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Velkommen til den fireogtyvende udgave af 'Nyhedsbrevet om Forbrugeradfærd'. I dette nummer af Nyhedsbrevet bringes to spændende artikler fra forbrugerforskningens verden, som begge drejer sig om *måling*.

Den første artikel, som er af lektor Marcus Schmidt, handler om, hvordan forbrugernes adfærd i sig selv kan blive påvirket af, at de udsættes for målinger af deres adfærd. I den anden artikel vises det, at det bestemt ikke er ligegyldigt, hvordan forbrugernes indkøbsadfærd måles, når afstandens betydning for adfærden skal vurderes. Denne artikel er af professor Torben Hansen, professor Hans Stubbe Solgaard og lektor Flemming Cumberland.

Det er os endvidere en stor glæde fra og med dette nummer at kunne byde velkommen til lektor Lars Grønholdt som ny medredaktør af Nyhedsbrevet. Lars Grønholdt har en mangeårig erfaring i marketing og statistik og har skrevet en lang række forskningsartikler og bøger om disse emner. Vi glæder os meget til samarbejdet med Lars, og vi er helt sikre på, at dette i fremtiden vil føre til et endnu bedre Nyhedsbrev.

Does measurement influence behaviour?

Af lektor Marcus Schmidt

The German Nobel Prize Laureate and quantum physicist Werner Heisenberg (1901-76) once noticed that a measure cannot be regarded as independent of the measurement instrument or of the individual who carries out the measurement: "…the measuring device has been constructed by the observer, and we have to remember that what we observe is not nature in itself but nature exposed to our questioning" (Heisenberg 1958, 57). According to the British polymath Lyall Watson (1939-2008)…"The greatest difficulty in which the scientific method has landed us is its implicit assumption that observers and experimenters are external to and independent of the objects of their attention. There is good reason to doubt that this is or ever was true" (Lyall Watson 1979, 20). At about the same time the American theoretical physicist John Archibald Wheeler (1911-2008) suggested "…to cross out that old word 'observer' and put in its place the new word 'participator'. In some strange sense we are all involved" (Capra, 1975, 145).

To sum up, the potential problem of 'contamination' between the observer and the observed is not a new phenomenon. Since the middle of the 20th century, and most probably even earlier than that researchers within the hard sciences have discussed the conundrum, its causes and its consequences for empirical research. However – apart from a few isolated cases – it took almost fifty more years before it emerged as a serious and interesting problem to researchers within more soft science disciplines like psychology, consumer behaviour and marketing.

Assume that a respondent is surveyed by a research agency about his or her plans regarding purchase of a new computer within the next six months. Do these research questions by the company somehow change his/her behavior? Do the questions trigger the mind of the respondent such that he/she considers purchasing a new computer in a way different from a situation where the respondent had not been interviewed? Does the sheer fact of being interviewed influence the purchase behavior of the person? Will a person who is intensively questioned about his/her purchase behavior regarding ecological products in subsequent months intensify his/her purchase of green versions compared to consumers that have not been questioned? If the consumer behaviour of a surveyed respondent deviates from a non-surveyed respondent in a significant way we face a problem of measurement validity. The phenomenon has caused a lot of interest amongst researchers during the recent decades and is known under several aliases like: Mere exposure effect, self-erasing error of prediction, self-generated validity, measurement reactivity, self-

prophecy effect, mere-measurement effect and question-behaviour phenomenon.

In a meta-analysis (forthcoming) we discuss 134 studies across 77 publications. The publications appeared in 34 different journals during 1968-2013. Most publications were published in *Journal of Consumer Research* and *Journal of Personality and Social Psychology*. If one wants to study the effect of mere exposure or of mere measurement one must have: First, an experimental sample that is exposed (i.e. being interviewed about purchase of something) and a control group that has not been exposed. Next, one must compare the purchase behavior of both samples in a period after the experimental group has been exposed to the interview questions (or to some advertising information). If the purchase behavior of the experimental group is significantly different from the control group a mere-measurement phenomenon exists.

Our meta-analysis shows some interesting results. See Table 1 and 2. An effect size is a measure of difference between experimental group and control group. The bigger the value (between 0 and 1) the bigger the effect, that is, the bigger the mere-measurement effect. In the 77 publications analysed we were able to measure 383 effect sizes. We notice that effect sizes are significantly higher when using student samples compared to non-students samples. Also, there is a correlation between sample size and effect size: The bigger the sample the smaller the effect size. With other words: In experimental designs using small student samples the effect is much bigger compared to big panel samples. So, is the mere measurement effect something that can primarily be identified under artificially conditions? If this is the case the problem may not be something that a researcher or a research agency should be especially worried about.

Table 1: Effect size across sample type

	n	Mean	SD
Student sample	247	,280	,225
Non-student sample	102	,123	,134
Blood bank	19	,163	,068
Panel	15	,045	,031
	383	,223	,209

Table 2: Effect size and sample size

Sample size	n	Mean	SD
0-50	2	,247	,085
51-100	55	,295	,126
101-150	46	,274	,152
151-250	123	,283	,210
251-400	77	,120	,157
401-1000	10	,097	,076
1001-2000	18	,079	,072
2001+	52	,096	,093
	383		

Table 3: Statements on Ecological and fair trade Products (5-point Likert scale, 1 = totally agree to 5 = totally disagree)	
1	When purchasing food products I prefer biological/ecological versions
2	With regard to biological products I trust specialized stores and ecological supermarkets more than ordinary retail stores
3	When I purchase biological products I can provide a small contribution against the climate change
4	In Germany the control procedure regarding the ecological production process is tighter than in other countries
5	If there is a choice between alternative biological products I prefer products from Germany to products from other countries
6	Biological products taste better than not-biological products
7	Biological products are more healthy than not-biological products
8	I would like a bigger supply of bio-eco products
9	I am willing to pay more for bio-eco products
10	I have several times purchased products at a specialized bio-store
11	I expect to purchase more in a specialized bio-store in the future
12	There should be more information about bio-eco products
13	I deliberately purchase fair trade products
14	I am willing to pay more for fair trade products

Table 3 displays 14 statements addressing environmental issues.

GfK Germany's consumer household panel (2007) consists of 25,420 respondents. During 2007 4472 panelists conducted 25,361 purchases of ecological yoghurt. See Table 4 (a). It has been possible to separate purchasers of ecological yoghurt into respondents (n = 4159) that have been exposed to the 14 statements (Table 3) and those who have not been exposed (n = 313).

A subgroup of panelists (experimental group) were exposed to the 14 statements during the first week of September (week 36). We notice that the difference in mean between experimental group and control group is not statistically significant (mean weight and value) regarding the period January-August: Hedge's 'd' 95% confidence interval includes 0. For instance, the interval environing the value for the period January-August (.07) goes from -.01 to .14). However, if we look at the period September-December Hedge's d low does not include 0, implying that the difference between the purchases of experimental and the control group is statistically significant on the 95% level. In other words: Panellists that have been exposed to the 14 statements purchase (slightly) more ecological yoghurt than panelists that have not been exposed.

In Table 4 (b) we zoom in on the week level. Once again we notice a significant, though week effect. Effect sizes concerning the experimental group are higher than comparable levels for the control group when comparing weeks before and after the exposure.

It appears that a mere measurement effect can be detected even in a big panel sample. However, the effect is weak, close to non-existent. Therefore, we do not think that a research company should worry about a bias caused by this effect. Striking effects have only been found in experimental designs with small student samples. Not in big "real life" samples.

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…*Figure 4* →

Table 4 (a): Ecological yoghurt, total purchases

Exposed and non-exposed panel subsamples

	January-August			September-December				
	Purchases	Mean Weight (Gram)	Mean Value (Eurocent)	Purchases	Mean Weight (gram)	Mean Value (Eurocent)	Total Purchases	n Respondents
Experimental group	17,158	497.87	118.89	7064	508.68	112.44	24,222	4159
Control group	746	468.66	119.33	393	454.40	72.34	1139	313
							25361	4472

	January-August		September-December	
Effect sizes:	Weight	Value	Weight	Value
Cohen's d	0.04	0.00	0.08	0.08
Hedges' d	0.07	0.00	0.13	0.14
Hedges' d_low	-0.01	-0.08	0.03	0.03
Hedges' d_high	0.14	0.06	0.23	0.24

Table 4 (b): Zooming in on critical weeks (ecological yoghurt)

	Week 31-35		Week 36-44	
	Purchases		Purchases	
Experimental group	2209		3892	
Control group	57		148	
Effect sizes:	Weight	Value	Weight	Value
Cohen's d	0.26	0.25	0.30	0.27
Hedges' d	0.25	0.20	0.25	0.23
Hedges' d_low	-0.05	-0.06	0.09	0.07
Hedges' d_high	0.48	0.47	0.42	0.39

How big is the influence of distance on consumers' store choice? …It depends on how you measure it!

Af professor Torben Hansen, professor Hans Stubbe Solgaard og lektor Flemming Cumberland

Summary
The influence of distance on consumer store choice behaviour has been widely considered. In that respect, frequency and budget share are frequently used methods of measurement to determine consumers' store choice behaviour. We propose and show, however, that the significance of distance is influenced by the way in which store choice behaviour is conceptualized. A survey among 631 consumers was carried out in order to examine this proposition. Structural equation results suggest that the negative effect of distance on store choice behaviour is larger when store choice behaviour is measured as number of visits to a particular store than when store choice behaviour is measured as the percentage of budget spend at a particular store. Our results indicate that both researchers and retail managers should carefully consider the measurement of store choice behaviour when carrying out decisions and/or empirical research involving the concept of distance.

Introduction
Store location (or distance) is a factor that influences offline store choice greatly. Previous research suggests that location explains up to 70 percent of the variations in the choice of grocery store (e.g., Huang et al., 2012). However, over the last couple of decades, the importance of explaining consumer store patronage behaviour may have diminished because the perceived obstacles of visiting various stores for comparison-shopping have decreased (Luceri and Latusi, 2010). Needless to say, the emergence of the Internet allows consumers to costlessly search many online retailers and buy at the lowest price. Also, in an offline setting, large department stores provide a variety of retail goods necessary for comparison-shopping, thus reducing the costs of visiting independent retailers to obtain special commodities. Thus, even extensive offline grocery comparison-shopping could involve just one obstacle for the consumer: the distance to the preferred warehouse or supermarket.

The standard 'value-perspective' proposes that when choosing between grocery stores, consumers may make an overall assessment of the utility

of the store based on perceptions of what is received and what is given (Zeithaml, 1988, p. 14). In that respect, consumers allocate time, money, and effort in utility-producing (i.e., value) activities (Baltas, Paraskevas, and Skarmeas, 2010; Rabbanee et al., 2012). The importance of distance may decrease according to how much the consumer feels s/he will achieve, or plans to achieve by visiting a particular store. Hence, a consumer who plans to spend a large percentage of her/his housekeeping budget in a particular store will be less influenced by the distance to the store than a consumer who plans to spend only a small percentage of her/his housekeeping budget at the same store. This is because the relative use of resource units to cover the distance will be less when the consumer takes care of most of her/his shopping needs than when the consumer only takes care of a small portion of her/his shopping needs. A possible consequence of this reflection is that the *importance of distance* as a factor in explaining consumers' store choice behaviour will probably be influenced by the way in which the actual *measurement* of consumers' store choice behaviour is carried out.

More specifically, if store choice behaviour is measured as the number of times a consumer visits a particular store (frequency), the negative influence of distance on store choice will presumably be greater than if store choice behaviour is measured as an expression of the percentage of the housekeeping budget (budget share) spent at a particular store. Both frequency and budget share are frequently used methods of measurement to determine consumers' store choice behaviour. Some researchers (e.g., Babin and Attaway, 2000) have combined frequency and budget share with other elements like 'the usual shopping time in a store' into a 'customer share' measure. However, it is difficult to extract a particular pattern regarding the significance of the method of measurement since distance is usually linked with a number of other influential variables, which in turn differ among the various published research results dealing with distance as an influencing variable on consumer store choice behaviour. The purpose of this study is thus to examine the following research hypothesis more explicitly:

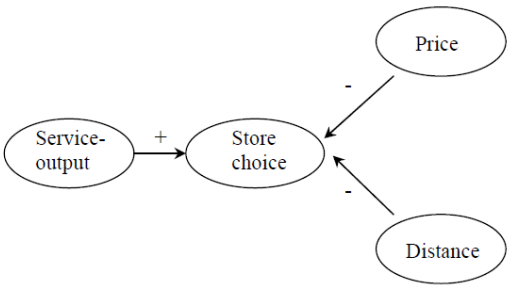
> *Research hypothesis: The importance of distance in explaining consumers' store choice behaviour is influenced by the way in which store choice behaviour is measured. The importance of distance will be greater when store choice behaviour is measured as the number of times a consumer visits (frequency) a particular store than when store choice behaviour is measured as the percentage of housekeeping budget (budget share) spent at a particular store.*

However, consumers will rarely make a decision based on one piece of information by itself, e.g. information about the distance to the store, rather they will try to collect different pieces of information and determine their behaviour on this basis (e.g., Sloot and Verhoef, 2008). The significance of measuring distance should therefore not be determined by itself, as the significance could relate to other factors. As

stated by Marjanen (1997), "consumers trade off distance with other store-choice variables" (p. 152). Consequently, a simple conceptual model which integrates various store choice factors has been developed (see Figure 1).

Figure 1

Conceptual Model of Store Choice Behaviour



The term 'service output' refers to factors that are dependent upon a visit to the store in question (Sampson, 2010). Based on previous research (e.g., Rabbanee et al. 2012; Hansen 2003), service output comprises the three dimensions: quality, assortment and atmosphere. The model deals with two types of costs: price and distance. Both cost types should be covered by consumers within their usual resource limits. To pay a price to receive a service output involves the use of consumers' monetary resources, while the distance to the store may involve a use of monetary as well as time resources.

Method

The empirical setting for this research is the Danish supermarket market consisting of conventional supermarkets, warehouses, and discount stores. The following stores owned by Dansk Supermarket Ltd. were included in the study: the discount store chain Netto, the warehouse chain Bilka, and the conventional supermarket chain Føtex. The following stores, owned by Coop Denmark, were also included in the study: the discount store chain Fakta, the warehouse chain Obs (now renamed to Kvickly), and the conventional supermarket chains Kvickly, and SuperBrugsen. In addition, the discount store chain Aldi was included in the investigation. A survey among 631 Danish consumers was performed to examine the research proposition. 1500 households were contacted, resulting in a response rate of 42%.

Results

The results were estimated using structural equation modelling. The results show that the primary predicting elements of store choice behaviour for conventional supermarkets and warehouses were service

output and distance. For discount stores the predicting elements include service output, distance as well as price. More importantly, the results indicate that our hypothesis is supported in the study. Although distance showed negative effects on store choice behaviour when measured as *budget share*, the negative effects on store choice behaviour when measured as *frequency* were remarkably larger. We can observe this result for all three categories of retailers, and for all the investigated retail chains. Hence, the results suggest that the significance of distance in explaining consumer store choice behaviour is moderated by the actual measurement of store choice behaviour. When store choice behaviour is measured as 'frequency' the negative effect of distance on store choice behaviour is larger than when store choice behaviour is measured as 'budget share'.

Discussion and implications

The results obtained in this study confirm what has already been detected in many studies: distance seems to have a negative effect on consumer store choice behaviour. The implication of the present study is, however, that researchers and retailers should carefully consider the measurement of store choice behaviour when carrying out empirical research involving the concept of distance. The results suggest that the observed effect of distance on store choice behaviour will be influenced by the measurement of store choice behaviour. For all the considered retail chains, the negative effect of distance on store choice behaviour when measured as frequency was larger than the negative effect on store choice behaviour when measured as budget share. Hence, when studying the negative influence of distance on consumer store choice behaviour, a type 1 error (i.e., concluding that something is true, when it is actually not and thereby increasing the risk of overestimating the relationship) may very well arise in incidents where consumer store choice behaviour is measured as frequency. In a similar vein, a type 2 error (i.e., concluding that something is false, when it is actually not and thereby increasing the risk of underestimating the relationship) may arise in incidents where consumer store choice behaviour is measured as budget share.

Our results have also direct implications for retail managers. In determining the 'right location' for a retail store one may argue that retail managers should seek the location that offers the highest potential return on investment. In finding such a location, it is essential that the strategic purpose of the new store is considered. If the strategic purpose is to generate traffic and to attract consumers on a frequently basis, the retail manager should be seriously concerned about the distance to the most wanted customers and may thus consider an in-town location. Otherwise, if the strategic purpose is to attract consumers conducting extensive grocery shopping, the retail manager may consider locations in out of town areas. However, in determining the right location a number of other aspects need also to be taken into

consideration. For example, it is probably more costly for a low quality retailer (e.g. a discount store) than for a high quality retailer (e.g. an up-scale conventional supermarket) to locate near its rivals. A low quality retailer may prefer to move away in competitive space in an effort to reduce price competition. In contrast, a retailer which holds a large quality advantage may seek to enjoy this advantage by moving closer to its rivals. Also, the high quality retailer may wish to provide information to consumers that help them to compare the quality of the products offered by competitive retailers. This may further help consumers to evaluate the offered value and, at the same time, it may urge consumers to put less weight on price when making assessments of value. In incidents, where consumers are faced with high uncertainty when making judgements of the quality of the offered products, a retailer's location can be used by consumers as a signal of quality. However, a low quality retailer seeking to exploit this opportunity face the risk of disappointing the consumers, which may prevent them from repeat shopping in that particular store.

This study is limited in that it does not consider a wide range of factors, which potentially may affect consumer store choice behaviour. Thus, we certainly do not propose that we have 'fully explained' consumer store choice behaviour. At the same time, such an explanation has not been the purpose of the present study. Instead, emphasis has been put on the significance of distance in combination with different measurements of store choice behaviour. In addressing this problem setting, future research may wish to combine other predicting variables of store choice behaviour (e.g., perceived hedonic and utilitarian shopping value, accessibility of the stores, *etc.*) with distance. Also, potentially moderating variables like available modes of transportation, income, age and other socioeconomic factors, and psychological factors as e.g. attitudes and interests may be taken into account.

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Best paper award

Lektor Lars Grønhold og lektor Anne Martensen har modtaget 'Best Paper Award' for paperet 'The effect of received word-of-mouth on consumer emotions and choice: Findings from a service industry', som blev præsenteret på the 18th QMOD-ICQSS International Conference on Quality and Service Sciences, 12-14 October 2015, Yonsei University, Seoul, Korea.

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