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Consumer style and health: The role of impulsive buying in unhealthy eating

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Abstract
Health psychologists have given surprisingly little attention to consumer behavior. This study focuses on the relationship between an impulsive consumer style and unhealthy eating. In a survey, moderate to strong correlations were found between low self-esteem, dispositional negative affect, impulse buying tendency, snacking habit, and eating disturbance propensity. Structural equation modeling was used to test a model of relations between these variables. Impulse buying tendency was strongly associated with snacking habit, which in turn was related to eating disturbance propensity. Impulse buying, though in itself a pleasurable activity, seemed driven by feelings of low self-esteem and dispositional negative affect. Low self-esteem had a direct link to eating disturbance propensity. The data fit a self-regulation explanation. The study demonstrates the relevance of consumer style for health-related behaviors.

Keywords: *Impulse buying, snack foods, eating disturbances, self-esteem, trait mood, emotional distress, consumer style*

Why do some people damage their health by smoking, drinking, or eating too much, while others maintain a healthy lifestyle? In search of antecedents of health-related behavior, health psychologists have used and developed a number of social cognitive models, such as the theory of reasoned action (Ajzen & Fishbein, 1980), the theory of planned behavior (Ajzen, 1991; Conner, Norman & Bell, 2002), the health belief model (Janz & Becker, 1984), protection motivation theory (Rogers, 1983), social cognitive theory (Bandura, 1986), and the health action process approach (Schwarzer, 1992). Although these models differ in scope, formulation, and emphasis on particular constructs, together they summarize an important set of cognitive and motivational variables related to health

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behavior, such as perceptions of risk, attitude toward behavior, behavioral intention, protection motivation, self-efficacy, self-regulatory strategies, and social norms (e.g., Armitage & Conner, 2000; Conner & Armitage, 2002; Lamb & Sissons Joshi, 2004; Luszczynska & Schwarzer, 2003). However, there is an unknown number of other variables that are not specifically formulated in terms of health consequences or health behaviors, but nevertheless, may be related to health conditions. We wish to demonstrate that consumer style is an interesting example of such a variable. Consumer style refers to the way consumers make decisions and buy products. This seems especially relevant in the domain of eating and food choice. Put simply, unhealthy eating starts with unhealthy shopping. The present investigation focuses on the relationships between an impulsive consumer style, the habitual consumption of unhealthy snack foods, and the propensity to develop eating disturbances. We first discuss impulsive buying, and then present a model that integrates impulsive buying and unhealthy eating into an affective and self-evaluative context.

Impulsive buying

Impulsive buying has been described as making unplanned and sudden purchases, which are initiated on the spot, and are accompanied by a powerful urge and feelings of pleasure and excitement (Rook, 1987). Impulsive purchases are often triggered in and by a shopping environment (e.g., Beatty & Ferrell, 1998). However, there is a strong evidence for chronic individual differences in consumers' propensity to buy on impulse. For instance, Verplanken and Herabadi (2001) demonstrated that a general impulse buying tendency is strongly rooted in personality. These authors developed a scale to measure the general impulse buying tendency, which correlated significantly, substantially, and meaningfully with a number of established individual difference and personality measures, including the Big Five personality dimensions. The typical high impulse buying profile is an individual (male or female) who is low on conscientiousness, autonomy, personal need for structure, and need to evaluate, but high on extraversion and action orientation.

If we focus on the immediate purchase situation, impulsive buying seems to fulfil hedonic motives (e.g., Hausman, 2000). For instance, using shopping diaries and in-store interviews, Herabadi, Verplanken, and van Knippenberg (2004) demonstrated that impulsive buyers have quite different shopping experiences than non-impulsive buyers, both at a cognitive and an affective level. At a cognitive level, impulsive buyers were shown to have hedonic rather than utilitarian considerations for their purchases. At an affective level, impulsive buyers' shopping experiences appeared to be determined by positive and high-arousal emotions such as excitement and pleasure. In contrast, non-impulsive buyers did not experience many emotions at all, making purchases largely on the basis of utilitarian considerations.

Although impulsive buying seems fun, there are reasons to believe that there is another side of this coin when we move away from the immediate purchase situation. Evidence can be found to suggest that impulsive buying may be a way to elevate unpleasant psychological states (e.g., Baumeister, 2002; Dittmar, Beattie & Friese, 1996). Rook and Gardner (1993) reported relationships between impulsive buying and positive as well as negative mood states. Other reports stress the compulsive aspect of impulse purchases (e.g., Dittmar & Drury, 2000; O'Guinn & Faber, 1989). Taking these views and findings together, it is not unreasonable to suspect the presence of 'darker motives' underlying the seemingly light character of impulsive buying, particularly among those who have a strong tendency to engage in such behavior. For these individuals impulse buying may function as a self-regulatory mechanism aimed at reducing negative feelings, especially when

these feelings have a structural basis such as a failure to live up to valued standards or low self-esteem.

Impulsive buying and unhealthy eating

We hypothesize that an impulsive consumer style is associated with impulsive eating. In the present study we focused on unhealthy snacking. Although the degree to which snacking is detrimental to a person's health depends on things such as the type and amount of snacks consumed, intake of other food, and the total energy balance, frequent snacking of high calorie, fatty and/or sweet food items between meals can be designated as unhealthy. Such snacking has also been found to lead to problems with weight control (e.g., Conner & Norman, 1996), and may go along with a reduced intake of healthy food such as fruits and vegetables (e.g., Cartwright et al., 2003). Unhealthy snacks (fatty and sweet snacks in particular) are easily available and in fact are often displayed in ways that trigger a quick and unintended purchase. It can thus be expected that the impulsive consumer is particularly vulnerable to this food category. There are other reasons to hypothesize such a relationship. Evidence exists to suggest that snacking is related to, and can be caused by, stress. For example, in a carefully designed and conducted laboratory experiment, Oliver, Wardle, and Gibson (2000) found that among emotional eaters (i.e., people with a general tendency to eat more when anxious or emotionally aroused), stress increased the intake of fatty and sweet snacks, while no such effect was present for other food categories. Conner, Fitter, and Fletcher (1999) provided evidence to suggest that the experience of daily hassles is related to between-meal snacking, especially among external eaters, i.e., those who eat in response to food-related stimuli regardless of hunger-related internal cues. Other studies provide evidence for a psycho-physiological basis of a relation between eating sweet and high-fat snacks and stress or a depressed mood by suggesting that snacks may have a palliating effect (Mercer & Holder, 1997). Snacking has also been documented as a part of eating disturbances, and has, in particular, been associated with obesity and bulimia nervosa (e.g., Rosen, Leitenberg, Fisher & Khazam, 1986), which, as a great deal of empirical work has shown, is associated with low self-esteem and emotional instability (e.g., Fairburn, Peveler, Jones, Hope & Doll, 1993). In all, snacking and eating disorder propensity thus seem related to responding to negative psychological states which are associated with relatively chronic factors related to stress and/or low self-esteem. Impulsive buying fits this pattern, as the tendency to buy on impulse may as well be fuelled by negative affect and low self-esteem.

Habituation

One aspect of unhealthy eating that has not received much attention in the literature, but seems very relevant in the present context, is habituation. Habits can be conceptualized as learned and automatic responses to specific cues, which occur in stable contexts (e.g., Ouellette & Wood, 1998; Verplanken & Aarts, 1999; Wood, Quinn & Kashy, 2002). Unhealthy snacking need not be problematic unless it occurs frequently and, in particular, habitually. There is no harm in taking the occasional snack, but developing a habit of snacking may form a significant health risk. Habits are characterized not only by the frequent occurrence of behavior, but, in particular, by being performed with minimal awareness, being difficult to control, and being mentally efficient in the sense that a habit may occur simultaneously with other behaviors or mental processes (Verplanken, 2005; Verplanken & Orbell, 2003). Habituation has a number of consequences such as an attenuated

influence of attitudes and intentions on behavior, and decreased attention to behavior- or context-relevant information (Ouellette & Wood, 1998; Verplanken & Aarts, 1999). The characteristics and consequences of habits all work against the likelihood that a habitual snacker will consider the option of not having the snack in a particular situation. Moreover, and important for the present discussion, the core characteristics of habits seem very compatible with an impulsive buying style.

An integrating model

In the study that follows we will test a model that makes a theoretically meaningful connection between consumer style (i.e., the tendency to buy on impulse) and eating behavior (i.e., habitual unhealthy snacking and eating disorder propensity). The model firstly poses a relationship between negative affect, impulsive buying and snacking habit, suggesting that snacks are among the products, which impulsive buyers typically tend to purchase, and that negative affect is the driving force, which leads to high frequencies of both behaviors. Habitual snacking is further assumed to be associated with the propensity to develop eating disturbances. Finally, chronic low self-esteem is expected to be related to dispositional negative affect, and thus to impulse buying and snacking. In addition, based on the findings in the eating disorder domain, low self-esteem is expected to be directly related to the propensity to develop eating disturbances. Self-esteem thus fulfils an integrating role in the model by its proposed relations with both consumer style and health-related variables.

Method

Participants and procedure

A survey was conducted among a convenience sample of 214 adults who were recruited among travellers at a domestic airport in Norway. There were 98 women and 114 men, while two participants did not disclose their gender. Ages ranged from 18 to 68 years ($M = 37.3$ years, $SD = 12.4$ years). Eleven participants' highest education was elementary school or high school, for 86 participants this was a vocational study, and for 112 this was college or university. Fifty-three participants were currently studying.

Measures

Self-esteem. Self-esteem was measured by the Self-Liking and Competence Scale (SLCS) developed by Tafarodi and Swann (Tafarodi & Swann, 1995; Silvera, Neilands & Perry, 2001). This scale distinguishes two dimensions of self-esteem, i.e., feelings of social worth (self-liking), and feelings of efficacy or control (self-competence), respectively. The SLSC scale measures these two dimensions with ten items for each dimension. Responses were given on five-point Likert scales, ranging from 1 (strongly disagree) to 5 (strongly agree). The items were coded such that high scores indicate positive self-esteem.

Dispositional mood. Dispositional or trait mood was measured by 24 mood adjectives (Huelsman, Nemanick & Munz, 1998). This instrument provides distinct measures of both poles of the positive and negative affect dimensions, i.e., of both the presence and absence of positive and negative mood. Thus, the adjectives measured four quadrants of this emotion schema: high positive affect (e.g., active, enthusiastic, energetic), low positive affect (e.g., tired, exhausted, worn out), high negative affect (e.g., aggravated, hostile, irritable), and low negative affect (e.g., relaxed, quiet, peaceful). Participants were asked

to rate the degree to which each of the 24 emotions was typical of their mood states during the past month.[1] Ratings were provided on seven-point scales, ranging from 1 (not at all representative) to 7 (very representative).

Impulse buying tendency. Impulse buying tendency was measured by a 20-item scale developed by Verplanken and Herabadi (2001). The scale distinguishes a cognitive and an affective facet, each measured by ten items. The cognitive facet contains items related to the lack of planning and deliberation that goes into a purchase decision (e.g., ''I usually think carefully before I buy something'', ''I only buy things that I really need''). The affective facet addresses feelings such as excitement, lack of control, and the urge to buy (e.g., ''It is a struggle to leave things I see in a shop'', ''I am the kind of person who 'falls in love at first sight' with things I see in shops''). Responses were given on seven-point Likert scales, ranging from 1 (strongly disagree) to 7 (strongly agree). The items were coded such that high scores indicate a strong impulse buying tendency. Note that the scale is general, and does not specify particular product types.

Snacking habit. Snacking was described as eating something between regular meals. Snacking habit was measured by the Self-Report Habit Index developed by Verplanken and Orbell (2003). The 12-item scale breaks down the habit concept into features such as perceived behavioral frequency (e.g., ''snacking is something I've been doing a long time''), lack of awareness (e.g., ''snacking is something I start doing before I realize I'm doing it''), lack of control (e.g., ''snacking is something I would find hard not to do''), and mental efficiency (e.g., ''snacking is something that would require effort to leave''). Responses were given on seven-point Likert scales, ranging from 1 (strongly disagree) to 7 (strongly agree). The items were coded such that high scores indicate a strong snacking habit. Note that the habit scale does not measure how often behavior occurs, but rather the degree to which a behavior has obtained the aforementioned habitual qualities. As has been argued elsewhere, these qualities better represent habit strength than the traditional behavioral frequency measures (Verplanken, 2005; Verplanken, Myrbakk & Rudi, 2004; Verplanken & Orbell, 2003).

In order to provide some evidence for the validity of the habit scale, in particular the assumption that we measured habitual snacking of unhealthy food, an open-ended question was included that asked participants to write down which snacks they usually consume. Participants mentioned up to ten items ($M = 3.25$, $SD = 3.09$). Two independent judges categorized the entries as healthy or unhealthy. The percentage of agreement was 95%. Four out of five snacks mentioned were coded as unhealthy. The most frequently mentioned unhealthy snacks were chocolate, cookies, and chips. The most frequently mentioned healthy snacks were fruit and yogurt. The correlations between the mean score on the Self-Report Habit Index of snacking and the number of healthy and unhealthy snacks were 0.12, ns (not significant), and 0.41, $p < 0.001$, respectively. The scale thus clearly represented unhealthy rather than healthy snacking habits. Eight participants who listed only ''fruit'' or fruit items were removed from the data set. Thus, although healthy snacks were sometimes mentioned, all participants' snacking behavior included predominantly unhealthy snacks.

[1] As one referee rightly commented, the scores on this measure may be influenced by events such as going on a holiday or events occurring in one's family. However, the data were collected in the middle of a semester, and it can be expected that idiosyncratic events will cancel out across the sample and thus appear as measurement error.

Eating disturbance propensity. Eating disturbance propensity was measured by the Eating Disturbance Scale (EDS-5; Rosenvinge et al., 2001). This scale was developed to measure problematic eating disturbances in normal populations. It is highly correlated with DSM-IV defined eating disorders, and high scores on the scale are in particular associated with bulimic type eating disorders. The scale has five items (''Are you satisfied with your eating habits?'', ''Have you eaten to comfort yourself because you were unhappy?'', ''Have you felt guilty about eating?'', ''Have you felt that it was necessary for you to use a strict diet or other eating rituals to control your eating?'', and ''Have you felt that you are too fat?''). Responses were given on seven-point scales, ranging from 1 (never) to 7 (every day), except for the first item, which was anchored by ''very satisfied'' and ''very unsatisfied''. The items were coded such that high scores indicate a strong eating disturbance propensity.

Results

Overview of the analysis strategy

The data were analysed into two phases. First, an exploratory approach was taken by investigating the dimensionality of the scales and by inspecting the correlations between the scales and subscales. In the second phase, the hypothesized model was tested by means of structural equation modeling. List-wise deletion of missing values on the model variables was performed, leaving 183 participants. All analyses reported in the following are based on this sample.

Scale construction and correlations

The 20 items of the SLCS to measure self-esteem were subjected to a principal component analysis with Varimax rotation. The scree-test suggested a two-component structure (the first five eigenvalues were 4.67, 1.10, 0.87, 0.70, and 0.65, respectively). The two components accounted for 57.70% of the variance. As expected, the two components represented self-liking and self-competence, respectively (Tafarodi & Swann, 1995). Factor scores of the two components were used as measures of self-liking and self-competence, respectively, which thus ensured that independent effects of these two components could be investigated.

The 24 dispositional mood items were subjected to a principal component analysis with Varimax rotation. The scree-test suggested a four-component structure (the first seven eigenvalues were 5.59, 3.34, 1.94, 1.77, 1.20, 0.93, and 0.87, respectively). The four components accounted for 54.93% of the variance. The components corresponded with the four mood factors this instrument is supposed to measure, i.e., in the order as they appeared from the analysis, high positive affect, high negative affect, low positive affect, and low negative affect, respectively (Huelsman et al., 1998). Factor scores were used to investigate the correlations of each factor independently with the other scales and subscales.

The 20 items of the impulse buying tendency scale were subjected to a principal component analysis with Varimax rotation. The scree-test suggested a two-component structure (the first five eigenvalues were 7.70, 2.02, 1.13, 1.03, and 0.95, respectively). The two components accounted for 48.59% of the variance. The first component was formed by the ten cognitive items, and the second component by the ten affective items (Verplanken & Herabadi, 2001). Factor scores were used as measures of the cognitive and affective components of impulse buying tendency, respectively.

Table I. Correlations between the two self-esteem components, the four dispositional mood components, the two impulse buying tendency components, snacking habit, and eating disturbance propensity.

		2	3	4	5	6	7	8	9	10
1.	Self-liking	0.00	0.31***	−0.35***	−0.21**	−0.02	−0.11	−0.23**	−0.08	−0.27***
2.	Self-competence		0.49***	−0.07	0.00	0.15*	0.08	0.01	0.07	−0.08
3.	High positive affect			0.00	0.00	0.00	0.02	−0.04	0.03	−0.18*
4.	High negative affect				0.00	0.00	0.10	0.32***	0.17*	0.09
5.	Low positive affect					0.00	−0.03	0.04	−0.04	0.17*
6.	Low negative affect						−0.06	0.03	0.01	0.07
7.	IBT-cognitive component							0.00	0.23**	0.02
8.	IBT-affective component								0.37***	0.22**
9.	Snacking habit									0.23**
10.	Eating disturbance propensity									

Note: *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$. Correlations are based on factor scores from VARIMAX-rotated principal component analyses.

The 12 items of the SRHI scale to measure snacking habit were subjected to a principal component analysis with Varimax rotation. The scree-test suggested a one-component structure (the first five eigenvalues were 6.34, 1.33, 1.08, 0.72, and 0.52, respectively). Factor scores were used as a measure of snacking habit.

The five items of the EDS-5 scale to measure eating disturbance propensity were subjected to a principal component analysis with Varimax rotation. The scree-test suggested a one-component structure (the first three eigenvalues were 2.97, 0.74, and 0.64, respectively). Factor scores were used as a measure of eating disorder propensity.

In Table I, correlations between the scales and subscales identified above are presented. Note that because uncorrelated factor scores were used for the subscales of self-esteem, dispositional mood, and impulse buying tendency, the correlations of these subscales with other variables show their independent effects. A number of noteworthy findings can be seen. First, snacking habit correlates strongly and positively with both impulse buying tendency subscales, and moderately and positively with eating disturbance propensity. Impulse buying is in turn related to the presence of dispositional high negative affect, and not with any of the other mood components. However, the impulse buying tendency–high negative affect relation is only present for the affective, and not for the cognitive, component of impulse buying tendency. Finally, self-liking is positively correlated with high positive dispositional mood, and negatively correlated with high negative mood, low positive mood, the affective component of impulse buying tendency, and eating disturbance propensity. Self-liking thus seems to take a prominent position in this constellation of variables. Self-competence is only associated with dispositional high positive affect, and not with any of the other mood components. Unexpectedly, no significant correlation was found between self-esteem and snacking habit. These correlations thus suggest that when it comes to the possible antecedents of the health-related constructs in this study (snacking habit and eating disturbance propensity), it is self-liking (not self-competence), high negative dispositional mood (not the other mood components), and the affective (not the cognitive) component of impulse buying tendency, where the action is. These variables were thus incorporated in the model, which will be tested more comprehensively in the next section.

Structural equation modeling

The model that was outlined in the introduction section was tested by means of structural equation modeling (AMOS-4), using maximum likelihood estimation. Structural equation modeling (SEM) refers to a family of statistical techniques that may be used to test the degree to which a predefined model (i.e., which variables are assumed to relate to others and directionalities of these effects) is supported by the data (e.g., Kline, 1998; Rigdon, 1998). SEM allows explicit and distinct representations of observed and latent variables. By explicitly modeling measurement error in the observed variables, SEM users seek to derive unbiased estimates for the relations between the latent constructs. In conducting SEM one usually first tests a measurement model, which may be considered as a confirmatory factor analysis involving all the variables validating the concepts under investigation. A full structural equation model then includes the relationships between the latent constructs. This model's parameters are estimated and the resulting covariance matrix is compared to the covariance matrix derived from the empirical observations. A chi-square statistic and a range of goodness-of-fit indices are then available to evaluate the fit of the data to the model.

Based on the correlations discussed in the previous section, the following constructs were included in the analysis: self-liking, high negative dispositional affect, the affective component of impulse buying tendency, snacking habit, and eating disturbance propensity. Because we wanted to test a measurement model, individual items (instead of the factor scores which were used to calculate the correlations in Table I) were used for all scales. All items were first screened on skewness and the presence of outliers. As was mentioned before, a list-wise deletion procedure of missing values was applied on the variables included in the analyses, which resulted in a sample size of 183 participants. Table II presents means, standard deviations, correlations, and internal reliabilities of the scales of which the items were subjected to structural equation modeling.

In order to keep the ratio of number of free parameters to sample size within acceptable limits (e.g., Kline, 1998, suggests a 1 : 10 ratio as reasonable), a parceling procedure was conducted, i.e., for each scale, items were averaged into three groups of observed variables (e.g., Little, Cunningham, Shahar & Widaman, 2002). The number of free parameters thus also did not exceed the number of observed covariances. The complete analysis was conducted in two steps. The first step consisted of testing a measurement model, while in the second step a structural model specifying causal paths between the latent factors was tested. In addition, we tested two alternative models. The following fit indicators were used: χ^2; the χ^2/df ratio; comparative fit index (CFI); goodness-of-fit index (GFI); adjusted goodness-of-fit index (AGFI); root-mean-square error of approximation (RMSEA).

Table II. Means, standard deviation, internal reliabilities, and correlations of the model variables.

		M	SD	1	2	3	4	5
1.	Self-liking (1–5)	3.88	0.67	[0.87]	−0.45***	−0.19**	−0.03	−0.29***
2.	Dispositional high negative affect (1–7)	2.01	0.82		[0.76]	0.27***	0.12	0.12
3.	IBT-affective component (1–7)	3.03	1.04			[0.81]	0.41***	0.19**
4.	Snacking habit (1–7)	2.96	1.32				[0.92]	0.23**
5.	Eating disturbance propensity (1–7)	2.86	1.31					[0.83]

Note: **$p < 0.01$, ***$p < 0.001$. The numbers between square brackets are internal reliabilities.

Although there are no fixed critical values for evaluating the goodness-of-fit, the χ^2 ideally should be nonsignificant (which is often not the case in large samples). The χ^2/df ratio should not exceed 3 : 1. For the CFI, GFI, and AGFI, values >0.90, and for the RMSEA values <0.08, are considered as acceptable. The results for all models tested are shown in Table III.

The initial measurement model was defined by five latent factors (self-liking, dispositional high negative affect, the affective component of impulse buying tendency, snacking habit, and eating disturbance propensity), which were each represented by their three indicators. The latent factors were allowed to covary freely. The model resulted in a satisfactory chi-squared value, $\chi^2(80,\ N = 183) = 84.166,\ p = 0.353$, while the other fit indices also suggested an excellent fit of the measurement model to the data (see Table III). The standardized path coefficients from the latent factors to the indicators ranged from 0.651 to 0.971, and were all highly significant, (p's < 0.001).

Next, a structural model specifying the paths that were hypothesized in the model was tested. The fit indices suggested an excellent fit (see Table III). The model and standardized path coefficients of the hypothesized paths are presented in Figure 1. On the basis of the correlations presented in Table II, two alternative models were tested, each of which included an additional path. Alternative #1 tested an additional path from self-liking to impulse buying tendency. Alternative #2 tested an additional path from impulse

Table III. Summary of model fit statistics.

Model	df	χ^2	p	CFI	GFI	AGFI	RMSEA
Measurement	80	84.166	0.353	0.997	0.941	0.912	0.017
Hypothesized	85	87.557	0.403	0.998	0.939	0.914	0.013
Alternative #1	84	86.992	0.390	0.998	0.939	0.913	0.014
Alternative #2	84	86.654	0.400	0.998	0.940	0.914	0.013

Notes: $N = 183$. CFI = comparative fit index; GFI = goodness-of-fit index; AGFI = adjusted goodness-of-fit index; RMSEA = root-mean-square error of approximation. The alternative models #1 and #2 each include one more additional path, i.e., from Self-Liking to Affective Component of Impulse Buying Tendency, and from Affective Component of Impulse Buying Tendency to Eating Disturbance Propensity, respectively.

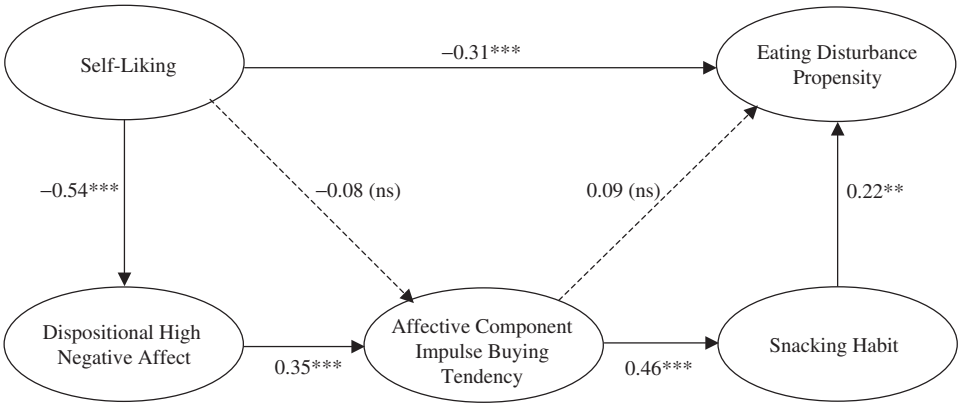


Figure 1. Structural relationships between the latent factors of the hypothesized model. Note: $N = 183$. Only latent factors are represented in this figure. The numbers are standardized path coefficients. The solid lines represent the hypothesized model. The dashed lines represent the additional paths tested in the two alternative models. $^{**}p < 0.01$, $^{***}p < 0.001$, ns = not significant.

buying tendency to eating disturbance propensity. As can be seen in Table III, in neither case did the fit improve. It can thus be concluded that the relationship between self-liking and impulse buying tendency is fully mediated by high negative dispositional affect, and that the relationship between impulse buying tendency and eating disturbance propensity is fully mediated by snacking habit. In other words, the paths hypothesized in the model are necessary as well as sufficient. Figure 1 presents the model as represented by the latent constructs and path coefficients.

Discussion

Health psychologists have given surprisingly little attention to consumer behavior. This study was meant as an attempt to make such a connection. We described two behaviors, impulsive buying and unhealthy snacking, which at low or moderate frequency levels are innocent and pleasurable, and seem to be driven by individuals' pursuit of hedonistic goals. Yet, at high frequency levels these behaviors may be harmful and, in the extreme case, self-destructive. It was found that the tendency to buy on impulse is strongly related to the habit of eating snack foods. Although impulsive buying and snacking habits represent quite different behavioral domains, the study included a constellation of variables that may integrate these behaviors into a theoretically meaningful perspective, i.e., a schema that involves self-evaluation and its potential negative affective consequences. Low self-esteem and dispositional negative affect associated with it were found strongly related to impulse buying tendency. This finding alone is surprising, because impulsive buying is usually associated and even defined in terms of pleasure and excitement, and, at least on the shopping floor, does not involve negative feelings (Herabadi et al., 2004). The structural model suggests that low self-esteem and negative affect are not directly related to snacking habit. On the other hand, a strong snacking habit was found associated with more serious eating disturbances, which in turn are associated with low self-esteem. Thus, the present research suggests a pattern in which the individual's style as a consumer coincides with unhealthy eating behavior, which is embedded in or fuelled by feelings of low self-esteem and dispositional negative mood.

What mechanisms underlie the relationships that were found between the variables in this study? While taking into account that our data are correlational and thus do not allow to draw causal conclusions, the results may be interpreted from a self-regulatory perspective. People who experience emotional distress may give up a degree of self-control and engage in activities that they expect to give immediate pleasure or satisfaction (e.g., Baumeister, 2002; Tice, Bratslavsky & Baumeister, 2001). Making impulsive purchases and eating snacks are both behaviors that typically fit this category of activities that lead to short-term pleasure. For instance, Tice et al. (2001) demonstrated that induced emotional distress may lead to eating fattening snacks, a preference for immediate instead of delayed gratification, and to procrastination. However, when participants were led to believe that their bad mood was unchangeable, they no longer engaged in such mood-repairing strategies. Similar attempts to self-regulate have been suggested by others. For instance, Mick and DeMoss (1990) observed that people sometimes provide themselves with 'self-gifts' as a form of indulgence in order to elevate a bad mood. Our results are in line with such notions. Impulse buying and the impulsive purchase and consumption of snack food may thus be attempts to cope with emotional distress associated with low self-esteem.

Because of its correlational nature, this study should be considered as hypothesis-building, rather than theory-testing. Although structural equation modeling is an

elegant way of investigating correlations, this technique does not allow to make causal claims. For instance, low self-esteem may function as an independent variable by driving impulsive buying and disturbed eating. However, it is also conceivable, and in fact debated in the eating disorder literature, that low self-esteem is a consequence of disturbed eating, and it seems reasonable to suggest that the causal flow is bidirectional (cf. Ball & Lee, 1999; Conner & Armitage, 2002). In the relations between negative affect, impulse buying, and snacking habit, it seems more convincing to assume the causal directions as these were hypothesized in our model. However, alternative explanations are also possible, for instance, reverse causal relations, or the operation of an unmeasured third variable, such as general impulsivity (Whiteside & Lynam, 2001).[2] We can only acquire more evidence of causation in studies with longitudinal and, preferably, experimental designs. The present study may therefore be an instigation to conduct studies that explore the relationship between consumer style and eating behavior in more detail, more systematically, and among larger and representative samples.

Another limitation concerns the measure of snacking behavior. Although we think that focusing on habit strength is particularly useful, we did not measure snacking behavior itself. Further studies may use more detailed measures, such as diary, event sampling, or observation techniques. Such techniques may also be used to learn more about food shopping behavior. In addition, such future studies might shed more light on how consumer style (e.g., impulsive buying tendency) and social cognitive variables related to eating (e.g., attitudes, norms, self-efficacy, and intentions) interact in the prediction of eating and food-related behavior.

Although important work has been done on food choice from physiological, bio-psychological and social psychological perspectives, a distinct input from the consumer research domain is largely absent in the health psychology literature. However, the purchase of food is part of the chain of events that may lead to unhealthy conditions. Knowing more about individuals' consumer style may thus provide a better understanding of why some people adopt and maintain unhealthy life styles. The present study suggests impulsive buying as a behavior of interest, which may thus be part of the complex picture of antecedents of health behavior.

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[2] As this is often the case with structural equation modeling, alternative models in which the directions of (some) paths are reversed can be found fitting the data as well. However, the present model is empirically the best fitting and seems to us theoretically the most compelling one.

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