



Ringblom et al.:

Assigning Ethical Weights to Clinical Signs Observed During Toxicity Testing

Supplementary Data

Information (in Swedish) given to the test participants concerning the hypothetical experiment

English translation can be found in the main manuscript:

“Vi utgår från ett påhittat djurförsök med råttor. Försöket pågår i en vecka och djuren antas uppvisa symtomen vid ett tillfälle under studien. Råttorna är 8 veckor gamla vid försökets inledning och avlivas genom att sövas med inhalationsnarkos och därefter avlivas med koldioxid eller överdos av sövningsmedel. Råttorna bor i standardiserade burar med träspån i botten, berikade med bo, bobyggarmaterial och gnagpinnar. De har fri tillgång till foder och hålls i grupper av två till tre råttor per bur.”

Tab. S1: The ethical weights assigned to each clinical sign by the 47 participants

An ethical weight of 10 means that one animal experiencing that sign under the circumstances described entails the same ethical cost as 10 animals free from clinical signs. The infinite maximal values reflect the fact that certain participants felt that it is always better to allow more animals to experience less distress than fewer animals to suffer more distress, regardless of the magnitude of distress.

Symptom	Type	Minimum	25 th percentile	Median	75 th percentile	Maximum
Ataxia	Mild	1	1.8	4	10	∞
	Severe	1	4.1	16	50	∞
Tremor	Mild	1	1.9	2.5	10	∞
	Severe	1	4	15	50	∞
Occasional spasm or short convulsion	Mild	1	1.7	4	10	∞
	Severe	1	3.9	10	50	∞
Hunched posture	Mild	1	2	4	15	∞
	Severe	1	6.2	20	220	∞
Decreased motor activity	Mild	1	2	4	15	∞
	Severe	1	5.3	16	125	∞
Clinical signs of respiratory distress	Mild	1	2	3	10	∞
	Severe	1	5	10	50	∞
Weight loss	Mild	1	1.5	2	10	∞
	Severe	1	2.3	5.3	50	∞
Piloerection	Mild	1	2	3	10	∞
	Severe	1	4	15	150	∞
Porphyria	Mild	1	2	3	10	∞
	Severe	1	4	10	145	∞



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**Tab. S2: Ethical weights assigned to each clinical sign by the 18 political nominees**

An ethical weight of 10 means that one animal experiencing that sign under the circumstances described entails the same ethical cost as 10 animals free from clinical signs. The infinite maximal values reflect the fact that certain participants felt that it is always better to allow more animals to experience less distress than fewer animals to suffer more distress, regardless of the magnitude of distress.

Symptom	Type	Minimum	25 th percentile	Median	75 th percentile	Maximum
Ataxia	Mild	1	1.6	2	5	∞
	Severe	1	4	5.8	41.5	∞
Tremor	Mild	1	1.6	2	5	∞
	Severe	1	3.8	5.4	43.5	∞
Occasional spasm or short convulsion	Mild	1	1.6	2	8.8	∞
	Severe	1	3.8	8	33.3	∞
Hunched posture	Mild	1	2	3	5.8	∞
	Severe	1	6	11	81.3	∞
Decreased motor activity	Mild	1	1.6	3.5	5	∞
	Severe	1	4.1	7.8	45.5	∞
Clinical signs of respiratory distress	Mild	1	2	2.8	9.5	∞
	Severe	1	4.5	9.5	31.5	∞
Weight loss	Mild	1	1.5	2	2.4	∞
	Severe	1	2	4	12.5	∞
Piloerection	Mild	1	1.4	2.3	10	∞
	Severe	1	2.6	8.8	306.3	∞
Porphyria	Mild	1	1.6	2	10	∞
	Severe	1	3.2	8.5	400	∞

Tab. S3: The ethical weights assigned to each clinical sign by the 22 researchers

An ethical weight of 10 means that one animal experiencing that sign under the circumstances described entails the same ethical cost as 10 animals free from clinical signs. The infinite maximal values reflect the fact that certain participants felt that it is always better to allow more animals to experience less distress than fewer animals to suffer more distress, regardless of the magnitude of distress.

Symptom	Type	Minimum	25 th percentile	Median	75 th percentile	Maximum
Ataxia	Mild	1	1.3	5	10	∞
	Severe	1	5.8	20	50	∞
Tremor	Mild	1	2	5	10	∞
	Severe	1	5	22.5	50	∞
Occasional spasm or short convulsion	Mild	1	2	4.5	8.8	∞
	Severe	1	4.1	15.5	47.5	∞
Hunched posture	Mild	1	2.1	8	13.8	∞
	Severe	1	8.3	32	230	∞
Decreased motor activity	Mild	1	2	4.5	10	∞
	Severe	1	6.5	22.5	125	∞
Clinical signs of respiratory distress	Mild	1	2	2.8	5.8	∞
	Severe	1	6	20	48.8	∞
Weight loss	Mild	1	1.4	2.5	10	∞
	Severe	1	3	9.5	43.8	∞
Piloerection	Mild	1	2.3	4	10	∞
	Severe	1	6.8	18	84.5	∞
Porphyria	Mild	1	2	4	10	∞
	Severe	1	4.5	13	87.5	∞

**Tab. S4: Ethical weights assigned to each clinical sign by the 7 representatives of animal welfare organizations**

An ethical weight of 10 means that one animal experiencing that sign under the circumstances described entails the same ethical cost as 10 animals free from clinical signs. The infinite maximal values reflect the fact that certain participants felt that it is always better to allow more animals to experience less distress than fewer animals to suffer more distress, regardless of the magnitude of distress.

Symptom	Type	Minimum	25 th percentile	Median	75 th percentile	Maximum
Ataxia	Mild	1	2.3	4	∞	∞
	Severe	4.5	12	100	∞	∞
Tremor	Mild	1	2.3	4	∞	∞
	Severe	3	5.5	11.3	∞	∞
Occasional spasm or short convulsion	Mild	1	1.9	4	∞	∞
	Severe	1	2.8	8	∞	∞
Hunched posture	Mild	2.5	4	9	∞	∞
	Severe	5.5	10	18	∞	∞
Decreased motor activity	Mild	2	2.6	10	∞	∞
	Severe	2	6.5	50	∞	∞
Clinical signs of respiratory distress	Mild	1	1.9	4	∞	∞
	Severe	3	6.0	10	∞	∞
Weight loss	Mild	1	1.8	2	∞	∞
	Severe	1	3.5	8	∞	∞
Piloerection	Mild	1	1.9	3	∞	∞
	Severe	3	3.6	9	∞	∞
Porphyria	Mild	1	2.3	6.5	∞	∞
	Severe	3	5.3	29.5	∞	∞

Tab. S5: The mean ranking of the mild clinical signs by all participants and the three different subgroups

A low rank indicates that the group considered that clinical sign less severe than the others. Participants who assigned weights equal to 1 or infinity to all clinical signs were removed when calculating the mean ranks as their answers did not provide any information about how they ranked the severity of the clinical signs.

All participants		Researchers		Political nominees		Representatives of animal welfare organizations	
Symptom	Mean rank	Symptom	Mean rank	Symptom	Mean rank	Symptom	Mean rank
1. Weight loss	3.9	1. Weight loss	4.0	1. Weight loss	3.8	1. Weight loss	3.6
2. Ataxia	4.5	2. Ataxia	4.3	2. Tremor	4.1	2. Respiratory signs	4.5
3. Tremor	4.6	2. Respiratory signs	4.3	3. Ataxia	4.5	3. Occasional spasm	4.6
4. Occasional spasm	4.7	4. Occasional spasm	4.4	4. Piloerection	4.9	4. Tremor	5.0
5. Respiratory signs	4.8	5. Tremor	4.8	5. Occasional spasm	5.0	5. Piloerection	5.0
6. Piloerection	5.2	6. Porphyria	5.3	6. Decreased motor activity	5.4	6. Ataxia	5.2
7. Porphyria	5.4	7. Piloerection	5.6	7. Porphyria	5.5	7. Porphyria	5.4
8. Decreased motor activity	5.6	8. Decreased motor activity	5.8	8. Respiratory signs	5.6	8. Decreased motor activity	5.5
9. Hunched posture	6.2	9. Hunched posture	6.4	9. Hunched posture	6.0	9. Hunched posture	6.1

Tab. S6: The mean ranking of the severe clinical signs by all participants and the three different subgroups

A low rank indicates that the group considered that clinical sign less severe than the others. Participants who assigned weights equal to 1 or infinity to all clinical signs were removed when calculating the mean ranks as their answers did not provide any information about how they ranked the severity of the clinical signs.

All participants		Researchers		Political nominees		Representatives of animal welfare organizations	
Symptom	Mean rank	Symptom	Mean rank	Symptom	Mean rank	Symptom	Mean rank
1. Weight loss	3.3	1. Weight loss	3.0	1. Weight loss	3.8	1. Weight loss	3.3
2. Convulsion	4.4	2. Ataxia	4.6	2. Convulsion	4.0	2. Convulsion	4.5
3. Porphyria	4.6	3. Tremor	4.8	3. Porphyria	4.5	3. Porphyria	4.9
4. Ataxia	5.0	4. Convulsion	4.8	4. Piloerection	4.9	4. Ataxia	5.0
5. Piloerection	5.1	5. Piloerection	5.0	5. Tremor	5.1	5. Tremor	5.0
6. Tremor	5.2	6. Decreased motor activity	5.2	5. Decreased motor activity	5.1	6. Piloerection	5.0
7. Respiratory signs	5.6	7. Porphyria	5.5	7. Respiratory signs	5.5	7. Decreased motor activity	5.4
8. Decreased motor activity	5.6	8. Respiratory signs	5.5	8. Ataxia	5.9	8. Respiratory signs	5.6
9. Hunched posture	6.3	9. Hunched posture	6.5	9. Hunched posture	6.2	9. Hunched posture	6.4

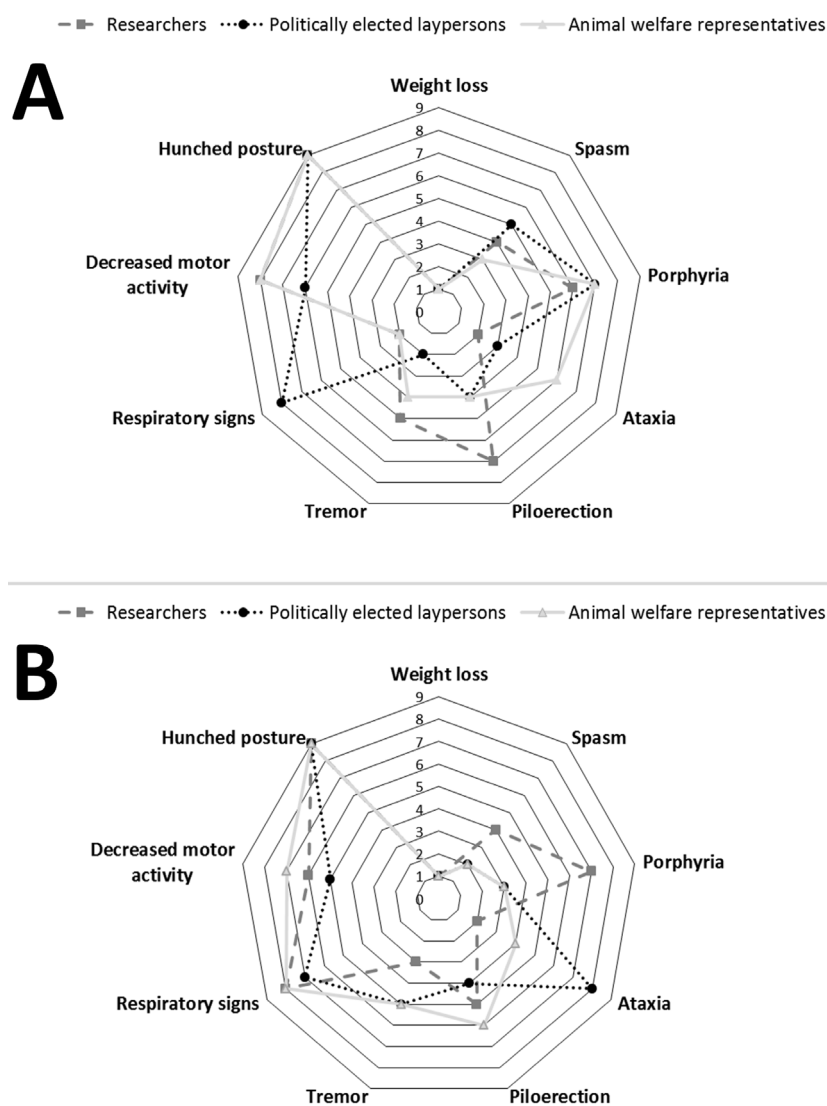


Fig. S1: Ranking of the mild (a) and severe clinical signs (b) by the three different subgroups

A low rank indicates that the group considered that clinical sign less severe than the others. Participants who assigned weights equal to 1 or infinity to all clinical signs was removed when calculating the mean ranks as their answers did not provide any information about how they ranked the severity of the clinical signs. The exact mean rankings can be found in the supplemental material.