Appendix 1: computer screens and instructions

Downloadable appendix but here included for the referees
(a shortened version of the experiment can be played at
http:www.creedexperiment.nl/recht2/begin.html in English or Dutch)

Computer screens part 1 and part 2

Period 2 of 30

There are 6 pieces of evidence:

1EXO 3EXO

1INC 3INC 3INC 3INC

A. **My decision:**

○ ACQUITTAL	○ CONVICTION
100 points when **innocent** -300 points when **the perpetrator**	-1500 points when **innocent** 100 points when **the perpetrator**

B. **I estimate the probability that the accused is guilty:** _____ %

Refer to the payoff table for decision B

Send

*At the end of the experiment you will learn for each period whether the accused was the perpetrator or innocent, and whether decision A **or** B will be paid.*

Period 2 of 30

2EXO 2INC

Another inquiry

-10 points

I decide:

ACQUITTAL	CONVICTION
100 points when **innocent** -300 points when **the perpetrator**	-1500 points when **innocent** 100 points when **the perpetrator**

Instructions of experiment on judicial reasoning (translated from Dutch)

Introduction Part 1

The experiment concerns the task of the judiciary. A judge tries cases that are brought before him. The verdict in a case is based on facts that parties put forward and inquiries that the judge conducts or orders. The cases that will be put to you are in the area of criminal law and concern the adjudication of criminal offences. The experiment deals only with the question whether the accused is guilty or not guilty (and not the determination of the punishment).

In the cases you will have to try, uncertainty exists about the culpability of the defendant. In practice, a judge must above all prevent that innocent defendants are condemned, not only in the interest of these innocent persons, but also because the real perpetrator will remain at large and may again commit crimes. At the same time the judge will want to prevent that real perpetrators are acquitted. The crime would remain unpunished and the perpetrator could commit new crimes. However, without sufficient evidence the accused must be acquitted: the charges have not been proven beyond reasonable doubt.

The experiment consists of two parts. We will now explain the first part. After part 1 you will receive the instructions for part 2. In both parts you can earn points that will be exchanged to money at the end of the experiment: 100 points equals 1 euro.

Part 1 consists of 30 cases. About each case you will be asked to take two decisions: Decision **A** concerns the acquittal or conviction of the accused; decision **B** asks you to estimate the probability that the accused is guilty.

Decision A: to acquit or to convict

In every case you will have to choose between conviction and acquittal. If your judgement is correct, thus either if you convict a real perpetrator or if you acquit an innocent person, you will earn 100 points. If you convict an innocent defendant, that will cost you 1500 points. If you acquit a real perpetrator, that will cost you 300 points. In addition you will receive a fixed salary of 100 points per period.

To summarize:

		Real situation: the accused is	
		the perpetrator	**innocent**
Your decision	**Conviction**	100	-1500
	Acquittal	-300	100

Decision B: the probability that the accused is guilty

In each case you will be asked to estimate the probability that the accused is guilty. With this answer you can earn points as well. See the separate sheet. For example: when you report a probability of 20% that the accused is guilty, you will earn 36 points if the accused is the perpetrator and 96 points if the accused is innocent. The table is constructed in such a way that it is to your advantage to give your opinion

truthfully. If you click here[1] you will see an explanation and for the mathematically inclined a formal proof. It is not necessary that you understand this proof; it is sufficient that you know it is in your own interest to provide your real belief.

You can only continue with the next case, when you have taken decisions A and B. You will be paid either for your decision A or your decision B. The computer determines at random which one of the two decisions will be paid out. It is advisable to make both decisions as good as you can, because you do not know which decision will be paid.

Evidence

A judge bases the decision to acquit or convict a defendant accused on the available evidence. Evidence can be incriminating or exonerating. Incriminating is for instance when a witness has seen the accused close to the scene of the crime around the time it took place. Exonerating is for instance when a witness has seen the accused far away from the scene of the crime at the time it occurred.

Incriminating and exonerating information that can be derived from a single piece of evidence can differ in strength of evidence. For instance, assume that in the fist of the victim of a violent crime blond hair that in all likelihood belongs to the perpetrator is found. If the accused has blond hair, this is incriminating evidence, but it is not very informative, because a large part of the population has blond hair. If the accused has black hair, the evidence is exonerating and much more informative. Furthermore, pieces of evidence can differ in strength. The DNA of the hair would offer much stronger evidence than the colour, as only a small number of people would have the same DNA-profile.

In the experiment you will receive for each piece of evidence information about the probability that this evidence will be happened upon in case of a perpetrator and the probability that this evidence will be happened upon in case of a person who is innocent. The evidence is stronger, the larger the difference between the two probabilities. The evidence will not be further described. Also, you will not be informed whether the evidence is put forward by the prosecution (public prosecutor) or the defense (lawyer of the accused).

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[1] In a pop up window the following text appeared: "**Example**

We will illustrate this with an example. You believe that the probability that the suspect is guilty is 70%. If you report 70%, you will earn in about 70% of the cases 91 points and in 30% of the cases 51 point, which is on average 0.70*91+0.30*51=63.7+15.3=89 points. If you do not report your real belief, but for example 90% you will earn more if the suspect is guilty (99 instead of 91 points) but this does compensate for the cases where the suspect is innocent (only 19 points): the average earnings will be 0.70*99+0.30*19=69.3+5.7=75 points, which is less than the 89 points you would earn with your honest report. The same holds when you report a lower probability, say 60%. In that case your average earnings will be 0.70*84+0.30*64=58.8+19.2=78 points. To conclude: it is in your own interest to report your true beliefs!

For the mathematically inclined we also provide a formal proof. You do not have to understand this proof to be successful in the experiment, but you should keep in mind that it is in your own interest to report your true beliefs.

The table is based upon the following formula. If p is the reported probability, the earnings are 50+p-[p*p+(1-p)*(1-p)]/2 if the suspect is guilty and 150-p-[p*p+(1-p)*(1-p)]/2 if the suspect is innocent. Assume that the real probability is q. Which *p* will optimize your expected earnings? The expected earnings are q*(50+p-[p*p+(1-p)*(1-p)]/2) +(1-q)(150-p-[p*p+(1-p)*(1-p)]/2) and to calculate the optimum we differentiate to p:

q*(1-p+(1-p))+(1-q)*(-1-p+1-p)=q*(2-2p)+(1-q)*(-2p)=2q-2pq-2p+2pq=2q-2p

This will be 0 only if p=q and this is a maximum (because the second derivation is -2 which is smaller than 0). QED

In each case the computer determines randomly (probability of 50%) whether the accused has committed the crime or not. Next, the computer determines the corresponding items of evidence, using the relevant probability distributions (see below). This happens at random as well.

All possible inquires that lead to evidence fall in three categories. Several inquiries of each type can take place, possibly with contradictory outcomes. Each type of inquiry results in either an incriminating or an exonerating piece of evidence. All inquiries lead to evidence; the probabilities of incriminating or exonerating evidence add to 100%, both for the perpetrator and an innocent suspect. The strength of evidence of the three types differs.

Type of inquiry	**Possible outcome**	**Code in experiment**	**Probability of evidence if the accused is the perpetrator**	**Probability of evidence if the accused is innocent**	**The strength of the evidence is found by dividing both probabilities**
1	**Incriminating**	1INC	84%	36%	84/36=7/3=2.33
	Exonerating	1EXO	16%	64%	16/64=1/4=0.25
2	**Incriminating**	2INC	64%	16%	64/16=4.00
	Exonerating	2EXO	36%	84%	36/84=3/7=0.43
3	**Incriminating**	3INC	60%	40%	60/40=3/2=1.50
	Exonerating	3EXO	40%	60%	40/60=2/3=0.66

An incriminating piece of evidence has a strength that is larger than 1 and is more informative the larger the strength. An exonerating item of evidence has a strength that is smaller than 1 and is more informative the smaller the strength. For ease of exposition the items of evidence have a colour and font size. Incriminating evidence is given in red and exonerating evidence in blue. Font size varies with the strength of evidence. The strongest incriminating evidence is 2INC ; the probability associated with this evidence is 4 times as large when the accused is guilty than when the accused is innocent. The strongest exonerating evidence is 1EXO ; the probability associated with this evidence is 4 times as large when the accused is innocent than when the accused is the perpetrator. The one but strongest incriminating and exonerating evidence (1INC and 2EXO, respectively) are presented in a smaller font. Finally, the results of inquiry 3 are represented smallest: 3INC en 3EXO .

Procedure per case

The computer generates a case by determining at random whether the accused has committed the crime or not. These two possibilities have equal probability (50%). Of course, you will not be informed about the outcome.

Next, the computer generates a number of items of evidence. This number is not the same in each period and varies at random between 3 and 6 (independent of the guilt or absence of guilt of the accused). The computer generates the items of evidence in the following way:
1. the type of inquiry is chosen (40% probability of type 3 and 30% probability of type 1 and 2 each);
2. the outcome of the inquiry is determined, using the relevant probabilities .

For example: in this period the accused is the perpetrator. The computer decides randomly to do inquiry 2. this means that incriminating evidence will be generated with probability 64%. The computer draws a number between 1 and 100. Assume that number is 74: because 74 is larger than 64 the evidence will be exonerating 2EXO with evidence strength 0.43.

All evidence will be presented at once, sorted on kind (color) and strength (size of font).

We will ask you some questions to check understanding and after that you will play some practice periods. Raise your hand if you need help.

Questions (participants could only continue after they answered all questions correctly. Feedback was provided to all questions by the computer, summarizing relevant parts of the instructions)
To make sure you understand the instructions we will ask you some questions.
Question 1.
Based upon the evidence, you decide to convict the accused (decision A). However, it turns out the accused was innocent. Assuming that in this period decision A is paid out, what will be your earnings (not including your salary)?
Question 2
Based upon the available evidence a participant believes the probability that the accused is guilty to be 75% (decision B). It turns out that the accused was the perpetrator. Assuming that decision B will be paid out, what will be her earnings (not including the salary)?
Question 3.
Assume that in the 30 periods exactly 15 accused are innocent and 15 are the perpetrator.

a) A participant acquits all accused. What would this participant earn (assuming that decision A will be paid in all periods, excluding salary)?
b) A participant convicts all accused. What would this participant earn (assuming that decision A will be paid in all periods, excluding salary)?
c) A participant acquits all innocents and convicts all perpetrators. What would this participant earn (assuming that decision A will be paid in all periods, excluding salary)?

Question 4.
Is the following statement true or false? "Only one inquiry of type 2 can be done in a period."

Introduction Part 2

Also in this part of the experiment you will be asked to try cases, in which uncertainty exists about the guilt of the accused. This uncertainty can now be reduced by conducting inquiries, but will never disappear completely. In practice, judges can order forensic inquiries, hear witnesses, consult experts, study the available written documents to reach a decision. Judges do not have unlimited time to adjudicate cases. Other cases are waiting to be tried and the criminal justice system would collapse if judges would continue studying cases and ordering further inquiries. Consequently, judges must be decisive.

In each period you will start with **one** item of evidence, which you will receive for free. Next, you have to decide whether to order an additional inquiry or not. If you refrain from ordering an inquiry, you have to pass sentence (acquittal or conviction). If you order an inquiry, the inquiry always results in an incriminating of exonerating piece of evidence. An inquiry costs **10 points**. After you have received the outcome of the inquiry, you have to decide again whether to order a further inquiry or pass sentence. In this part all inquiries are of the same type. The maximum number of inquiries that you may order is 7.

In this part you will not be asked about probabilities. Your only task is to gather the evidence you find necessary to reach a decision.

The procedure used by the computer to generate evidence and the earnings table is the same as in part 1 and. As before, you will receive a salary of 100 points per period in addition.

		Real situation: the accused is	
		the perpetrator	**innocent**
Your decision	**Conviction**	100	-1500
	Acquittal	-300	100

Each inquiry ordered costs 10 points.

You are asked to try 30 cases. In each case the computer determines randomly (probability of 50%) whether the accused has committed the crime or not. Next, the computer determines the corresponding items of evidence, using the relevant probability distributions. This happens at random as well.

Evidence

All inquiries that can be ordered are of the same type (type 2, as in part 1). Each inquiry either results in an incriminating or exonerating piece of evidence.

Type of inquiry	Possible outcome	Code in experiment	Probability of evidence if the accused is the perpetrator	Probability of evidence if the accused is innocent	The strength of the evidence is found by dividing both probabilities
2	Incriminating	2INC	64%	16%	64/16=4.00
	Exoneratin g	2EXO	36%	84%	36/84=3/7=0.43

Procedure per period

The procedure is the same as in part 1, but there is only one kind of inquiry (what was called inquiry 2 in part 1). In every period the computer generates a case by determining at random whether the accused has committed the crime or not. These two possibilities have equal probability (50%), you will not be informed about the outcome.
Next, the computer generates a the items of evidence you ask for.

For example: in this period the accused is the perpetrator. The computer generates incriminating evidence with probability 64%. The computer draws a number between 1 and 100. Assume that number is 74: because 74 is larger than 64 the evidence will be exonerating 2EXO with evidence strength 0.43.
Only at the end of the experiment you will learn whether the accused was innocent or the perpetrator.

We will ask you some questions to check understanding and after that you will play some practice periods. Raise your hand if you need help.

Questions

Question 1.
You ask for three pieces of evidence and decide to acquit the accused. However, the accused was the perpetrator. What will your earnings be this period (excluding salary)?
Question 2.
You ask 6 pieces of evidence and you decide to acquit the accused. The accused is actually innocent. What will your earnings be (excluding salary)?.

Earnings decision B, part 1

Reported probability of guilt	Earnings if the accused is perpetrator	Earnings if the accused is innocent	Reported probability of guilt	Earnings if the accused is perpetrator	Earnings if the accused is innocent
0%	0.00	100.00			
1%	1.99	99.99	51%	75.99	73.99
2%	3.96	99.96	52%	76.96	72.96
3%	5.91	99.91	53%	77.91	71.91
4%	7.84	99.84	54%	78.84	70.84
5%	9.75	99.75	55%	79.75	69.75
6%	11.64	99.64	56%	80.64	68.64
7%	13.51	99.51	57%	81.51	67.51
8%	15.36	99.36	58%	82.36	66.36
9%	17.19	99.19	59%	83.19	65.19
10%	19.00	99.00	60%	84.00	64.00
11%	20.79	98.79	61%	84.79	62.79
12%	22.56	98.56	62%	85.56	61.56
13%	24.31	98.31	63%	86.31	60.31
14%	26.04	98.04	64%	87.04	59.04
15%	27.75	97.75	65%	87.75	57.75
16%	29.44	97.44	66%	88.44	56.44
17%	31.11	97.11	67%	89.11	55.11
18%	32.76	96.76	68%	89.76	53.76
19%	34.39	96.39	69%	90.39	52.39
20%	36.00	96.00	70%	91.00	51.00
21%	37.59	95.59	71%	91.59	49.59
22%	39.16	95.16	72%	92.16	48.16
23%	40.71	94.71	73%	92.71	46.71
24%	42.24	94.24	74%	93.24	45.24
25%	43.75	93.75	75%	93.75	43.75
26%	45.24	93.24	76%	94.24	42.24
27%	46.71	92.71	77%	94.71	40.71
28%	48.16	92.16	78%	95.16	39.16
29%	49.59	91.59	79%	95.59	37.59
30%	51.00	91.00	80%	96.00	36.00
31%	52.39	90.39	81%	96.39	34.39
32%	53.76	89.76	82%	96.76	32.76
33%	55.11	89.11	83%	97.11	31.11
34%	56.44	88.44	84%	97.44	29.44
35%	57.75	87.75	85%	97.75	27.75
36%	59.04	87.04	86%	98.04	26.04
37%	60.31	86.31	87%	98.31	24.31
38%	61.56	85.56	88%	98.56	22.56
39%	62.79	84.79	89%	98.79	20.79
40%	64.00	84.00	90%	99.00	19.00
41%	65.19	83.19	91%	99.19	17.19
42%	66.36	82.36	92%	99.36	15.36
43%	67.51	81.51	93%	99.51	13.51
44%	68.64	80.64	94%	99.64	11.64
45%	69.75	79.75	95%	99.75	9.75
46%	70.84	78.84	96%	99.84	7.84
47%	71.91	77.91	97%	99.91	5.91
48%	72.96	76.96	98%	99.96	3.96
49%	73.99	75.99	99%	99.99	1.99
50%	75.00	75.00	100%	100.00	0.00

Appendix 2 Description of cases and average decisions taken in parts 1 and 2 of the experiment

		Evidence						Probability			Decision	
period	**#evidence**	**EXO 1**	**EXO 2**	**EXO 3**	**INC 2**	**INC 1**	**INC 3**	**objective**	**subjective (all)**	**subjective (cat 1)**	**optimal decision**	**% convictions**
1	6	3	1	1	0	1	0	1.0%	36.7%	19.7%	acquit	1.2%
2	6	1	0	1	0	1	3	56.5%	54.3%	52.7%	acquit	40.7%
3	4	0	0	2	0	2	0	70.3%	65.3%	64.7%	acquit	72.2%
4	6	0	0	0	1	2	3	98.7%	94.3%	94.8%	convict	99.4%
5	5	0	2	2	1	0	0	24.4%	44.7%	38.3%	acquit	8.6%
6	6	1	3	2	0	0	0	0.9%	43.4%	6.9%	acquit	0.0%
7	4	0	0	1	0	2	1	84.3%	73.5%	74.1%	convict	94.4%
8	3	0	0	0	1	1	1	93.3%	86.1%	88.2%	convict	98.8%
9	3	1	1	0	0	1	0	20.0%	40.5%	33.4%	acquit	4.3%
10	5	1	1	1	0	0	2	13.8%	36.9%	30.0%	acquit	1.2%
11	4	1	0	1	0	2	0	47.3%	50.6%	48.5%	acquit	24.6%
12	3	2	1	0	0	0	0	2.6%	32.4%	11.4%	acquit	0.0%
13	5	0	1	1	2	0	1	87.2%	68.8%	69.2%	convict	80.9%
14	5	2	1	1	0	1	0	4.0%	30.0%	16.5%	acquit	0.0%
15	4	0	3	0	1	0	0	24.1%	43.5%	37.4%	acquit	9.9%
16	5	0	1	2	0	1	1	39.6%	46.1%	43.1%	acquit	11.1%
17	3	1	0	1	0	0	1	19.8%	32.9%	25.2%	acquit	1.2%
18	3	0	1	0	0	2	0	70.0%	63.7%	63.8%	acquit	66.0%
19	3	0	1	1	1	0	0	53.2%	51.4%	51.1%	acquit	30.2%
20	5	0	1	1	0	1	2	59.8%	57.1%	55.8%	acquit	42.6%
21	5	0	0	2	1	1	1	85.9%	73.8%	73.6%	convict	93.2%
22	3	0	1	0	0	0	2	49.2%	46.6%	45.1%	acquit	16.0%
23	4	0	0	0	1	3	0	98.1%	91.5%	92.5%	convict	98.8%
24	3	0	0	0	1	1	1	93.3%	86.9%	87.4%	convict	96.9%
25	5	0	0	1	1	2	1	95.6%	82.5%	83.0%	convict	95.7%
26	4	0	1	1	0	2	0	60.6%	55.3%	55.6%	acquit	37.0%
27	4	1	0	2	0	1	0	20.2%	35.7%	28.5%	acquit	1.8%
28	4	1	0	2	0	0	1	14.0%	28.0%	21.1%	acquit	0.0%
29	4	1	1	0	1	0	1	39.2%	44.0%	42.6%	acquit	6.8%
30	6	0	2	0	0	3	1	77.8%	65.4%	65.3%	acquit	71.6%
Average								50.2%	55.4%	50.7%	26.7%	40.2%

Table App1: Evidence, objective and subjective probabilities and optimal and actual decisions in part 1 per period.

Period	Evidence (**bold** is optimal)	Optimal number evidence	Average number evidence	Optimal decision	% convictions
1	**IN-EX-EX-EX-EX**-EX-EX	5	4.1543	convict	93.2%
2	**IN-EX-IN-IN-EX-IN**-IN	6	4.5556	acquit	9.3%
3	**IN-EX-EX-IN-IN-IN**-EX	6	4.9074	acquit	30.9%
4	**EX-EX-EX**-EX-IN-EX-IN	3	3.2531	convict	99.4%
5	**IN-IN-IN**-IN-IN-EX-IN	3	3.2963	acquit	0.0%
6	**IN-IN-IN**-IN-IN-EX-EX	3	3.3642	acquit	1.2%
7	**EX-EX-IN-IN-IN-IN**-EX	6	4.6728	acquit	36.4%
8	**IN-IN-EX-IN-EX-IN**-IN	6	4.4198	acquit	7.4%
9	**EX-EX-IN-IN-EX-EX**-EX	6	4.7778	convict	82.7%
10	**EX-IN-IN-EX-EX-IN-EX**	7	5.0247	convict	53.1%
11	**IN-EX-EX-EX-EX**-EX-EX	5	4.2716	convict	93.2%
12	**IN-IN-EX-EX-IN-IN**-IN	6	4.8025	acquit	5.6%
13	**EX-IN-IN-EX-IN-EX-IN**	7	5.1111	acquit	18.5%
14	**IN-EX-EX-EX-EX**-EX-EX	5	4.3148	convict	94.4%
15	**EX-IN-EX-IN-IN-IN**-IN	6	4.9877	acquit	19.1%
16	**IN-IN-EX-EX-IN-EX-IN**	7	4.7284	acquit	18.5%
17	**IN-EX-EX-EX-EX**-EX-IN	5	4.2901	convict	94.4%
18	**EX-IN-EX-IN-EX-EX**-IN	6	5.1173	convict	60.5%
19	**IN-EX-IN-EX-EX-IN-EX**	7	5.1728	convict	46.3%
20	**EX-IN-IN-EX-EX-IN-EX**	7	5.0432	convict	45.1%
21	**IN-IN-IN**-EX-IN-EX-EX	3	3.4691	acquit	2.5%
22	**EX-IN-EX-IN-IN-IN**-IN	6	4.9444	acquit	14.8%
23	**EX-EX-EX**-IN-IN-EX-IN	3	3.7593	convict	89.5%
24	**IN-EX-IN-IN-IN**-EX-EX	5	4.1358	acquit	4.9%
25	**EX-IN-EX-EX-IN-IN-IN**	7	5.0432	acquit	49.4%
26	**IN-IN-IN**-EX-IN-EX-EX	3	3.4198	acquit	2.5%
27	**EX-IN-IN-IN-IN**-IN-IN	5	4.1173	acquit	3.1%
28	**EX-EX-EX**-IN-EX-IN-IN	3	3.6975	convict	88.9%
29	**EX-IN-IN-EX-IN-IN**-IN	6	4.9444	acquit	6.8%
30	**EX-EX-IN-IN-IN-IN**-IN	6	4.9259	acquit	23.5%
Average		5.3	4.4241	0.4	39.8%

Table App2: Evidence, optimal and average decisions in part 2 per period. In the two last columns acquittal=0 and conviction=1.

Appendix 3: Loglinear regressions per participant

Downloadable but included for the referees here

The dependent variable is the logarithm of subjective probability of guilt, the dependent variables are the number of pieces of evidence of different types.

Category 1: subjects with regressions with a adjusted R-square larger than 0.5 and at most one coefficient with the wrong sign.

Category 2: all subjects not in category 1 or 3.

Category 3: subjects without regression (too little variation in the data, e.g. subjects who report always 50%) or with EXO-coefficients with the wrong sign (indicating that they misunderstood the task and reported their confidence instead of the probability of guilt).

*** p<0.01, ** p<0.05, * p<0.10

Category 1, 82 subjects

Subject	**Adj R Square**	**INC_1**	**INC_2**	**INC_3**	**EXO_1**	**EXO_2**	**EXO_3**	**(Constant)**
	Theory:	**0.85**	**1.39**	**0.41**	**-1.39**	**-0.85**	**-0.41**	**0**
218	0.98	0.86***	1.35***	0.49***	-1.36***	-0.63***	-0.28***	-0.33
313	0.95	0.77***	1.49***	0.19	-1.45***	-0.83***	-0.53***	0.30
27	0.94	0.57***	1.00***	0.33***	-0.96***	-0.33***	-0.12	-0.42
23	0.94	1.02***	1.55***	0.41***	-0.95***	-0.80***	-0.48***	-0.42
302	0.93	0.58***	0.81***	0.24***	-0.75***	-0.52***	-0.20**	-0.10
318	0.92	0.71***	2.33***	0.18	-0.45**	-0.55***	-0.30**	0.40
217	0.92	0.85***	1.84***	0.40**	-1.68***	-0.89***	-0.59***	0.16
607	0.91	0.50***	1.02***	0.19	-1.12***	-0.62***	-0.37**	0.15
705	0.91	0.25***	0.45***	0.08*	-0.32***	-0.10**	-0.07	-0.18
29	0.90	0.47***	0.79***	0.07	-0.55***	-0.24**	-0.23**	-0.15
717	0.90	0.53***	1.18***	0.20	-1.11***	-0.58***	-0.36**	-0.34
406	0.90	0.81***	1.27***	0.48***	-0.52**	-0.74***	-0.56***	-0.32
24	0.89	1.10***	2.83***	0.29	-0.81***	-0.67***	-0.24	-1.13
22	0.88	0.55***	0.61***	0.18*	-0.51***	-0.34***	-0.28**	-0.07
207	0.88	0.56***	0.83***	0.38***	-0.64***	-0.51***	-0.43***	-0.44
709	0.88	0.38*	1.32***	0.15	-1.54***	-1.24***	-0.76***	1.46
702	0.88	0.50***	0.78***	0.34**	-0.86***	-0.86***	-0.38**	0.49
505	0.87	0.45***	0.88***	0.60***	-0.63***	-0.60***	-0.55***	-0.24
307	0.87	1.09***	0.58**	0.32**	-0.67***	-0.30**	0.05	-0.67
315	0.86	0.66***	1.11***	0.39**	-1.09***	-0.47**	-0.45**	-0.06
616	0.86	0.69***	0.95**	0.35	-1.53***	-1.20***	-0.85***	1.30
409	0.86	0.35***	0.87***	0.22*	-0.77***	-0.35***	-0.01	-0.03
712	0.86	0.77***	1.85***	0.46**	-0.95***	-0.41*	-0.23	-1.02
2	0.86	0.69***	1.53***	0.24	-1.16***	-0.97***	-0.60**	0.56
201	0.86	1.06***	1.12**	0.61**	-1.38***	-1.23***	-0.74**	0.24
508	0.86	0.37**	0.76***	0.23	-1.14***	-0.53***	-0.37**	0.42
35	0.85	0.35**	1.44***	0.40**	-0.73***	-0.44**	-0.28*	-0.28
317	0.85	0.41***	0.84***	0.27**	-0.75***	-0.41***	-0.11	-0.20
310	0.85	0.21**	0.43***	0.05	-0.69***	-0.32***	-0.16	0.28
713	0.85	0.68***	1.48***	0.29	-1.02***	-1.07***	-0.66**	-0.02
707	0.84	1.82***	2.36***	0.16	-1.30***	-0.72**	-0.78**	-1.41
11	0.84	0.63***	0.82***	0.21	-0.66***	-0.71***	-0.23	-0.13
214	0.84	0.77***	2.02***	0.38	-1.40***	-0.91***	-0.42	0.16
17	0.84	1.00***	1.56***	0.41*	-1.00***	-0.80***	-0.65**	-0.18
38	0.83	0.43***	0.22	0.07	-0.87***	-0.29**	-0.07	0.03
703	0.83	0.65**	1.44***	0.38	-1.54***	-0.78***	-0.37	0.01
7	0.83	1.65***	1.68***	0.59**	-0.02	-0.68**	-0.36	-1.70
21	0.83	0.66***	0.66**	0.52***	-0.79***	-0.62***	-0.36*	-0.09
407	0.83	0.65**	1.50***	0.18	-1.26***	-0.89***	-0.76***	0.79
215	0.83	0.85***	1.61***	0.22	-0.74***	-0.41*	-0.28	-0.64
612	0.83	0.95***	0.63	0.98***	-1.14***	-1.17***	-0.79**	0.40
425	0.83	0.49***	0.74***	0.06	-0.73***	-0.36**	-0.31**	-0.46
710	0.83	1.07***	1.78***	0.52**	-0.82**	-0.68**	-0.72**	-0.39
603	0.83	0.65***	0.48***	0.26***	-0.13	-0.01	-0.08	-0.92
401	0.82	0.68***	1.15***	-0.06	-1.47***	-0.81***	-0.62**	0.73

314	0.82	0.88***	1.46***	0.35	-0.70**	-1.15***	-0.55**	0.00
519	0.82	0.92***	1.28***	0.27	-1.56***	-0.68**	-0.39	-0.26
518	0.81	0.33**	1.07***	0.20	-0.51***	-0.23	-0.45***	-0.59
39	0.81	0.51***	1.07***	0.18*	-0.06	-0.06	-0.08	-0.29
46	0.81	0.49***	0.95***	0.20	-0.57***	-0.67***	-0.30*	0.08
617	0.81	0.65***	1.61***	0.21	-0.64**	-0.68***	-0.63***	0.09
413	0.80	0.89***	1.20**	0.20	-0.83**	-1.07***	-0.95***	0.67
718	0.80	0.67***	1.20***	0.47**	-0.87***	-0.75***	-0.35	-0.13
220	0.80	0.21***	0.06	0.05	-0.37***	-0.16**	-0.05	0.14
419	0.79	0.67**	1.10***	0.35	-1.19***	-0.74***	-0.39	0.03
704	0.78	0.51***	0.58**	0.38***	-0.43**	-0.24*	-0.30**	-0.08
615	0.78	0.85***	0.24	0.37	-1.23***	-1.19***	-0.34	0.99
15	0.78	0.57**	1.65***	0.00	-1.17***	-0.80***	-0.53*	0.54
525	0.77	0.36	0.92**	0.18	-1.36***	-0.82***	-0.75***	1.30
605	0.75	0.56***	0.93***	0.46***	-0.53**	-0.14	-0.06	-0.78
219	0.74	0.75*	2.80***	0.24	-1.24**	-0.73*	-0.63	0.57
701	0.73	0.33***	0.27**	0.08	-0.18*	-0.21**	0.02	-0.22
622	0.71	0.78*	1.58**	0.40	-1.80***	-1.22**	-1.03**	1.23
203	0.69	0.98***	1.66***	0.51**	0.03	-0.37	-0.28	-1.25
308	0.69	1.34***	2.22***	0.49	0.20	-0.61*	-0.30	-1.61
708	0.69	0.92*	2.69***	0.75*	-1.74***	-0.28	0.56	-0.83
716	0.68	0.25	0.21	0.11	-0.43	-0.91***	-0.89***	1.48
43	0.68	0.51***	0.49*	0.27	-0.37*	-0.52***	-0.09	-0.68
624	0.68	0.79**	1.01*	0.19	-0.76*	-0.88***	-0.70**	0.83
613	0.67	0.51**	0.97***	0.63***	-0.12	-0.39*	-0.44*	-0.75
225	0.66	0.92***	1.35***	0.51*	-0.57	-0.63**	-0.07	-0.69
16	0.63	0.74**	1.62***	0.47	-0.21	-0.85**	-0.62*	-0.15
10	0.62	1.06***	1.42***	0.50*	0.21	-0.50*	-0.07	-1.48
714	0.61	1.60***	0.77	0.08	-0.35	0.00	-0.29	-1.02
514	0.61	0.46**	0.35	0.14	-0.57**	-0.47**	0.11	0.10
611	0.58	0.67**	0.70	0.28	-0.21	-0.51*	-0.74**	0.08
305	0.57	0.40	1.12*	0.12	-0.52	-0.95**	-1.04***	1.13
515	0.56	0.94***	1.33***	0.28	-0.41	0.21	-0.11	-1.49
13	0.54	0.84***	0.95***	0.49**	0.40	-0.17	-0.05	-1.53
33	0.54	1.29***	2.05***	0.32	0.19	-0.74*	-0.47	-1.13
304	0.54	0.59***	0.82***	0.09	0.10	-0.21	-0.13	-0.86
208	0.53	0.32	0.81**	0.13	-0.58**	0.01	-0.11	-0.28

Category 2, 49 subjects

Subject	**Adj R Square**	**INC_1**	**INC_2**	**INC_3**	**EXO_1**	**EXO_2**	**EXO_3**	**(Constant)**
	Theory:	**0.85**	**1.39**	**0.41**	**-1.39**	**-0.85**	**-0.41**	**0**
9	0.57	1.09***	0.98**	0.66***	-0.08	0.35	0.38	-2.35
316	0.57	1.10**	2.19***	0.48	-1.36**	0.24	0.14	-1.64
36	0.57	0.44**	0.34	0.23	-0.86***	0.18	0.18	-0.53
311	0.51	1.49***	2.10***	0.69*	-0.10	0.61	0.06	-2.63
210	0.49	0.11	0.67	0.04	-0.95*	-1.08**	-1.07**	2.09
206	0.48	0.82*	1.33*	0.28	-1.28**	-0.20	-0.28	-1.17
213	0.48	0.57	0.30	-0.26	-0.94**	-0.81**	-0.68*	1.45
211	0.46	0.52**	0.80**	0.20	-0.16	-0.51**	-0.09	-0.70
12	0.44	0.80***	1.29***	0.25	0.25	-0.27	0.13	-1.60
405	0.42	0.10	0.64	-0.14	-0.71	-0.93**	-1.36***	2.52
222	0.42	0.74***	0.73*	0.38*	-0.18	0.12	0.05	-0.85
20	0.41	0.23	1.00**	0.42	-0.06	-0.50	-0.49	0.14
5	0.41	0.48**	0.62**	0.19	-0.04	-0.19	0.03	-0.77
306	0.37	0.81**	1.24*	0.59	-0.68	0.24	0.16	-1.23
418	0.36	0.38*	0.78**	0.08	-0.38	0.25	0.13	-0.39
720	0.34	0.78*	1.12	0.37	-1.00*	0.21	0.21	-1.08
34	0.33	0.71**	0.92**	0.36	-0.23	0.24	-0.05	-0.96
28	0.29	0.63*	1.24**	0.12	-0.28	-0.01	-0.24	-0.43
31	0.29	1.00**	1.53*	0.54	-0.58	0.45	0.32	-1.92
216	0.28	0.78***	0.89*	0.43	0.48	-0.05	-0.14	-1.24
47	0.26	0.59	1.94**	0.46	-0.40	0.22	-0.09	-0.59
706	0.25	0.46*	0.74*	0.07	0.35	-0.37	-0.12	-0.20
45	0.23	0.65*	0.87	0.35	-0.63	0.39	0.13	-1.15
411	0.23	0.26	0.37	-0.02	-0.30	-0.13	0.12	-0.10

19	0.18	0.53	0.78	0.26	-0.29	0.09	-0.12	-0.54
503	0.16	0.27	0.48	-0.06	-0.75*	-0.24	0.08	0.49
609	0.15	0.62	0.17	-0.03	-0.69	0.13	-0.72	2.18
416	0.15	0.96**	1.37*	0.12	1.10**	0.28	-0.31	-0.93
506	0.15	0.50	0.82	0.27	-0.55	0.42	0.14	-0.69
223	0.12	0.35*	0.74**	0.06	0.15	0.08	-0.03	-0.61
25	0.12	0.56	1.30*	0.30	-0.18	0.31	-0.11	-0.88
32	0.11	0.71**	0.88	0.51	0.83**	0.61*	-0.11	-1.46
26	0.11	0.55	0.94	0.14	-0.30	0.11	-0.29	-0.06
221	0.11	0.56	1.59**	0.20	0.46	0.09	-0.51	-0.14
719	0.11	0.85	1.49*	0.08	1.40**	0.01	-0.52	-0.15
402	0.08	0.58	1.26	0.07	0.08	0.07	-0.75	0.20
516	0.08	0.84*	1.59**	0.28	1.11*	0.47	-0.30	-1.27
415	0.08	0.40	0.19	0.15	-0.87*	0.30	0.20	-0.23
604	0.07	0.47	1.30*	0.11	1.15*	-0.14	-0.49	0.05
48	0.05	0.73**	0.41	0.33	-0.14	0.42	0.11	-1.01
417	0.02	0.74	0.95	-0.02	1.02*	0.06	-0.18	0.38
403	0.01	0.60	0.62	-0.15	0.10	0.00	-0.60	0.96
621	0.01	0.12	-0.27	0.39	-0.12	0.46*	0.05	-0.10
606	0.01	0.40	0.66	0.22	-0.05	-0.12	-0.21	1.16
614	0.01	0.58	1.68	-0.27	0.41	-0.75	0.25	0.91
301	0.00	0.36	0.55	0.17	-0.22	0.11	-0.13	-0.18
209	-0.02	0.42	0.66	0.27	-0.14	0.35	-0.10	-0.48
404	-0.10	0.54	0.85	0.36	0.42	0.29	-0.23	-0.63
711	-0.13	0.17	-0.03	-0.22	0.15	-0.13	-0.20	1.12

Category 3, 31 subjects

Subject	**Adj R Square**	**INC_1**	**INC_2**	**INC_3**	**EXO_1**	**EXO_2**	**EXO_3**	**(Constant)**
Theory		**0.85**	**1.39**	**0.41**	**-1.39**	**-0.85**	**-0.41**	**0**
309	0.63	1.34***	1.61***	0.82***	0.62*	0.14	0.07	-3.12
513	0.43	0.73***	0.95***	0.32*	0.13	0.29	0.18	-1.50
212	0.36	1.72***	2.41***	0.51	0.41	0.61	0.45	-3.46
408	0.35	1.84***	2.61***	0.76	0.74	0.68	0.82	-4.33
312	0.34	1.47***	2.14***	0.78*	0.30	0.76	0.43	-3.65
303	0.32	0.60***	0.59**	0.21	0.22	0.02	0.15	-1.15
625	0.31	1.86***	3.04***	0.63	0.80	0.75	0.47	-4.02
420	0.31	1.15***	1.88***	0.53	0.48	0.45	0.19	-2.73
412	0.30	0.95***	0.92**	0.25	0.40	0.38	0.25	-2.05
414	0.17	1.28**	2.28**	0.59	0.65	0.42	0.35	-2.92
205	0.15	1.42**	2.26**	0.61	0.16	0.63	0.59	-2.78
424	0.14	0.66**	0.74	0.37	1.11***	0.49	0.55	-1.66
204	0.12	1.07*	1.92**	0.46	0.22	0.22	0.35	-1.92
202	0.12	0.54**	0.89**	0.36	0.61**	0.34	0.03	-1.04
44	0.11	1.56**	2.32**	0.65	0.47	0.27	0.78	-3.61
602	0.06	0.65*	1.01*	0.55	0.22	0.59	0.12	-1.72

For subjects 3, 4, 8, 40, 501, 502, 504, 507, 509, 524, 601, 608, 618, 619, 620 no regression could be calculated, mostly because too little variation in the data.