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Intention to consume seafood—the importance of habit

Pirjo Honkanen[a,*], Svein Ottar Olsen[b], Bas Verplanken[c]

[a]Norwegian Institute of Fisheries and Aquaculture Research, Post Box 6122, NO-9291 Tromsø, Norway
[b]Norwegian College of Fishery Science, University of Tromsø, NO-9037 Tromsø, Norway
[c]Department of Psychology, University of Tromsø, NO-9037 Tromsø, Norway

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Abstract

The role of habit strength and past behaviour were studied in order to gain a better understanding of seafood consumption behaviour. A sample of Norwegian adults ($N=1579$) responded to a self-administered questionnaire about seafood consumption habits, past frequency of seafood consumption, and attitude towards and intention to eat seafood. Structural equation modelling revealed that past behaviour and habit, rather than attitudes, were found to explain differences in intention, indicating that forming intention does not necessarily have to be reasoned. The results also indicated that when a strong habit is present, the expression of an intention might be guided by the salience of past behaviour rather than by attitudes. The findings of this study might thus have consequences for dietary interventions.
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Introduction

Although we often talk about repetitive behaviours such as eating, smoking, or driving a car as *habits*, habit is not part of many the models that are most prevalent in studying such behaviours, i.e. the Theory of Reasoned Action (TRA; Fishbein & Ajzen, 1975) and the Theory of Planned Behaviour (TPB; Ajzen, 1991). Both these theories suggest that behaviour is guided by attitudes, norms, and, in the case of the TPB, perceptions of control. We suggest that habit plays an important part in understanding repetitive behaviour such as food consumption.

Seafood has been shown to have positive effects on people's health (Altekurse, Timbo, Headdrick, & Klontz, 1995; Trondsen, Braaten, Lund, & Eggen, 2003), and health authorities have an interest in promoting seafood consumption. It is, therefore, important to learn what influences seafood consumption, and under which conditions. If food consumption has habitual qualities, then this should have consequences for the persuasion strategies that should be used to influence people's eating habits.

The habit concept

In the literature on the relationship between attitude and behaviour, the role of habit has always been elusive (e.g. Ajzen, 2002; Ajzen & Fishbein, 2005; Eagly & Chaiken, 1993; Ouellette & Wood, 1998). A major problem is the way habit has been conceptualized and measured. Drawing on the behaviourist tradition in psychology (e.g. Hull, 1943), habit is usually measured as past behavioural frequency (e.g. Ronis, Yates, & Kirscht, 1989; Triandis, 1980). However, in their *definition* of habit, most writers on habit include the fact that habit is repeated behaviour that has gained automatic qualities, which needs not be the case for all repeated behaviour (Ajzen, 2002). For instance, Triandis (1980) defined habit as "… situation-behaviour sequences that are or have become automatic, so that they occur without self-instruction" (p. 204). Verplanken and Aarts (1999) describe habits as "… learned sequences of acts that have become automatic responses to specific cues, and are functional in obtaining certain goals or end states" (p. 104). Thus, it can be argued that although repetition is a necessary condition to develop a habit, habit should be distinguished from behavioural frequency. In a series of

* Corresponding author. Tel.: +47 77 62 90 37; fax: +47 77 62 91 00.
E-mail addresses: pirjo.honkanen@fiskeriforskning.no (P. Honkanen), sveinoo@nfh.uit.no (S.O. Olsen), verplanken@psyk.uit.no (B. Verplanken).

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studies, Verplanken (2005) demonstrated the discriminant validity of habit with respect to frequency of occurrence. For instance, in one study an independent measure of snacking habit predicted later snacking behaviour not only over and above measures contained in the theory of planned behaviour, but also past snacking behaviour. Relevant to the present context, Verbeke and Vackier (2005) found the habit of fish consumption as a distinct component within a set of items measuring perceived behavioural control, and also found that this habit component was a strong predictor of fish consumption over and above variables contained in the theory of planned behaviour. Corroborating the mindless character of habits, Wood, Quinn, and Kashy (2002) asked participants to provide hourly reports of their ongoing experiences, and found that habitual behaviour was associated with relatively little behaviour-relevant thoughts.

If one accepts the mainstream definitions of habit, which include both the elements of repetition and automaticity, it follows that a measure of past behavioural frequency is not a sufficiently valid measure of habit. In order to accommodate to that notion, Verplanken and Orbell (2003) presented a 12-item self-report measure of habit, which includes subjective experiences of repetition as well as automaticity. The automaticity concept is further broken down into facets that people may easily reflect on, i.e. a lack of awareness, lack of control, and mental efficiency (doing things in parallel). This measure showed good psychometric properties, and showed convergent as well as discriminant validity.

Habit, past behaviour and food choice

Food choice is a complex function of sensory (taste, odour, texture) and non-sensory factors, for example attitudes, health (Bech-Larsen & Grunert, 2003; Miles & Frewer, 2001), price (Ritson & Petrovici, 2001), ethical concern (Frewer, Howard, & Shepherd, 1997; Sparks, Shepherd, & Frewer, 1995), personal values (Furst, Connors, Bisogni, Sobal, & Falk, 1996), social influence (Shepherd, 1989), availability (Marshall, 2001), perceived risk (Frewer, Howard, Hedderley, & Shepherd, 1996), convenience (Jaeger & Meiselman, 2004), and self-identity (Charng, Piliavin, & Callero, 1988).

Various models have been introduced to explain food choice. Most of them include aspects of food, individual and the environment as determinants for food choice. General models like Khan (in Shepherd, 1989) and Randall and Sanjur (1981), try to explain food choice through preferences for food. These models do not specify or suggest the likely mechanisms for the factor influences on food choice; models serve thus more as a guideline to study parts of such models. Habit, or past behaviour is included in some of the models (Booth & Shepherd, 1988; Furst et al., 1996). For more detailed discussion of the different food choice models, see Shepherd (1989).

Shepherd (1989) suggested that the different factors affecting food choice could be integrated by studying personal attitudes and beliefs. Fishbein and Ajzen's (1975) Theory of reasoned action and the Theory of planned behaviour (Ajzen, 1991) claim that all influences on social behaviour work though beliefs and attitudes, social norm and perceived behavioural control. The Theory of planned behaviour models behaviour through concepts of intention, attitudes, subjective norms, and perceived behavioural control. Intentions are generally good predictors of behaviour. Sheeran (2002) found in a Meta study that the overall correlation between intentions and behaviour was 0.53. In marketing and consumer behaviour literature, intention is often used as a surrogate for buying behaviour, choice, and loyalty (Dennison & Shepherd, 1995; Macintosh & Lockshin, 1997).

These theories have been used extensively in social behaviour and food choice literature. Several modifications of the theories have been suggested, e.g. nutritional knowledge (Shepherd & Stockley, 1987) and self-identity as additional predictors of behaviour (Shepherd & Sparks, 1994). Past behaviour has also been incorporated in the theory of planned behaviour approach by some researchers (Bagozzi, Wong, Abe, & Bergami, 2000; Conner, Norman, & Bell, 2002; Saba & di Natale, 1999). Verbeke & Vackier (2005) introduced a measure of habit as a part of the perceived behavioural control construct, thus departing from the past behaviour concept as an indicator of habit.

The results of using the TPB in food choice context have been somewhat conflicting. Attitudes have proved to have most influence on intentions in most studies, but especially the role of subjective norm has not been convincing in food-related studies (Saba & di Natale, 1998; Sapp, 1991; Stafleu, de Graaf, van Staveren, & Schroots, 1991). The ability to of these models to explain variance in the food choice has also varied considerably (Armitage & Conner, 2001). Attitudes, others' opinions and perceived ability to perform behaviour are likely factors to influence behaviour when it is new (Ouellette & Wood, 1998). However, several studies in other contexts have shown that past behaviour and/or habit influence intentions over and above attitudes (Bagozzi, Baumgartner, & Yi, 1989; Bamberg, Ajzen, & Schmidt, 2003; Ouellette & Wood, 1998; Saba & di Natale, 1999).

The present study has two purposes: The first is to examine whether habit has an independent contribution to the prediction of intention over and above past behaviour and attitude. This would thus demonstrate that habit, rather than past behaviour, is a psychological construct that has explanatory power (cf. Ajzen, 2002). In other words, we address the question of whether habit is more than past behavioural frequency. The second purpose is to investigate the basis of intentions. Holland, Verplanken, and van Knippenberg (2002) demonstrated that when participants were asked to express an attitude, those who have weak attitudes base their judgment on their recent behaviour. This result is in line with self-perception principles (Bem, 1972). Following these principles, when a person is asked to express an attitude but lacks a clearly formulated opinion,

this person will base a judgment on the most salient cognition available, which might often be one's own recent behaviour. In a similar vein, we assume that such a mechanism may play a role when persons are asked to express an intention. Thus, we anticipate that those who have well-developed intentions will show a relatively strong relationship between attitude and intention. Their intention then represents a motivation to act. Those who do not have well-developed intentions may use their past behaviour as a basis for their response, as this may be the most salient piece of information available. We anticipate that the former group (those who base an intention on their attitude) are those who have not developed strong habits, whereas the latter group (those who base an intention on past behaviour) are those with strong habits. This hypothesis could be tested only because we have separate measures of habit and past behaviour.

Method

Sample and design

The data used in this study are a part of a larger survey of Norwegian consumers' attitudes towards and perceptions of different foods. A cross-sectional postal survey was used as a research instrument. Two thousand five hundred questionnaires were sent to a sample of Norwegian individuals over 15 years by a professional marketing research agency. The large, representative sample ensures the external validity of the study. The participants were pre-recruited by telephone in advance in order to ensure better response rate. The sample characteristics were similar to that of the Norwegian population in general on age, gender, education, income and geography. One thousand six hundred and three subjects completed the questionnaire (64%), of which 1579 questionnaires were usable. Of the participants, 47% ($n=740$) were male while 53% (834) were female, and five did not report gender. Participants' ages varied from 15 to 98, the average being 48 years.

Measurement of the constructs

Attitude towards eating seafood

Attitude towards eating seafood was measured with three 7-point semantic differential scales: 'Bad–Good; Unpleasant–Pleasant; Unsatisfying–Satisfying', coded from 1 to 7. These items are commonly used in food-related studies (see e.g. Armitage & Conner, 1999).

Past consumption behaviour

Past behaviour was a frequency measure. The subjects were asked to state 'How many times on average during the last year have you eaten the following types of seafood (whole fish or fillets, minced fish and fish-based pasta): 4 times or more per week, 3 times a week, twice a week, once a week, once every fortnight, once a month or more seldom, never'. These responses were coded from 7 to 1, respectively.

Habit

Habit was measured by a 12-item self-report index of habit strength scale (Verplanken & Orbell, 2003). A 7-point Likert scale was used. We chose to reduce the number of items in order to avoid estimating a too complex model, using the procedure created by Voss, Spangenberg, and Grohmann (2003), where the fit indexes and χ^2 difference testing were used to eliminate items. Items with the lowest item-to-total correlation were eliminated. The process was iterated by recomputing the item-to-total correlations, deleting the lowest item, fitting a CFA model (LISREL 8.54) and conducting the difference test. The process was stopped when the χ^2 difference test was no longer significant. The scale then consisted of four items, starting with the stem 'Eating seafood is something': '…I do frequently/… I do without having to consciously remember/ … I feel weird if I don't do it/… I don't have to think about doing it'. These four items represent the four different facets of the habit: frequency, lack of awareness, lack of control, and mental efficiency.

Intention to consume seafood

Intention to consume seafood was measured with scale consisting of three items, indicating how often the subjects expected, planned, or tried (see for example Conner et al., 2002) to consume organic food during the next 2 weeks (from 0 to 14 days), coded from 0 to 14. We chose a frequency measure because it is deemed the most appropriate scale to use when the behaviour in question is repeated behaviour, as food consumption is (see e.g. Courneya, 1994).

Results

Plan for analysis

First, descriptive statistics and bivariate relations were calculated. Then, a measurement model was run by LISREL 8.54 (Jöreskog & Sörbom, 2003) to test the discriminant validity and construct reliability of the scales used in the structural model. Next, a structural model was analysed in order to test whether habit contributes to explaining consumption intention. Finally, a multiple group analysis in LISREL 8.54 was performed, conducting a test for moderation effect of habit strength on attitude–intention relation. The sample was split in two extreme groups including only the highest and lowest quartiles in the study. This resulted in weak habit group with 353 respondents and a strong habit group with 387 respondents.

The fit in LISREL models is normally reported by χ^2. We will also report it this way, although the sample size makes

Table 1
Correlations and descriptive results for attitude, intention, habit, and past behaviour measures

	Attitude	Intention	Habit	Past behaviour	Mean	Std. deviation
Attitude	1.00				6.40	0.83
Intention[a]	0.43	1.00			2.56	2.31
Habit	0.53	0.57	1.00		4.36	1.45
Past behaviour[a]	0.33	0.67	0.54	1.00	2.08	1.41

All correlations were significant at 0.01-level.
[a] Measured as times per week.

it rather inappropriate to use. Two other fit indices are reported: RMSEA (Root Mean Square Error of Approximation), and GFI (Goodness of Fit Index). RMSEA should be <0.08, which indicates an acceptable model fit, while RMSEA below 0.05 indicates a good model fit. GFI should be greater than 0.90 (Byrne, 1998).

Descriptive results

Table 1 shows the correlations between the constructs in our study. All correlations were significant at 0.01 level. The table indicates that attitudes towards seafood were very positive (6.4 on a scale from 1 to 7). It also shows that participants intended on average to eat seafood 2–3 times during the next week. The past behaviour measure showed that seafood was consumed twice a week. The habit measure (mean = 4.4) suggests that seafood consumption had a strong habitual component. Habit was significantly correlated with intention ($r=0.57$), attitude towards seafood ($r=0.53$) and past behaviour ($r=0.54$). The strongest correlation, however, was between past behaviour and intention ($r=0.67$).

Reliability and validity of measures

A confirmatory factor analysis was run for the constructs in the model in order to ensure reliability and validity of the constructs. The fit measures for the overall measurement model were acceptable with RMSEA = 0.070 and GFI = 0.96. χ^2 was significant, but a large sample size tends to give a significant χ^2, thus making it necessary to study other fit indices. The composite reliability was high for all constructs, ranging from 0.82 to 0.95, thus exceeding the threshold value of 0.7 (Bagozzi & Yi, 1988). Table 2 also shows the factor loadings and *t*-values for the indicators. The individual item loadings on the constructs should be >0.5 (Hair, Anderson, Tatham, & Black, 1995) in order to ensure convergent validity. The standardised factor loadings were highly significant (*t*-values >10), ranging from 0.43 to 0.96.

Structural model results

A structural equation analysis was conducted for our model for seafood consumption intention, where attitudes, habit, and past behaviour explain intentions. The model had an acceptable fit (RMSEA = 0.07, GFI = 0.96), and the explained variance was quite high, 61%. All path coefficients were significant at 0.05 level.

Fig. 1 shows that past behaviour was the most important predictor of intention for fish consumption ($\beta=0.47$), followed by habit measure ($\beta=0.35$). Attitudes seemed to have quite weak, but significant influence on intention when the habit and past behaviour measures were included in the model ($\beta=0.07$).

Moderation model results

In the second part of our analysis, we studied whether there were differences in intentions between people with weak and strong habits by testing whether habit strength was a moderator of the attitude–intention and past behaviour–intention relationships. We used the lowest and highest quartiles of the sample on the habit measure as weak and strong habit groups in order to split the sample into two groups: Weak and strong habits. A multi-group analysis in LISREL was used to assess the importance of habit strength as a moderator (see e.g. Homburg & Giering, 2001). Differences in χ^2 values between a constrained and

Table 2
Standardised factor loadings and reliabilities for the attitude, intention, habit, and past behaviour

Constructs and indicators	Standard loading	*t*-values*	Composite reliability[a]
Attitude			0.83
Good–bad	0.43	15.84	
Pleasant–unpleasant	0.90	35.05	
Unsatisfactory–satisfactory	0.96	37.55	
Intention			0.95
Expect to eat	0.92	44.12	
Plan to eat	0.94	45.15	
Will try to eat	0.91	40.30	
Habit			0.82
…I do frequently	0.77	30.22	
…I do without having to consciously remember	0.78	30.72	
…I feel weird if I don't do it	0.59	21.85	
…I don't have to think about doing it	0.78	30.80	
Past behaviour			
Frequency of seafood consumption	1	49.50	
Fit measures: χ^2 (39df) = 294 p = 0.000 RMSEA = 0.070 GFI = 0.96			

*$p<0.05$. *t*-values test the significance of the parameter estimates.
[a] Composite reliability = $(\Sigma \text{ std. loading})^2/((\Sigma \text{ std. loading})^2+\Sigma\in)$.

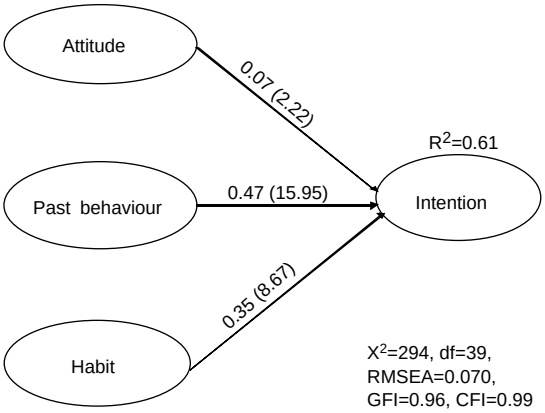


Fig. 1. Structural model path coefficients and model fit.

unconstrained model determined whether habit strength was a moderator for the studied relationships. We first conducted an overall χ^2 significance test for habit as a moderator, using a model that imposes equality constraints on all path coefficients and a general model that allows parameters to vary freely across the subgroups. The results are shown in Table 3. The global fit measures were acceptable (RMSEA = 0.080; GFI = 0.97), although the χ^2 was significant and large (χ^2 (30) = 101.2).

All path coefficients were significant, and the significant χ^2 difference between the groups for past behaviour–intention relation showed that this relation was indeed moderated by habit strength ($\Delta\chi^2 = 15.4$). This indicates that the influence of past behaviour on intention differed between weak and strong habit groups. The moderation effect was not significant for attitude–intention relation ($\Delta\chi^2 = 0.2$). This indicates that the attitude–intention relation was equally strong for both strong and weak habit groups. The first effect was as expected, partly confirming our second hypothesis, while the lack of the second effect was unexpected. Looking at the magnitude of the path coefficients for attitude–intention relation for the two groups ($\beta = 0.19$ for weak habit group, $\beta = 0.17$ for the strong habit group), there is a slight tendency towards our predictions, namely, that attitudes were more strongly correlated with intentions in the weak attitude group compared to the strong attitude group, though both attitudes and past behaviour remained significant for both groups. However, this result should be interpreted cautiously given that the modification analysis did not confirm this pattern.

Discussion

The present study examined the role of habit and past behaviour in relation to intention to consume seafood. Both past behaviour and habit proved to have strong influence on intention. We also found a moderation effect of habit on the past behaviour–intention relation, as expected: Strong habits tended to enhance the past behaviour–intention relation, while people with weak habits had a weaker relation between past behaviour and intention. These results are in accordance with earlier results (see e.g. Ouellette & Wood, 1998). As mentioned in Section 1, Verbeke and Vackier (2005) also found habit as a strong predictor of fish consumption. Our findings are very much in line with their study. However, whereas in the Verbeke and Vackier (2005) study habit emerged as a factor amongst perceived behavioural control items, in the present study we used the Self-Report Habit Index (Verplanken & Orbell, 2003), which has been designed specifically to measure habit in terms of its constituting facets. The availability of such an instrument opens up new possibilities for investigating the relationships between habit, past behaviour, attitudes, intentions, and later behaviour. We would argue that in future studies on food consumption independent measures of habit such as the SRHI are strongly recommended, and may significantly enhance the predictive power of existing sets of antecedents.

Attitudes were positively related to intention as well, but the relation was weaker than those of past behaviour–intention and habit–intention, in line with Verbeke and Vackier (2005). In fact, past behaviour had the strongest impact on intention to consume seafood, followed by habit. Trafimov (1999) found that past behaviour might in fact function as a priming effect on future intention, making past behaviour a predictor of intention to perform behaviour later. He reasoned that performing behaviour increases its cognitive accessibility, which again affects intentions to perform the behaviour. We may have obtained a strong past behaviour–intention relation because we asked people to report and thus recall eating seafood. The results also showed that habit was strongly related to intention. This may indicate that forming of intention does not have to be reasoned, it can

Table 3
Parameter estimates for habit as a moderator model

Paths	Weak habit		Strong habit		χ^2 difference (Δdf = 1)
	Estimate	*t*-value	Estimate	*t*-value	
Attitude → intention	0.19	4.33**	0.17	5.14**	2.21 ns.
Past behaviour → intention	0.40		0.67	19.69**	15.4
Global goodness-of-fit statistics: $\chi^2(30) = 101.2$ $p = 0.000$ RMSEA = 0.080 GFI = 0.97					

$\Delta\chi^2$ for all paths set equal across weak and strong habit subgroups (Δdf = 2): 17.02 ($p < 0.001$). **$p < 0.05$, ns = Non-significant. Weak and strong habit groups.

indeed be habitual. The results thus suggest that neither habit nor past behaviour should be disregarded as empty constructs in studies of behaviour. We have to be careful, however, in making such inferences from our study, because we actually did not measure later behaviour. Intentions are, however, generally good predictors of behaviour. The overall correlation between intentions and behaviour was found to be 0.53 by Sheeran (2002) in a meta-study.

Our study seemed to confirm in part the second hypothesis of intention expression being dependent on habit strength. Our results showed that those with strong habit showed a strong relation between past behaviour and intention, and a weaker relation between attitude and intention. Those with weak habits also had quite strong relations between past behaviour and intention, but clearly weaker than in the strong habit condition. This may indicate that people with strong habits base their expression of intentions on a reflection of their past behaviour. Attitudes still had significant effect on intentions as well, but the relationship was somewhat weaker in the strong habit group compared to the weak habit group. We would have expected that those with a weak habit would base their intention mainly on attitudes. This was not confirmed in our study, even though there seemed to be a difference in the magnitude of path coefficients for the attitude–intention relation between the weak and strong habit groups. The χ^2 difference for this model was not statistically significant. One explanation for the non-significant χ^2 might be the modest impact attitude had on intention in the initial model. More research is needed in this area. Measuring the strength of intentions might be an important addition in order to find further evidence of our second proposition that well formed, strong intentions are primarily based on attitudes, while weak intentions are based on past behaviour. Another interesting road to explore would be to experimentally manipulate intention strength, and measure the differential impact of past behaviour or habit and attitude on the expression of an intention and behaviour.

Understanding the theoretical bases of habit is important for practitioners who wish to change behaviour or behavioural intentions, such as health authorities. Eating habits have become an important social and health issue, and the target of public campaigns to make people consume healthier food. Public campaigns are often directed towards changing behaviour through changing attitudes by means of persuasive communication. This strategy assumes that attitudes are in fact important predictors of intentions and behaviour. This appears often not the case when strong habits have been formed (e.g. Ouellette & Wood, 1998; Verplanken, Aarts, van Knippenberg, & Moonen, 1998; Verplanken, Aarts, van Knippenberg, & van Knippenberg, 1994). Therefore, even if we manage to change attitudes among individuals with strong habits, the attenuated attitude–intention–behaviour relationships among these individuals make it unlikely that such interventions will succeed in changing behaviour. An alternative strategy is to focus directly on breaking undesirable habits, and replacing these with new behaviour. One approach that could be taken is to use implementation intentions. Implementation intentions are specific plans of action, which specify where, when, and how a person should act (e.g. Gollwitzer & Schaal, 1998). In other words, implementation intentions specify links between cues in the environment (e.g. shopping in the supermarket) and specific responses (e.g. buy fish instead of meat). If such plans are aimed at the very cues and responses which form old habits, these may thus be replaced by new behaviour (Verplanken, 2005; Verplanken & Aarts, 1999; Verplanken & Faes, 1999). However, one must realize that such interventions are difficult, and seem only feasible in the form of small-scale projects.

Another problem for persuasive communication aimed at strong habit segments is that habits go along with a lack of interest for information (Verplanken, Aarts, & van Knippenberg, 1997). The other side of the habit coin is that if we manage to change people's behaviour in a healthier direction, we want those changes to last. In other words, interventions should aim at establishing new habits. One element of such efforts is to focus on proper reinforcement. Another way would be to strengthen people's self-regulation competence (Verplanken, 2005). In all, from a theoretical as well as from a practical perspective, habit is an important construct to consider in the food domain.

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