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THE EURO – A SOCIAL ACCENTUATION EXPERIMENT¹

By

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The introduction of the euro released both hope and fear. On January 1st, 1999, the euro became the official currency in the majority of the European Community (EC) states. However, for the majority of the population this expressed itself only in the omission of the rate of exchange fluctuations between the currencies participating in the euro. The introduction of new cash notes and cash coins took place on January 1st, 2002. Since then, participating countries had to bid farewell to their familiar means of payment. But did European citizens already get used to this idea?

Although the shift from country-specific to common currency arguably improves basic economic conditions in the EC, in recent years there have been signs that many people have not embraced this positive view of the euro and its consequences. Instead, a widely spread skepticism puts the success of the new currency at risk. In 1998, Manfred Brunner, chairman of the federation “Bund Freier Bürger“ (“Association of Free Citizens“) received broad public attention in Germany when his so-called “Euro-Complaint“ was refused by the Federal Constitutional Court (central arguments of this complaint are reported by Hankel et al., 1998). After its introduction to the capital markets, the euro constantly lost in value in relation to other currencies, in particular to the US dollar. Apart from rather small upward motions, this tendency has lasted for the last two years. Although this fall in prices also had some positive aspects for the economy of the EC (especially for those industries capitalizing on export), the euro gained a rather negative image. This manifested itself—among other things—in various euro-sceptical publications. Some of them received high publicity (e.g., Hannich, 2001; Hankel et al. 2001; Ewert; 1998)².

Whether the reservations against the euro are actually rationally justified or not, the lack of confidence in the euro might seriously impede its introduction in the European Community (Frankfurter Allgemeine Zeitung, 1999). Many surveys that were conducted in the past also refer to high scepticism towards the euro: It seems that only a minority of the Germans is convinced that the euro will have the same stability as the “D-Mark” (Verbraucher-News, 1999).

So far, the attitude towards the Euro has routinely been measured by direct interviews with their focus on verbal responses. The open and reactive characteristics of this methodological approach bear the risks of prompting responses driven by social desirability (“one has to

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² The arguments of these German authors are to a large extent congruent with many English publications: e.g., Chalton (1999); Temperton (2001), and Thiersky (2001).

identify oneself with the ideal of a united Europe“ or calculated optimism (“introduction of the Euro as an irreversible decision with which one has to come to terms”). These factors possibly could have influenced the interviewees’ responses. In contrast, the present study aims to investigate the attitude towards the Euro in a non-reactive way. For this reason we want to use the social psychological phenomenon of *social accentuation*.

Research of social accentuation

The estimation of physical dimensions is frequently influenced by variables that have social meaning. For example, Bruner & Goodman (1947) found that the perceived diameter of cash coins (physical dimension) is influenced by the subjective purchase value: Poor children, usually associating coins with a relatively high purchase value, estimated coins to be larger than rich children. This study triggered a number of much further theoretical and empirical work (e.g., Lilli, 1975). Even though the results of Bruner and Goodman could never be convincingly replicated, there is a large number of experiments which support the phenomenon of social accentuation. Thus, things that possess a socially relevant meaning (e.g., coins) are often overrated compared to neutral stimuli (e.g., cardboard discs), (see e.g., Bruner & Postman, 1948; Holzkamp & Perlwitz, 1966).

Our experiment

If the German mark (DM) is actually more highly esteemed than the euro, the physical dimension of the DM coins (i.e., their diameter) should be estimated to be bigger. On the other hand, the euro has a higher purchase value than the DM. Thus, euro coins should be estimated to be of a larger size than DM coins. Nevertheless, we had two reasons for assuming that DM would be estimated to be larger: First of all, we wanted to use the findings of the accentuation research that *worth-associated* objects (e.g. coins) are overrated in their size compared with neutral objects (e.g., cardboard discs). In our experiment DM or euro coins respectively should be compared directly with empty white circular areas. During the estimation of the stimuli, direct confrontation of DM and euro coins was avoided. Secondly, the experiment was conducted in June and July 2001, just before the area-wide launch of euro pricing in supermarkets etc. Obviously, the conversion that one euro corresponds to approximately 2 DM (the official rate is 1 euro=1,95583 DM), was thus not yet supposed to be a common automatism for the population at this time. Therefore, we formulate the following hypothesis:

For two coins of similar numeric value, the diameter of the DM coins will be estimated larger than that of the euro.

According to this hypothesis, we assume e.g., that the 1 “Pfennig” coin (100 “Pfennige” are equal to one German mark) will be estimated larger than the 1 cent coin or that the 1 DM coin will be estimated larger than the 1 euro coin.

The sample consisted of 32 students (11 male, 21 female) at ages 19 to 36. During the experiment, subjects (Ss) were placed individually in front of a personal computer. The experimenter was present at all times. At the beginning, it was pointed out that the Ss participated in an experiment about size estimations. The aspect of valuation was not mentioned. During the experiment, a white circle appeared on the right side of the screen with

its supposed diameter shown below. It was explicitly pointed out to the Ss that the diameter specification does not correspond to the actual circle's diameter on the screen. This diameter information actually served as a reference for the following task: The Ss should estimate the diameter of a coin, which was presented at the same time on the left side of the display. The estimation should be typed into an empty edit field right under the coin. The diameter of the white circle should serve as a reference. So the Ss were not instructed to give an estimation of the real coin's diameter, but to estimate how large the coin would be, if the white circle had the indicated diameter. We chose this indirect option of eliciting the Ss' ratings for a number of reasons. First, we wanted to assure that Ss deliver a psychometric assessment. Consequently, we asked the Ss to assess the coin diameter in relation to another stimulus that had no meaning. Aiming at a psychometric evaluation implies the exclusion of knowledge and experience as sources of potential variation in the dependent measure. We regarded this to be particularly important in this experiment because knowledge and experience were confounded with our independent variable: DM is the well-known money whereas the euro was still unfamiliar. This is why we preferred to assess the coins' size in relation to an artificial reference rather than a direct rating for a well-known DM coin or a completely unknown euro coin. Secondly, by presenting the coin on the screen without a reference circle it would have been necessary to ensure that across experimental sessions screen presentations remain constant. In this case, factors like brightness of the display, size of the screens' black frame would presumably have had an influence on the estimates.

The size of the following coins had to be estimated: 1, 2, 5, 10, 50 Pfennig / cent and 1, 2 DM / euro. The experiment was divided into two sets of trials, whereby both currency sequence and the specification of the reference diameter varied. Thus, four experimental conditions result:

Table 1: Experimental Design

Condition	Trial One	Trial Two	n
A	C: euro RD: 22mm / 37mm	C: DM RD: 29mm / 34mm	8
B	C: euro RD: 29mm / 34mm	C: DM RD: 22mm / 37mm	8
C	C: M RD: 29mm / 34mm	C: euro RD: 22mm / 37mm	8
D	C: M RD: 22mm / 37mm	C: euro RD: 29mm / 34mm	8

(Annotation: C= currency, RD=reference diameter, n = number of subjects)

The diameters differed in order to avoid the confusion between diameters and currency as well as possible effects of sequence: Ss should not have the impression of being supposed to make inputs, which are consistent with those of the first trial.

Results

We tested our hypothesis with two analyses. First, we compared all estimates of DM-coins with all estimates of euro coins. To that effect, we calculated the total median for all estimates in order to determine the number of DM / euro coins that were smaller (larger) than the total median (General median=28,79). According to the null hypothesis, the actual type of currency should not matter for the size estimate and the same number of DM / euro coins (16 at each case) should be smaller (larger) than the total median. Instead, we found the following frequencies:

Table 2: Distribution of Frequencies

<i>Currency</i>	<i>Above median</i>	<i>Below median</i>	<i>Total</i>
Euro	13 (16)	19 (16)	32 (32)
DM	19 (16)	13 (16)	32 (32)
Total	32 (32)	32 (32)	64 (64)

(Annotation: Expected frequencies are in parentheses.)

According to the median test (corresponding to the four-squares χ^2 test) this result is marginally significant ($\chi^2 = 2,250$, $p_{(one-tailed)} = .067$, one degree of freedom (df)). This analysis was chosen because of our experimental design. Since our Ss performed euro as well as DM ratings with different reference diameters, we have a mixture between a classical between subjects and a classical within –subjects design. We did not want to reduce the statistical validity by pooling the data for all seven DM / euro coins (which represent seven different variables). This is why we decided to calculate the conservative median test using only dichotomous rank order information of Ss' ratings. The median test is often recommended when assumptions for the more popular tests are not met (Marascuilo & McSweeney, 1977). The disadvantage of this test is its low asymptotic relative efficiency (ARE = 0,64; Bortz, Lienert & Boehnke), i.e., the probability of finding significant differences is low.

For this reason we calculated a second test statistics for one selected portion of our data. In this analysis only data of the 1 DM- and 1 euro- estimations were compared, based on the assumption that the 1 DM coin is often used as prototype for symbolization of cash and can frequently be seen in everyday life (e.g., slot machines or coin-operated lockers). As expected, on average the 1 DM coin was estimated to be larger than the 1 euro coin (average of 1 DM: 37,25 mm, average of 1 euro: 34,78 mm). The t-test for independent groups shows that this effect is statistically significant ($t = 2,035$; $df = 62$; $p_{(one-tailed)} = .023$).

Discussion

We demonstrated that euro coins are underestimated in their size compared to DM-coins with identical numeric values. This finding, however, has to be handled with care in two regards.

First, regarding the strength of the relationship identified by our statistics: The effect size both for the median test based on all estimates ($\phi^2 = .04$) and the t-test for the estimates of the 1 DM / 1 euro coins ($r_{pbis}^2 = .11$) are comparably small. The statistical association between the estimates for DM and euro coins is substantially higher ($r^2 = .37$). Consequently the tendency toward over- or underestimation of coins affects the variance of the estimates to a larger extent than the type of currency.

Secondly, our findings are to be put into perspective regarding their temporal validity: The euro has a higher purchase value than the DM. It is to be expected that people just estimate the euro as smaller until they experience that they can acquire a higher equivalent with 1 euro than with 1 DM. When we performed the experiment most Ss had not yet had the chance to experience the high purchase value of the euro. Since our experiment, this has changed rapidly. Beginning in July 2001 most shops started to launch double pricing (DM and euro), and since January 1st, people have begun to use the euro cash money. Today, euro coins are perhaps estimated to be larger. In order to test this, we decided to repeat the experiment after the introduction of the Euro.

At the end of January 2002 we repeated this experiment with 32 students from the same population. First, the median test showed that there is almost no difference between estimates for DM coins ($n = 17 > \text{median} > n = 15$) and Euro coins ($n = 15 > \text{median} > n = 17$, $\text{Chi}^2 = 0,250$, $\text{df} = 1$, $p_{(\text{one-tailed})} = .309$). Secondly, t-test statistics for the 1 DM and 1 euro coins showed that the DM coin is estimated to be larger than the euro coin. This difference was highly significant: $t = 2,035$; $\text{df} = 62$; $p_{(\text{one-tailed})} = .0095$. These two results seem to reveal a paradox. Euro coins in general are now perceived to be relatively larger compared to the DM coins. The perceived difference between the 1 DM coin and the 1 euro coin in particular is more substantial than in our first experiment. Yet, at a closer look, this result does not surprise at all. In fact, both coins have the same diameter, but the 1 euro coin is much thicker. Therefore, the euro coin seems to be smaller in diameter. Ss of course were only presented the same flat two-dimensional coins on the screen from the first experiment. But at the time of the second experiment, Ss knew what euro and DM coins look like in a three dimensional world. We anticipated this problem. Thus, after the experiment our Ss were presented with a real 1 DM and a real 1 euro coin on a table, separated from each other at a distance of 30 cm. Ss were not allowed to move the coins and were asked to rate which one is larger. The majority ($n = 20$, or 63 percent) rated the DM coin to be bigger, two Ss (6 %) thought that the Euro had a greater diameter, ten persons (31 %) were indifferent. We interpret this finding to be a psychophysical artifact. Our conclusion is that the high estimates for the DM in comparison to the euro, which in our first experiment led to the biased ratings of diameters, do no longer exist. Euro and DM coins of the same size were perceived to have the same size (except for the 1 euro / DM coin). This finding can be explained by two reasons. First, the image of the euro is now better; secondly, people have experienced that the purchase value of the euro is higher than that of the DM. On the basis of our data, we are unable to determine which of these hypotheses is correct. It would be worthwhile trying to disentangle these two possible explanations in future research.

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