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High school students' attitudes and behaviour towards organic products: survey results from Vienna

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Abstract

Our consumption patterns and environmental behaviour are rooted in long lived practices and habits. Social norms and values are among the factors that determine what we buy or what we think about organic products. As they are largely unconscious it is difficult to change them. A survey of high school students (between 14 and 20 years) in Vienna determines social norms and attitudes towards organic products that influence consumption of organic products in order to add new insights to the discourse. Young people, who already participate in household decisions and consume organic products are of special interest. They may be viewed as future consumers and buyers but have not yet been recognised sufficiently in research. Based on the Theory of Reasoned Action, developed by Fishbein and Ajzen, a simple model of the impact of attitudes and social norm on behaviour is tested, using a data set, which was collected in 2005 (n=340). This basic model is extended by structural variables, factors representing cultural patterns and knowledge. By these means, we explore the complex field of decisions and reasoned action regarding the shopping behaviour of high school students with respect to organic products. Key findings include (1) the importance of primary socialization over secondary socialization in forming social norms and shaping behaviour, (2) the absence of a significant relation between knowledge on organic products and actual behaviour (shopping organic products), and (3) cultural orientations being good predictors for attitudes as well as for behaviour towards organic products.

Key words: organic products, intended and actual behaviour, survey, high school students

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Background of the analysis

Growing environmental awareness in combination with concerns over healthy and safe food have led to a higher level of consumption of organic produce, which is perceived healthier and better with respect to the environment as compared to conventional food (Schifferstein and Oude-Ophuist 1998). This general trend towards organic food[1] is especially experienced in Austria where the consumption of organic food has undergone a considerable increase over the past two decades. Between 2001 and 2004, with the growing interest of supermarket chains, the estimated volume of sales has doubled (Vogel and Larcher 2007). Consequently also the number of consumers has increased by 35 % between 2003 and 2006. 87 % of consumers buy organic food occasionally or more often and 77 % would welcome a broader range of available organic products (AMA 2007).

As far as preferences of consumers are concerned, consumption of organic food has been conceptualized as one aspect of high levels of positive attitudes towards the environment, or - the other way round - environmental concern has "been found to be a major determinant of buying organic food" (Grunert and Juhl 1995:45). However, the number of organic food consumers who are environmentally aware and demonstrate solidarity with organic farmers is diminishing in favour of those who choose organic food out of a larger product range based on trade offs between price, time, and availability (Thomas and Groß 2005:66). Egoistic motivation such as scepticism against conventional food (younger consumers), or health concerns (especially older consumers) are prevalent and better predictors to buying organic food than altruist motives (Magnusson et al. 2003:109).

The body of social science literature dealing with issues of organic farming has grown steadily since 1990: Vogt (2000), has compiled the history of organic farming, Thomas and Groß (2005) have assessed changes in principles of organic farming and its importance in politics and society. Other studies assess structures of how the organic sector is being organized (Schermer 2005), its competitiveness compared to conventional agriculture (Dabbert 1990), but also the attitudes of farmers towards organic farming and their changes in recent years (Oppermann 2001, Padel 2006, Vogel and Larcher 2007). Further research subjects include the

[1] Despite the fact that the European Union has established a formal regulation to describe standards for labelling, production methods and inspections of *organic* production (E.C. Regulation 2092/91), in everyday's language a variety of terms is used interchangeable, such as biological, ecological, natural, alternative or environment-friendly produce (Schifferstein and Oude-Ophuist 1998). With respect to the E.C. Regulation 2092/91, in this paper we refer to organic food or organically produced food.

transition from conventional towards organic farming (Fischer 1982, Bichlbauer and Vogel 1993), as well as the impact of organic farming on rural development, or the rural society (Schermer 2006). There is also a number of studies on motives for buying or not buying organic food, willingness to pay higher prices for organic food (Hamm 1986, Fricke 1996), as well as of markets, marketing and regional development (Hamm et al. 2002, Hamm and Gronefeld 2004, Schmid et al. 2004) with respect to organic food. An assessment of the rapidly growing body of social science literature concerning the organic sector reveals that relatively little has been published on consumers' preferences (Vogel and Larcher 2007). This is especially true for different social groups, such as students (Freyer et al. 2005).

With an increasing prominence and availability of organic food, consumers are confronted with new options: they need to develop and compute new attitudes towards these products, connected with reasoning whether to buy or not. Further, with respect to attitude formation concerning health and impacts of organic food consumption, the opinion of friends or family members might increase perceived normative pressure and thus establish social norms which eventually lead to a modification of consumer behaviour (Fazio 1990:90). Schäfer (2002:2) has demonstrated that important determinants of changes in attitudes and behaviour towards organic food is primary socialization, the role models of important people or changes in life (e.g. child birth, sickness).

Assessing the distribution of the general increase in organic food consumption in Austria suggests that it is highest amongst the age group 15-19 (BMLFUW 2003:68[2]). This is especially interesting as the overwhelming part of Austrian secondary students does not (yet) have control over an own household but lives within the household of origin from which he or she is normally also financially dependent. Despite this young generation consuming within a limited budget, it is probably them who (co-)determine what enters their parents shopping baskets. More so, the assessment of students' preferences is interesting for estimating future developments, as within only a couple of years it will be them who constitute a large share of actual consumers.

Having discussed the overall developments and the general background to our research questions we will now present the theoretical foundations using some Attitude Theory as a starting point. Then we will turn to the analyses, which will assess the relative importance of selected determinants of actual behaviour of Austrian high school students towards organic

[2] The consumption of organic cereals, bakeries, meat and meat products has increased by 20 %, milk and dairy products by 15 % in the age group of 15-19 years (BMLFUW 2003:68).

products. The determinants in question stem from the personal and social background of the students. The study shall allow insights into the relative importance of attitudes, subjective norms, and perceived behavioural control in guiding students' actual behaviour towards organic products.

Theoretical foundations

Studying attitudes is a central field of social psychology, but it yet remains unclear how attitudes guide behaviour. Fazio (1990) distinguishes two models of behaviour, (1) theories that imply conscious deliberation, intended or planned action, and (2) theories of "spontaneous reaction to one's perception of the immediate situation" (Fazio 1990:78). In the first explanation of behaviour the individual might consider costs and benefits of action, reflecting deliberately on attitudes which are relevant to a certain decision and coming up with a plan that might be enacted. The second model assumes that individuals behave more spontaneous - often without actively considering the relevant attitudes. Central to both models is the assumption that attitudes are having an impact on behaviour; however, the two models assume a varying degree of the influence of effortful reasoning.

While organic food can be bought spontaneously, research shows that consumers of organic food have developed specific attitudes (e.g. egoistic motives, environmental awareness…). Therefore, we opt for the model of deliberate or planned action to explain the case of buying organic food. We further assume some degree of cognitive reasoning whether to buy organic food or not because organic food is usually more expensive compared to conventional food. A consumer needs to consider trade-offs between higher prices of organic food and assumptions of its positive impact on health. Initial reasons for buying organic food are mostly egoistic motives such as health concerns or scepticism over conventional food. However, after a certain period consumers often develop more complex attitudes and beliefs vis-à-vis organic food, e.g. attitudes towards objects of the environmental, ecologic and social spheres, environmental concerns, solidarity with organic farmers etc. (Vogel and Larcher 2007).

There are two basic and distinct approaches towards attitudes: (1) Attitudes towards objects: Attitudes[3] generally are predispositions that guide and influence behaviour and are

[3] We acknowledge that attitudes are rooted in and composed of a persons' believes about certain attributes of an object; these attributes determine the evaluation of whether the person likes or dislikes the object (Fishbein and Ajzen 1975:59). For the

conceptualized within the attitude theory as "composed of beliefs and affect toward an object" (Heberlein 1981:241). The so called "component-approach to attitudes" comprises three components, i.e. knowledge, emotion and intention. The interrelation of the three components in the effects towards a behaviour results in a certain degree of positive or negative evaluation of an attitudinal object (Eagly and Chaiken 1993). (2) Attitudes towards behaviour: To improve the attitude-behaviour relation Fishbein and Ajzen (1975) suggested assessing attitudes and behaviour on the same level of specificity or generality, i.e. rather to measure attitudes towards the behaviour in question than towards an object.

The complexity between attitudes, subjective norms and other determinants of behaviour has been presented in the *Theory of Reasoned Action* (Ajzen and Fishbein 1980; Fishbein and Ajzen 1975) and the *Theory of Planned Behaviour* (Ajzen 1985, 1988, 1991). In the Theory of Reasoned Action behaviour is a causal result from behavioural intentions. Behavioural intention plays a central role in the model as an immediate factor of behaviour – understood as motivation towards the behaviour and by itself results from two causal variables, i.e. (1) attitudes towards the targeted behaviour, (2) subjective norms which represent the actor's assumptions of expectations of valued third persons on the direction of his or her behaviour. Subjective norm is a variable that is suggested to assess individuals' readiness to follow the norms of others: The individual beliefs with respect to behavioural expectations of a important reference person or group are weighted by the subjective motivation to follow these expectations. Thus, the variable encompasses the embedding of a behaviour in the social relations of individuals. In a more general sociological view, subjective norm tries to integrate the socialisation process into predicting behaviour.

The Theory of Planned Behaviour extends the Theory of Reasoned Action with a third variable, Perceived Behavioural Control, i.e. expectations of the individual about conditions (e.g. time, money, prices) which ease or constrain the actual behaviour (Ajzen 1985, 1991; Ajzen and Madden 1986; Madden, Ellen and Ajzen 1992). While the Theory of Reasoned Action is restricted to explain behaviour which is dependent on the free will of the subject, the Theory of Planned Behaviour considers also perceptions of constraints (in other words: perceived costs and benefits) related to the behaviour.

In our analysis, we do not include perceived behavioural control as a factor. The data set, on which this analysis is based, does not contain information about individual perceptions of

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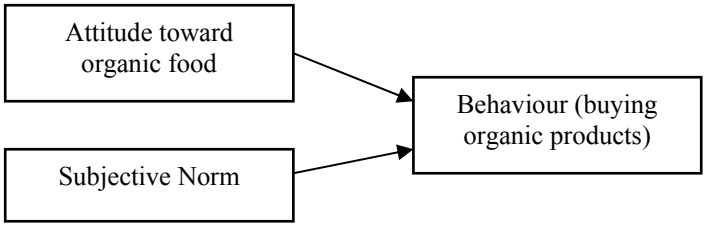
purpose of this paper, however, we concentrate on attitudes rather than on beliefs. Our single score item to determine „attitude towards organic food" (ebd. 105) represents the respondents' evaluation of the object.

constraints of buying organic produce[4]. Therefore, we use the Theory of Reasoned Action as a theoretical framework for our analysis. However, in our research design in the initial model there are two deviations from this theory:. (1) We do not assess an attitude towards the behaviour, but an attitude towards the attitudinal object, which are organic products. The measurement of attitudes towards behaviour has been criticized: Measuring an attitude that is similar to the behaviour rather represents a *plan to act* than an attitude (Vogel 1999). Furthermore, the research team was particularly interested in the assessment of students' attitude as an evaluation of the object (i.e. organic produce). Our score item to determine the respondents „attitude towards organic products" represents his/her evaluation or level of like and dislike of the object, i. e. organic products. (2) We do not explain behavioural intentions; we directly turn to behaviour (different levels of buying organic products).

In their Theory of Reasoned Action Ajzen and Fishbein (1980) assumed that the relative importance of the variables "attitude" and "subjective norm" is influenced by situational factors, individual characteristics (gender, age, class…) as well as personal or cultural characteristics. Together, these factors determine the concrete value of "behavioural intention". As we elaborate our research questions and analyse the data set we will extend the "Simple Model of Reasoned Action" (Figure 1) in order to include such individual characteristics. We will assess whether the extension of the model will increase the value in explaining behaviour (consumption of organic products).

[4] The data set available does not include students' perceived price differences between conventional and organic food, as in the survey it was argued that the shopping budget and its constraints is rather in the responsibility of the parents.

Figure 1 Simple model of Reasoned Action to explain buying organic products



Source: Theory of Reasoned Action (Ajzen & Fishbein 1980; Fishbein & Ajzen 1975), adjusted on basis of the survey and research design

Research issues and methods

This research is meant to contribute to a better understanding of the complexity of variables that determine shopping behaviour (organic products). By deepening our insights into the context of consumption of organic products we hope to illuminate also how behaviour is shaped by social norms, cultural roles, attitude and situational factors.

As we have argued in the literature review, there is a lack of information about consumers' perceptions of organic products, especially of young people such as high school students. The following section elaborates our research issues.

Research issues

The general aim of this discussion paper is to explain influences of the attitude of high school students towards organic products and a measure of their subjective norm within the conceptual framework of a model of Reasoned Action (Figure 1), acknowledging also the context of other factors. A given data set (340 respondents) from a survey of high school students in Vienna serves as a basis for our analysis. Key variables for testing the model include (1) an index of subjective norm (comprising of beliefs of the respondents about the influence of six attachment persons/groups) and (2) an attitude towards organic products (Table 8, Appendix).

Using this simple model as a starting point we will further explore connections between the variables of this simple model with cultural factors, social structure and knowledge on organic products. Thus, we extend the model and appreciate Ajzen and Fishbein (1980), who

acknowledge that the model of Reasoned Action needs to be adopted for researching specific groups. Similarly Liska (1984) suggests considering social structure in the analysis. Consequently, we will determine connections between subjective norm, i. e. social norms, and subjective structure (gender, age and school type[5]) and cultural variables, to analyse whether some respondents depend more heavily on perceived norms of others and assess which attachment persons or groups play important roles in guiding behaviour. Finally, we will also integrate the students' knowledge on organic products into our analysis. The purpose of the extension of the simple model is to gain information about the context of possible factors guiding high school students' behaviour towards organic products and to determine how far we can improve the explanation of the simple model of Reasoned Action by integrating further variables.

In detail, there are five research issues:

(i) to form patterns of cultural likes and dislikes of students,

(ii) to test the simple model of Reasoned Action to explain consumption of organic products,

(iii) to explore the relations between components of the simple model, structural and cultural variables,

(iv) to reformulate the simple model, and

(v) to test the extended model.

Questionnaire development and data collection

Between March and April 2005 a survey was conducted in upper secondary schools (grade 9-12) in six schools in Vienna, Austria[6]. In total 340 students, 58 % girls and 41,2 % boys, have been interviewed. Quota sampling has been employed to select schools using official data on school types (*Gymnasium*, *Realgymnasium* and *Wirtschaftskundliches Gymnasium*). Within each of the selected schools a number of classrooms has been selected based on quota for

[5] Other variables, in which the population is relatively homogenous, e.g. occupation, minority/majority group etc., are disregarded here.

[6] This research is embedded in a larger collaboration between the Division of Organic Farming of the Department of Sustainable Agricultural Systems and the Institute of Sustainable Economic Development (both: University of Natural Resources and Applied Life Sciences Vienna, Austria) on attitudes and behaviour of students. We would like to acknowledge the collaboration of Prof. Dr. Bernhard Freyer; three master thesis have been supervised (Bacher 2005, Buchner 2005, Leitner 2004), and various papers published (e.g. Freyer et al. 2005; Leitner et al. 2005). This paper reflects a new research approach on the basis of a part of the whole data set, which has been established at the Institute of Sustainable Economic Development.

grade (slightly more classes in grade 9-10 than in 11-12), and availability of the classes in the respective school. Because the questionnaire was filled during regular teaching hours and all students of a class have been asked to fill in the questionnaire the return quote was consequently very high (340 out 345 questionnaires could be used for the analysis). An overview on the variables is given in Table 8, in the Appendix. While the data does not claim to be representative for Vienna or entire Austria, the aim of this research was to explore interrelations between variables which are assumed to be valid also in other regions.

The questionnaire employed consisted of the following sections:

- general preferences in life
- knowledge of organic product labels and denominations,
- attitude towards organic products
- importance of opinion of attachment persons or groups,
- appraisal of attitudes of attachment persons / groups towards organic products,
- self-reported behaviour of buying organic products, and
- socio-demographic characteristics.

Variables and statistical evaluation

Descriptive statistics, factor analysis, cross-tabulations, independent t-tests and discriminant analysis were run, using the Statistical Package for Social Sciences (SPSS 11.0). For all analyses the level of significance was set to 0,001 ***, 0,01 ** and 0,05 *.

Factor analysis was used to reduce a list of students' responses with respect to their preferences of various leisure activities and general perceptions in life to assess distinct cultural patterns. The list of students' preferences represented their answers in the survey to the personal importance of sport, health, television, party, computer and videos, theatre, classic music, pop/rock music, journals/comics, travelling, nutrition, car/motorbike, books, hiking/biking/outdoor, nature protection and environment, income and friends. Underlying cultural patterns were identified on factors derived on basis of *Eigenfaktor* >1,2 and a rotation of the component matrix with maximation of variance (Varimax, Kaiser normalization).

Discriminant analysis was used to describe the relationships between attitude towards organic products and subjective norm of attachment persons with behaviour. This method allows determining which factors have a greater impact in explaining behaviour. Moreover, we

checked the validity of the calculations by reducing the data to "extreme" values to determine whether the overall trend could be strengthened and underlined. Finally, also discriminant analysis was used to determine the relations between the variables in the extended model (Figure 2), which additionally comprised structural variables, cultural variables and knowledge on organic products.

Results

The presentation of results follows the sequence of the research issues.

Cultural patterns of high school students

Preferences of students regarding their activities – they rated the importance of leisure activities - allowed the classification into four different categories which we termed "classic", "health", "party&fun" and "digital". These four factors explain 50,1 % of variance of the data in the question for cultural preferences of students (17 preferences were given in the questionnaire, see above and Appendix).

Table 1 Factor analysis to determine types of culture

Type/Label	% variance	Issues	Factor Load
Classic	17,7	Theatre	0,816
		Books	0,614
		Classic Music	0,769
Health	13,4	Health	0,687
		Nutrition	0,592
		Hiking, biking, outdoors	0,701
		Environment/nature conservation	0,572
		Friends	0,467
Party&Fun	10,9	Party, disco, cinema, clubbing	0,722
		Travelling	0,569
		Car, motorbike	0,661
		Income	0,584
Digital	8,0	Television	0,684
		Computer, videos	0,768
		Journals/comics	0,672

<0,450, sport, pop-music, not allocated
Source: Analysis of survey data from Viennese high school students, n=340, 2005

The first cultural pattern we called "classic" as the loading items include theatre, books and classic music. The second type "health" includes loading items such as health, nutrition, hiking/biking/outdoor, environment/nature conservation, and friends. The items

party/disco/cinema, travelling, car/motorbike and income loaded on type three, which we called “party&fun”. Finally, the items television, computer/video, journals/comics loaded on type four which we named “digital”. The items sport and pop/rock music were not allocated as they did neither load highly (<0,450) on any of the types nor did they form a separate factor (Table 1).

Testing the simple model of Reasoned Action to explain the consumption of organic products

Discriminant analysis was employed to explain whether students buy organic products regularly, often, rarely or never. The categories never, rarely and often were recoded into buy never or little). Calculation method (CM) 1 reveals that the results are significant (χ^2 20,486 ***) (Table 2). However, in this model only attitude (F=21,303 ***) and not subjective norm is relevant in explaining students’ buying behaviour of organic products.

For calculation method 2 the four categories of shopping behaviour were not re-coded into two dimensions as in CM 1, but “extreme” answers (1=never buy organic products, 4=regularly buy organic products) were filtered for assessment. The reduced number of cases (N=76) confirms the trends explored in CM 1: results are significant (χ^2 28,491 ***); attitude (F 34,219 ***) is far more relevant than subjective norm (F 4,389 *) in explaining the behaviour. However, the overall percentage of predicted behaviour is reduced from 77,7 % (CM 1) to 75 % (CM 2).

Table 2 Predictive discriminant analysis - behaviour (1)

Variable	Discriminant Function Coefficient		F	
	CM 1 (N=292)	CM 2(N=76)	CM 1 (N=292)	CM 2 (N=76)
Attitude	0,991	0,851	21,303 ***	34,219 ***
SN	0,000	0,048	1,393	4,389 *
Overall χ^2			20,486 ***	28,491 ***
		Predicted Group-Classification		
Actual Group Classification		Buy never or little	Buy regularly	Total
CM 1) (N=292)	Buy never or little	203 (79,9 %)	51 (20,1 %)	254 (100 %)
	Buy regularly	14 (36,8 %)	24 (63, 2 %)	38 (100 %)
	Ungrouped	30 (96,8 %)	1 (3,2 %)	31 (100 %)
CM 2) (N=76)	Buy never or little	21 (55,3 %)	17 (44,7 %)	38 (100 %)
	Buy regularly	2 (5,3 %)	36 (94,7 %)	38 (100 %)

1) 77,7% of original grouped cases correctly classified.
2) 75 % of original grouped cases correctly classified.

Exploring the relations between components of the simple model, structural and cultural variables

Relatively unsatisfied with the simple model suggested above, we now try to detect connections between (1) structural variables with subjective norm, attitude and behaviour using a t-test (Table 3), (2) cultural variables with subjective norm, attitude and behaviour, and (3) knowledge with subjective norm, attitude and behaviour using Gamma in cross tabulations (Table 4)[7].

Table 3 T-test gender and school type with attitude, subjective norm and behaviour

Variable	Gender (1,2)	Gym (1,0)	Realg (1,0)	Wkg (1,0)
Attitude	3,109 **	2,640 **		-2,026 *
Subjective Norm (SN)				
SN mother		2,370 *	-1,983 *	
SN father	-2,053 *			
SN brothers & sisters				
SN friends	2,323 *		-2,431 *	
SN colleague@school				
SN teacher				
Behaviour	3,490 **	2,116 *		

*** < 0,001 significance, ** 0,01 significance, * 0,05 significance

Table 3 reveals the importance of structural variables such as gender and school type in relation to attitude, social norm and behaviour. Girls are more likely to develop a positive attitude towards organic products, significantly more influenced by their fathers' (positive) attitude towards organic products, and more likely to buy organic products compared to boys. For boys, the opinion of their friends is more important as it is for girls.

As far as school type is concerned, in *Gymnasium* (Gym) a significantly more positive attitude towards organic products is prevalent as compared to *Wirtschaftskundliches Realgymnasium* (Wkg). In Gymnasium students also buy significantly more organic products. The importance of the norm of the attachment person "mother" is comparatively higher in Gymnasium. The subjective norm of "mother" or "friends" show a significant negative connection with the school type *Realgymnasium* (Realg).

Furthermore, the attachment of cultural patterns and knowledge with subjective norm, attitude and shopping behaviour is tested. Knowledge and the cultural pattern "party&fun" were not significantly connected to the other variables. In Table 4 only significant relations are

[7] While we have calculated all values for Table 3-6, we display only significant values.

reported. We show that respondents with the cultural pattern "classic" (i. e. students who report that books, theatre, and classic music are important in their lives) and those with the pattern "health" (i. e. students who report that health, nutrition, outdoor, environment and friends are important in their lives) have a significantly positive attitude towards organic products, while respondents in the group "digital" (i. e. students who report that television, computer and journals/comics are important in their lives) have a significantly negative attitude toward organic products.

The importance of the subjective norm (SN) of attachment persons varies also over different types of students. The "health" type is most embedded in the family (mother, father, brothers and sisters) but also peers (friends and colleagues at school), while for the "classic" type a more scattered pattern of embedding is revealed. The "party&fun" type is not significantly embedded, as is the digital type with the exception for teacher.

Table 4 also reveals that the shopping behaviour for organic products correlates significantly positive with the cultural pattern "health" and negatively with the pattern "digital".

Table 4 Cross tabulations (Gamma) cultural variables with subjective norm, attitude and behaviour

Variable	Classic	Health	Party&Fun	Digital
Attitude F15	0,279 ***	0,411 ***		-0,148 *
Subjective Norm (SN, total)	0,150 **	0,264 ***		
SN Mother	0,146 *	0,293 ***		
SN Father		0,240 ***		
SN Brothers & Sisters		0,116 *		
SN Friends	0,167 **	0,209 ***		
SN Colleague@school		0,167 **		
SN Teachers				0,168 *
Behaviour		0,338 ***		-0,247 ***

*** < 0,001 significance, ** 0,01 significance, * 0,05 significance

In addition to testing the relation between variables, which are external to the simple model (Figure 1), the relation between attitude and subjective norm as components of the model is also tested. Table 5 reveals high correlations between subjective norm – especially of family members - and attitude towards organic products. Primary socialization, i.e. the norms and values learnt at home seem to be more influential in developing a certain attitude compared to secondary socialization, which would be in the case of the normative influence of school teachers.

Table 5 Cross-table (Gamma) relation between attitude and subjective norm

Variable	Attitude (f15)
Subjective Norm (SN, total)	0,271 ***
SN Mother	0,327 ***
SN Father	0,224 ***
SN Brothers & sisters	0,166 **
SN Friends	0,226 ***
SN Colleagues at school	
SN Teachers	

*** < 0,001 significance, ** 0,01 significance, * 0,05 significance

An assessment of the relation between cultural patterns and structural variables (gender, school type) reveals that girls are more likely than boys to form preferences for the pattern "classic" while there are no specific gender differences for the other three cultural types (Table 6). Keeping in mind the relative importance of primary socialization compared to secondary socialization, we argue that *Gymnasium* is more likely to attract students with preferences for "classic" and is less likely to attract students with preferences for "digital" (instead of arguing that *Gymnasium* is more likely to form students with "classic" orientation, and less likely to form students with the pattern "digital"). Consequently, the *Realgymnasium* is more likely to attract students with preferences for "digital" and "party&fun", and less likely students with "classic" orientation. The *Wirtschaftskundliche Realgynmasium* does not significantly attract certain types of students, as far as cultural preferences are concerned[8].

Table 6 Cross-tabulations between structural (gender, school type) and cultural variables

Variable	Gender	Gym	Realg	Wkg
Classic	-5,351 *	4,350 ***	-3,049 **	
Health				
Party&fun			2,156 *	
Digital		-2,448 *	2,261 *	

*** < 0,001 significance, ** 0,01 significance, * 0,05 significance

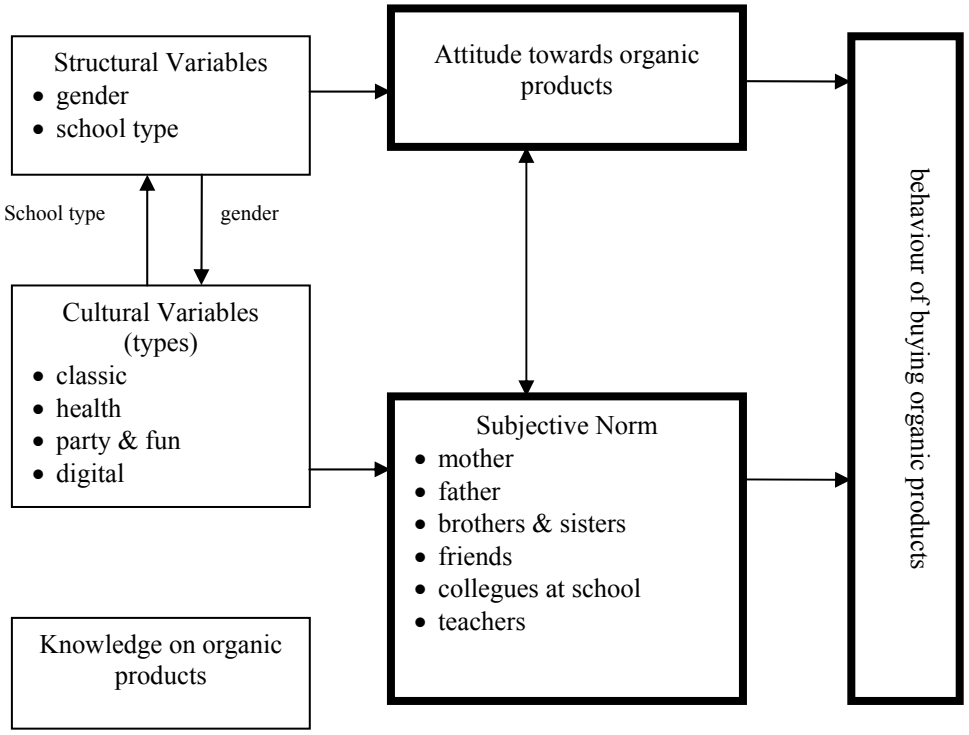
Reformulation of the simple model

The results of exploring the relations between the endogenous variables of our initial, simple model (Figure 1) and exogenous structural variables and cultural patterns lead us to extend the simple model. Figure 2 shows the extended model and at the same time summarizes the significant connections between the different variables as explored in Tables 3-6. The Theory

[8] We assume a large part of the readership of this discussion paper is familiar with the Austrian school system. It is therefore beyond the scope of this paper to discuss differences in curricula between these school types.

of Reasoned Action still serves as a basic conceptual framework of the analysis. In addition to attitude and subjective norm Figure 2 also includes structural variables, cultural variables and knowledge for explaining behaviour.

Figure 2 Extended model of shopping behaviour for organic products



Source: Simple model (Figure 1), extended on the basis of empirical results

Test of the extended model of shopping behaviour for organic products

According to the test of the simple model, the extended model is tested using discriminant analysis to explain the self-reported behaviour of buying organic products among secondary students in Vienna.

In the results, we notice that the predicted group behaviour is to 70,0 % for students buying never or little organic products, and 80,6 % for those who regularly buy organic products. The prediction can be increased to 87,2 % and 88,9% respectively, by reducing the analysis to "extreme cases" (Table 7).

Both, calculation methods of the model are highly significant (CM 1: χ^2 37,13 **; CM2: χ^2 47,47 ***) and positive attitude of the students towards organic products, subjective norm of the father, and "health" preferences are useful to predict behaviour of buying regularly. It is

revealed that preferences for "digital" explain low levels of buying behaviour. In addition, the subjective norm of friends and colleagues predicts buying regularly in CM 2, as does female gender.

Table 7 Predictive discriminant analysis - behaviour (2)

Variable	Discriminant Function Coefficient		F	
	CM 1 (N=279)	CM 2(N=75)	CM 1 (N=279)	CM 2 (N=75)
Attitude	0,611	0,567	20,422 ***	29,454 ***
SN Mother	0,009	-0,021	3,892	3,546
SN Father	0,416	0,338	7,976 **	9,635 **
SN brothers&sisters	-0,216	-0,006	0,240	3,697
SN friends	0,125	0,201	2,790	19,417 ***
SN colleagues	-0,040	0,121	0,613	8,506 **
SN teacher	-0,064	0,057	0,186	0,272
Gender	-0,085	-0,121	2,068	6,464 *
Gym	-0,056	-0,193	0,737	0,302
Realg	-0,139	-0,365	0,715	0,817
Wkg			0,001	0,216
Classic	-0,291	-0,216	0,069	0,182
Health	0,275	0,397	8,141 **	16,226 ***
Party&Fun	0,082	0,076	0,017	0,552
Digital	-0,383	-0,383	8,371 **	11,236 **
Knowledge	0,165	0,060	1,461	1,526
Overall χ^2			37,13 **	46,474 ***
		Predicted Group Classification		
Actual Group Classification		Buy little or never	Buy regularly	Total
CM 1) (N=279)	Buy little	170 (70,0 %)	73 (30,0 %)	243 (100 %)
	Buy regularly	7 (19,4 %)	29 (80,6 %)	36 (100 %)
	Ungrouped	27 (84,4 %)	5 (15,6 %)	32 (100 %)
CM 2) (N=75)	Buy little	34 (87,2 %)	5 (12,8 %)	39 (100 %)
	Buy regularly	4 (11,1 %)	32 (88,9 %)	36 (100 %)

1) 71,3 % of original grouped cases correctly classified.
2) 88,0 % of original grouped cases correctly classified.

Discussion and conclusion

Despite a growing body of social studies on various aspects of organic farming, preferences of different consumer groups have not yet received full attention. This is especially true for students. Our literature review revealed that only a few studies have been conducted to explore the attitudes of the young generation towards organic farming (Leitner et al. 2005, Freyer et al. 2005). This paper is meant to contribute to a better understanding of factors that shape and influence the shopping behaviour of high school students in Vienna with respect to organic products. A data set of 340 questionnaires from high school students in Vienna serves as empirical basis for the analyses. The Theory of Reasoned Action (Fishbein and Ajzen 1975, Ajzen and Fishbein 1980) has been used as a theoretical framework and, according to the

needs of this study, has been adjusted to an initial, simple model of students' shopping behaviour towards organic products. In a first step of the analysis this simple model of behaviour was tested, using two determinants, i.e. attitude and subjective norm. In a second step, the bivariate relations between different structural and cultural variables and variables of the simple, initial model were explored in order to improve the initial model. Finally, the simple model was extended. Discriminant analysis was employed to determine the contribution of attitude, subjective norm, cultural patterns and structural variables in order to explain the shopping behaviour (organic products) of high school students in Vienna.

It has been demonstrated that the simple model is valuable in predicting the self-reported behaviour of buying organic products on the basis of attitude and subjective norms. However, we have found that the degree of explanation can be increased by using the extended model, which includes social structure and cultural values into the model. The extended model gave further insights into the relative importance of primary and secondary socialization with respect to formation of attitude and behaviour.

Knowledge and secondary socialization have no or only a relatively small degree of impact on the formation of the shopping behaviour compared to primary socialization. Our research demonstrated that especially the subjective norm within the family (i.e. primary socialization) shows significant correlations with attitude and shopping behaviour towards organic products. A similar study (conducted in agricultural high schools in Austria) also found that secondary socialization is relatively ineffective. Freyer et al. (2005) found that a teachers' positive attitude towards organic agriculture does not translate into students' positive attitudes. They argue that the "missing link between the attitudes of teachers and students' opinions and intentions may indicate that there are other factors than education (…) essential" (Freyer et al. 2005:417), which could be – according to our findings – the influence of parents at home (primary socialization). Our results further confirm the study of Freyer et al. (2005), that knowledge is not related to the development of attitudes and behaviour towards organic products. A higher degree of knowledge does not necessarily lead to positive attitudes or higher levels of shopping organic products. In addition, gender differences have been affirmed: girls are more likely than boys to have a positive attitude towards organic products and are more willing to consume organic products.

Cultural orientations have received increasing importance in consumer and cross-cultural research, as a common ground that is "shared, at least to some extent, by people within a culture, and can hence be used to characterize the psychological similarities within, and the

differences across cultures“ (Grunert and Juhl 1995: 40). Our research shows that sub-cultural differentiations such as different preferences in activities and general aspects in life (books versus comics, car/motorbike versus outdoor activities etc.) are also good predictors to explain attitudes and self-reported behaviour towards buying organic products. Following Grunert and Juhl (1995) we could further interpret cultural orientations and a positive attitude towards organic products and consumption of organic products as part of a broader and higher level of environmental attitude or concern. Consequently, it would be interesting to determine in how far self-reported behaviour of buying organic products is related with other environmentally concerned behaviours (such as choice of transport, recycling of waste, etc.) or whether a positive attitude towards organic products and consumption of organic products are influenced or determined by environmentally concerned behaviour.

Our results have shown that primary socialisation is more important in shaping behaviour as compared to secondary socialization. This contradicts the common sense of peer pressure in schools (for example in the desire of students to buy certain cloths…). However, it remains open if this is specific to organic products, or indeed a more general pattern. More so, an assessment of whether school types form different cultural dimensions, attitudes and behaviour or attract different types of students would be an interesting research topic.

From our point of view, the most interesting research issue is to further assess in how far secondary socialization can change attitudes and behaviours as learnt in early childhood. Our results indicate that high levels of knowledge or experiences in schools cannot profoundly change attitudes and behaviours as they are formed at home in early childhood. This would have far reaching implications also for design of educational goals or policies, as this would mean, that it is very difficult to change people’s behaviour.

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Appendix

Table 8 Overview on Variables

Model of Reasoned Action	
Attitude towards organic farming:	
In general, what do you think of organic products?	Ordinal 1-7 1 nothing at all, 7 very much
Subjective Norm: $\sum sn_i * sn_j / x$	Compute x=0, if $sn_i * sn_j \neq 0$ compute x=x+1
Relative importance of attachment figure • Mother • Father • Brothers & sisters • Friends • Colleagues at school • Teachers	Ordinal 1-5 1 not important at all, 5 very important
Perceived opinion of attachment figure towards organic products	Ordinal 1-5 1 nothing at all, 5 very much
Behaviour	
Do you buy organic products?	Four groups 1 never (n=42), 2 rarely (n=84), 3 at times (n=140), 4 regularly (n=39). Model 1: recoded into 2 regularly, 1 at times, rarely, never Model 2: filtered IF f6 = 4 OR 1
Extended Model	
Subjective Norm X: snxi*snxj	
Relative importance of attachment figure • Mother • Father • Brothers & sisters • Friends • Colleagues at school • Teachers	Ordinal 1-5 1 not important at all, 5 very important
Perceived opinion of attachment figure towards organic products	Ordinal 1-5 1 nothing at all, 5 very much
Structural variables	
Gender	Dichotomy 1 girl, 2 boy
School type	Dichotomy Gymnasium (Gym) (1,0) Realgymnasium (Realg) (1,0) Wirtschaftskundliches Gymnasium (Wkg) (1,0)
Cultural Factors	
What is important in your life	16 items, 5 very important, 1 not important at all
Factor Analysis: Four different types	Ordinal, z-transformation Classic Health Party&Fun Digital
Knowledge on organic products ∑(d+l)	Ordinal
Which denominations characterise organic products?	Out of 8 denominations 2 refer to organic products (1 right, 0 wrong answer)
Which of the following labels characterize organic products?	Out of 5 labels 4 were organic products' labels (1 right, 0 wrong answer)

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