear social determinations and effects of discourse that normally are opaque to participants. The objective of CDA is to denaturalize, or to make visible, the dominant ideological-discursive formations that are accepted as ‘common sense’ within an institution, domain or group. For Fairclough, a discourse is language use as social practices that present areas of experience from a particular perspective. He sees discourse as a
complex of three elements all of which should be analyzed: social practice, discoursal practice, and text. The focus is upon the partially linguistic character of social and cultural structures. A variety of contrasting and even competing discourses can coexist in the same domain, and the interplay between how different discourses present the understandings of the world is important for the analysis (Hanrahan 2010).

Reading a text for the purposes of CDA differs from reading by an uncritical consumer because of the systematic approach to inherent meanings, relying on scientific procedures, and the requirement of self-reflection by the researchers themselves (Fairclough & Wodak 2010). CDA focuses on how power is maintained through accepted social practices that tend to favor the interests of those currently in power and hinder those of the competitors (Hanrahan 2010). According to Winther Jørgensen & Phillips (1999), a discourse analysis is not supposed to judge the statements into as being either right or wrong, but to study which patterns occur in the statements as well as what social consequences different discursive productions have. The analysis should come down to what choices are made, what is included or excluded, and what is present and absent in the text. Fairclough & Wodak (2010) also remind us that the interpretations and explanations from CDA are never finished and authoritative, but are dynamic and open to new contexts and information.

In Paper IV, CDA inspired by Fairclough (2000) was adopted. The analysis started with thoroughly reading and re-reading each piece of text separately with an open mind in order to identify themes (Phillips & Jorgensen 2002). The nature of the analysis was open-ended and circular, also called iterative (Taylor 2001), and it took place in three inter-related and overlapping phases as had been previously applied by Madden & Chamberlain (2004). The first phase consisted of becoming familiar with the texts through re-reading them individually and making notes on content and meanings. At this stage, a number of preliminary themes were inductively identified and coded into thematic categories. In the second phase of the analysis process, the important discourses were identified while relevant literature was read around the topic. Then, all F&V-related excerpts of the texts were selected and grouped under the revised discourses.

**Ethical considerations**

The Swedish Research Council’s guidelines for good research practice were followed (Gustafsson, Hermerén & Petersson 2006) in conducting the studies. The respondents in Paper I and II gave their informed consent by responding the questionnaire. The returned questionnaires were treated confidentially, and personal information was stored separately from the raw data. Since the study did not include any biological material or any sensitive in-
formation, there was no need for approval from the ethical board in accordance with the Act Concerning the Ethical Review of Research Involving Humans (2003).

Because the Internet is still relatively new as a research environment and there are not many firmly established ethical guidelines regarding research online, researchers need to pay special attention to ethical issues in each case. The Association of Internet Research states that statements made in publicly accessible communication spaces, such as open blogs, are in the public domain and may thus be freely used by researchers (Ess & Committee 2002). In Papers III and IV, the ethical guidelines for research online presented by Bruckman (2002) were followed. According to these guidelines, online information may be freely used and analyzed without consent if it is publicly archived; the archives are not password protected or no registration is needed; the site policy does not prohibit it, and; the topic is not highly sensitive. All the blogs included in the analysis fulfilled these criteria. However, Moreno, Fost & Christakis (2003) remind us that despite the public presentation of personal information and legal rights for publishing it, researchers should still avoid linking personally identifying and potentially damaging information. The confidentiality of the research subjects is one of the concerns taking into consideration in the present studies.

According to Moreno, Fost & Christakis (2008), social networking sites are a venue in which people voluntarily publish personal information in a global public forum. The persons clearly intend for their private information to be available to wider audience, although they may not necessarily expect a researcher to be a part of that audience. Thus, the individuals may claim that they did not intend for the information to be used for research purposes, but they could not claim that the information was private. Researchers may collect observational data from a web profile without contacting the subjects. This research method is often used for observation of public information, such as open access blogs, and could be exempt from the need for ethical review board approval (Fridlund & Hildingh 2000).
Results: Questionnaire studies

Paper I: Fruit and vegetable consumption

Of the 1,304 respondents returning the questionnaire, 313 chose to fill out the web-based questionnaire instead of the pen-and-paper version. The sample was geographically representative of the whole Sweden, but there were slightly more women (56%) among the respondents. Roughly every third (37%) respondent had a university-level education and every other (49%) had been employed during the past six months. About 12% were not born in Sweden.

Self-administered pre-coded 24-h recall

According to the self-administered pre-coded 24-h recall, total consumption of all F&V types was 2.2 (99% CI 2.0 - 2.4) portions per day in the lowest quartile among women) and 1.9 (1.7 - 2.1) daily portions among men. The highest quartile of women consumed 9.9 (9.3 - 10.4) portions compared to 9.4 (8.4 - 10.5) portions among men. Mean number of total F&V portions varied from 4.9 – 5.8 among women and 4.2 – 5.0 among men in different age groups, but the consumption did not differ statistically across age groups. Men born in Sweden had lower total F&V consumption than did men born in another country. Women with less than half an hour self-reported PA per week had lower F&V consumption than those reporting at least one hour weekly PA. Also among men, those reporting ≤0.5 hour PA per week had lower F&V consumption than those reporting ≥2.5h PA / week.

Fresh fruit as well as raw vegetables were consumed in the greatest amounts, and more so by women than by men. Comparisons between women and men within each age group showed that 55- to 74-year-old women consumed more fruit in total and specifically fresh fruit than men did (Table 4). Women between 55–64 years also had higher total vegetable consumption than did men in the same age group. Overall consumption of berries and cooked vegetables was relatively low, and there were no gender differences.
Table 4. Fruit and vegetable consumption (mean number of daily portions and 99% confidence interval) with gender differences within each age group according to the self-administered pre-coded 24-h recall.

<table>
<thead>
<tr>
<th>Age</th>
<th>Gender</th>
<th>Total fruit</th>
<th>Fresh fruit</th>
<th>Total vegetables</th>
<th>Salad and raw vegetables</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-24y</td>
<td>Women</td>
<td>1.7 [1.3-2.2]</td>
<td>1.5 [1.1-1.9]</td>
<td>2.3 [1.7-2.8]</td>
<td>1.5 [1.0-2.0]</td>
</tr>
<tr>
<td></td>
<td>Men</td>
<td>1.2 [0.8-1.6]</td>
<td>1.1 [0.7-1.5]</td>
<td>1.8 [1.3-2.3]</td>
<td>1.0 [0.6-1.4]</td>
</tr>
<tr>
<td>25-34y</td>
<td>Women</td>
<td>1.8 [1.4-2.1]</td>
<td>1.6 [1.3-1.9]</td>
<td>2.3 [1.8-2.9]</td>
<td>1.5 [1.1-1.8]</td>
</tr>
<tr>
<td></td>
<td>Men</td>
<td>1.2 [0.8-1.5]</td>
<td>1.1 [0.8-1.4]</td>
<td>2.2 [1.8-2.6]</td>
<td>1.5 [1.1-1.8]</td>
</tr>
<tr>
<td>35-44y</td>
<td>Women</td>
<td>1.9 [1.5-2.2]</td>
<td>1.8 [1.4-2.1]</td>
<td>2.0 [1.7-2.4]</td>
<td>1.4 [1.1-1.7]</td>
</tr>
<tr>
<td></td>
<td>Men</td>
<td>1.7 [1.3-2.0]</td>
<td>1.5 [1.2-1.8]</td>
<td>1.8 [1.4-2.2]</td>
<td>1.1 [0.7-1.5]</td>
</tr>
<tr>
<td>45-54y</td>
<td>Women</td>
<td>2.0 [1.6-2.4]</td>
<td>1.8 [1.4-2.1]</td>
<td>2.3 [1.9-2.8]</td>
<td>1.5 [1.2-1.8]</td>
</tr>
<tr>
<td></td>
<td>Men</td>
<td>1.7 [1.3-2.0]</td>
<td>1.5 [1.2-1.8]</td>
<td>2.2 [1.7-2.6]</td>
<td>1.2 [0.9-1.5]</td>
</tr>
<tr>
<td>55-64y</td>
<td>Women</td>
<td>2.4 [2.0-2.8]***</td>
<td>2.2 [1.8-2.6]**</td>
<td>2.4 [2.0-2.7]**</td>
<td>1.4 [1.2-1.7]</td>
</tr>
<tr>
<td></td>
<td>Men</td>
<td>1.7 [1.4-2.0]</td>
<td>1.5 [1.3-1.8]</td>
<td>1.7 [1.4-2.0]</td>
<td>1.1 [0.9-1.4]</td>
</tr>
<tr>
<td>65-74y</td>
<td>Women</td>
<td>2.3 [2.0-2.7]***</td>
<td>2.1 [1.8-2.4]**</td>
<td>2.2 [1.8-2.5]</td>
<td>1.2 [1.0-1.5]</td>
</tr>
<tr>
<td></td>
<td>Men</td>
<td>1.7 [1.4-1.9]</td>
<td>1.5 [1.2-1.7]</td>
<td>2.0 [1.7-2.4]</td>
<td>1.0 [0.8-1.2]</td>
</tr>
<tr>
<td>75-84y</td>
<td>Women</td>
<td>2.4 [1.9-2.8]</td>
<td>2.2 [1.8-2.6]</td>
<td>1.9 [1.5-2.4]</td>
<td>1.1 [0.8-1.4]</td>
</tr>
<tr>
<td></td>
<td>Men</td>
<td>1.9 [1.5-2.2]</td>
<td>1.7 [1.4-2.1]</td>
<td>1.8 [1.5-2.2]</td>
<td>1.0 [0.7-1.3]</td>
</tr>
<tr>
<td>All ages</td>
<td>Women</td>
<td>2.1 [1.9-2.2]***</td>
<td>1.9 [1.7-2.0]**</td>
<td>2.2 [2.0-2.4]**</td>
<td>1.4 [1.3-1.5]**</td>
</tr>
<tr>
<td></td>
<td>Men</td>
<td>1.6 [1.4-1.9]</td>
<td>1.5 [1.3-1.6]</td>
<td>1.9 [1.8-2.1]</td>
<td>1.1 [1.0-1.3]</td>
</tr>
</tbody>
</table>

***P<0.001; **P<0.01

Food Frequency Questionnaire

The FFQ showed that fresh fruit and raw vegetables or salad were most often used on a daily basis. Gender differences for proportions of daily users of fresh F&V within different age groups are presented in Table 5. More women than men in all age groups consumed fresh fruit every day (63.5% vs. 38.9% for all age groups combined, P<0.001). More women than men were also daily users of salad or raw vegetables in all age groups, although the gender difference was statistically significant only among 35-64-year-olds as well as when all age groups were combined (48.3% for women vs. 28.8% for men). Fewer respondents reported daily consumption of cooked than raw vegetables, but there were more daily users among women than men (11.7% vs. 6.4%, respectively, P<0.001). Only in the age group 65-74y were more women daily users of cooked vegetables than men (12.1% vs. 5.0%, respectively, P=0.001). Juice was consumed on a daily basis by 22.6% of women and men, and there were no reported gender differences. Berries were consumed every day by 6.9% of women and 5.1% of men, but the only statistically significant difference was in age group 45-54y, where more women than men ate berries every day (9.9% vs. 0%, respectively, P=0.007). Only very few respondents reported daily consumption of canned F&V or beans.
Table 5. Proportion of daily users of fresh fruit and vegetables and gender differences in age groups based on food frequency questionnaire.

<table>
<thead>
<tr>
<th>Age</th>
<th>Gender</th>
<th>Fresh fruit</th>
<th>Salad and raw vegetables</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-24y</td>
<td>Women</td>
<td>48.9%**</td>
<td>41.3%</td>
</tr>
<tr>
<td></td>
<td>Men</td>
<td>19.6%</td>
<td>29.4%</td>
</tr>
<tr>
<td>25-34y</td>
<td>Women</td>
<td>56.5%***</td>
<td>45.0%</td>
</tr>
<tr>
<td></td>
<td>Men</td>
<td>35.5%</td>
<td>28.4%</td>
</tr>
<tr>
<td>35-44y</td>
<td>Women</td>
<td>60.6%***</td>
<td>54.1%***</td>
</tr>
<tr>
<td></td>
<td>Men</td>
<td>38.6%</td>
<td>34.8%</td>
</tr>
<tr>
<td>45-54y</td>
<td>Women</td>
<td>65.5%***</td>
<td>54.5%***</td>
</tr>
<tr>
<td></td>
<td>Men</td>
<td>37.0%</td>
<td>29.6%</td>
</tr>
<tr>
<td>55-64y</td>
<td>Women</td>
<td>65.1%***</td>
<td>48.0%***</td>
</tr>
<tr>
<td></td>
<td>Men</td>
<td>43.5%</td>
<td>33.3%</td>
</tr>
<tr>
<td>65-74y</td>
<td>Women</td>
<td>77.7%***</td>
<td>50.9%</td>
</tr>
<tr>
<td></td>
<td>Men</td>
<td>46.1%</td>
<td>35.3%</td>
</tr>
<tr>
<td>75-84y</td>
<td>Women</td>
<td>71.0%***</td>
<td>38.6%</td>
</tr>
<tr>
<td></td>
<td>Men</td>
<td>41.6%</td>
<td>30.6%</td>
</tr>
</tbody>
</table>

***P<0.001; ** P<0.01

Paper II: Fruit and vegetable perception clusters

The respondents were categorized into two clusters based on their F&V-related perception: Positive cluster (n=476) and Indifferent cluster (n = 715). The relative importance of each perception variable for determining the cluster membership was estimated using a binary logistic regression (see Table 6). The results show how much the odds for belonging to a certain cluster change if the respondent’s answer would change one unit on the 5-level scale. Odds for the Indifferent cluster membership were highest for those who agreed that F&V are difficult to store at home and that the preparation takes too much time, that lower prices and better selection at the food store would increase F&V consumption, and who preferred something else or felt hungry after having eaten F&V. Odds for Positive cluster membership were higher for those looking for information regarding diet and health.
Table 6. Relative importance of perception variables based a binary logistic regression with Positive cluster membership as dependent variable.

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>OR (^a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh vegetables roots are difficult to store at home</td>
<td>2.96</td>
</tr>
<tr>
<td>It takes too long time to prepare vegetables and roots</td>
<td>2.49</td>
</tr>
<tr>
<td>It takes too long time to prepare fruit or berries</td>
<td>2.37</td>
</tr>
<tr>
<td>I would eat more vegetables/roots if the selection in my food store was better</td>
<td>2.35</td>
</tr>
<tr>
<td>I would eat more fruit/berries if the selection in my food store was better</td>
<td>2.26</td>
</tr>
<tr>
<td>Fresh fruit/berries are difficult to store at home</td>
<td>2.16</td>
</tr>
<tr>
<td>I would eat more fruit/berries if they were cheaper</td>
<td>1.82</td>
</tr>
<tr>
<td>Often I do not eat vegetables/roots because I prefer something else</td>
<td>1.79</td>
</tr>
<tr>
<td>I still feel hungry after having eaten vegetables/roots</td>
<td>1.70</td>
</tr>
<tr>
<td>I would eat more vegetables/roots if they were cheaper</td>
<td>1.69</td>
</tr>
<tr>
<td>Often I do not eat fruit/berries because I want to eat something else</td>
<td>1.55</td>
</tr>
<tr>
<td>Eating vegetables every day is a habit for me</td>
<td>1.11</td>
</tr>
<tr>
<td>I am interested in diet and health</td>
<td>0.993</td>
</tr>
<tr>
<td>I try to eat a healthy diet</td>
<td>0.90</td>
</tr>
<tr>
<td>Eating fruit every day is a habit for me</td>
<td>0.88</td>
</tr>
<tr>
<td>I think fruit and vegetables can affect health</td>
<td>0.75</td>
</tr>
<tr>
<td>I look for information on diet and health</td>
<td>0.63</td>
</tr>
<tr>
<td>Vegetables usually seem fresh in the food store</td>
<td>0.62</td>
</tr>
<tr>
<td>Fruit usually seems fresh in the food store</td>
<td>0.55</td>
</tr>
</tbody>
</table>

\(^a\)one unit change in the agreement on a Likert scale (from 1=fully agree to 5=fully disagree) equals OR-1.0 change in the odds for belonging to Positive cluster; **Bolded figures** represent ORs with 95% confidence excluding 1.0

The proportion of men in the Indifferent cluster was higher, as was the proportion of those born outside Sweden (see Table 7). The respondents in the Positive cluster were older and their vegetable consumption was higher (+0.6 portions / day among women; +0.5 portions / day among men). The Positive cluster also consumed more fruit and berries but the difference was significant among women only (+0.4 portions / day). On the other hand, men in the Indifferent cluster had a higher juice consumption than those in the Positive cluster (+0.3 portions / day).
Table 7. Characteristics of fruit and vegetable perception clusters.

<table>
<thead>
<tr>
<th></th>
<th>Positive cluster (n=476)</th>
<th>Indifferent cluster (n=715)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women</td>
<td>63.2%</td>
<td>51.9%</td>
</tr>
<tr>
<td>Men</td>
<td>36.8%</td>
<td>48.1%</td>
</tr>
<tr>
<td>Mean age (95% CI)</td>
<td>54.3 (52.8-55.9)</td>
<td>46.6 (42.5-47.9)</td>
</tr>
<tr>
<td>Born outside Sweden</td>
<td>9.4%</td>
<td>13.9%</td>
</tr>
<tr>
<td>Number of fruit and berry portions (95% CI)(^a)</td>
<td>2.6 (2.4-2.7)</td>
<td>2.1 (1.9-2.3)</td>
</tr>
<tr>
<td>Number of juice portions (95% CI)(^a)</td>
<td>0.6 (0.6-0.7)</td>
<td>0.8 (0.7-0.9)</td>
</tr>
<tr>
<td>Number of vegetable portions (95% CI)(^a)</td>
<td>2.5 (2.3-2.7)</td>
<td>2.0 (1.8-2.1)</td>
</tr>
<tr>
<td>Number of fruit and vegetable portions in total (95% CI)(^a)</td>
<td>5.7 (5.5-6.0)</td>
<td>4.9 (4.6-5.2)</td>
</tr>
</tbody>
</table>

CI = confidence interval; \(^a\) the self-administered pre-coded 24-h recall

The respondents described in their own words factors that prevent or promote F&V consumption. The respondents described seven promoting (mentioned a total of 808 times) and nine preventing factors (mentioned a total of 444 times). Not liking or not having F&V as a habit, being too lazy or forgetting and lack of time were typical barriers for the Indifferent cluster. Overall, the Indifferent cluster mentioned preventing factors more often than the Positive cluster. Not liking F&V or having health problems were the dominant preventing factors in the Positive cluster. Both clusters raised good availability, habit, and personal preferences as promoting factors.
Results: Blog studies

Paper III: Fruit and vegetable blogs

Purposes for and approaches to blogging

The analysis of F&V–related weblogs authored by laypeople showed two-dimensional categories of the purposes for and approaches to blogging on F&V. These dimensions were: level of influential purpose and source of experience.

The first dimension, level of influential purpose, was coded either as active or passive. Bloggers with an active dietary influential purpose gave instructions to their readers regarding how F&V should be prepared and consumed. Some bloggers criticized the official nutrition guidelines, and questioned the reliability of nutrition authorities. Blog readers were also given food recipes, as well as reminders of how F&V consumption is related to environmental and ethical issues. On the other hand, bloggers with passive influential purpose did not directly target any instructions to their potential readers.

In the second dimension, source of experience, the described experiences were coded either as lived experiences or mediated experiences. This dichotomy is inspired by Thompson (1995), who writes that lived experiences are acquired in day-to-day life, whereas people gain mediated experiences through mediated interaction, such as online communication. In the present data, lived experiences were described as something the bloggers, their relatives, or colleagues had been through personally. These were often written in a diary-type style from the personal perspective of the writer. Expressions of personal likings and taste preferences, sometimes accompanied with particular health aspects, were also typical of lived experiences. Also arguments on the price and availability of F&V were presented in blog texts. Some bloggers wrote about new diets that they had tried or wanted to try.

The other category of the dimension source of experience was mediated experiences of F&V. The bloggers then reported something they had read or heard from another source or person without directly experiencing it themselves. Some examples of the referred sources were national and international newspapers, nutritional experts, governmental authorities, scientific articles, cookbooks, and other bloggers. Mediated experiences also included discussions of political decision-making on the national and EU level.
Blogger ideal types

After identifying two dimensions presented above, each blogger was categorized into one of four blogger ideal types based on combinations of these dimensions. The identified ideal blogger types were called the *Persuader*, the *Authority*, the *Exhibitionist* and the *Mediator*. Each of these is presented in more details below as well as in Table 8.

*The Persuaders’* texts were based on lived experiences, and they were actively trying to influence their readers on dietary issues. *The Persuaders* seemed to almost regard themselves as “saved” because of having some kind of an insider perspective on the importance of dietary choices either because of their personal health condition or deep nutritional knowledge level. These bloggers tried to educate others so that they would make the right choices to increase, decrease or modify their F&V consumption.

The second blogger ideal type with an active level of dietary influence was *the Authority*, who was characterized by having a more (non-nutritional) professional status, such as a politician. Unlike *the Persuaders*, *the Authority* bloggers referred to mediated experiences instead of their lived experiences. Personal opinions, if stated, were justified by references to other documents. These bloggers wanted not only to influence an individual reader, but to make wider changes in the society.

The third blogger ideal type was *the Exhibitionist*, whose main purpose for blogging seemed to be focusing on personal everyday life in a more diary-type blog. *The Exhibitionists* discussed F&V infrequently, when something unexpected or exciting had been going on in the blogger’s personal life that caused the blogger to comment on F&V. Also childhood memories or personal likings could serve as a topic for a blog entry. *The Exhibitionists* did not appear to be particularly interested in the influence their texts may or may not have on their readers.

The fourth and last blogger ideal type was *the Mediator*. It was characteristic of these bloggers that they took a passive, outsider position, and mediated others’ experiences and opinions trying to distance themselves from the texts. These bloggers might present statistics or other hard facts on their blogs more as an interesting curiosity or observation, not with a view to making any judgments. Typically, pure food recipe blogs without personal comments could be classified under this ideal type.

Thirty-five of these fifty bloggers were women, 12 were men, and 1 weblog was run by a woman and a man together. Seventeen bloggers reported their age, which ranged from 17 to over 50 years. A distribution of blogger ideal types by gender was not equal (see Table 7). A majority of *Exhibitionists* (n=23 of 26) and *Persuaders* (n=9 of 12) were women, whereas five of seven *Authorities* were men. The present data included only two *Mediators*: one woman and one man.
Table 8. Dimensions of the purposes for and approaches to blogging on fruit and vegetables and four blogger ideal types.

<table>
<thead>
<tr>
<th>Dimension 1: Level of influential purpose</th>
<th>Dimension 2: Source of experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active influence</td>
<td>Lived experience</td>
</tr>
<tr>
<td>Persuader</td>
<td>9♀ 3♂</td>
</tr>
<tr>
<td>Exhibitionist</td>
<td>23♀ 3♂</td>
</tr>
<tr>
<td>Passive influence</td>
<td>Mediated experience</td>
</tr>
<tr>
<td>Authority</td>
<td>2♀ 5♂</td>
</tr>
<tr>
<td>Mediator</td>
<td>1♀ 1♂</td>
</tr>
</tbody>
</table>

Paper IV: Fruit and vegetable related online discourses

Critical discourse analysis (CDA) on F&V-related blog texts authored by Persuader bloggers identified three separate F&V-related discourses: 1) normative consumption, 2) authentic consumption, and 3) altruistic consumption. In the discourse on normative consumption, the bloggers motivated optimal F&V consumption through physiological mechanisms and biological effects of specific nutrients. Instead of talking about food groups or dishes, specific single compounds, such as inulin, fructose or nitrates, were used as examples on how F&V consumption affect human physiological functions. Persuader bloggers aim to influence their readers and often they give direct dietary recommendations. Sometimes the instruction was a response to a specific reader inquiry, but they also function as expression of mistrust to official nutritional recommendations and professionals. The bloggers gave dietary recommendations that were mainly focused on one or just a few nutrients. Although F&V in traditional health communication are presented together as a homogeneous group, in these blogs they were often presented separately due to their different nutrient content. Vegetables were more widely accepted also among those who preferred low-carbohydrate diets, but high sugar, or more specifically fructose, content made fruits to seem almost unhealthy among these individuals. The most critical bloggers even draw parallels between fruit and candy.

The second blog discourse approached F&V from the perspective of authentic consumption. Human physiological properties, such as color sense, were seen as evolutional evidences for F&V being our original, natural and thus most healthy diet. On the other hand, some bloggers stated that plant-based food alone is not enough for a healthy diet or even that F&V were unnecessary for a human being. It was interesting that regardless of what opposite conclusions the blogger believed in, they both were based on the same principle of striving for the “natural diet.” Although it was widely ac-
cepted that F&V might have been adequate human food a long time ago, and having a “natural” diet was regarded as basically positive, the fruits available today were not automatically believed to be nutritious. Modern F&V were perceived as refined variants of the original products and not at all as healthy because of their modified nutrient content, e.g. less vitamins and more harmful sugar. As a solution to skip the processed, unhealthy variants the readers were recommended to live in accordance with the nature by choosing berries and other F&V according to the season.

Desire for an ethically and environmentally sustainable diet was apparent in the discourse on altruistic consumption. Environmental concerns were associated with ethical responsibilities, and the writers looked for a diet that would cause least harm to nature in the form of emissions. However, the conclusions varied again from promoting purely vegetable-based diets all the way to those claiming that F&V consumption is harmful to nature. Besides the environmental effects, a responsible and conscious consumer should also take into consideration the effects of F&V production on the rights and well-being of those people working on plantations. Altruistic consumption involved also animal rights. In most cases, choosing F&V instead of animal-based foods was perceived to cause less suffering, while also promoting good health. Typically those bloggers who were most concerned about animal rights also chose to follow and recommend vegetarian, vegan or even purely raw-food vegan diet.
Discussion

Fruit and vegetable consumption and socio-demographic differences

The average F&V consumption among the study population is reported to be close to the recommended five portions per day. This is slightly higher than could have expected based on earlier findings in Sweden (Boström & Nykvist 2006; Dietary habits and nutrient intake in Sweden 1997-98. The second national food consumption survey. 2003). Because the present data collection methods or the target population were not identical to the previous ones, direct comparisons should be made cautiously. Nor should one ignore the fact that of those individuals who originally were contacted, only 51% returned the questionnaire. In other words, the current consumption figures do not show what the missing part of the population actually eats. On the other hand, responses rates rarely reach much higher levels in large national surveys like the Swedish Riksmaten survey (Dietary habits and nutrient intake in Sweden 1997-98. The second national food consumption survey. 2003). However, the findings can be assumed to reflect the real, relatively high F&V consumption levels in this specific study population. This hypothesis is supported by recent research from other European countries that has suggested an increasing trend of F&V consumption (Estaquio et al. 2008).

The present study showed clear gender differences in F&V consumption. According to both the self-administered pre-coded 24-h recall and FFQ, Swedish men overall have lower F&V consumption than women, as has been shown in other populations as well (Baker & Wardle 2003; Boström & Nykvist 2006; Johansson et al. 1999; Prättälä et al. 2007). Women, particularly in some age groups, are more frequent consumers of fruit, salad and other raw vegetables. Underreporting often causes bias in self-reported dietary surveys, but women are in fact more willing to actually overestimate their F&V consumption (Wardle et al. 2004). If this applies also to the present study population, the real gender differences may be slightly less marked than these findings suggest.

F&V are processed and consumed in many different ways. The FFQ showed that there are most daily users of fresh, unprocessed F&V. Thus, it seems that Swedes prefer eating F&V as they are, without further preparation. However, only one open-ended questionnaire item covered vegetable intake in mixed dishes, which may have led to some underreporting. If vege-
tables in mixed dishes really are underreported, the average total F&V consumption is even higher than shown.

The present study aimed also at identifying whether country of birth is associated with F&V consumption. Men born outside Sweden have higher F&V consumption than men born in Sweden do, which may reflect differences between the traditional Swedish and other international cuisines. In the study population, there are no differences among women with different countries of birth. Previous surveys on immigrants’ dietary habits in Denmark (Hansen, Ekholm & Kjoller 2008) and Sweden (Koochek 2008) have shown that non-Western immigrants have higher F&V consumption. However, the present data do not include more detailed information on the country of origin. Further examination of F&V consumption in different cultural subgroups living in Sweden might be an interesting research topic.

In line with earlier studies, physically active individuals consume more F&V. Being physically active (PA) is positively associated with F&V consumption among both genders. It seems that F&V consumption is an integrated part of an overall healthy lifestyle and being physically is associated with better self-reported functional health (Myint et al. 2007). Yet, it is recognized that using only a single self-reported parameter for measuring the PA level gives only very robust data, and the exact PA levels should be interpreted cautiously. Moreover, it is logical to think that persons with higher levels of physical activity need and consume larger amounts of food due to increased energy needs. The present data do not enable analyses of F&V consumption in relation to standardized energy intake levels.

Dietetic communication process: Problem identification

The first process of dietetic communication is problem identification (see Table 1). In this phase, the aim is to identify the diet-related issue that needs to be addressed. One role of the present study is to demonstrate how dietary survey data can be used for purposes of dietetic communication. Based on the present findings, the problem among the study population is not the low average F&V consumption level, but rather that the consumption still varies between socio-demographic groups, as has been shown in earlier studies. The most crucial concerns are gender differences in general, and particularly low F&V consumption among men born in Sweden. Also, those who are physically least active consume least F&V, which places demands on taking the whole lifestyle and personal determinants into consideration when planning potential health promotion initiatives. Another approach to problem identification could be promotions of certain types of F&V. Fresh F&V are used most often, whereas their use in mixed dishes could potentially be higher. This could be developed, for instance, into a dietetic communication initiative that aims at promoting use of F&V in different forms and using different preparation methods.
Clusters with positive or indifferent perceptions

The *Positive cluster* and the *Indifferent cluster* identified in the present study are relatively distinguishable according to their perceptions of F&V. The *Positive cluster* with higher proportion of women and older respondents is more favorable towards F&V consumption. One interesting finding is that the proportion of individuals born outside Sweden is relatively higher in the *Indifferent cluster*, although the findings in Study I show that men born outside Sweden have higher F&V consumption. The reasons behind this unexpected finding can only be speculated on. One explanation could be that the total number of respondents of non-Swedish origin is relatively low and their somewhat higher consumption cannot significantly increase the group average. There may also be vast variation in F&V consumption between individuals from different food cultures, meaning that there may be men with a non-Swedish background with higher but also lower consumption levels. There are no data available regarding in which country these individuals were born.

It is interesting that the *Indifferent cluster* is clearly not negative toward F&V but rather expresses “neutral” perceptions. Due to the nature of cluster analysis, these two clusters should not be regarded as a representation of the whole Swedish population but only as a description of this particular group. Given the present findings, it can be assumed that actions towards increasing F&V consumption among this study population should not focus on general attitude changes as such, but rather on more practical factors related to F&V consumption. Some of these factors would need action from external actors, such as food retailers or politicians, whereas some of them could be influenced by communicative measures.

Many respondents mention habits and personal preferences, or simply ‘liking,’ as major determinants of F&V consumption. This gives an impression that consumers regard food choice as an individual choice based on ‘feeling like it.’ Daily food choices are a natural part of everyday life, and in routine situations, such as food purchase and consumption, they are not necessarily actively considered (Brug, Lechner & de Vries 1995). A large number of participants simply state that F&V consumption is a habit for them, but not all individuals can identify more detailed and specific promoting factors.

Consumers do not necessarily perceive F&V as a homogeneous group. Men in the *Indifferent cluster* have a higher juice and lower vegetable consumption, but their fruit consumption does not differ significantly. For women, juice is the only F&V group whose consumption does not differ between the clusters. Ease of use is probably one of the promoting factors, because the *Indifferent cluster* perceives time-consuming food preparation as more problematic.

It can be summarized that the identified clusters differ in relation to three types of factors. First, most frequently mentioned factors that prevent F&V
consumption are reflections of individual life styles and preferences, and could basically be controlled by the consumers themselves. Examples of these kinds of factors are preferences for foods other than F&V, and lower interest in looking for dietary information. Second, particularly the Indiffere

rent cluster experience practical difficulties with storage, purchase and preparation of F&V, which may be problems specifically for persons living in small apartments or single households. Third, the respondents also report external factors, such as F&V price and selection in food store, that cannot be directly affected by individual consumers but entail other actors.

Dietetic communication process: Audience segmentation

Based on the current findings, F&V-related perceptions can be useful for identifying segment groups for tailored dietetic communication. The findings of the present study have implications for assessing diet related perceptions for dietetic communication and health education planners. For example, the Indifferent cluster (e.g. more men, younger respondents, and those born outside Sweden) would be a potential target group for more individual health messages. The findings suggest that perceptions on an individual level as well as broader issues, such as F&V selection and price, influence the actual F&V consumption. People themselves regard personal preferences and having F&V consumption as a habit as the most important predictors of F&V consumption. There surely are different needs in different population subgroups, as shown by two different clusters identified among the respondents. These differences must be considered both in research planning and in creating more innovative F&V promotional campaigns to target individual needs.

Ideal types of fruit and vegetable bloggers

In Paper III, most of those bloggers who report their age are young, which is not surprising given that the Internet is most widely used among young age groups (Findahl 2010). One should not make overly generalized estimations of how socio-demographically representative these bloggers are compared to all bloggers. However, the restricted blogger information actually is a representation of the current nature of the blogosphere. Despite not knowing who the bloggers are or what qualifications they have, many people are reading their blog texts. It may be a matter of trustworthiness that is associated with these bloggers. Health professionals do have a formal competence, but persons writing on their lived experiences, such as Persuaders and Exhibitionists, may be perceived as having evidence-based trustworthiness. This is a significant difference compared to how official health authorities often focus on reporting scientifically correct information but only occasionally reveal information on the person behind the text. It cannot be established on the
basis of the present findings whether different levels of enclosed personal information actually influence the acceptance of delivered dietetic messages among laypeople. But this is an issue that should be taken into further consideration among professional dietetic communicators.

F&V bloggers can be categorized according to whether they blog about lived or mediated experiences. These different kinds of experiences have been earlier described by Thompson in *Media and modernity* (Thompson 1995). According to him, lived experiences have nowadays grown less important in society. Sometimes these even get mixed into consumers’ thoughts, making it difficult to differentiate between lived and mediated experiences. In the present data, blog texts about lived experiences mostly consider F&V in relation to an individual and household level. On the other hand, bloggers with mediated experiences see F&V as part of a wider context, such as the environment, political strategies, or society as whole. Particularly bloggers who mediate others’ experiences use official documents and scientific reports as references that support the bloggers’ opinions or raise controversial topics in the media agenda.

Many of F&V-related blog texts cover individual’s everyday life and thoughts in general. Overall, in this sample blogging for the purpose of self-expression is more common than trying to influence the readers’ dietary habits. This finding is in line with previous studies on bloggers’ motives in general (Jung, Youn & McClung 2007; McCullagh 2008). However, the present study is the first one to analyze a sample of bloggers writing about F&V. It was also shown prior to the present study that women more often tend to include descriptions of family life and personal experiences in the blog texts whereas men prefer ‘hard facts’ and opinion making (Pedersen & Macafee 2007). Also among this study sample, as almost all bloggers writing about lived experiences, e.g. Exhibitionists and Persuaders, were women, whereas five out of seven Authorities were men.

The bloggers were categorized into four ideal types. According to Weber (Burger 1976), ideal types capture the essential characteristics of a group of cases, and they are explicit in the sense that each individual can only be placed into one ideal type. Although in reality blogging individuals can have some characteristics from several ideal types, almost all of the bloggers in the present study can be clearly placed into one dominant type only.

*The Persuaders* give dietary instructions that may be in conflict with official guidelines. The readers may have problems distinguishing between ‘official’ and ‘non-official’ information because the bloggers present themselves more or less as experts on the topic. Difficulties in judging the information credibility are common in the blogosphere (Minol et al. 2007), but the present study did not aim to compare the given instructions with official nutritional guidelines.

The most common of the F&V blogger ideal types is the Exhibitionist, which is particularly dominated by women. *The Exhibitionists* mainly de-
scribe everyday situations with infrequent references to F&V without a clear intention to influence their readers. However, these bloggers may still be important opinion leaders (Katz & Lazarsfeld 1955; Kotler & Lee 2008), because also media texts that are not directly intended to influence people’s health may still have an impact on health development (Welch Cline 2003). Miller and Shepherd (2004) have presented another interesting perspective on different roles in the blogosphere. According to them, Internet technology makes it easier to be either an exhibitionist or a voyeur, a role that blog readers might take. Exhibitionist bloggers reveal personal information in a public forum. This interaction in an online setting can be compared to a dramaturgical performance on a stage where people produce certain impressions on themselves, as is originally described in Goffman’s theory on the presentation of self (Goffman 1959). Anonymity in the Internet allows the Exhibitionists a possibility of addressing sensitive and personal issues without the threat of stigmatizing themselves. In addition, the bloggers may not necessarily only report the objective truth of their life but can selectively choose the details they reveal. Thus, the Exhibitionists like all bloggers shape the impression they want to share.

The Authorities are similar to a blogger type known in other contexts as political or filter bloggers (Herring et al. 2005). These bloggers are more outwardly focused towards society compared with Persuaders or Exhibitionists who are more inwardly focused towards their personal life. The Authorities do also have opinions that they even can express strongly because of their role as a politician, for instance. However, their comments only concern the given topic instead of reporting on their personal lives.

The last blogger type, the Mediator, includes only one example in the present study material, because blogs without any personal comments were excluded in the data collection phase. This does not affect the typology, however, because ideal types are theoretical constructions and caricatures of real-life phenomena, all of which do not actually need to be found in the data. These kinds of categorizing phenomena are widely used by all of us in everyday situations. The point is that they might exist and thus that they might also be empirically tested (Eneroth 1984).

Dietetic communication process: Targeting the audience

The present study shows that F&V discussions are a vital part of blogs, and this should not be ignored by nutritional authorities. Understanding how F&V are integrated into everyday communication is crucial for planning effective promotion strategies. The identification of four blogger ideal types shows that bloggers really are not a homogeneous group. There seems to be a tendency towards favoring blogging about lived experiences and inward focus on the bloggers themselves. This subjective approach differs from the traditional, often rather impersonal expert-led health communication with a
focus on pure facts. A recent survey among Internet users in the USA showed that particularly women and younger adults prefer to gather quick remedies from peers while men and older adults prefer professionals (Fox 2011a). If this gender and age group difference is a valid assumption also in Sweden, laypeople blogs could be most suitable to target dietetic communication to women and younger adults. Bloggers mediating somebody else’s experiences, i.e. Authorities and Mediators, might appeal to the male audience, whereas Exhibitionists and Persuaders are more favored by females. Studying whether this is true could be an interesting new research topic.

Targeting the audience is the third dietetic communication process after problem identification and audience segmentation. Who the target audience perceives to be delivering the social marketing message and what they think of this particular messenger can make a big difference (Kotler & Lee 2008). Three important factors are crucial for source credibility: expertise, trustworthiness, and likability. Sometimes it is useful to use spokespersons to deliver the messages to achieve higher attention and increased credibility.

Fuchs (2010) has written about knowledge and new media from the Marxist class perspective. Laypeople authoring blogs with F&V-related content can be described as indirect knowledge workers that produce and reproduce the social conditions such as communication and common knowledge in everyday life. They do not perform this unpaid labor exclusively, i.e. they are not directly employed for producing online content, but they are necessary for the existence of society and particularly for the user-created social media. Lay bloggers without formal dietetic education are potential opinion builders (Kotler & Lee 2008) who can be influential for dietetic practices among other consumers. Kotler & Lee estimate that one influential person’s word of mouth affects attitudes of eight persons when online. Through strategic collaboration, their role in targeting audiences could be strengthened.

Fruit and vegetable related blog discourses

Three distinctive but partly overlapping discourses were identified in F&V blogs. In the discourse on normative consumption, physiological mechanisms and nutritional science are frequently used for advocating bloggers’ own messages. However, the conclusions on the role of F&V in diet vary from “pro vegan, bad meat eaters”–advocates to those who perceive of F&V as even being harmful to the health. Overall people tend to have rather black and white thoughts in relation to food. Both Madden & Chamberlain (2004) and Lupton (1996) have found that foods are dichotomized to either ‘good’ or ‘bad,’ ‘right’ or ‘wrong.’ It is logical that individuals who actively engage in blog activities are convinced of their perceptions and want to deliver their points of view; a person with a neutral or no opinion at all would hardly engage in time-consuming blogging activities.
The current findings are in line with other food-related media discourses. Madden & Chamberlain, for example, identified biomedical and scientific discourses in women magazines, where the food was framed as a source of health or ill health because of their role in bodily systems (Madden & Chamberlain 2004). The discourse on “Normative consumption” in the present study presented F&V in relation to specific nutrients and physiological mechanisms. On the one hand, people ask for detailed information and specific explanations: they do not accept any given facts but want to make their own judgments. On the other hand, the “big picture” of whether F&V actually is healthy sometimes disappears in the constant flow of contradictory information. Persuader bloggers, whose blog texts were analyzed in the present study, seem to have a clear idea of how to consume F&V, and they eagerly want to make others to follow their advice. Those promoting F&V consumption rely on nutritional science and more probably agree with the official nutritional guidelines, although they may want to make some modifications to them. However, the skeptical bloggers show strong mistrust of nutrition authorities and experts. To convince their readers, they talk about specific nutrients, such as fructose or inulin, instead of more general terms such as carbohydrates or dietary fiber as in the official dietary recommendations. Showing this specific level of nutritional knowledge is the bloggers’ way to show a position of power and expertise in relation to readers.

The other discourse identified is called “Authentic consumption.” Many of the bloggers in the present study share the ideal of a “natural,” original or evolutionary diet as desirable. The finding is not unique to these bloggers but it has been reported in other groups as well. In a study by Ekström & Sandberg, Swedish teenagers used words as natural, unprocessed, and possibly even organically produced when describing good food (Ekström & Sandberg 2010). Lupton suggests that in food-related discourses, naturalness is emotively connected to purity and goodness (Lupton 1996). However, the definition of a natural diet varies widely among different bloggers. They use human physiology and evolutional adaptations as evidence for what would be the most natural, and thus the healthiest, diet for human beings. Examples of color sense and the appealing taste of fruit are used as a proof that F&V are our original food. Yet, according to many bloggers, the F&V available today are too much refined and sugary to be seen as natural anymore. The refinement is claimed to have led to negative changes in nutrient content and in taste and appearance of fruit. Also compared to dietary guidelines, bloggers rarely view a whole diet but focus on single nutrients when drawing their conclusions.

The third discourse in the present study is called “Altruistic consumption.” F&V consumption is associated with ethical concerns, which are presented in relation to the environment, human rights, and animal welfare in food production. Also prior to this study, ethics have often been found to be associated with food choices. Coveney, for instance, has written about the
science and spirituality of nutrition (Coveney 1999). He remarks that self-evaluation is axiomatic to modern healthy lifestyles, and consumers are urged to review their eating habits constantly. Through these personal strategies, consumers recognize themselves as ‘good eaters,’ in the sense that their food choices can be scientifically ‘good’ and, therefore, also morally correct. The present findings suggest in line with Coveney’s conclusions that consumers want to make right food choices in relation to health, nature and ethics. However, sometimes these different values collide, which causes uncertainty among consumers. Health communication professionals are needed in helping consumers to get a wider picture of these complex F&V-related discourses in order to guide them towards healthy diets.

Blogs can be an effective way to reach and communicate with laypeople, but to identify credible information is not an easy task. According to Eysenbach (2008) there are “grey areas” without a simple correct answer in medicine. Sources that give simple, unconditional, even over-simplified information may appear more credible. The Persuader bloggers try to influence their readers and convince them about their perceptions. Still, their advice leads to very contradictory conclusions, which probably makes the reader feel confused. It is probably difficult for an individual who reads the contents of several separate blogs to conclude how F&V actually should preferably be consumed.

The dietetic communication process: Tailoring the messages

Effective communication for dietetics professionals is, among other things, the ability to use language that is appropriate to the receiver’s level of understanding (Holli et al. 2009). The present findings could be used to select the most relevant issues related to F&V consumption and to use them to craft dietetic communication. It seems to be important for laypeople to discuss and gain information on the normative, evidence-based dietary guidelines. But an equally interesting issue is what F&V types are most natural and nutritious. This might be something that the food industry could focus on in their marketing strategies, because consumers express strong skepticism of technological modification of foods that are perceived as part of our original diet. Consumers also want to be responsible towards their environment, other people, and animals. These approaches are certainly not easy to give straightforward answers to, but they are the ones in the present study that raised most audience interest, and they should not be ignored by nutritional professionals either.
Methodological strengths and limitations

Questionnaire studies (Paper I and II)

Some strengths and limitations in the present studies need to be mentioned. F&V consumption was measured using two previously validated methods, a self-administered pre-coded 24-h recall and FFQ (Kristjansdottir et al. 2006). Use of two measures strengthens the findings, particularly as the reported consumption by both methods was fairly similar. Due to intra-individual variability, a single pre-coded 24-h recall does not represent the usual individual intake but it characterizes the average intake of a group fairly well (Biró et al. 2002). On the other hand, FFQ is a useful tool to estimate foods usually eaten and can be used to rank individuals by F&V consumption so that characteristics of those with high or low consumption may be compared. Although consumption has not been reported in grams, consumption frequency as such is a good measure of consumption, because portion sizes have not been reported to differ between high and low consumers. There are also some disadvantages in the use of any dietary assessment method. The pre-coded 24-h recall depends on memory and consumers may have difficulty estimating portion sizes accurately. In the present study, the respondents could have used the questionnaire to report their F&V consumption throughout the day instead of relying on memory afterwards. Estimates of portion sizes were facilitated by giving examples of one portion in each questionnaire item.

The response rate for the questionnaire remained at 51% even though two reminder letters were sent. The youngest men (18-24y) and the oldest women (75-84y) were somewhat underrepresented in the final sample. Respondent selection in postal surveys probably leads to overrepresentation of people who are more interested in the topic, or who already have healthier dietary habits. This may have resulted in underestimating real differences between different socio-demographic groups. The response rate reached the level that can be regarded as realistic in randomly selected population surveys. The ideal, though unrealistic, 100% response rate would probably decrease the average consumption and lead to wider variation between subgroups. However, there are good reasons to believe that the current findings adequately represent F&V consumption among those Swedish inhabitants that are at least moderately interested in diet and health.

All days of the week were equally represented in the data (data not shown), which eliminates the possible bias caused by consumption differences across the weekdays. Seasonal consumption variation can also be excluded as a confounding factor, because the data consist of roughly equally large groups of participants in different seasonal groups. The present study design also provides valuable experience in using a web-based questionnaire as an alternative response measure. Although the majority of respondents...
preferred the paper version to the web-based questionnaire, electronic data collection may still be worthwhile, as it saves both environmental and labor resources.

To our knowledge, Paper II is the first study that successfully applied cluster analysis for identifying consumer subgroups based on F&V-related perceptions. In cluster analysis, the respondents are always placed in only one of the clusters, and the key is to know when these groups are real and not merely imposed by the method. Instead of having a statistical basis, the clusters must be validated by solid conceptual support. In the present study, the final cluster solution was carefully analyzed based on the theoretical foundations and previous scientific findings. To be included in the analysis, respondents were required to have answered each of the perception variables included. Nevertheless, internal dropout rates remained low.

A common problem for all studies that require voluntary participation is that they mainly reach those individuals who are most interested in the topic. In the present thesis this may have led to overly positive representation of laypeople perceptions towards F&V, although the study design does not allow confirmation of this hypothesis. There are also slightly more women than men and an underrepresentation of single-person households among the respondents, but this is not thought to significantly affect the results. Although these findings should be interpreted based on the study population only, these analyses still show that cluster analysis can be a useful and illustrative tool for identifying consumer groups for communicative and educational purposes regarding health.

Online studies (Paper III and IV)

A methodological strength in Papers III and IV was that the approach allowed unobtrusive observation of authentic online behaviors without interference from the researcher, i.e. naturally occurring data (Domingo & Heinonen 2008; Hughes, Joshi & Wareham 2008). Dahlberg, Dahlberg and Nyström (2008) emphasize that it is important to maintain an open position to the phenomenon and thereby let the phenomenon demonstrate how it can and should be studied, how it is, and what meanings there are (p.98). Also, Gadamer (1994) warns against following “a marked route,” meaning adhering to a previously determined research method step by step and thus setting the openness at stake and even undermining the possibility of truly understanding the phenomenon. Domingo & Heinonen (2008) recommend experiencing online sites the same way that actual users routinely perceive them. The present data collection tool, Google search engine (www.google.com), is the most visited Internet site worldwide (Nordicom 2010). People construct their worldview in a subjective way and, in relation to this subjectivity, the data-collection method used is not fundamentally different from any other type of self-reports, such as questionnaires with open-ended items. The
administrative burden and timely matters associated with collecting observational online data is much lower than that of traditional research methods.

One of the challenges was the use of an Internet search engine that only allows access to a sample of all the texts on the Internet. However, this problem is a real-life phenomenon shared with all Internet users looking for web-based material using search engines. Critics may also claim that everything written in blogs is completely subjective and limited to what the authors choose to disclose. This is most certainly true, but at the same time this can be seen as strength of the present study. People always construct their worldview in a subjective way, e.g. by choosing what to reveal about themselves to others. Weblogs as research data are thus not fundamentally different from any other self-reports, such as questionnaires with open-ended items (Williams & Merten 2008). Another advantage of the present data collection method is that it allowed analysis of authentic online behaviors without interference from the researcher. Thus, the qualitative content analysis and critical discourse analysis began from the unprocessed data, which were not colored by the researcher’s theoretical and/or methodological choices, compared to pre-structured questionnaires or interview guides, for example (Boyatzis 1998; Flick 2006). It is a strength of the study that the analysis is based on naturally occurring data (Hughes, Joshi & Wareham 2008) in the same form as it is available to anyone with Internet access and not in an artificially constructed form particularly developed for research purposes.

The background information on most of the bloggers is rather limited, and the analysis is based on a limited number of specific blog texts. The aim has been to represent the multiplicity of F&V-related presentations that can be found in the blogosphere. Different search terms or conducting the data collection at another time point would not lead to identical data because of the constantly changing content of the blogosphere. Thus, the findings should not be regarded as a statistical representation of all F&V bloggers.

Implications of the findings

Because this doctoral thesis belongs to the research field of dietetic communication, it is important to see how the findings can be useful in the practical work of dieticians, food experts, health communicators, and researchers.

Thomas (1996) suspects that in the future healthcare consumers will be better informed on health issues than in the past, and they will also be increasingly demanding regarding the preferred communication channels. Thus, health communicators must be in closer touch with the end-users and to develop in-depth understanding of the wants, needs and preferences of potential customers. The present thesis gives examples of identifying laypeople perceptions on F&V consumption, and analyzes weblogs more close-
ly as a potential dietetic communication channel. Although nutritional professionals still play a central role in the design and dissemination of credible and practical nutrition information, a modern health expert is no longer a person with only professional competence (Fitzgibbon et al. 2007; Fraser & Greenhalgh 2001). To be perceived as a health expert, one needs to know how to access knowledge efficiently and how to form conceptual links between this knowledge and other areas. This thesis shows that particularly bloggers with motives of influencing their readers are close to “expert patients” who interact with “health seekers,” as Nettleton described in her article about emergence of e-scaped medicine (Nettleton 2004). Possibilities of nutritional professionals shaping and controlling the content of dietetic knowledge diminish as more active individuals create dietetic communication in online settings.

Rise of social media increases empowerment of citizens and customers and engagement in dialogue on the topical issues. Messages are viewed and discussed by social networks, creating social acceptability of the behavior for the network members. For public health professionals this means that one needs to adapt to existing and upcoming channels of dietetic communication instead of trying to force media users to accept more traditional approaches. Keeping track of on-going online discourses should therefore become an established routine. It is a challenge for nutrition and communication scientists to design and develop nutrition messages that are both scientifically precise and sensitive to the essential factors that drive dietary behavior. So called e-professionalism reflects traditional professional paradigms from private settings in online environments (Cain & Romanelli 2009). Merely adopting blogging technology does not automatically guarantee success in health promotion, but participation and creating communication also through blogs should become a part of organizations in order to achieve success (Chai & Kim 2010). Although these issues are still relatively new, it is vital to examine them critically, as Cain & Romanelli put it: “before society’s trust in health care professionals begins to erode” (Cain & Romanelli 2009). There probably is a need for media training among health professionals, who need to manage good communication skills besides their own field of expertise. In the professional health and dietetic communication sector, some new professions may be introduced in the future, such as “professional bloggers” (Ahlqvist et al. 2008).

It should also be borne in mind that health and dietetic communication are not necessarily such linear one-way processes as one might assume based on theoretical models. So far, some e-health communication strategies have showed improving, but not stunning, results (Neuhauser & Kreps 2010). All diet-related issues cannot be solved by communication, such as practical problems identified with F&V storage at home, whereas perceptions and nutritional knowledge may be influenced through communication strategies. Interest in the issue communicated is a basic prerequisite for getting the tar-
get audience to listen to the one’s message. Still, to understand and be able to sift through a large number of messages, health literacy, “the degree to which individuals can obtain, process, understand, and communicate about health-related information needed to make informed health decisions,” is increasingly important (Healthy People 2010 2010).

**Future perspectives**

Health professionals and offline resources are central to health care, but people often use online social tools to gather information, share stories, and discuss concerns with non-professionals (Fox 2011b), particularly if there is a need for a quick remedy regarding an everyday health issue (Fox 2011a). There are still issues that call for attention to new studies from the perspective of dietetic communication. In the current thesis, the blog reader perspective or personal interviews with the bloggers were not studied. Another possible approach is to apply the findings to other food groups or international contexts. The assumption about misleading peer information on blogs is not necessarily true, but the content of the peer recommendations given and official nutritional guidelines on F&V consumption can be a subject for future studies.

The ability to sort out and judge the practically infinite flow of information is a crucial skill for everyone. These skills can be described as health or media literacy. The World Health Organization (WHO) defines health literacy as “the cognitive and social skills which determine the motivation and ability of individuals to gain access to, understand and use information in ways which promote and maintain good health” (Nutbeam 1998). Paek, Reber & Lariscy (2011) studied roles of media socialization agents in adolescent self-reported health literacy. They defined health socialization as the processes through which young people acquire health-related orientations, skills, knowledge and attitudes that form their healthy lifestyles and behaviors. Further, they acknowledge that interpersonal and media socialization agents play important roles in delivering health information and training health-related skills.

Particular media literacy is also important because health information is delivered through different channels (Bernhardt & Cameron 2003). Media literacy involves not only individual and cognitive skills, but is also a social process of everyday life and interaction (Kupiainen & Sintonen 2010). A sufficiently media literate individual should thus have both the analytical and technological skills needed to grapple with health information. Future studies could focus on how literate blog readers are for F&V-related information, and through what kind of communication different groups can be targeted. This information can further be combined with analyses of recent food consumption trends.
As this thesis is being completed, many even more interactive social media applications, such as Facebook, Twitter and MySpace, are becoming ever more popular. The findings from the present thesis could be compared with the communication via these platforms. Understanding what communication channels consumers want and how they use them in accordance with up-to-date trends in F&V consumption enables public health and dietetic professionals to develop easy-to-use applications for dietetic communication.
Conclusions

In summary, from the present thesis it is concluded that

- Average F&V consumption among Swedish adults is close to the official recommendations, but wide variation still exists between different socio-demographic groups. F&V are mainly consumed as fresh (Paper I).

- Two clusters were identified based on F&V-related perceptions. The Positive cluster has higher F&V consumption, whereas the more neutral Indifferent cluster, typically younger respondents with lower F&V consumption, experience more practical and lifestyle-related difficulties. Some perceived problems, i.e. F&V price and selection in food store, are beyond the power of individual consumers to change. (Paper II).

- Lay people blogging about F&V can be placed into four blogger ideal types based on their source of experience (lived or mediated experiences) and level of dietary influence (active or passive). The blogger ideal types in the present study were the Persuder, the Exhibitionist, the Authority and the Mediator (Paper III).

- Laypeople blogs presented F&V in three discourses. The discourse on normative consumption focused on single nutrients and physiological mechanisms, authentic consumption included a desire for naturalness, and the discourse on altruistic consumption enhanced ethical responsibilities (Paper IV).

- The present thesis approaches four dietetic communication processes (problem identification, segmentation, targeting and tailoring) from an explorative research perspective. The next step could be to apply these processes to promote a healthy diet through communicative measures, for instance.
Svensk sammanfattning

Bakgrund

Frukt och grönsaker (F&V) bidrar generellt med en låg energitätethet, är rika på vitaminer, mineraler, andra bioaktiva födoämnessubstanser och kostfibrer. Flertalet studier har visat en minskad risk för välfärdsjukdomar som cancer, hjärtkärlsjukdom och diabetes typ 2 om frukt och grönsaker inkluderar som en del i kostvanemönstret. En ökad konsumtion uppmuntras därför i officiella kostrekommendationer nationellt såväl som internationellt. Tidigare undersökningar i Sverige har visat att F&V intaget generellt inte når upp till dessa rekommendationer. Uppdaterat konsumtionsdata saknades dock bland svenska vuxna när den aktuella avhandlingen initierades. Tillväxt av sociala media, inklusive bloggar, har ökat betydelse bland lekmän som opinionsbildare även i kostrelaterade ämnen. Dock har begränsad forskning genomförts om olika kostrelaterade bloggtyper samt om hur lekmän använder dessa online-källor som en del av den vardagliga kommunikationen kring dietetik. Dietetikens kommunikation kan ses som ett interdisciplinärt forskningsområde som har sin bakgrund i forskningsmetodologiska traditioner inom kostvetenskap och dietetik så väl som på praxis av hälsokommunikation och medieforskning.

Metodologiskt innehåller avhandlingen två delar. En enkätundersökning som kartlägger frukt- och grönsakskonsumtion och relaterade uppfattningar bland svenska vuxna samt blogganalys som undersöker hur frukt och grön-saker kommuniceras online. Respektive delstudier i avhandlingen är exempel på hur olika processer i dietetikens kommunikation kan analyseras. Dessa processer har som syfte att först identifiera det aktuella kostrelaterade problemet. Därefter segmenteras målpopulationen enligt vissa kriterier. I den tredje processen inriktas målgruppen via en lämplig kommunikationskanal för att i det sista fjärde steget skraddras kostrelaterade budskap mot bakgrund av målgruppens behov.

Syfte

Syftet var att undersöka konsumtion av frukt och grönsaker samt relaterade uppfattningar bland svenska vuxna för att identifiera kostrelaterade problem samt segmentera målgruppen. Utöver detta, var syftet att utifrån analys av
aktuella bloggtexter kartlägga lekmäns bakomliggande motiv att blogga om frukt och grönsaker samt analysera bloggdiskurser kring frukt och grönsaker.

Konsumtion av frukt och grönsaker samt relaterade uppfattningar

En semistrukturerad enkät användes för att kartlägga konsumtion av frukt och grönsaker samt uppfattningar om faktorer som anses påverka konsumtionen. Studiepopulationen bestod av ett randomiserat urval av svenska vuxna (18-84år; slutlig svarsfrekvens 51%; n=1304). Konsumtion av frukt och grönsaker rapporterades via en pre-kodad själv-administrerad 24 timmars kostundersökning samt via ett frekvensformulär (FFQ). Den genomsnittliga rapporterade konsumtionen var nära de officiella kostrekommendationerna, dvs. cirka fem portioner per dag. Högst konsumtion av frukt och grönsaker rapporterades bland kvinnor generellt, män födda utanför Sverige samt svarsfrekvensområde som var fysiskt mest aktiva. Enligt FFQ konsumerades mest frukt och grönsaker i färsk form.

Respondenterna kategoriserades enligt deras frukt- och grönsaksrelaterade uppfattningar till konsumentsegmenter med hjälp av klusteranalys. Analysen resulterade i två kluster bland respondenterna: Positiv kluster och Likgiltig kluster. Den Positiva klustern innehöll fler kvinnor och klustermedlemmarnas medelålder var högre än i den Likgiltiga klustern. Även konsumtion av frukt och grönsaker var högre i den Positiva klustern, medan i den Likgiltiga klustern oftare rapporterade problem med de praktiska förhållandena, vanor samt gav även exempel på de externa faktorer som kan påverka konsumtionen av frukt och grönsaker. Klusteranalys användes som ett metodologiskt exempel på hur målgruppen kan uppdelas i segmenter innan man fortsätter med dietetikens kommunikation.

Onlinekommunikation kring frukt och grönsaker


Karakteristiskt för den Exhibitionist-idealtypen är att bloggaren påverkar sina läsares kostvanor passivt och beskriver mest sina egna upplevda vardagsliga erfarenheter. Exhibitionist var den mest frekvent förekommande bloggaridealtypen i undersökningsmaterialet (n= 26 av 50). Även Övertalare-
bloggare (n=12) använder sina egna erfarenheter som källa till texterna och de försöker medvetet påverka sina läsare. Auktoritet-bloggare (n=7) vill agera som opinionsbildare, men de väljer som strategi att förmedla någon annans erfarenheter i stället för sina egna. Förmedlar-bloggareidealtypen var i det aktuella urvalet minst vanligt förekommande (n=2). Idealtypen kan beskrivas som en neutral observator utan egna åsikter eller medveten vilja att påverka sina läsare.

Att förstå vilken roll bloggar och andra sociala media har i den vardagliga kommunikationen från ett lekmansperspektiv är viktigt för att kunna rikta individuellt anpassat budskap. texter av Övertalare-bloggare undersöktes med hjälp av kritisk diskursanalys. Tre separata frukt- och grönsaksrelaterade diskurser identifierades i undersökningsmaterialet: normativ konsumtion, autentisk konsumtion samt altruistisk konsumtion.

Resultat av blogganalysen kan vara till nytta för den fjärde och sista processen av dietetikens kommunikation, nämligen att skräddarsy kostrelaterade budskap för enskilda individer eller mindre konsumentgrupper.

Slutsats och reflektion


Sociala media och kosttrender är inte stabila utan deras innehåll och användning ändras hela tiden. Mot denna bakgrund är det viktigt att man fortsätter att vidareutveckla forskning kring online-dietetikens kommunikation. Erfarenheter från detta avhandlingsprojekt kan användas som inspiration både för vidare forskning så väl som för praktiska kommunikationsmetoder.
Tutkimuksen taustaa

Viime vuosina on internetistä ja erilaisista kuluttajien itse tuottamista sosiaalisen median sisällöistä tullut olennainen osa valtaväestön arkipäivää. Sosiaalisen median, mukaan lukien blogien, kasvu on lisännyt maallikoiden merkitystä mielipidevaikutajina myös ravitsemukseen liittyvissä asioissa. Kuitenkin saatavilla on ollut vain vähän tutkimustietoa erilaisista ravitsemusaiheista blogityypeistä sekä siitä, kuinka maallikot käyttävät näitä online-tekstejä osana päivittäistä ravitsemukseen liittyvää viestintää. Ravitsemuksen viestintää (dietetic communication) voidaan kuvailla poikkitieteellisenä tutkimusalueena, jonka perusteet ovat ravitsemustieteilellisissä ja ravitsem Anastroppeutisissa tutkimusmenetelmissä sekä myös terveysviestinnän ja mediaturkimuksen käytännöissä.

Väitöskirjan tavoite
Tämän väitöskirjan tavoitteena oli tutkia ruotsalaisten aikuisten kasvisten ja hedelmien käyttöä sekä käyttää kasviksiin ja hedelmiin liittyviä mielikuvia tutkimusväestön segmentointiin. Lisäksi tavoitteena oli kartoittaa blogitekstitanalyyssien avulla kasviksista ja hedelmistä blogitekstejä kirjoittavien maallikoiden motiveita sekä lähestymistapoja sekä myös analysoida kasviksiin ja hedelmiin liittyviä online-diskursseja.

Kasvisten ja hedelmien käyttö sekä niihin liittyvät asenteet


Kasviksiin ja hedelmii liittyvä online-viestintä
Kasviksiin ja hedelmiin liittyvää käsittelevää, maallikoiden kirjoittamia bloggeja etsittiin Google-hakukoneen avulla. Lopulliseen aineistoon valikoitua ennakkokriteereiden perusteella viisikymmentä maallikoiden pitämää kasviksiin ja hedelmiin liittyvää blogia (yhenteenä 205 blogitekstiä), joiden analysointiin käytettiin laadullista sisällönanalyysia. Neljä bloggaajien teoreettista idealityyppiä tunnistettiin kaksiulotteisten kategorioiden ravitsemusvaikuttamisen taso.
sekä kokemuksenlähde – avulla. Itsensäpaljastelija (Exhibitionist) vaikuttaa lukijoihinsa passiivisesti kuvallien enimmäkseen arkielämänsä omakohtaisia kokemuksia. Tämä oli myös yleisin bloggaajatyypin tutkimusaineistossa. Suostuttelijat (Persuaders) käyttävät myös omia kokemuksiaan tekstiensä pohjana, mutta he pyrkivät tietoisesti vaikuttamaan lukijoihinsa. Auktoriteetit (Authorities) haluavat myös toimia mielipidevaikuttajina, mutta he enimmäkseen välittävät blogeissaan omien elämystensä sijaan muiden kokemuksia. Neljäs bloggaajatyypin, Välittäjä (Mediator), on lähinnä neutraali havainnoinen joka ei pyri liittämään teksteihin omia mielipiteitään.

Blogien ja muun tavallisten kuluttajien tuottamien sosiaalisen median sisällön roolin ymmärtäminen jokapäiväisessä viestinnässä on tärkeää terveyshyvinvöitymiseen ja ravitsemusviestinnän kohdistamiseen. Taivuttelijat-bloggaajien (n=12) tekstejä tutkittiin kriittisen diskursianalyysin avulla. Kolme erillistä kasvikuutiosta ja hedelmäkielisä liiiptaamisesta tunnistettiin aineistosta: normatiivinen kasvisten ja hedelmien käyttö, autenttinen kasvisten ja hedelmien käyttö sekä altruistinen kasvisten ja hedelmien käyttö. Tämän analyysin tulokset voivat olla hyödyllisiä ravitsemusviestinnän viimeisessä prosessissa eli viestin räätälöimisessä.

Keskustelu ja johtopäätökset


Sosiaalinen median ja ruokatrendit eivät ole inERMUlLMTKUVAU, vaan niiden sisällöitä ja käyttöä muuttuvat jatkuvasti. Siksi on tärkeää, että online-ravitsemusviestinnän monipuolista tutkimusta jatketaan ja laajennetaan. Tästä vääntäjäraasta saadut kokemukset niin käyttelyistä tutkimusmenetelmistä kuin itse viestintätavoista ja maallikkoiden käyttämisestä arkielämän ravitsemusviestinnästä voivat toimia inspiraationa niin jatkotutkimuksille kuin myös käytännön ravitsemusviestinnän parissa työskenteleville ammattilaisille.

62
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My special thanks are due to:

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**Ylva Mattsson Sydner** and **Brita Karlström**, Head of the Department of Food, Nutrition and Dietetics

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**My Dear Sweet Friends**, you are all important to me. I could not make up a name list due to a risk of forgetting someone but you know who you are.
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NVivo. 2008. QSR International Pty Ltd


Appendix:
Questionnaire (in Swedish)
Vad tycker dagens konsumenter om frukt och grönsaker?


För att underlätta bearbetning av enkätsvaren önskar vi i första hand att du besvarar enkäten via Internet. Har du inte tillgång till Internet finns möjlighet att skicka in svaren via bifogad papperskopia och svarskuvert. Enkäten, som till största delen består av korta frågor, tar ungefär 15-20 minuter att besvara.

Så här gör du:

**Svara via Internet:** Logga in på www.ihv.uu.se och klicka på **Frukt och grönsaker 2007** och fyll i lösenordet **Frukt**. Först frågas din enkätkod som finns i början av denna sida. Följ instruktionerna på skärmen. När du har svarat på alla frågor, klickar du på knappen i rutan och svaren skickas till oss automatiskt.

**Svara via pappersenkäten:** Svara på frågorna i enkäten enligt instruktionerna. När du har svarat på alla frågor var vänlig och lägg enkäten i det bifogade kuvertet och skicka till adressen angiven på kuvertet. OBS! Pappersenkäten skickar du bara om du inte svarat på Internet!


**Tack för din hjälp!**

Uppsala 2007-05-14

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Docent
Tel. 018/471 2318

Agneta Andersson
MedDr
Tel. 018/471 3442
Inledande frågor (fråga 1-7):

1. Vilket år är du född? _________

2. Är du kvinna eller man?
   - Kvinna
   - Man

3a Hur många personer totalt (inkl. dig själv) bor vanligtvis i ditt hushåll? _____ pers

3b Hur många barn under 18 år bor vanligtvis i ditt hushåll? ______ barn

3c Om du har barn som bor i ditt hushåll, hur gamla är barnen?
   ____________________________ år

4 Hur ofta handlar du eller dina hushållsmedlemmar hem mat?
   - Varje dag
   - 4-6 gånger per vecka
   - 2-3 gånger per vecka
   - 1 gång per vecka
   - Mer sällan

5 Är du allergisk mot någon frukt eller grönsak?
   - Nej
   - Ja

   Om du svarat ja, ange mot vilken/vilka ________________________________

6 Har du ätit något vitamin- eller mineraltillskott under de senaste 2 veckorna?
   * Kryssa alla passande alternativ.
   - Inget
   - C-vitamin
   - Kalcium
   - Järn
   - Multivitaminprodukt
   - Multimineralprodukt
   - Något annat, ange vilket/vilka ________________________________________
Två frågor om symbolen på bilden nedan (fråga 7a-b).

7a Har du sett denna symbol på något livsmedel?
☐ Ja
☐ Nej

7b Vad tror du att märkningen betyder? *Berätta med egna ord.*

_____________________________________________________
_____________________________________________________
_____________________________________________________

Frågor om vad du åt igår (fråga 8-12)

*Tänk på hela dygnet från igår morse kl 06.00 tills idag morse före kl 06.00. Tänk speciellt på juice, frukt, bär, grönsaker och rotfrukter.*

8 Vilken dag var det igår?
☐ Måndag
☐ Tisdag
☐ Onsdag
☐ Torsdag
☐ Fredag
☐ Lördag
☐ Söndag

___________________________________________________________________________

9 Drack du igår någon av följande juice och i så fall *hur mycket*? *1 glas = 2dl = 200ml*

<table>
<thead>
<tr>
<th>Juice</th>
<th>Nej</th>
<th>Ja</th>
<th>Hur många glas?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apelsinjuice</td>
<td></td>
<td></td>
<td>_____Glas</td>
</tr>
<tr>
<td>Annan fruktjuice</td>
<td></td>
<td></td>
<td>_____Glas</td>
</tr>
<tr>
<td>Morotsjuice eller annan grönsaksjuice</td>
<td></td>
<td></td>
<td>_____Glas</td>
</tr>
</tbody>
</table>
10 Åt du **frukt eller bär** igår och i så fall *hur mycket*?
*T ex 1 äpple, 0,5dl bär och så vidare*

<table>
<thead>
<tr>
<th></th>
<th>Nej</th>
<th>Ja</th>
<th>Hur många stycken eller deciliter?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apelsin/Mandarin/Klementin</td>
<td>□</td>
<td>□</td>
<td>_________st</td>
</tr>
<tr>
<td>Äpple/Päron</td>
<td>□</td>
<td>□</td>
<td>_________st</td>
</tr>
<tr>
<td>Banan</td>
<td>□</td>
<td>□</td>
<td>_________st</td>
</tr>
<tr>
<td>Annan färsk frukt</td>
<td>□</td>
<td>□</td>
<td>_________st</td>
</tr>
<tr>
<td>Fryst frukt</td>
<td>□</td>
<td>□</td>
<td>_________dl</td>
</tr>
<tr>
<td>Konserverad frukt (t ex ananas)</td>
<td>□</td>
<td>□</td>
<td>_________dl</td>
</tr>
<tr>
<td>Torkad frukt (t ex russin, banan)</td>
<td>□</td>
<td>□</td>
<td>_________dl</td>
</tr>
<tr>
<td>Bär (färsk, frysta eller torkade)</td>
<td>□</td>
<td>□</td>
<td>_________dl</td>
</tr>
</tbody>
</table>

11 Åt du några **grönsaker eller rotfrukter** igår och i så fall *hur mycket*?

<table>
<thead>
<tr>
<th></th>
<th>Nej</th>
<th>Ja</th>
<th>Hur många deciliter?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grönsaker som sallad eller rärivna</td>
<td>□</td>
<td>□</td>
<td>_________dl</td>
</tr>
<tr>
<td>Kokta grönsaker</td>
<td>□</td>
<td>□</td>
<td>_________dl</td>
</tr>
<tr>
<td>Konserverade grönsaker (t ex majs, krossad tomat)</td>
<td>□</td>
<td>□</td>
<td>_________dl</td>
</tr>
<tr>
<td>Bönor, linser, kikärtor eller ärtor</td>
<td>□</td>
<td>□</td>
<td>_________dl</td>
</tr>
<tr>
<td>Potatis</td>
<td>□</td>
<td>□</td>
<td>_________dl</td>
</tr>
</tbody>
</table>

12 Åt du igår några andra **grönsaker eller rotfrukter** som du inte har nämnt här?

- □ Nej
- □ Ja, i grönsakssoppa
- □ Ja, i vegetarisk lasagne eller annan vegetarian rätt
- □ Ja, i någon annan maträtt
  Ange vilken maträtt var den/dem?
Frågor om frukt och grönsaker som du *vanligtvis* äter (fråga 13-15)

13 Hur ofta brukar du äta frukt och bär eller dricka fruktjuice?
*Kryssa ett lämpligt svar på varje rad.*

<table>
<thead>
<tr>
<th>Mindre än 1 gång/vecka</th>
<th>1 gång/vecka</th>
<th>2-4 ggr/vecka</th>
<th>5-6 ggr/vecka</th>
<th>1 gång/dag</th>
<th>2 ggr/dag</th>
<th>Mer än 2 ggr/dag</th>
</tr>
</thead>
<tbody>
<tr>
<td>Färsk frukt</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Fryst frukt</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Fruktjuice</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Konserverad frukt</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>(t ex ananas, persika)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Torkad frukt</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>(t ex russin)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bär</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>(färska, frysta eller torkade)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
14 Hur ofta brukar du äta grönsaker / rotfrukter eller dricka grönsaksjuice?  
*Kryssa ett lämpligt svar på varje rad.*

<table>
<thead>
<tr>
<th></th>
<th>Aldrig</th>
<th>Mindre än 1 gång/vecka</th>
<th>1 gång/vecka</th>
<th>2-4 ggr/vecka</th>
<th>5-6 ggr/vecka</th>
<th>1 gång/dag</th>
<th>2 ggr/dag</th>
<th>Mer än 2 gång/dag</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grönsaker som sallad eller rårivna</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Kokta grönsaker</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Konserverade grönsaker (t ex rödbetor, krossad tomat)</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Bönor, linser, kikärtor eller ärtor</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Grönsaksjuice</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

15 Tycker du att du äter mycket eller lite frukt jämfört med allmänheten?  
☐ Väldigt mycket frukt  
☐ Mycket frukt  
☐ Varken mycket eller lite  
☐ Lite frukt  
☐ Väldigt lite frukt

16 Hur mycket stämmer påståendena nedan om frukt för dig?  
<table>
<thead>
<tr>
<th></th>
<th>Stämmer helt</th>
<th>Stämmer ganska bra</th>
<th>Stämmer varken bra eller dåligt</th>
<th>Stämmer inte så bra</th>
<th>Stämmer inte alls</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Att äta frukt varje dag är en vana för mig</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>b) Frukt smakar gott</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>
17 Tycker du att du äter mycket eller lite grönsaker jämfört med allmänheten?

☐ Väldigt mycket grönsaker
☐ Mycket grönsaker
☐ Varken mycket eller lite
☐ Lite grönsaker
☐ Väldigt lite grönsaker

18 Hur mycket stämmer påståendena nedan om grönsaker för dig?

<table>
<thead>
<tr>
<th>Stämmer helt</th>
<th>Stämmer ganska bra</th>
<th>Stämmer varken bra eller dåligt</th>
<th>Stämmer inte så bra</th>
<th>Stämmer inte alls</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a) Att äta grönsaker varje dag är en vanaf mig

b) Grönsaker smakar gott

19 Påståenden om dina hushållsmedlemmar och deras konsumtion av frukt och grönsaker.  

Välj ett svar per rad.

<table>
<thead>
<tr>
<th>Stämmer helt</th>
<th>Stämmer ganska bra</th>
<th>Stämmer varken bra eller dåligt</th>
<th>Stämmer inte så bra</th>
<th>Stämmer inte alls</th>
<th>Jag bor ensam</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a) Mina hushållsmedlemmar äter frukt varje dag

b) Mina hushållsmedlemmar uppmuntrar mig till att äta frukt varje dag

c) Mina hushållsmedlemmar äter grönsaker varje dag

d) Mina hushållsmedlemmar uppmuntrar mig till att äta grönsaker varje dag
20 Frukt, bär och grönsaker hemma hos dig. Välj ett svar per rad.

<table>
<thead>
<tr>
<th>a) Finns det vanligtvis olika frukter hemma hos dig?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ja, alltid</td>
</tr>
<tr>
<td>☐</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>b) Finns det vanligtvis fruktjuice hemma hos dig?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ja, alltid</td>
</tr>
<tr>
<td>☐</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>c) Finns det vanligtvis olika bär hemma hos dig?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ja, alltid</td>
</tr>
<tr>
<td>☐</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>d) Finns det vanligtvis olika grönsaker hemma hos dig?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ja, alltid</td>
</tr>
<tr>
<td>☐</td>
</tr>
</tbody>
</table>

21 Frukt och grönsaker på arbetet samt under din fritid. Välj ett svar per rad.

<table>
<thead>
<tr>
<th>a) Tar du vanligtvis med dig frukt till arbetet eller till fritidsaktiviteter?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ja, alltid</td>
</tr>
<tr>
<td>☐</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>b) Kan du få eller köpa frukt på de ställen där du har dina fritidsaktiviteter?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ja, alltid</td>
</tr>
<tr>
<td>☐</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>c) Kan du få eller köpa frukt på arbetsplatsen?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ja, alltid</td>
</tr>
<tr>
<td>☐</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>d) Tar du vanligtvis med dig grönsaker till arbetet eller till fritidsaktiviteter?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ja, alltid</td>
</tr>
<tr>
<td>☐</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>e) Kan du få eller köpa grönsaker på de ställen där du har dina fritidsaktiviteter?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ja, alltid</td>
</tr>
<tr>
<td>☐</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>f) Kan du få eller köpa grönsaker på arbetsplatsen?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ja, alltid</td>
</tr>
<tr>
<td>☐</td>
</tr>
</tbody>
</table>
22a Det är svårt för mig att äta frukt eller bär varje dag.

- [ ] Stämmer helt
- [ ] Stämmer ganska bra
- [ ] Stämmer varken bra eller dåligt
- [ ] Stämmer inte så bra
- [ ] Stämmer inte alls

22b Varför är det så? *Berätta med egna ord.*

____________________________________________________________________

____________________________________________________________________

23 Hur mycket stämmer påståendena nedan med vad du tycker om frukt och bär?
*Kryssa en ruta per rad.

<table>
<thead>
<tr>
<th></th>
<th>Stämmer helt</th>
<th>Stämmer ganska bra</th>
<th>Stämmer varken bra eller dåligt</th>
<th>Stämmer inte så bra</th>
<th>Stämmer inte alls</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Det tar för lång tid att förbereda frukt eller bär (t.ex skära)</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>b) Färska frukt och bär är svåra att förvara hemma</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>c) Ofta äter jag inte frukt eller bär därför att jag vill äta något annat</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>d) Jag skulle äta mera frukt och bär om de var billigare</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>e) Jag skulle äta mera frukt och bär om utbudet i min mataffär var bättre</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
</tbody>
</table>

24a Det är svårt för mig att äta grönsaker eller rotfrukter varje dag

- [ ] Stämmer helt
- [ ] Stämmer ganska bra
- [ ] Stämmer varken bra eller dåligt
- [ ] Stämmer inte så bra
- [ ] Stämmer inte alls

24b Varför är det så? *Berätta med egna ord.*

____________________________________________________________________

____________________________________________________________________

<table>
<thead>
<tr>
<th>Påstående</th>
<th>Stämmer helt</th>
<th>Stämmer ganska bra</th>
<th>Stämmer varken bra eller dåligt</th>
<th>Stämmer inte så bra</th>
<th>Stämmer inte alls</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Det tar för lång tid att förberedda grönsaker och rotfrukter (t ex skära och koka)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>b) Färska grönsaker och rotfrukter är svåra att förvara hemma</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>c) Jag känner mig förstörd åt att ha ätit grönsaker eller rotfrukter</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>d) Ofta äter jag inte grönsaker eller rotfrukter därför att jag vill äta något annat</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>e) Jag skulle äta mera grönsaker och rotfrukter om de var billigare</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>f) Jag skulle äta mera grönsaker och rotfrukter om utbudet i min mataffär var bättre</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

26 Hur mycket stämmer påståendena nedan med vad du tycker om frukt och grönsaker: Kryssa bara en ruta per rad.

<table>
<thead>
<tr>
<th>Påstående</th>
<th>Stämmer helt</th>
<th>Stämmer ganska bra</th>
<th>Stämmer varken bra eller dåligt</th>
<th>Stämmer inte så bra</th>
<th>Stämmer inte alls</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) För det mesta ser fruktens fräsch utan i affären</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>b) För det mesta ser grönsakerna fräschad utan i affären</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>c) Jag är intresserad av kost och hälsa</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>d) Jag letar själv efter information om kost och hälsa</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>e) Jag försöker medvetet äta en hälsosam kost</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
27 Kost och hälsa. Välj ett lämpligt svar på varje fråga.

<table>
<thead>
<tr>
<th>a) Jag tycker att kosten kan påverka hälsan</th>
<th>Stämmer helt</th>
<th>Stämmer ganska bra</th>
<th>Stämmer varken bra eller dåligt</th>
<th>Stämmer inte så bra</th>
<th>Stämmer inte alls</th>
</tr>
</thead>
<tbody>
<tr>
<td>❑</td>
<td>❑</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>b) Jag tycker att frukt och grönsaker kan påverka hälsan</th>
<th>Stämmer helt</th>
<th>Stämmer ganska bra</th>
<th>Stämmer varken bra eller dåligt</th>
<th>Stämmer inte så bra</th>
<th>Stämmer inte alls</th>
</tr>
</thead>
<tbody>
<tr>
<td>❑</td>
<td>❑</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

28 Vilka hälsoeffekter tror du att frukt och grönsaker kan ge? Du kan välja flera svar.

- □ Ingen hälsoeffekt
- □ Minskad cancerrisk
- □ Minskad hjärt- och kärlsjukdomsrisk
- □ Hjälper vid viktminskning
- □ Förebygger förstoppning / Främjar tarmfunktion
- □ Minskar risken för diabetes
- □ Förebygger demens / Alzheimer sjukdom
- □ Annan effekt, vilken __________________________________________

29 Hur mycket frukt och grönsaker tror du att man bör äta för att vara hälsosam?

- □ Inga frukter eller grönsaker
- □ 1 - 3 portioner per vecka
- □ 4 - 6 portioner per vecka
- □ 1 portion varje dag
- □ 2 portioner varje dag
- □ 3 portioner varje dag
- □ 4 portioner varje dag
- □ 5 eller fler portioner varje dag

30 Hur mycket frukt och grönsaker tycker du att du bör äta att må bra?

- □ Inga frukter eller grönsaker
- □ 1 - 3 portioner per vecka
- □ 4 - 6 portioner per vecka
- □ 1 portion varje dag
- □ 2 portioner varje dag
- □ 3 portioner varje dag
- □ 4 portioner varje dag
- □ 5 eller fler portioner varje dag
### Frågor om måltider och vad du gör på din fritid (fråga 31-36).

*Kryssa bara en ruta per fråga.*

#### Fråga 31
**Hur ofta tittar du på TV samtidigt som du äter frukost, lunch eller middag?**
- [ ] Varje dag
- [ ] 4 – 6 dagar i veckan
- [ ] 1 – 3 dagar i veckan
- [ ] Mindre än 1 dag i veckan
- [ ] Aldrig

#### Fråga 32
**Hur många timmar per dag brukar du titta på TV och video under din fritid?**
- [ ] Ingen alls
- [ ] Ca. En halv timme om dagen
- [ ] Ca. 1 timme om dagen
- [ ] Ca. 2 timmar om dagen
- [ ] Ca. 3 timmar om dagen
- [ ] Ca. 4 timmar om dagen
- [ ] Ca. 5 timmar om dagen
- [ ] Ca. 6 timmar om dagen
- [ ] Ca. 7 eller flera timmar om dagen

#### Fråga 33
**Hur många TIMMAR per vecka brukar du träna så att du blir andfådd eller svettig?**
- [ ] Inga
- [ ] Ca. en halv timme per vecka
- [ ] Ca. 1 timme per vecka
- [ ] Ca. 2-3 timmar per vecka
- [ ] Ca. 4-6 timmar per vecka
- [ ] 7 timmar per vecka eller mer

#### Fråga 34
**Hur många timmar av din fritid per dag brukar du använda datorn**
- [ ] Ingen alls
- [ ] Ca. En halv timme om dagen
- [ ] Ca. 1 timme om dagen
- [ ] Ca. 2 timmar om dagen
- [ ] Ca. 3 timmar om dagen
- [ ] Ca. 4 timmar om dagen
- [ ] Ca. 5 timmar om dagen
- [ ] Ca. 6 timmar om dagen
- [ ] Ca. 7 timmar om dagen eller mera

#### Fråga 35
**Jag tycker om att laga mat.**
- [ ] Stämmer helt
- [ ] Stämmer ganska bra
- [ ] Stämmer varken bra eller dåligt
- [ ] Stämmer inte så bra
- [ ] Stämmer inte alls

#### Fråga 36
**Att använda frukt och grönsaker varierat i matlagningen är svårt.**
- [ ] Stämmer helt
- [ ] Stämmer ganska bra
- [ ] Stämmer varken bra eller dåligt
- [ ] Stämmer inte så bra
- [ ] Stämmer inte alls
Till sist några bakgrundsfrågor om dig (fråga 37-42)

37 Din högsta utbildning motsvarar
☐ Grundskola eller folkskola
☐ Realskola eller flickskola
☐ 2-årigt gymnasium eller yrkesskola
☐ 3-4-årigt gymnasium
☐ Högskola eller universitet

38 Din huvudsakliga sysselsättning under de senaste 6 månaderna har varit
☐ Yrkesarbetare
☐ Ålderspensionär
☐ Förhands pensionär
☐ Arbetssökande
☐ Långtidssjukskriven
☐ Studerande
☐ Hemmafru / hemmamake

39 Hur mycket var hela hushållets totala inkomst per år före skatt i senaste taxeringen?
☐ 0 – 100 000 kr
☐ 100 001 – 300 000 kr
☐ 300 001 – 500 000 kr
☐ 500 001 – 700 000 kr
☐ 700 001 – 900 000 kr
☐ Över 900 000 kr

40 Vilka av följande alternativ stämmer in på ditt hem? Du kan välja flera alternativ.
☐ Har egen trädgård eller kolonilott
☐ Har matkällare
☐ Har frys
☐ Har tillgång till bil

41 Vilket land är du född i?
☐ Sverige
☐ Norge, Danmark, Finland eller Island
☐ Annat land

42 Vilket är ditt postnummer? __________________________
Du kan välja om du vill få en skriftlig redovisning av studiens resultat under vinter 2008.

☐ Ja tack, skicka gärna redovisningen till min hemadress.
☐ Ja tack, skicka gärna redovisningen till min e-postadress:

☐ Nej tack, jag vill inte att ni skickar redovisningen till mig.

Har du några andra kommentarer eller andra tankar angående formuläret, var så god och skriva dina tankar här:

___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________

Du kan nu lägga enkäten i svarsduvert och skicka den till oss.

TACK SÅ MYCKET FÖR HJÄLPEN!
Acta Universitatis Upsaliensis

Digital Comprehensive Summaries of Uppsala Dissertations from the Faculty of Social Sciences 70

Editor: The Dean of the Faculty of Social Sciences

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