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The False Consensus Effect Disappears if Representative Information and Monetary Incentives Are Given

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Abstract

We present an experiment on the false consensus effect. Unlike previous experiments, we provide monetary incentives for revealing the actual estimation of others' behavior. In each session and round, sixteen subjects make a choice between two options simultaneously. Then they estimate the choices of a randomly selected subgroup. For half of the rounds we provide information about other subjects' choices. There we find no false consensus effect. At an aggregate level, subjects significantly underweight rather than overweight their choices. When we do not provide information, the presence of a false consensus effect cannot be detected.

Keywords: false consensor, experimental economics

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1. Introduction

The 'false consensus effect' has frequently been reported in social psychological research. The term was first used by Ross et al. (1977). Mullen et al. (1985) report 115 studies which show a false consensus effect. It has also been observed in several experiments conducted by economists, although these were not designed to test for this effect.[1] Most of the studies employed a definition similar to that used by Mullen et al. (1985):

> False consensus refers to an egocentric bias that occurs when people estimate consensus for their own behaviors. Specifically, the false consensus hypothesis holds that people who engage in a given behavior will estimate that behavior to be more common than it is estimated to be by people who engage in alternative behaviors.[2]

Dawes (1989, 1990) realized that this type of definition does not justify the label 'false'. He argues that it is perfectly rational to use the information about one's own decision in the same way as the information about any other randomly selected sample of size one. The effect is only false if too much weight is assigned to one's own decision. We will therefore refer to the effect as defined above as a *consensus effect* and use the following definition of a *false* consensus effect which is both stricter and more appropriate:

> A (truly) false consensus effect is considered to be present if people, when forming expectations concerning other people's decisions, weight their own decision more heavily than that of a randomly selected person from the same population.

In contrast to the definition cited first this implies that a false consensus effect can be considered as a bias in a Bayesian framework. A consistent bias of expectations in the direction of the own decision or preferences would have impact on economic interaction whenever decisions are influenced by expectations. It would improve our ability to predict human behavior greatly if we could discover systematic deviations from rational expectations, like the false consensus effect, and if we could quantify them.[3] Whether the false consensus effect can be shown to be present even in terms of the stricter definition is therefore of interest to economists.[4]

A reevaluation of several studies using the strict and appropriate definition has shown that most of the studies did not find such a (truly) false consensus effect, but that they quite often found an effect in the opposite direction (see Dawes, 1990). Sherman et al. (1984) find a (truly) false consensus effect only when the self-image is threatened. Krueger and Clement (1994) find a false consensus effect even in the presence of other information. So when the strict definition of the false consensus effect is applied, empirical results are rather ambiguous.

Most studies do not even allow testing for a (truly) false consensus effect since they do not provide any option for comparing how the knowledge about one's own decision is weighted relative to information about other people's decisions. A possible approach to evaluate the falsity of the effect is to assume a uniform prior belief about possible decisions and then compare the posterior belief actually expressed to what would be obtained by rational Bayesian updating using a sample of size one (see Dawes, 1989, for details). However, we consider the assumption of a uniform prior belief in this context rather arbitrary and not really justified. In addition, if overweighting of the available information is detected according to this criterion, it cannot be decided whether it is overweighted because it concerns the own decision.

Hence we set out to conduct an experiment which, without needing to use unjustifiable assumptions or sophisticated statistical methods, allows a simple test to be made to see if knowledge about the own decision is weighted more heavily than information about other people's decisions which we took from the same population whose behavior was to be estimated later.

Our experiment avoids further shortcomings of previous experiments. From the perspective of an experimental economist, most social psychological experiments on the false consensus effect are unsatisfactory for methodological reasons. This is primarily due to the fact that no incentives for revealing the true beliefs are provided. Our study (like that of Offerman et al., 1996, who examine the presence of a false consensus effect in a public good experiment) differs by providing clear (monetary) incentives for revealing the true beliefs.

The relevance of incentives in this context is demonstrated by Offerman et al. (1996). In a post-experiment questionnaire 50% of their subjects stated that they would have answered differently if no incentives had been provided.

Furthermore, in many of the social psychological experiments where information about other people's decisions is provided, this information is rigged and the subjects are clearly deceived (e.g. Sherman et al., 1984; Alicke and Largo, 1995). Apart from general concerns about this practice (see Camerer, 1996, for a general discussion), it is quite obvious that, in some studies (Krueger and Clement, 1994; Alicke and Largo, 1995), subjects might have become suspicious about this information and thus might have discarded it. In the present study subjects were not deceived.

16 rounds were played in each session of the present experiment. In each round subjects first had to choose between two options and then estimate how some of the other subjects in the same session had chosen. They were informed before the estimation step about the first step choices of the remaining subjects in half of the rounds. Monetary incentives for true revelation of both preferences and beliefs were provided, since payoffs were based on the number of correct estimates and transformed through the first step choices of half of the rounds. (See the following section for details.)

We found a clear consensus effect both when we provided information and when we did not. Where we provided information about other subjects' decisions, the information was clearly used. Although subjects assigned some positive weight to their own decision when estimating that of other subjects, this weight was lower than that assigned to the decisions they were informed about. Hence the consensus effect we found was not a false consensus effect. In the rounds where we did not provide representative information testing for a (truly) false consensus effect is problematic, since the effect of the own decision on the estimation cannot be compared with the effect of representative information simply because there isn't any.

In the next section we describe the experimental design. Section 3 contains the experimental results, followed by the conclusion.

2. Experimental design

In each of the six experimental sessions 16 subjects played 16 rounds simultaneously on a computer network.[5] Each round consisted of three steps. In the first step each subject chose between two options of an item (Decision 1). One item, for example, was the question: "What do you eat more frequently, oranges or bananas?" Another allowed the subjects to donate DM 1,- to the non-government organization "amnesty international". (See Appendix C for the complete list.) The second step began with the random assignment of four (different) subjects to each individual subject. In half of the rounds subjects were then informed about these four subjects' Decisions 1 without identifying them. For the other rounds subjects received no information. The task in the third step was to estimate the remaining eleven subjects' Decisions 1 (this is called Decision 2). Subjects were informed that the random matching was conducted independently for each subject and for each round. This procedure ensured that the information subjects were provided with was from the same population as the subjects whose decisions they were to estimate. No feedback about the success in

Table 1. Decision items 2×2×2 design. The numbers in brackets correspond to the order in which the items were presented to the subjects. For details see Appendix C.

		With Information		Without Information	
Payoff Relevant	Morally Relevant	Rich-Poor	(6)	Public Good	(4)
		Donation Chapel	(15)	Donation ai	(9)
	Morally Irrelevant	Lottery	(7)	Payoff System	(3)
		Time Preference	(10)	Stamps	(14)
Not Payoff Relevant	Morally Relevant	Free-Riding	(2)	Tax Evasion	(5)
		Waiter	(16)	Exam	(12)
	Morally Irrelevant	Fruit	(1)	Writing	(8)
		Months	(13)	Elevator	(11)

Decision 2 was provided before the experiment was completed so as to prevent learning across items.

We implemented a 2×2×2 design with respect to the items (see Table 1). Items differ in terms of payoff relevance, moral relevance, and whether the subjects received information about the decisions of other participants.

The traditional way of measuring a false consensus effect compares estimates given in Decision 2 by subjects who chose one option in Decision 1 to estimates given by subjects who chose the other option in Decision 1 (see e.g. Ross et al., 1977). This does not require information. The more appropriate way is to compare the weights given to the own Decision 1 and to that of a randomly chosen person in the same population when making Decision 2. Thus we focus on the items with information in our analysis. The purpose of the items without information is to check whether we can replicate with our design in the absence of information the presence of a consensus effect found in previous studies. This allows us to check whether possible deviations of our results from those of previous studies result from any aspects of our design other than the information.

The distinction between morally relevant and irrelevant items gives us the opportunity to investigate whether the (false) consensus effect has an ego-defensive function, for example: "I do free-ride on public transport, but everybody does." If this were the case, the effect should be larger for morally relevant items than for morally irrelevant items. Sherman et al. (1984) find evidence for this hypothesis which is doubted by Alicke and Largo (1995).

An alternative explanation for the phenomenon usually labeled false consensus effect could be that it is not a distortion of the expectations about other people's decisions but rather results from a desire to comply with perceived social norms. In the present context, this means that subjects adapt to assumed group behavior and norms as expressed in Decision 2 when making Decision 1. If this were the case, the effect should be smaller for the pay-off relevant items because we provide clear monetary incentives for revealing subjects' true preferences.

Each cell in Table 1 contains two items. The numbers in brackets correspond to the order in which the items were presented to the subjects. The payoffs to the subjects depended primarily on the number of exact hits in Decision 2 in all rounds. They were also influenced by the payoff relevant Decisions 1. Thus we provided clear monetary incentives for the true revelation of both the true estimates of other subjects' decisions and of the own preferences regarding Decision 1.

The protocol of the experiment as well as a translated version of the instructions can be found in Appendices A and B.

3. Experimental results

The data from the first of the six sessions (pilot session) are not included in the analysis, since we slightly changed the setup and some items. Hence, we have data on 80 subjects from five independent observations. Participants were mainly economics and business administration students at Humboldt-Universität. Each session took roughly one hour. The average payoff was about DM 21.12.[6]

3.1. Analysis of items with information

The main results for the items with information are summarized in Tables 2, 3 and 4. Table 2 deals with the presence of a consensus effect. Here, options in Decision 1 of each round are labeled with A and B for simplicity.[7] In the rest of this section we will refer to the subjects who chose option A in Decision 1 as 'A-subjects' and the subjects who chose option B in Decision 1 as 'B-subjects'.

As in most "classical" studies of the false consensus effect, in Table 2 we simply compare the estimates of how many of eleven subjects chose option A given by the A-subjects with those given by the B-subjects. We consider a consensus effect present if the first estimate is higher than the second, because this means that at least one of the groups estimates that the consensus for the own decision is greater than is justified by the information given. Since the information provided clearly matters (as will be explained below), only subjects who received the same information can be compared.

The rows in Table 2 refer to the different items while the columns refer to the different information sets that the subjects were provided with before Decision 2. Each cell contains five entries. These are the number (aggregated over all five sessions) of A-subjects (upper left) and B-subjects (upper right) who received the corresponding information set, the average estimate of how many of eleven other subjects chose option A given by the A-subjects (middle left) and by the B-subjects (middle right) and an indicator (bottom line) which is C if a consensus effect is present and N otherwise. Consider for example the item "Free-Riding" and the information set "1A-3B", displayed here for illustration.

9	18
3.9	3.7
C	

The entries in this cell show that 9 A-subjects and 18 B-subjects received the information "one other subject chose A and three subjects chose B" and that their average estimates

Table 2. Test for consensus effect (own decision not considered as information).

Info Set	4A-0B		3A-1B		2A-2B		1A-3B		0A-4B	
Decision	A	B	A	B	A	B	A	B	A	B
Item	#	#	#	#	#	#	#	#	#	#
	av	av	av	av	av	av	av	av	av	av
	C/N		C/N		C/N		C/N		C/N	
Fruit	0	3	4	6	14	13	6	9	3	22
	—	8.7	7.5	4.8	5.7	4.8	3.8	3.2	3.7	1.7
	—		C		C		C		C	
Free-	2	1	10	6	7	15	9	18	6	6
Riding	10.5	9.0	6.5	7.2	6.6	4.6	3.9	3.7	2.7	2.7
	C		N		C		C		N	
Rich-	0	0	2	8	6	10	9	20	7	18
Poor	—	—	7.5	5.4	5.8	3.8	4.0	1.9	2.9	0.4
	—		C		C		C		C	
Lottery	0	0	0	1	0	6	5	28	7	33
	—	—	—	6.0	—	3.8	3.8	2.0	2.3	0.8
	—		—		—		C		C	
Time	1	0	3	4	8	12	13	23	3	13
Preference	10.0	—	9.0	6.5	6.6	4.8	3.6	3.1	3.3	0.6
	—		C		C		C		C	
Months	1	3	5	7	3	14	16	16	5	10
	10.0	7.0	8.2	5.7	6.0	4.7	3.3	2.9	1.4	1.6
	C		C		C		C		N	
Donation	1	0	1	8	10	18	14	19	4	5
Chapel	11.0	—	8.0	5.8	5.0	4.6	3.7	3.0	3.5	0.2
	—		C		C		C		C	
Waiter	2	0	2	4	11	10	11	26	3	11
	10.0	—	9.0	5.5	5.5	4.3	3.4	1.9	1.7	0.5
	—		C		C		C		C	

\# Number of subjects chosing A (left) or B (right) for the item in the corresponding row and receiving the information in the corresponding column

av Average estimate given by these subjects of how many of eleven subjects chose A for the corresponding item

C Difference of estimates directly above corresponds to a consenus effect

N Difference of estimates directly above does not correspond to a consensus effect

Table 3. Test for (truly) false consensus effect (own decision considered as information).

Info Set	4A-1B		3A-2B		2A-3B		1A-4B	
Decision	A	B	A	B	A	B	A	B
Item	# av	# av	# av	# av	# av	# av	# av	# av
	F/N		F/N		F/N		F/N	
Fruit	4	3	14	6	6	13	3	9
	7.5	8.7	5.7	4.8	3.8	4.8	3.7	3.2
	N		F		N		F	
Free-	10	1	7	6	9	15	6	18
Riding	6.5	9.0	6.6	7.2	3.9	4.6	2.7	3.7
	N		N		N		N	
Rich-	2	0	6	8	9	10	7	20
Poor	7.5	—	5.8	5.4	4.0	3.8	2.9	1.9
	—		F		F		F	
Lottery	0	0	0	1	5	6	7	28
	—	—	—	6.0	3.8	3.8	2.3	2.0
	—		—		N		F	
Time	3	0	8	4	13	12	3	23
Preference	9.0	—	6.6	6.5	3.6	4.8	3.3	3.1
	—		F		N		F	
Months	5	3	3	7	16	14	5	16
	8.2	7.0	6.0	5.7	3.3	4.7	1.4	2.9
	F		F		N		N	
Donation	1	0	10	8	14	18	4	19
Chapel	8.0	—	5.0	5.8	3.7	4.6	3.5	3.0
	—		N		N		F	
Waiter	2	0	11	4	11	10	3	26
	9.0	—	5.5	5.5	3.4	4.3	1.7	1.9
	—		N		N		N	

\# Number of subjects chosing A (left) or B (right) for the item in the corresponding row and receiving the information in the corresponding column (including their own decision)

av Average estimate given by these subjects of how many of eleven subjects chose A for the corresponding item

F Difference of estimates directly above corresponds to a false consensus effect

N Difference of estimates directly above does not correspond to a false consensus effect

Table 4. Regression coefficients (β: own decision, γ: information), session 1 (pilot) is not reported.

Session	All	2	3	4	5	6
Coefficients	β γ	β γ	β γ	β γ	β γ	β γ
Items						
All	1.33 1.73	1.44 1.72	1.51 1.78	0.85 1.74	1.35 1.47	1.42 1.83
Morally relevant	1.39 1.75	0.36 2.06	1.77 1.87	1.29 1.64	2.00 1.39	1.19 1.66
Not morally rel.	1.28 1.73	2.32 1.49	1.36 1.85	0.43 1.84	0.54 1.56	1.57 1.95
Payoff relevant	1.66 1.78	1.15 1.69	1.97 1.56	1.13 2.13	1.62 1.41	2.25 1.90
Not payoff rel.	1.01 1.67	1.64 1.58	1.00 1.91	0.37 1.28	1.16 1.52	0.56 1.75

were 3.9 and 3.7, respectively. Thus a consensus effect is present which is indicated by the C in the bottom line.

3.1.1. The effect of the information. Examining Table 2, the first important thing we see is a clear effect of the information given. The less A's the subjects have in their information sets, the lower their estimates of the number of subjects who chose option A. To see this, consider for example the item "Waiter" and the A-subjects. Those subjects who had four A's in their information set on average estimated that 10 out of 11 subjects chose option A. The estimates strictly decrease with the number of A's in the information set to 9.0, 5.5, 3.4, and eventually to 1.7. This strict decrease in A estimates is violated only twice. Hence the information clearly affects the estimates as expected.

The observations within each session are not independent and thus it is not possible to apply straightforward tests to the aggregate data. An alternative method is to treat each session as an independent observation and consider each item separately. For each session and each item, we compare the number of A estimates for the subjects with the same own decision but different informations sets. We simply count the results of all these comparisons and consider one session to be a hit for the corresponding item if the number of positive differences is larger than the number of negative differences. This occurs under the hypothesis that information has no influence with probability of less than $\frac{1}{2}$ (since there is a positive probability for a draw). Therefore the probability for a hit in all five sessions is smaller than $\frac{1}{32} = 3.125\%$ and hence in this case the hypothesis can be rejected for the item at the 5%-level. Using this procedure we find a significant effect of the information for six of the eight items (data not reported). For the remaining two items ("Fruit" and "Time Preference") there are four hits and the effect of the information is thus in the same direction but not significant. Thus the overall effect of information on the estimates of other subjects' behavior is well established.

3.1.2. The consensus effect. The second important observation that can be drawn from Table 2 is the presence of a consensus effect. Of 32 cells where a comparison between the estimates given by the A-subjects and the B-subjects could be made, 29 show an effect as predicted by the consensus hypothesis. So there is a very clear indication of a consensus effect in the present study.

As noted above, for strict statistical tests we have to treat the sessions as independent observations instead of the decisions. For any item, any session, and any information condition, we compare the estimates given by the A-subjects with those given by the B-subjects. We count a session as a hit for this item if for more information conditions the difference between average estimates given by A-subjects and by B-subjects is positive rather than negative. Under the hypothesis that the own decision is irrelevant to the estimate, i.e. the absence of a consensus effect, the probability for a hit is less than $\frac{1}{2}$ (since the probability for a draw is positive). Corresponding to the analysis of the effect of information, there is a significant consensus effect at the 5%-level for an item if there is a hit in all five sessions. Using this procedure we find a significant consensus effect for two items ("Fruit" and "Waiter"). Of the remaining items four have four hits, one three hits and two draws and one two hits, two draws and one miss (data not reported). If the probability for a draw is taken into account there is a significant consensus effect (5%-level) for two further items ("Rich-Poor" and "Lottery"). Thus the evidence for the consensus effect is rather strong.[8]

The two conclusions drawn from Table 2 show that the estimates subjects give for the choices of other subjects are clearly influenced by both the information they receive and their own choice in Decision 1.

3.1.3. The false consensus effect. As was argued in the introduction, to examine the *false* consensus effect it must be acknowledged that it is rational to use the information concerning the own decision in the same way as the information about the decision of any randomly selected subject from the same population. Hence, in the present study subjects have the information about five subjects and not just four. Thus to decide whether there is a false consensus effect we have to compare those subjects who made different choices in Decision 1 but have the same total information which *includes their own decision*. An A-subject who received the information set "2A-2B" *should* expect more A choices than a B-subject who received the same information. Therefore, a comparison should not be made between these two subjects. Instead, the first should be compared to the B-subjects who received the information set "3A-1B" since both have the total information that three subjects chose A and two chose B ("3A-2B"). The second should be compared to those A-subjects who received the information set "1A-3B". Only if in these comparisons the A-subjects estimate a higher number of A choices than the B-subjects, would there be an indication for the presence of a *false* consensus effect because this would imply that greater weight was assigned to the own decision than to that of the subjects about whom information was given.

Table 3 is structured similarly to Table 2, it only has to be noted that the own decision is included in the information set. For example, in the column marked "3A-2B" we note for each item the number and average estimate of A-subjects who received the information set "2A-2B" (upper and middle left) and the number and average estimate of B-subjects who received the information set “3A-1B” (upper and middle right). If, among the subjects with the same total information, the A-subjects on average estimated more A choices than the B-subjects, we note an “F” for “false consensus present” in the bottom line of the cell, otherwise an “N” for “no false consensus present”.

A brief inspection of Table 3 reveals that the situation is far less clear than that in Table 2. From 26 cells which allow a comparison, only eleven show a difference between average estimates in line with the false consensus hypothesis, whereas 13 show a difference in the opposite direction and two show no difference. Furthermore, among the eleven differences corresponding to a false consensus, there are just two (“Fruit, 3A-2B” and “Rich-Poor, 1A-4B”) which are both substantial (i.e. > 0.5) and based on a large sample (i.e. at least five subjects for both groups). On the other hand, there are ten substantial differences based on large samples which are in the direction opposite to a false consensus effect.

Only for the item “Rich-Poor” the results from all information sets taken together are more in favor of a false consensus effect than the opposite. The possible conclusion that a false consensus effect might be more likely in the respective category (“morally relevant” and “payoff relevant”) is not sustained, since the other item from the same category (“Donation Chapel”) shows differences which are clearly contrary to this conclusion. Also, if this conclusion were true, the items from the category “morally relevant” and “not payoff relevant” (“Free-Riding” and “Waiter”) should exhibit a false consensus at least as strongly. But they clearly do not, indeed, just the contrary.

Altogether there is stronger evidence opposite to a false consensus effect, i.e. subjects weight the information about their own decision *less* than the information they have been given about other subjects’ decisions.[9]

This conclusion is confirmed by an analysis of the single items for each separate session. As with the consensus effect, we count a session as a hit if for more information conditions the difference between average estimates given by A-subjects and B-subjects is positive rather than negative. For none of the items are there more than two (out of possible five) hits. Altogether, there are eleven hits, eleven draws and 18 misses.

3.1.4. Regression analysis. The tendency against a false consensus effect is shown more clearly by a regression analysis. Assume the simple linear regression model

$$E = \beta O + \gamma I + \delta,$$

where E = # of A’s estimated, I = # of A’s in the information set and O = # of A’s in the own decision, i.e. $O = 1$ if the own decision is A and $O = 0$ otherwise. If subjects weight their own decision like they do the information about other subjects’ decisions, then β equals γ. A false consensus effect corresponds to $\beta > \gamma$ and the underweighting of the own decision to $\beta < \gamma$. The estimated coefficients are shown in Table 4.

The first column contains the coefficients for the regression over all sessions, the first row those over all items. Over all sessions and all items, β is clearly smaller than γ. The same holds for any single session over all items. Under the hypothesis that subjects overweight their own decision relative to other subjects’ decisions (or that they weight it equally) the probability of $\beta < \gamma$ is less than $\frac{1}{2}$. Since the sessions are independent, the probability of $\beta < \gamma$ for all five sessions is smaller than $\frac{1}{32} < .05$. Consequently, the hypothesis can be rejected at a 5%-level. Hence we obtain a significant effect opposite to a false consensus effect.

The comparison of the morally relevant to the morally irrelevant items allows us to test whether a potential false consensus effect has an ego-defensive function. Over all sessions there is a tendency in the direction corresponding to this hypothesis, namely the relative weight given to the own decision compared to the information is slightly higher for the morally relevant items than for the morally irrelevant items. However, we do not consider this to indicate that this hypothesis is correct because the weight given to the own decision is still smaller than that given to the information.

The comparison between payoff relevant and not payoff relevant items allows us to test the hypothesis that a possible false consensus effect is not based on the influence of the own decision on the estimation of others' decisions, but rather on an adaptation of the own decision towards the estimated majority. If this were the case, then the effect should be smaller for the payoff relevant items since the incentives for expressing the true preferences work in the opposite direction. Hence the relative weight of the own decision should be smaller for the payoff relevant decisions. We find just the opposite. We only have a speculative explanation for this result. These items are further from everyday experience than the not payoff relevant items. This could result in a reasoning process which is based less on general expectations and the given information and more on introspection.

Following our general argument that incentives matter, it may be argued that the analysis should be restricted to the payoff relevant items. Then, over all sessions, the weight of the own decision is still smaller than that of the given information. However, for the sessions considered separately the picture is less clear. For three sessions (3, 5, and 6), the weight of the own decision is slightly larger than that of the given information, for two (2 and 4) it is smaller. Hence we have no significant effect contrary to a false consensus effect in this case, but also no hint in line with the false consensus effect.

On the other hand, it can be argued that the items that are not payoff relevant can be included in the analysis since the subjects do not have to estimate what other subjects do but what they state in the experiment. Hence, if subjects do not answer according to their real preferences, they should also take into account the fact that other subjects might do the same. Consequently, the task is essentially the same except that, apart from the possible projection of own preferences, the possible projection of own honesty also matters. Our interest is not primarily in the real preferences of the subjects but in their beliefs about what others state in the same situation. We consider this a valid argument for the inclusion of the not payoff relevant items in the analysis.

For all sessions the own decision clearly matters ($\beta > 0$) and hence the regression supports the existence of a consensus effect in our experiment. This effect is more clearly established than the underweighting of the own decision. Subjects more consistently weight their own decision positively than that they underweight it.

3.2. Analysis of items without information

Table 5 shows the average estimates given for the items where we did not provide any information about other subjects' Decision 1. The columns show from left to right a key to the content of the item, the number of A-subjects, their average estimate of A choices, the

Table 5. Estimates for items without representative information.

Item	A #	A av	B #	B av	A av - B av
Payoff system	48	6.8	32	5.0	1.8
Public good	58	8.5	22	3.7	4.8
Tax evasion	42	7.2	38	4.4	2.8
Writing	29	5.7	51	4.2	1.5
Donation ai	41	7.6	39	3.8	3.8
Elevator	57	7.3	23	4.9	2.4
Exam	50	8.1	30	4.4	3.7
Stamps	57	9.1	23	6.0	3.1

number of B-subjects, their average estimate of A choices, and the difference between the average estimates.

3.2.1. The consensus effect. For all items, the average estimate of A choices is higher for the A-subjects than for the B-subjects. Thus there is a consensus effect at the aggregate level. The same holds for five items ("Public Good", "Tax Evasion", "Donation ai", "Exam", "Stamps") for each of the five sessions. Hence, by using a binomial test as in the preceding sections, the hypothesis that the estimates are not biased towards the own choice can be rejected at the 5%-level. For the remaining three items, average estimates given by the A-subjects are higher in four out of five sessions and hence also clearly in line with a consensus effect, though not significantly. Thus we replicate the results of conventional research on the false consensus effect. This implies that the non-existence of a false consensus effect for the items with information is really due to the definition we apply and the information but not to any other aspect of the design. In particular, incentives alone do not eliminate a consensus effect.

3.2.2. The false consensus effect. The definition we gave above for the (truly) false consensus effect requires that the weight assigned to the own decision can be compared to the weight given to any other subject's decision. Hence, in the absence of information concerning other subjects' decisions, the falsity of a present consensus effect cannot be decided.

An alternative way is to compare the given estimates to those that would be optimal estimates based on Bayesian updating of a reasonable prior belief. Since it is difficult to justify a particular prior belief, usually a uniform prior belief is chosen (see Dawes, 1989). An estimate of more consensus than justified by Bayesian updating would then be considered an indication of a false consensus effect.

However, the assumption of a uniform prior belief (as that of any particular prior belief) is of course arbitrary. On the other hand we consider the only reasonable alternative form of prior beliefs to be unimodal. Such a prior belief would have a smaller variance than a uniform prior belief and would therefore be more robust to updating. Hence Bayesian updating of such a prior belief would result in a lower difference between the optimal estimates of

A-subjects and B-subjects. Thus a false consensus effect could be considered present if the observed difference is larger than that between optimal estimates for a uniform prior.

Several problems remain with this approach. First of all, it is not necessarily a sign of overweighting of the own decision if too extreme updating is observed. It could simply be that subjects give too much weight to any information about a single choice and this would thus simply indicate an inability to carry out Bayesian updating but not that subjects give special attention to a decision just because it is their own.[10] Second, with our incentive system, for a uniform prior no overweighting is possible.[11] To maximize the expected payoff, subjects have to maximize the probability of an exact hit and should hence give the mode of the posterior belief as the estimate. Under the assumption of a uniform prior belief the mode of the posterior belief is either all A or no A, depending on the own decisions.[12] Thus already optimal weighting leads to extreme estimates. Furthermore, this approach would not allow to detect underweighting of the own decision. If the difference between the estimates of A-subjects and B-subjects is smaller than that between optimal estimates for a uniform prior, this could always be explained by a prior with smaller variance.

The fact that the four items from the category "morally relevant" are among those five items with the strongest consensus effect might be considered as support for the hypothesis that a possible false consensus effect has an ego-defensive function. However, this effect is very small for the items from the same category for which we provided information. The consensus effect for the items which are payoff-relevant is on average stronger than that of those which are not. This contradicts the hypothesis that the consensus effect is, in fact, an adaptation effect which would imply that it would decrease if incentives for the true revelation of preferences are provided. The results for the items with information are along the same line in this respect.

4. Concluding remarks

Our study was designed to provide an easy test for a (truly) false consensus effect and to overcome the shortcomings of previous studies by providing clear monetary incentives for the revelation of true beliefs.

It indicates that, given both these incentives and representative information, although subjects show a consensus effect, they show no false consensus effect. They significantly underweight, not overweight, their own decision compared to the representative information we provided. This primary result has qualitatively been replicated by A. Ortmann and R. Hertwig who used an adaptation of our design in an experiment at Bowdoin College in December 1998. The results also fit the answers to the questionnaires that subjects completed after the experiment.[13]

Thus the false consensus effect might not be very relevant for economic applications. Plainly, it could even be a result of bad definition. However, this conclusion might hold only for the type of information we provide, namely explicit information without uncertainty. We do not know what the results would be like if the information were implicit, for example if subjects observed the behavior of other subjects in repeated games, but did not receive a list of others' decisions. In this case, it might happen that subjects overweight their own decisions because of problems in keeping track of others' behavior. This situation may be more relevant to economics since, in reality, people often have the opportunity to observe other people's behavior but do not receive a list of what they did. Certainly this is an area for future research.

Offerman et al. (1996) provided such implicit information and did not find a false consensus effect. They conducted a public good experiment and did not find any systematic difference between players and spectators. Hence, the own decision is not weighted more than the information about other subjects. Offerman et al. did not even find a consensus effect in the sense that cooperators and individualists did not differ in their estimates of cooperation rates. However, this result has to be treated with care, since they did not control for the information the subjects received. Given their finite subject set in each session, cooperators on average met fewer cooperators than individualists did. Hence the equality of the estimates of cooperation rates means that, if subjects used the information at all, they also gave some weight to their own decisions. So there is a consensus effect. The results of Offerman et al. are in line with ours in the sense that there is a consensus effect, but no false consensus effect.[14]

Concerning the rounds where we did not provide any information, we believe that we cannot decide whether the consensus effect we find is a false consensus effect. Even if one can overcome the problem to measure prior beliefs, examining the false consensus effect in the absence of other information does not seem to be a very promising idea. As noted in the introduction, we believe that it does not even make much sense to define a false consensus effect without reference to other information. Only if a possible overweighting of the own decision is detected compared to other information can this be traced to giving a special role to the self and not just to any available information.

Appendix A

Experimental protocol

The experiment was conducted at Humboldt-Universität zu Berlin. Subjects where invited to register for an experiment through posters and announcements in classes. When subjects came to the computer pool arranged they were randomly placed at separated, isolated computer terminals. They received written instructions (see Appendix B) for which they could ask for clarification. They then played the sequence of Decide, Receive information, and Estimate for 16 different items (see Appendix C) without any feedback about their hit rate. After this they had to fill in a questionnaire before getting feedback about their hit rate and payoff. Finally, they were paid according to their number of hits and their decisions about donations, form and time of payoff.[15]

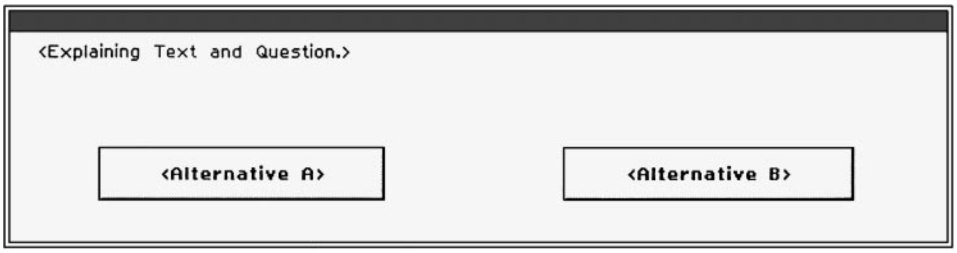
Appendix B

Translated instructions

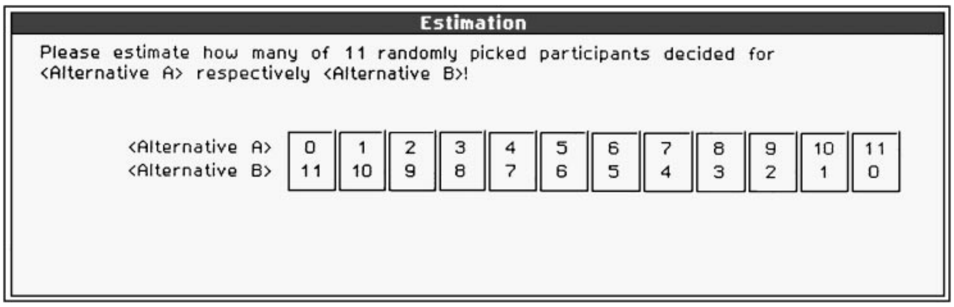
Welcome to our experiment. Please read the following instructions carefully. If you have any difficulty in understanding, do not ask for help out loud, just raise your hand. We will then answer your questions privately. Please stop communicating with other participants from now on.

You will get a showup fee of DM 10.- for your participation. You can gain or lose additional money during the experiment. You will end up with a positive amount in any case.

The experiment consists of 16 rounds. In each of these rounds you have to make two decisions. First you have to choose between two alternatives (Decision 1). Simply click the relevant button to make your choice.



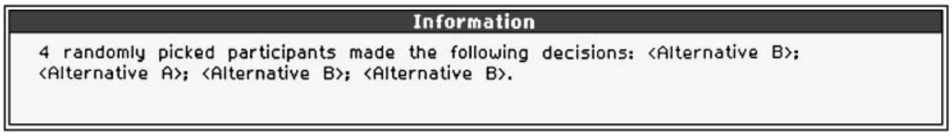
Next your task is to estimate how eleven other subjects decided in Decision 1 (Decision 2). Those eleven subjects are randomly picked from the participants, independently for every participant and round. You will not know who these people are. Please choose a distribution by clicking the relevant field. The upper number in each field means the number of subjects who have chosen alternative A. The lower number means the number of subjects who have chosen Alternative B.



For example, if you expect that two out of eleven subjects have chosen ⟨ Alternative A ⟩ and nine have chosen ⟨ Alternative B ⟩ then click the field:

2
9

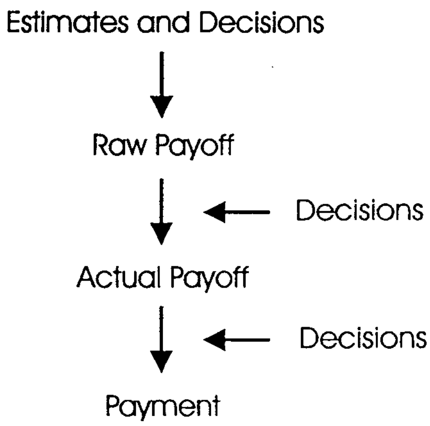
In some rounds you will receive some information before making Decision 2. You will be informed about how four other participants decided in Decision 1. (You do not have to estimate Decision 1 for any of them.)



These four subjects will also be randomly picked independently for every participant and round. Your own decision will not be included. You will not know about whom you received information. Other participants might receive information about your decision but in this case they will not know you were the decision maker.

Your actual payoff will be determined as follows: The number of correct estimates in Decision 2 determines your raw payoff. It consists of DM 10.- showup fee and DM 4.- for every correct estimate (hit). You will not receive any information about your hit rate or your current raw payoff during the experiment.

Some of the Decisions 1 have an effect on the size and form of your raw payoff. There are some transfer decisions which govern how your raw payoff is converted into your actual payoff. As well, there are some decisions which govern the form of your payment. Hence, your payoff results according to the following scheme. This may look complicated at first, but it will become clear during the experiment.



Please keep the sheet with your subject-id. Without it you won't receive any payment.

Appendix C

Items

Fruit: What do you eat more frequently, Oranges or Bananas?

Oranges Bananas

Free-riding Do you occasionally free-ride on public transport?

No Yes

Payoff System: You can change the payoff system (up to now DM 10.- showup fee and DM 4.- per hit) and receive DM 5.- showup fee and DM 6.- per hit. Do you want to change?

Keep current system Change

Public Good: You can invest DM 1.- of your payoff in a shared fund. For each DM invested every participant will receive DM 0.25.

I invest DM 1.- I do not invest

Tax Evasion: Suppose you have a new washing machine delivered. The delivery man offers not to bill you for the sales tax if you go without a receipt. Do you accept this offer of tax evasion?

I accept I do not accept

Rich-Poor: If you are the one with the highest raw payoff, will you give away DM 2.- to the one with the lowest raw payoff?

I give away DM 2.- I do not give away anything

Lottery: You can take part in a lottery. Your payoff is then no longer determined by the hits in all rounds but we will randomly draw one round which is paid out 16 times. The showup fee remains the same.

I take part in the lottery I do not take part

Writing: What do you use more frequently, pencil or pen?

Pencil Pen

Donation ai: You can donate DM 1.- of your raw payoff to amnesty international. For every DM donated the experimenters will donate an additional DM 1.-. This donation will be deducted from your raw payoff.

I do not donate I donate DM 1.-

Time Preference: You can receive your payoff immediately after the experiment or you can get your payoff plus 10% interest after one month. Do you want your payoff now or later?

Now Later

Elevator: If there is an elevator, do you use it for going to the third floor or do you take the stairs?

Stairs Elevator

Exam: Do you allow neighbors who are unknown to you to copy from you in exams?

No Yes

Months: Which month do you prefer for holidays, March or October?

October March

Stamps: You can receive your payoff either in cash or in stamps. If you choose stamps you receive one stamp worth DM 1.10 for every DM of your payoff. We round up to entire stamps. What do you prefer?

Cash Stamps

Donation Chapel: You can donate DM 1.- of your raw payoff to the reconstruction of the Heiliggeist Chapel. For every DM donated the experimenters will donate an additional DM 1.-. This donation will be deducted from your raw payoff.

I donate DM 1.- I do not donate

Waiter: Do you usually correct the waiter in a restaurant who has miscalculated a bill in your favor?

Yes No

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Notes

1. See for example Selten and Ockenfels (1998) or Jacobsen and Sadrieh (1996).
2. For example, in the study by Ross et al. (1997) subjects were asked to walk around campus wearing a sandwich board saying “Repent”. Those who agreed estimated that 63.5% of their peers would do so, while those who refused expected only 23.3% to agree.
3. The inclusion of a false consensus effect in game theoretic models can yield interesting insights and results (see e.g. Engelmann, 2000, chapter 4).
4. The disappearance of other cognitive illusions that are important in economics is investigated in Gigerenzer et al. (in press).
5. That the number of subjects equals the number of rounds is a mere coincidence and of no significance to the experiment.
6. Participants could choose to get their payoff in stamps. If they did, we counted the cash equivalent of the stamps, which was DM 1.10.

7. To subjects, options always were named by an abbreviation of the respective meaning (see Appendix C), not by these labels.
8. Although we are aware of the fact that we cannot legitimately treat the different items in one session as independent, it is illustrative to ignore this problem. If we considered each item in each session as independent observation and defined hits as above, we would obtain 31 out of possible 40 (eight items times five sessions) hits. This would allow the hypothesis that there is no consensus effect to be rejected at a 0.5%-level.
9. There is no notable gender difference with respect to either the consensus or false consensus effects. Compared to Economics and business students other subjects showed less underweighting but also no false consensus.
10. In awareness of this possibility Alicke and Largo (1995) designed an experiment to compare the weight of the own decision with information about other subjects. Their design is similar to ours in that they also provide information about four other subjects. They find a (truly) false consensus effect, but, in contrast to our study, their items were performance tests. Conceptionally, this is very different, since the background information concerning performance tests in a familiar area (psychology students had to take a test in personality assessment) is much broader than that of preferences regarding unfamiliar choices. Usually subjects have some reasonable belief about their relative performance and thus information about their success is much more informative than information about the success of a randomly chosen subject. Hence, in this context, it can be perfectly rational to assign greater weight to the own success or failure than to that of another subject.
11. One could consider this as a defect of our incentive scheme. However, since our focus was on the items with information, we preferred an easy incentive scheme over one that would have allowed to detect overweighting in principle, given the problems with this approach.
12. Given a uniform prior over the probability p for a choice of A, the posterior probability for t A's out of m observations after observing 1 A in 1 observation is given by $2\int_0^1 p^{t+1}(1-p)^{m-t}\binom{m}{t}dp = \frac{2(t+1)}{(m+1)(m+2)}$, which is maximal for $t = m$.
13. Most subjects stated that they used their own choice to adapt estimates they had formed based on the information given. This process may have led to an underweighting of the own decision. Subjects seemed to be uncertain about how to weight the own decision, although they were aware that they should consider it somehow (except for two subjects who stated explicitly that they had information not just about four subjects' decisions but about five, including themselves). Concerning the rounds without information, the majority of subjects stated that they based their expectations on their own decision, which is clearly in line with the observed consensus effect.
14. In our experiment, however, a public good game had the strongest consensus effect among the items for which we did not provide any information.
15. Subjects on average dramatically overestimated their hit rate. The average estimated hit rate was 28.9%, whereas the average actual hit rate was 11.56% (only slightly above the expected hit rate of pure guessing $\frac{1}{12} \approx 8.33\%$). Although the subjects used the provided information in a reasonable way surprinsingly the actual hit rate for the items without information was slightly better than for the items with information (77 vs. 71 out of 640 possible hits).

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