A. The recovery of mental models from the set of instances of concepts.

The procedure for recovering mental models from the instances of a concept can be illustrated for the case of concept IV in Table 1 of the main paper. The concept has the following instances:

a	¬b	¬c
¬a	b	¬c
¬a	¬b	c
¬a	¬b	¬c

Any inference of the following form is valid:

(X and Y) or (X and not-Y)

Therefore, X.

and so the mental models of the instances above can be simplified to:

a	¬b	¬c
¬a	b	¬c
¬a	¬b	

because ¬ a and ¬ b occur with c and with ¬ c. In principle, the algorithm could continue to search for further simplifications. But, we doubt whether humans are able to do so, and so our algorithm does not pursue further simplifications of those models that have already been simplified. Such a search, however, is the first step in a well-known algorithm, the Quine-McCluskey prime-implicant method (McCluskey, 1956; Quine, 1955), for finding minimal descriptions in a language restricted to *not*, *and*, and *or*.

Our algorithm, which we implemented in Lisp, searches for a single but powerful simplification for a set or subset of models. For instance, given the following set of instances:

a b c

a b ¬c

a ¬b c

a ¬b ¬c

it detects that a occurs with all possible combinations of the values of b and c, and so it reduces the set of instances to a single model:

a

A more formal description of the algorithm is as follows:

i. If there is a set of properties common to all instances and

ii. If they occur with all possible combinations of the other properties

then they identify the current concept (as in the preceding example).

iii. Otherwise, increase the set of properties by at least one additional property, reapply the algorithm to those instances that have them, and add those instances that don't have them to any other deferred instances.

iv. Otherwise, find a set of properties that many instances have and reapply the algorithm to those instances that have them, and add those instances that don't have them to any other deferred instances.

v. Once all the instances have been simplied to the extent that they can be, apply the algorithm to the deferred instances.

References

McCluskey, E. J. (1956). Minimization of Boolean functions. *Bell System Technical Journal, 35,* 1417-1444.

Quine, W. V. O. (1955). A way to simplify truth functions. *American Mathematical Monthly, 62,* 627-631.

B. The mental models, instances and minimal descriptions of list of concepts tested in Feldman (2000).

No.	Concept code[1]	Feldman's minimal descriptions	Parity	Instances of the concept	Mental models (each line represents a separate model)
1	3[2]1	not a and not b	up	¬ a ¬ b c ¬ a ¬ b ¬ c	¬ a ¬ b
2	3[2]2	not a and ((not b and not c) or (b and c))	up	¬ a b c ¬ a ¬ b ¬ c	¬ a b c ¬ a ¬ b ¬ c
3	3[2]3	(not a and (not b and not c)) or (a and (b and c))	up	a b c ¬ a ¬ b ¬ c	a b c ¬ a ¬ b ¬ c
4	3[3]1	not a and not (b and c)	up	¬ a b ¬ c ¬ a ¬ b c ¬ a ¬ b ¬ c	¬ a ¬ b c ¬ a ¬ c
5	3[3]2	(not a and not b) or (a and (b and not c))	up	a b ¬ c ¬ a ¬ b c ¬ a ¬ b ¬ c	a b ¬ c ¬ a ¬ b
6	3[3]3	(not a and ((not b and not c) or (b and c))) or (a and (not b and c))	up	a ¬ b c ¬ a b c ¬ a ¬ b ¬ c	a ¬ b c ¬ a b c ¬ a ¬ b ¬ c
7	3[4]1	not a	up	¬ a b c ¬ a b ¬ c ¬ a ¬ b c ¬ a ¬ b ¬ c	¬ a
8	3[4]2	(a and b) or (not a and not b)	up	a b c a b ¬ c ¬ a ¬ b c ¬ a ¬ b ¬ c	a b ¬ a ¬ b
9	3[4]3	(not a and not (b and c)) or (a and (not b and c))	up	a ¬ b c ¬ a b ¬ c ¬ a ¬ b c ¬ a ¬ b ¬ c	¬ a ¬ c ¬ b c
10	3[4]4	(not a and not (b and c)) or (a and (not b and not c))	up	a ¬ b ¬ c ¬ a b ¬ c ¬ a ¬ b c ¬ a ¬ b ¬ c	¬ a b ¬ c ¬ a ¬ b c ¬ b ¬ c
11	3[4]5	(not a and not (b and c)) or (a and (b and c))	up	a b c ¬ a b ¬ c ¬ a ¬ b c ¬ a ¬ b ¬ c	a b c ¬ a ¬ b c ¬ a ¬ c
12	3[4]6	(a and ((not b and c) or (b and not c))) or (not a and ((not b and not c) or (b and c)))	up	a b ¬ c a ¬ b c ¬ a b c ¬ a ¬ b ¬ c	a b ¬ c a ¬ b c ¬ a b c ¬ a ¬ b ¬ c
13	4[2]1	(not a and (not b and not c))	up	¬ a ¬ b ¬ c d ¬ a ¬ b ¬ c ¬ d	¬ a ¬ b ¬ c
14	4[2]2	(not a and not b) and ((not c and not d) or (c and d))	up	¬ a ¬ b c d ¬ a ¬ b ¬ c ¬ d	¬ a ¬ b c d ¬ a ¬ b ¬ c ¬ d
15	4[2]3	(not a and ((not b and (not c and not d)) or (b and (c and d)))	up	¬ a b c d ¬ a ¬ b ¬ c ¬ d	¬ a b c d ¬ a ¬ b ¬ c ¬ d

16	4[2]4	((not a and b) and (not c and not d)) or ((a and b) and (c and d))	up	a ¬ a	b ¬ b	c ¬ c	d ¬ d	a ¬ a	b ¬ b	c ¬ c	d ¬ d
17	4[3]1	(not a and not b) and not (c and d)	up	¬ a ¬ a ¬ a	¬ b ¬ b ¬ b	c ¬ c ¬ c	¬ d d ¬ d	¬ a ¬ a	¬ b ¬ b	¬ c	d ¬ d
18	4[3]2	(not a and ((not b and not c) or (b and (c and not d))	up	¬ a ¬ a ¬ a	b ¬ b ¬ b	c ¬ c ¬ c	¬ d d ¬ d	¬ a ¬ a	b ¬ b	c ¬ c	¬ d
19	4[3]3	(not and (not b and not c)) or ((a and b) and (c and not d))	up	a ¬ a ¬ a	b ¬ b ¬ b	c c ¬ c	¬ d d ¬ d	a ¬ a ¬ a	b ¬ b ¬ b	c c ¬ c	¬ d d ¬ d
20	4[3]4	(not a and ((not b and ((not c and not d) or (c and d))) or (b and (not c and d))))	up	¬ a ¬ a ¬ a	b ¬ b ¬ b	¬ c c ¬ c	d d ¬ d	¬ a ¬ a ¬ a	b ¬ b ¬ b	¬ c c ¬ c	d d ¬ d
21	4[3]5	((not a and not b) and ((not c and not d) or (c and d))) or ((a and b) or (not c and not d))	up	a ¬ a ¬ a	b ¬ b ¬ b	¬ c c ¬ c	¬ d d ¬ d	a ¬ a ¬ a	b ¬ b ¬ b	¬ c c ¬ c	¬ d d ¬ d
22	4[3]6	((not a and not b) and ((not c and not d) or (c and d))) or ((a and b) or (not c and d))	up	a ¬ a ¬ a	b ¬ b ¬ b	¬ c c ¬ c	d d ¬ d	a ¬ a ¬ a	b ¬ b ¬ b	¬ c c ¬ c	d d ¬ d
23	4[4]1	(not a and not b)	up	¬ a ¬ a ¬ a ¬ a	¬ b ¬ b ¬ b ¬ b	c c ¬ c ¬ c	d ¬ d d ¬ d	¬ a	¬ b		
24	4[4]2	(not a and (not b and not (c and d))) or (b and (not c and not d))	up	¬ a ¬ a ¬ a ¬ a	b ¬ b ¬ b ¬ b	¬ c c ¬ c ¬ c	¬ d ¬ d d ¬ d	¬ a ¬ a ¬ a	¬ b ¬ b	c ¬ c ¬ c	¬ d d ¬ d
25	4[4]3	(not a and (not b and not (c and d))) or (b and (d and not c))	up	¬ a ¬ a ¬ a ¬ a	b ¬ b ¬ b ¬ b	¬ c c ¬ c ¬ c	d ¬ d d ¬ d	¬ a ¬ a	¬ b	¬ c	¬ d d
26	4[4]4	(not a and (not b and not (c and d))) or (b and (c and d))	up	¬ a ¬ a ¬ a ¬ a	b ¬ b ¬ b ¬ b	c c ¬ c ¬ c	d ¬ d d ¬ d	¬ a ¬ a ¬ a	b ¬ b ¬ b	c ¬ c	d d ¬ d
27	4[4]5	((not a and not b) and not (c and d)) or ((a and b) and (not c and not d))	up	a ¬ a ¬ a ¬ a	b ¬ b ¬ b ¬ b	¬ c c ¬ c ¬ c	¬ d ¬ d d ¬ d	a ¬ a ¬ a	b ¬ b ¬ b	¬ c ¬ c	¬ d d ¬ d
28	4[4]6	((not a and not b) and not (c and d)) or ((a and b) and (not c and d))	up	a ¬ a ¬ a ¬ a	b ¬ b ¬ b ¬ b	¬ c c ¬ c ¬ c	d ¬ d d ¬ d	a ¬ a ¬ a	b ¬ b ¬ b	¬ c ¬ c	d d ¬ d
29	4[4]7	((not a and not b) and not (c and d)) or ((a and b) and (c and d))	up	a ¬ a ¬ a ¬ a	b ¬ b ¬ b ¬ b	c c ¬ c ¬ c	d ¬ d d ¬ d	a ¬ a ¬ a	b ¬ b ¬ b	c ¬ c	d d ¬ d
30	4[4]8	(not a and ((b and c) or (not b and not c)))	up	¬ a ¬ a ¬ a ¬ a	b b ¬ b ¬ b	c c ¬ c ¬ c	d ¬ d d ¬ d	¬ a ¬ a	b ¬ b	c ¬ c	
31	4[4]9	((c and not d) and ((not	up	a	¬ b	c	¬ d	a	¬ b	c	¬ d

		a and b) or (a and not b))) or (not a and (not b and not c))		¬ a b c ¬ d ¬ a ¬ b ¬ c d ¬ a ¬ b ¬ c ¬ d	¬ a b c ¬ d ¬ a ¬ b ¬ c
32	4[4]10	(not a and ((not b and not c) or (b and (c and not d)) or ((a and not b) and (c and d))	up	a ¬ b c d ¬ a b c ¬ d ¬ a ¬ b ¬ c d ¬ a ¬ b ¬ c ¬ d	a ¬ b c d ¬ a b c ¬ d ¬ a ¬ b ¬ c
33	4[4]11	(b and (c and not d)) or (not a and (not b and not c))	up	a b c ¬ d ¬ a b c ¬ d ¬ a ¬ b ¬ c d ¬ a ¬ b ¬ c ¬ d	¬ a ¬ b ¬ c b c ¬ d
34	4[4]12	((b and c) and ((not a and not d) or (a and d))) or (not a and (not b and not c))	up	a b c d ¬ a b c ¬ d ¬ a ¬ b ¬ c d ¬ a ¬ b ¬ c ¬ d	a b c d ¬ a b c ¬ d ¬ a ¬ b ¬ c
35	4[4]13	(a and (b and c)) or (not a and (not b and not c))	up	a b c d a b c ¬ d ¬ a ¬ b ¬ c d ¬ a ¬ b ¬ c ¬ d	a b c ¬ a ¬ b ¬ c
36	4[4]14	(not a and (b and ((not c and d) or (c and not d)))) or (not b and ((not c and not b) or (c and d)))	up	¬ a b c ¬ d ¬ a b ¬ c d ¬ a ¬ b c d ¬ a ¬ b ¬ c ¬ d	¬ a b c ¬ d ¬ a b ¬ c d ¬ a ¬ b c d ¬ a ¬ b ¬ c ¬ d
37	4[4]15	(not a and (not b and ((not c and not d) or (c and d))) or (b and (not c and d))) or ((a and not b) and (not c and d))	up	a ¬ b ¬ c d ¬ a b ¬ c d ¬ a ¬ b c d ¬ a ¬ b ¬ c ¬ d	a ¬ b ¬ c d ¬ a b ¬ c d ¬ a ¬ b c d ¬ a ¬ b ¬ c ¬ d
38	4[4]16	(not a and (not b and ((not c and not d) or (c and d))) or (b and (not c and d))) or ((a and not b) and (c and not d))	up	a ¬ b c ¬ d ¬ a b ¬ c d ¬ a ¬ b c d ¬ a ¬ b ¬ c ¬ d	a ¬ b c ¬ d ¬ a b ¬ c d ¬ a ¬ b c d ¬ a ¬ b ¬ c ¬ d
39	4[4]17	(not a and (not b and ((not c and not d) or (c and d))) or (b and (not c and d))) or ((a and b) and (c and not d))	up	a b c ¬ d ¬ a b ¬ c d ¬ a ¬ b c d ¬ a ¬ b ¬ c ¬ d	a b c ¬ d ¬ a b ¬ c d ¬ a ¬ b c d ¬ a ¬ b ¬ c ¬ d
40	4[4]18	((not c and not d) or (c and d)) and ((a and b) or (not a and not b))	up	a b c d a b ¬ c ¬ d ¬ a ¬ b c d ¬ a ¬ b ¬ c ¬ d	a b c d a b ¬ c ¬ d ¬ a ¬ b c d ¬ a ¬ b ¬ c ¬ d
41	4[4]19	((a and b) and ((not c and d) or (c and not d))) or ((not a and not b) and ((not c and not d) or (c and d)))	up	a b c ¬ d a b ¬ c d ¬ a ¬ b c d ¬ a ¬ b ¬ c ¬ d	a b c ¬ d a b ¬ c d ¬ a ¬ b c d ¬ a ¬ b ¬ c ¬ d
42	3[2]1	not a & not b	down	a b c a b ¬ c a ¬ b c a ¬ b ¬ c ¬ a b c ¬ a b ¬ c	a ¬ a b
43	3[2]2	not a and ((not b and not c) or (b and c))	down	a b c a b ¬ c a ¬ b c	a ¬ a b ¬ c ¬ a ¬ b c

				a ¬b ¬c ¬a b ¬c ¬a ¬b c	
44	3[2]3	(not a and (not b and not c)) or (a and (b and c))	down	a b ¬c a ¬b c a ¬b ¬c ¬a b c ¬a b ¬c ¬a ¬b c	a ¬c ¬a b ¬b c
45	3[3]1	not a and not (b and c)	down	a b c a b ¬c a ¬b c a ¬b ¬c ¬a b c	a ¬a b c
46	3[3]2	(not a and not b) or (a and (b and not c))	down	a b c a ¬b c a ¬b ¬c ¬a b c ¬a b ¬c	a ¬b ¬a b ¬c b c
47	3[3]3	(not a and ((not b and not c) or (b and c))) or (a and (not b and c))	down	a b c a b ¬c a ¬b ¬c ¬a b ¬c ¬a ¬b c	a b a ¬b ¬c ¬a b ¬c ¬a ¬b c
48	4[2]1	(not a and (not b and not c))	down	a b c d a b c ¬d a b ¬c d a b ¬c ¬d a ¬b c d a ¬b c ¬d a ¬b ¬c d a ¬b ¬c ¬d ¬a b c d ¬a b c ¬d ¬a b ¬c d ¬a b ¬c ¬d ¬a ¬b c d ¬a ¬b c ¬d	a ¬a b ¬c ¬a c
49	4[2]2	(not a and not b) and ((not c and not d) or (c and d))	down	a b c d a b c ¬d a b ¬c d a b ¬c ¬d a ¬b c d a ¬b c ¬d a ¬b ¬c d a ¬b ¬c ¬d ¬a b c d ¬a b c ¬d ¬a b ¬c d ¬a b ¬c ¬d ¬a ¬b c ¬d ¬a ¬b ¬c d	a ¬a b ¬a ¬b c ¬d ¬a ¬b ¬c d
50	4[2]3	(not a and ((not b and (not c and not d)) or (b and (c and d)))	down	a b c d a b c ¬d a b ¬c d a b ¬c ¬d a ¬b c d a ¬b c ¬d	a ¬a b ¬d ¬a ¬b c ¬a ¬c d

				a ¬b ¬c d a ¬b ¬c ¬d ¬a b c ¬d ¬a b ¬c d ¬a b ¬c ¬d ¬a ¬b c d ¬a ¬b c ¬d ¬a ¬b ¬c d	
51	4[2]4	((not a and b) and (not c and not d)) or ((a and b) and (c and d))	down	a b c ¬d a b ¬c d a b ¬c ¬d a ¬b c d a ¬b c ¬d a ¬b ¬c d a ¬b ¬c ¬d ¬a b c d ¬ a b c ¬d ¬ a b ¬c d ¬a b ¬c ¬d ¬ a ¬b c d ¬ a ¬b c ¬d ¬a ¬b ¬c d	a b c ¬d a ¬b ¬a ¬b ¬c d ¬a c b ¬c
52	4[3]1	(not a and not b) and not (c and d)	down	a b c d a b c ¬d a b ¬c d a b ¬c ¬d a ¬b c d a ¬b c ¬d a ¬b ¬c d a ¬b ¬c ¬d ¬a b c d ¬a b c ¬d ¬a b ¬c d ¬a b ¬c ¬d ¬a ¬b c d	a ¬ a b ¬a ¬b c d
53	4[3]2	(not a and ((not b and not c) or (b and (c and not d))	down	a b c d a b c ¬d a b ¬c d a b ¬c ¬d a ¬b c d a ¬b c ¬d a ¬b ¬c d a ¬b ¬c ¬d ¬a b c d ¬a b ¬c d ¬a b ¬c ¬d ¬a ¬b c d ¬a ¬b c ¬d	a ¬ a b ¬c ¬a ¬b c ¬d ¬a c d
54	4[3]3	(not and (not b and not c)) or ((a and b) and (c and not d))	down	a b c d a b ¬c d a b ¬c ¬d a ¬b c d a ¬b c ¬d a ¬b ¬c d a ¬b ¬c ¬d ¬a b c d ¬a b c ¬d ¬a b ¬c d	a b c d a ¬b ¬ a c b ¬c

				¬ a	b	¬ c	¬ d				
				¬ a	¬ b	c	¬ d				
				¬ a	¬ b	¬ c	d				
55	4[3]4	(not a and ((not b and ((not c and not d) or (c and d))) or (b and (not c and d))))	down	a	b	c	d	a			
				a	b	c	¬ d	¬ a	b	c	
				a	b	¬ c	d	¬ a	b	¬ c	¬ d
				a	b	¬ c	¬ d	¬ a	¬ b	c	¬ d
				a	¬ b	c	d	¬ a	¬ b	¬ c	d
				a	¬ b	c	¬ d				
				a	¬ b	¬ c	d				
				a	¬ b	¬ c	¬ d				
				¬ a	b	c	d				
				¬ a	b	c	¬ d				
				¬ a	b	¬ c	¬ d				
				¬ a	¬ b	c	¬ d				
				¬ a	¬ b	¬ c	d				
56	4[3]5	((not a and not b) and ((not c and not d) or (c and d))) or ((a and b) or (not c and not d))	down	a	b	c	d	a	¬ b		
				a	b	c	¬ d	¬ a	b	¬ c	¬ d
				a	b	¬ c	d	¬ a	¬ b	¬ c	d
				a	¬ b	c	d		b		d
				a	¬ b	c	¬ d			c	¬ d
				a	¬ b	¬ c	d				
				a	¬ b	¬ c	¬ d				
				¬ a	b	c	d				
				¬ a	b	c	¬ d				
				¬ a	b	¬ c	d				
				¬ a	b	¬ c	¬ d				
				¬ a	¬ b	c	¬ d				
				¬ a	¬ b	¬ c	d				
57	4[3]6	((not a and not b) and ((not c and not d) or (c and d))) or ((a and b) or (not c and d))	down	a	b	c	d	a		c	d
				a	b	c	¬ d	a		¬ c	¬ d
				a	b	¬ c	¬ d	¬ a	b		
				a	¬ b	c	d		¬ b	¬ c	d
				a	¬ b	c	¬ d			c	¬ d
				a	¬ b	¬ c	d				
				a	¬ b	¬ c	¬ d				
				¬ a	b	c	d				
				¬ a	b	c	¬ d				
				¬ a	b	¬ c	d				
				¬ a	b	¬ c	¬ d				
				¬ a	¬ b	c	¬ d				
				¬ a	¬ b	¬ c	d				
58	4[4]1	(not a and not b)	down	a	b	c	d	a			
				a	b	c	¬ d	¬ a	b		
				a	b	¬ c	d				
				a	b	¬ c	¬ d				
				a	¬ b	c	d				
				a	¬ b	c	¬ d				
				a	¬ b	¬ c	d				
				a	¬ b	¬ c	¬ d				
				¬ a	b	c	d				
				¬ a	b	c	¬ d				
				¬ a	b	¬ c	d				
				¬ a	b	¬ c	¬ d				
59	4[4]2	(not a and (not b and not (c and d))) or (b and (not c and not d))	down	a	b	c	d	a			
				a	b	c	¬ d	¬ a	b	c	
				a	b	¬ c	d	¬ a	b	¬ c	d
				a	b	¬ c	¬ d	¬ a	¬ b	c	d

				a ¬b c d a ¬b c ¬d a ¬b ¬c d a ¬b ¬c ¬d ¬a b c d ¬a b c ¬d ¬a b ¬c d ¬a ¬b c d	
60	4[4]3	(not a and (not b and not (c and d))) or (b and (d and not c))	down	a b c d a b c ¬d a b ¬c d a b ¬c ¬d a ¬b c d a ¬b c ¬d a ¬b ¬c d a ¬b ¬c ¬d ¬a b c d ¬a b c ¬d ¬a b ¬c ¬d ¬a ¬b c d	a ¬a b ¬d ¬a c d
61	4[4]4	(not a and (not b and not (c and d))) or (b and (c and d))	down	a b c d a b c ¬d a b ¬c d a b ¬c ¬d a ¬b c d a ¬b c ¬d a ¬b ¬c d a ¬b ¬c ¬d ¬a b c ¬d ¬a b ¬c d ¬a b ¬c ¬d ¬a ¬b c d	a ¬a b ¬c d ¬ a b ¬d ¬a ¬b c d
62	4[4]5	((not a and not b) and not (c and d)) or ((a and b) and (not c and not d))	down	a b c d a b c ¬d a b ¬c d a ¬b c d a ¬b c ¬d a ¬b ¬c d a ¬b ¬c ¬d ¬a b c d ¬a b c ¬d ¬a b ¬c d ¬a b ¬c ¬d ¬a ¬b c d	a ¬b ¬c a c ¬d ¬a b ¬d b ¬c d c d
63	4[4]6	((not a and not b) and not (c and d)) or ((a and b) and (not c and d))	down	a b c d a b c ¬d a b ¬c ¬d a ¬b c d a ¬b c ¬d a ¬b ¬c d a ¬b ¬c ¬d ¬a b c d ¬a b c ¬d ¬a b ¬c d ¬a b ¬c ¬d ¬a ¬b c d	a ¬b ¬a b ¬c d b ¬d c d
64	4[4]7	((not a and not b) and not (c and d)) or ((a and	down	a b c ¬d a b ¬c d	a ¬b ¬a c d

		b) and (c and d))		a	b	¬ c	¬ d		b	c	¬ d
				a	¬ b	c	d		b	¬ c	
				a	¬ b	c	¬ d				
				a	¬ b	¬ c	d				
				a	¬ b	¬ c	¬ d				
				¬ a	b	c	d				
				¬ a	b	c	¬ d				
				¬ a	b	¬ c	d				
				¬ a	b	¬ c	¬ d				
				¬ a	¬ b	c	d				
65	4[4]8	(not a and ((b and c) or (not b and not c)))	down	a	b	c	d	a			
				a	b	c	¬ d	¬ a	b	¬ c	
				a	b	¬ c	d	¬ a	¬ b	c	
				a	b	¬ c	¬ d				
				a	¬ b	c	d				
				a	¬ b	c	¬ d				
				a	¬ b	¬ c	d				
				a	¬ b	¬ c	¬ d				
				¬ a	b	¬ c	d				
				¬ a	b	¬ c	¬ d				
				¬ a	¬ b	c	d				
				¬ a	¬ b	c	¬ d				
66	4[4]9	((c and not d) and ((not a and b) or (a and not b))) or (not a and (not b and not c))	down	a	b	c	d	a	b	c	¬ d
				a	b	c	¬ d	a	¬ b	¬ c	
				a	b	¬ c	d	¬ a	¬ b	c	¬ d
				a	b	¬ c	¬ d		b	¬ c	
				a	¬ b	c	d			c	d
				a	¬ b	¬ c	d				
				a	¬ b	¬ c	¬ d				
				¬ a	b	c	d				
				¬ a	b	¬ c	d				
				¬ a	b	¬ c	¬ d				
				¬ a	¬ b	c	d				
				¬ a	¬ b	c	¬ d				
67	4[4]10	(not a and ((not b and not c) or (b and (c and not d)) or ((a and not b) and (c and d))	down	a	b	c	d	a	b	c	
				a	b	c	¬ d	a	¬ b	¬ c	
				a	b	¬ c	d	¬ a		c	d
				a	b	¬ c	¬ d		b	¬ c	
				a	¬ b	c	¬ d		¬ b	c	¬ d
				a	¬ b	¬ c	d				
				a	¬ b	¬ c	¬ d				
				¬ a	b	c	d				
				¬ a	b	¬ c	d				
				¬ a	b	¬ c	¬ d				
				¬ a	¬ b	c	d				
				¬ a	¬ b	c	¬ d				
68	4[4]11	(b and (c and not d)) or (not a and (not b and not c))	down	a	b	c	d	a	¬ b	¬ c	
				a	b	¬ c	d		b	c	d
				a	b	¬ c	¬ d		b	¬ c	
				a	¬ b	c	d		¬ b	c	
				a	¬ b	c	¬ d				
				a	¬ b	¬ c	d				
				a	¬ b	¬ c	¬ d				
				¬ a	b	c	d				
				¬ a	b	¬ c	d				
				¬ a	b	¬ c	¬ d				
				¬ a	¬ b	c	d				
				¬ a	¬ b	c	¬ d				

69	4[4]12	((b and c) and ((not a and not d) or (a and d))) or (not a and (not b and not c))	down	a b c ¬ d a b ¬ c d a b ¬ c ¬ d a ¬ b c d a ¬ b c ¬ d a ¬ b ¬ c d a ¬ b ¬ c ¬ d ¬ a b c d ¬ a b ¬ c d ¬ a b ¬ c ¬ d ¬ a ¬ b c d ¬ a ¬ b c ¬ d	a b c ¬ d a ¬ b ¬ c ¬ a b c d b ¬ c ¬ b c
70	4[4]13	(a and (b and c)) or (not a and (not b and not c))	down	a b ¬ c d a b ¬ c ¬ d a ¬ b c d a ¬ b c ¬ d a ¬ b ¬ c d a ¬ b ¬ c ¬ d ¬ a b c d ¬ a b c ¬ d ¬ a b ¬ c d ¬ a b ¬ c ¬ d ¬ a ¬ b c d ¬ a ¬ b c ¬ d	a ¬ b ¬ a c b ¬ c
71	4[4]14	(not a and (b and ((not c and d) or (c and not d)))) or (not b and ((not c and not b) or (c and d)))	down	a b c d a b c ¬ d a b ¬ c d a b ¬ c ¬ d a ¬ b c d a ¬ b c ¬ d a ¬ b ¬ c d a ¬ b ¬ c ¬ d ¬ a b c d ¬ a b ¬ c ¬ d ¬ a ¬ b c ¬ d ¬ a ¬ b ¬ c d	a ¬ a b c d ¬ a b ¬ c ¬ d ¬ a ¬ b c ¬ d ¬ a ¬ b ¬ c d
72	4[4]15	(not a and (not b and ((not c and not d) or (c and d))) or (b and (not c and d))) or ((a and not b) and (not c and d))	down	a b c d a b c ¬ d a b ¬ c d a b ¬ c ¬ d a ¬ b c d a ¬ b c ¬ d a ¬ b ¬ c ¬ d ¬ a b c d ¬ a b c ¬ d ¬ a b ¬ c ¬ d ¬ a ¬ b c ¬ d ¬ a ¬ b ¬ c d	a b ¬ c a ¬ b ¬ c ¬ d a c d ¬ a b c d ¬ a b ¬ c ¬ d ¬ a ¬ b ¬ c d c ¬ d
73	4[4]16	(not a and (not b and ((not c and not d) or (c and d))) or (b and (not c and d))) or ((a and not b) and (c and not d))	down	a b c d a b c ¬ d a b ¬ c d a b ¬ c ¬ d a ¬ b c d a ¬ b ¬ c d a ¬ b ¬ c ¬ d ¬ a b c d ¬ a b c ¬ d ¬ a b ¬ c ¬ d	a c d a ¬ c ¬ a b c d ¬ a ¬ b c ¬ d ¬ a ¬ b ¬ c d b ¬ d

				¬ a	¬ b	c	¬ d				
				¬ a	¬ b	¬ c	d				
74	4[4]17	(not a and (not b and ((not c and not d) or (c and d))) or (b and (not c and d))) or ((a and b) and (c and not d))	down	a	b	c	d	a	b	¬ c	
				a	b	¬ c	d	a	¬ b		
				a	b	¬ c	¬ d	¬ a	b	¬ c	¬ d
				a	¬ b	c	d	¬ a	¬ b	¬ c	d
				a	¬ b	c	¬ d	¬ a		c	¬ d
				a	¬ b	¬ c	d		b	c	d
				a	¬ b	¬ c	¬ d				
				¬ a	b	c	d				
				¬ a	b	c	¬ d				
				¬ a	b	¬ c	¬ d				
				¬ a	¬ b	c	¬ d				
				¬ a	¬ b	¬ c	d				
75	4[4]18	((not c and not d) or (c and d)) and ((a and b) or (not a and not b))	down	a	b	c	¬ d	a	¬ b	c	d
				a	b	¬ c	d	a	¬ b	¬ c	¬ d
				a	¬ b	c	d	¬ a	b		
				a	¬ b	c	¬ d			c	¬ d
				a	¬ b	¬ c	d			¬ c	d
				a	¬ b	¬ c	¬ d				
				¬ a	b	c	d				
				¬ a	b	c	¬ d				
				¬ a	b	¬ c	d				
				¬ a	b	¬ c	¬ d				
				¬ a	¬ b	c	¬ d				
				¬ a	¬ b	¬ c	d				
76	4[4]19	((a and b) and ((not c and d) or (c and not d))) or ((not a and not b) and ((not c and not d) or (c and d)))	down	a	b	c	d	a		c	d
				a	b	¬ c	¬ d	a		¬ c	¬ d
				a	¬ b	c	d	¬ a	b		
				a	¬ b	c	¬ d		¬ b	c	¬ d
				a	¬ b	¬ c	d		¬ b	¬ c	d
				a	¬ b	¬ c	¬ d				
				¬ a	b	c	d				
				¬ a	b	c	¬ d				
				¬ a	b	¬ c	d				
				¬ a	b	¬ c	¬ d				
				¬ a	¬ b	c	¬ d				
				¬ a	¬ b	¬ c	d				

1. The concept codes follow Feldman's (2000) notation. The first number represents the number of properties that the concept is defined over, the second number, in parentheses, represents the number of positive instances of the concept, and the third number enumerates the concepts of a given sort.