C.2 POST-EXPERIMENT QUESTIONNAIRE

To evaluate the constraint definition technique you have just used, we now ask you to answer some questions about it. Take into account that we are interested in knowing your opinion: answer questions freely, and consider there are no right or wrong answers.
Please remember that we are evaluating the technique you have just used and not you.

User ID:		Technique:	

Please place a TICK ☑ in the square that best matches your opinion. Please answer all questions.

Part 1: Understanding the Constraint Definition Task

In this section we ask about the constraint definition tasks you have just attempted, independent of the technique that you have used. These are the tasks described on the constraint list.

The tasks I was asked to perform were:

unclear	☐	☐	☐	☐	☐	clear
easy	☐	☐	☐	☐	☐	difficult
simple	☐	☐	☐	☐	☐	complex
unfamiliar	☐	☐	☐	☐	☐	familiar

Part 2: Constraint Definition Technique

In this section we ask you about the constraint definition technique you have used.

How mentally demanding was the task using this technique?

Very Low — Very High

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

How physically demanding was the task using this technique?

Very Low — Very High

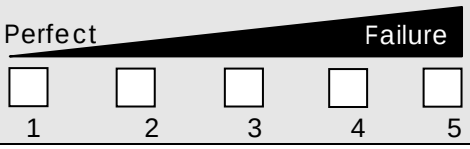
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

How hurried or rushed was the pace of the task using this technique?

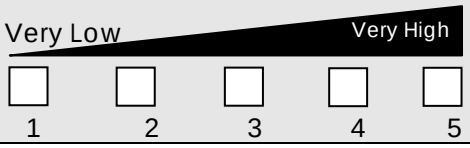
Very Low — Very High

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

How successful were you in accomplishing what you were asked to do?

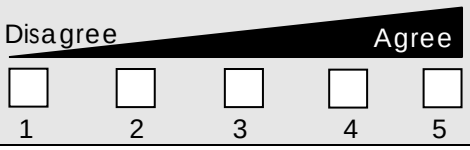


How hard did you have to work to accomplish your level of performance?

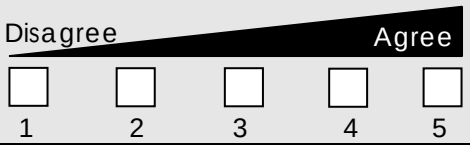


How uncertain, discouraged, irritated, stressed, and annoyed were you?

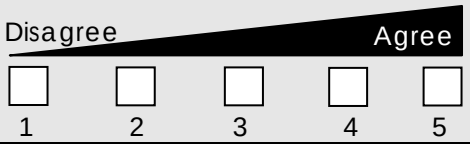
While I was working I felt I was doing the task wrongly.



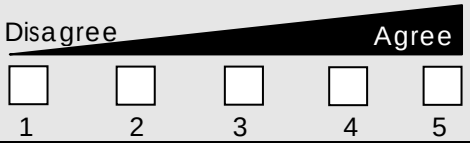
While I was working, I felt that I needed help from an expert.



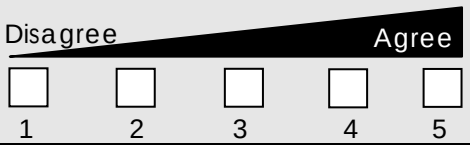
This technique was powerful enough to allow me to define my constraints.



I needed a long time to define constraints using this technique.

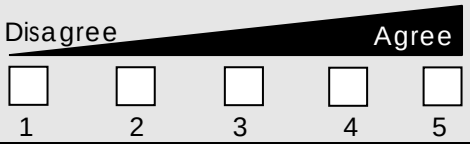


In most cases, I achieved the required constraint at the first attempt.



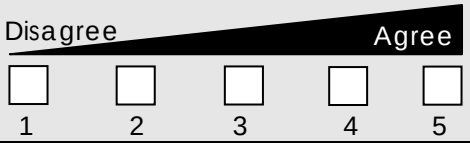
☐ I do not know

In most cases, I was confident that I defined the required constraint.

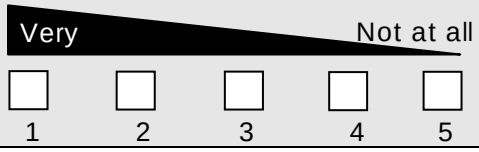


☐ I do not know

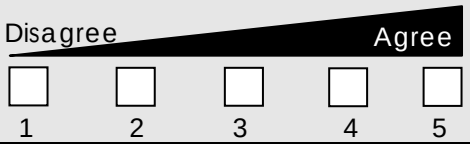
I felt that I acquired experience in this technique quickly while I was working.



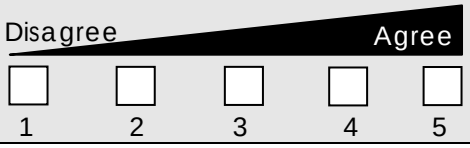
I am satisfied with my performance in constraint definition tasks using this technique.



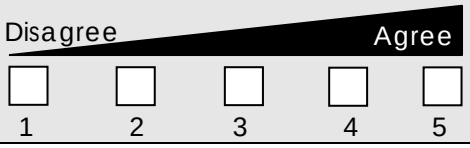
I enjoyed using this technique to accomplish my constraint definition tasks.



I learned about constraint definition using this technique.



Constraint definition task was easy using this technique.



What are the issues/problems that affected your performance?	Agree ← → Disagree				
1.1 I could not find a direct way to define the constraints.	1	2	3	4	5
1.2 It was difficult to think about a way to express a constraint.	1	2	3	4	5
1.3 I was often unsure of what action to take next.	1	2	3	4	5
1.4 I found the technique confusing.	1	2	3	4	5

C.3 EXIT QUESTIONNAIRE/INTERVIEW

The aim of this experiment was to investigate the enhancement of "programming by example" constraint definition technique. Please consider the entire constraint definition experience using two GUI of this technique that you just had when you respond to the following questions.

User ID:	

Please place a TICK ☑ in the square that best matches your opinion. Please answer the questions as fully as you feel able to.

Part 1: Understanding the Constraint Definition Task

Thinking about how to define the constraints was:

stressful	☐	☐	☐	☐	☐	relaxing
interesting	☐	☐	☐	☐	☐	boring
tiring	☐	☐	☐	☐	☐	restful

It was easy to formulate an initial idea about how I would define the constraints.

Agree — Disagree

☐	☐	☐	☐	☐
1	2	3	4	5

Part 2: Comparison of Techniques

In this section we ask you some questions about the two constraint definition techniques you just have used.

It was easier to learn to use "by example" technique than "wizard" technique for constraint definition.

Disagree — Agree

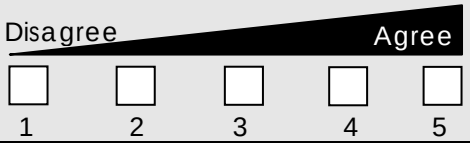
☐	☐	☐	☐	☐
1	2	3	4	5

It was easier to define constraints using "by example" technique than "wizard" technique.

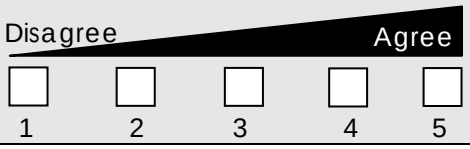
Disagree — Agree

☐	☐	☐	☐	☐
1	2	3	4	5

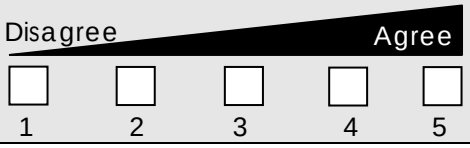
In most of the constraint definition attempts using "by example" technique, I felt I defined constraints correctly.



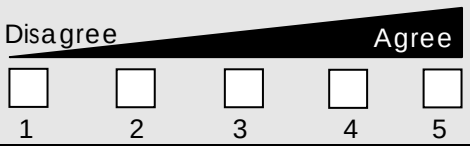
If I work regularly in constraint definition, I would use "by example" technique.



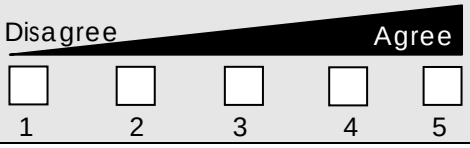
"By example" technique gives more control over constraint definition than "wizard" technique.



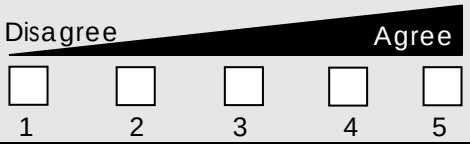
It is easier to remember how to define constraints using "by example" technique than "wizard" technique.



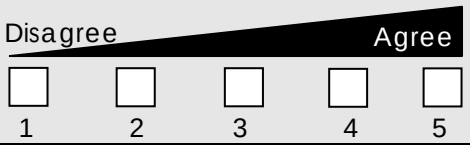
Each time I defined a constraint using "by example" technique, I needed more time to think in the way to define it before starting than "wizard" technique.



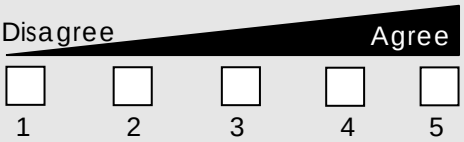
"By example" technique needs longer period IN TOTAL to define a constraint than "wizard" technique.



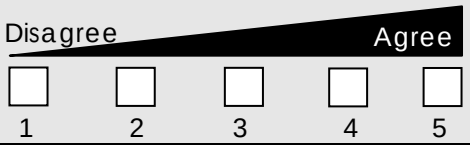
"By example" technique needs more practice than "wizard" technique to be able to define a constraint.



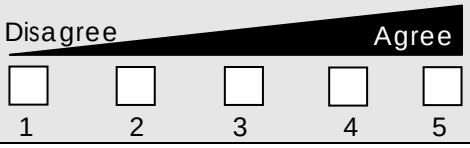
Constraint definition “by example” technique is more confusing than “wizard” technique.



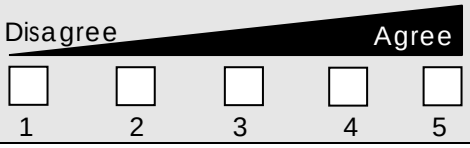
I felt that I acquired experience in “by example” technique while I was working quicker than “wizard” technique.



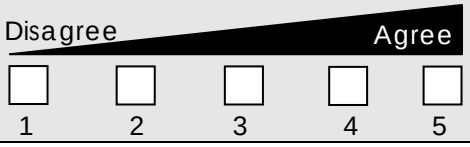
“By example” technique requires fewer steps to accomplish constraint definition than “wizard” technique.



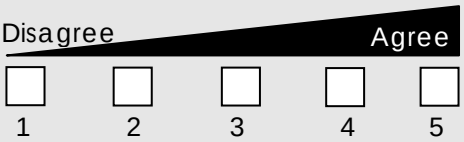
I will use “by example” technique every time I need to perform a constraint definition task.



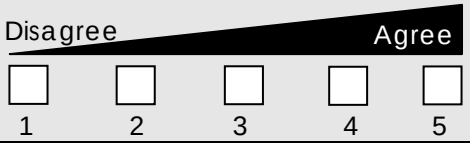
Using “by example” technique for constraint definition will save time over using “wizard technique”.



“By example” technique was more effective than “wizard” technique in constraint definition.



“By example” technique is more flexible in accomplishing constraint definition tasks than “wizard” technique.



Part 2: SYSTEM SUPPORT

In this section we ask you more detailed questions about the system (both constraint definition techniques).

What did you LIKE about the system?

What did you DISLIKE about the system?

If you asked to change one thing in the system, what would that thing be?

Do you have any other comments on the system? (optional)

E.2 QUESTIONS PER CONSTRAINT

To evaluate the constraint definition tool you are using regarding the constraint you just have defined, please answer some questions about it.

User ID:		Tool:		Question:	

Please place a TICK ☑ in the square that best matches your opinion. Please answer all questions.

1. It was difficult to express the constraint with an example.

Disagree Agree

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

2. It was easy to find the required constraint in the inferred constraint list.

Disagree Agree

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

3. I was confident that I defined the required constraint.

Disagree Agree

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ I do not know

4. It was confusing to convert the English constraint expression to example.

Disagree Agree

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

5. The way the constraint is written in English in the constraint list (the paper in your hand) affected my choice of the way I should express the constraint with an example.

Disagree Agree

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

E.3 POST-EXPERIMENT QUESTIONNAIRE

University of Glasgow

To evaluate the constraint definition tool you have just used, we now ask you to answer some questions about it. Take into account that we are interested in knowing your opinion. answer questions freely, and consider there are no right or wrong answers.
Please remember that we are evaluating the tool you have just used and not you.

User ID:		Tool:	

Please place a TICK ☑ in the square that best matches your opinion. Please answer all questions.

Part 1: Understanding the Constraint Definition Task

In this section we ask about the constraint definition tasks you have just attempted, independent of the tool that you have used. These are the tasks described on the constraint list.

1. The constraint definition tasks I was asked to perform were:

unclear	☐	☐	☐	☐	☐	clear
easy to understand	☐	☐	☐	☐	☐	difficult to understand
not logical constraints	☐	☐	☐	☐	☐	logical constraints
unfamiliar	☐	☐	☐	☐	☐	familiar

Part 2: Constraint Definition Tool

In this section we ask you about the constraint definition tool you have used.

1. How mentally demanding was the task using this tool?

Very Low — Very High

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

2. How physically demanding was the task using this tool?

Very Low — Very High

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

3. How hurried or rushed was the pace of the task using this tool?

Very Low — Very High

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

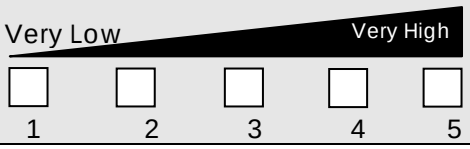
4. How successful were you in accomplishing what you were asked to do?

Perfect — Failure

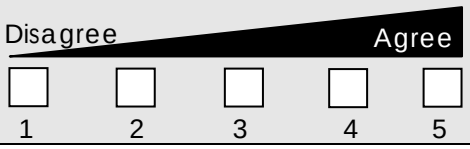
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

5. How hard did you have to work to accomplish your level of performance?

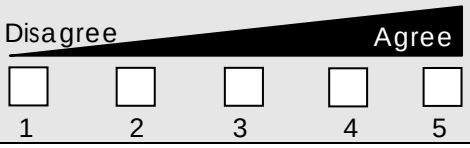
6. How uncertain, discouraged, irritated, stressed, and annoyed were you?



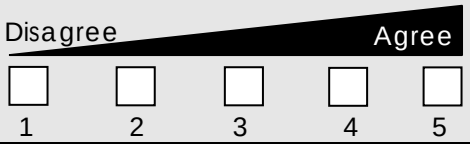
7. While I was working, I felt that I needed help from an expert.



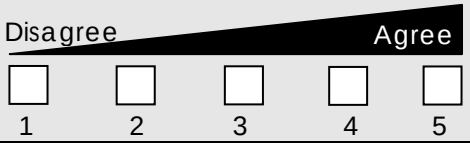
8. Transparency feature was helpful in constraint definition task.



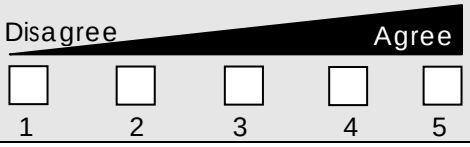
9. Using this tool requires a lot of time and effort because I need to think of an example to express the constraint.



10. In most cases, I achieved the required constraint with my first attempted example.



11. Constraint definition task was easy using this tool.



12. What are the issues/problems that affected your performance?	Agree ← Disagree				
1. I could not find a direct way to define the constraints.	1	2	3	4	5
2. I was often unsure of what action to take next.	1	2	3	4	5
3. I found the tool confusing.	1	2	3	4	5

E.4 EXIT QUESTIONNAIRE/INTERVIEW

The aim of this experiment is to investigate the easiest way of expressing a constraint by example for the purpose of constraint definition. Please consider the entire constraint definition experience using the two tools that you just have used when you respond to the following questions.

User ID:	

Please place a TICK ☑ in the square that best matches your opinion. Please answer the questions as fully as you feel able to.

Part 1: Comparison of the Tools

In this section we ask you some questions about the two tools you just have used.

1. From my experience in the two tools, I believe they have different abilities to define constraints.

Disagree Agree

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

2. Forcing negative example choice did not affect me in expressing the constraint.

Disagree Agree

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

3. It was **easy** to decide the required polarity (positive or negative) to express the example in **the mixed tool**.

Disagree Agree

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

4. It was easy to convert the constraints in the list provided into examples.

Disagree Agree

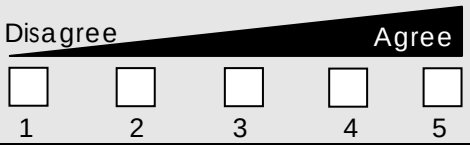
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

5. It was easier to define constraints using the mixed tool than the negative one.

Disagree Agree

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

6. Choosing the polarity of the examples **in the mixed tool** was confusing.



7. It was easier to choose a constraint from the inferred list in:

Negative tool ☐ Mixed tool ☐ The same ☐ I do not know ☐

8. The tool that generates higher number of constraints in the inferred list is:

Negative tool ☐ Mixed tool ☐ The same ☐ I do not know ☐

9. The tool that consumes more time and effort in constraint definition task is:

Negative tool ☐ Mixed tool ☐ The same ☐ I do not know ☐

10. The tool that requires more practice for constraint definition is:

Negative tool ☐ Mixed tool ☐ The same ☐ I do not know ☐

11. The more flexible tool in constraint definition is:

Negative tool ☐ Mixed tool ☐ The same ☐ I do not know ☐

12. Converting the constraints in the lists provided (the paper in your hand) into examples was easier in:

Negative tool ☐ Mixed tool ☐ The same ☐ I do not know ☐

Part 2: SYSTEM SUPPORT

In this section we ask you more detailed questions about the three tools.

1. What did you LIKE and DISLIKE about both tools in general?

2. Which tool have you preferred and why?

3. Give me your opinion about the steps of converting a constraint expression from natural English language to an example in your mind (imagining it), to an example on the screen.

4. If you have the ability to customise the examples that express some constraints, would you make? Why?

5. If you asked to change one thing in the tools, what would that thing be?

6. Do you have any other comments on the tools? (optional)

F.3 POST-EXPERIMENT QUESTIONNAIRE

To evaluate the constraint definition tool you have just used, we now ask you to answer some questions about it. Take into account that we are interested in knowing your opinion. answer questions freely, and consider there are no right or wrong answers.
Please remember that we are evaluating the tool you have just used and not you.

User ID:		Tool:	

Please place a TICK ☑ in the square that best matches your opinion. Please answer all questions.

Part 1: Understanding the Constraint Definition Task

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1. The constraint definition tasks I was asked to perform were:

unclear	☐	☐	☐	☐	☐	clear
easy to understand	☐	☐	☐	☐	☐	difficult to understand
not logical constraints	☐	☐	☐	☐	☐	logical constraints
unfamiliar	☐	☐	☐	☐	☐	familiar

Part 2: Constraint Definition Tool

In this section we ask you about the constraint definition task you have done.

1. How mentally demanding was the task?
Mentally Demand: How much mental and perceptual activity was required (e.g. thinking, deciding, calculating, remembering, looking, searching, etc.)? Was the task easy or demanding, simple or complex, exacting or forgiving?

Very Low				Very High
☐	☐	☐	☐	☐
1	2	3	4	5

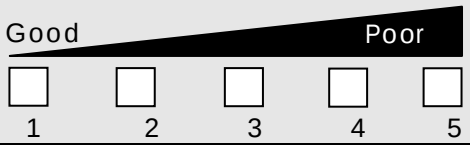
2. How physically demanding was the task?
Physical Demand: How much physical activity was required (e.g. pushing, pulling, turning, controlling, activating, etc.)? Was the task easy or demanding, slow or brisk, slack or strenuous, restful or laborious?

Very Low				Very High
☐	☐	☐	☐	☐
1	2	3	4	5

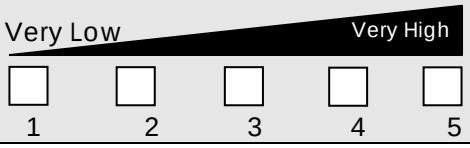
3. How temporal demanding was the task?
Temporal Demand: How much time pressure did you feel due to the rate or pace at which the tasks or task elements occurred? Was the pace slow and leisurely or rapid and frantic?

Very Low				Very High
☐	☐	☐	☐	☐
1	2	3	4	5

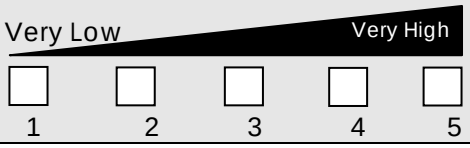
4. How successful were you in accomplishing what you were asked to do?



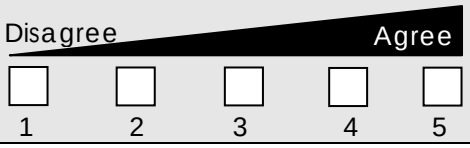
5. How hard did you have to work (mentally and physically) to accomplish your level of performance?



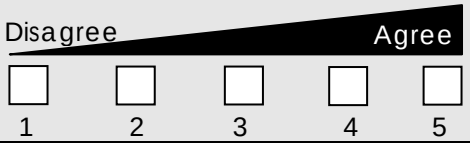
6. How uncertain, discouraged, irritated, stressed, and annoyed did you feel during the task?



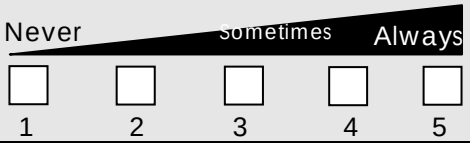
7. The constraint definition task was easy using this tool.



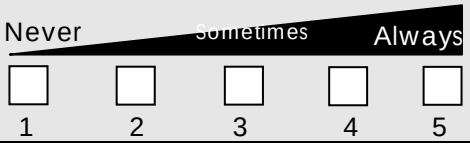
8. While I was working, I felt that I needed help from an expert.



9. I spent a lot of time and effort in defining the constraint, including thinking of an example.



10. I achieved the required constraint with my first attempted example.



11. What are the issues/problems that affected your performance?	Agree ... Disagree				
1. I could not find a direct way to define the constraints using examples.	1	2	3	4	5
2. I was often unsure of what action to take next.	1	2	3	4	5
3. I found the tool confusing.	1	2	3	4	5

F.4 EXIT QUESTIONNAIRE/INTERVIEW

The aim of this experiment is to investigate adding and customising rules for easier way to express a constraint by example for the purpose of constraint definition. Please consider the entire constraint definition experience using the two tasks that you just have done when you respond to the following questions.

User ID:	

Please place a TICK ☑ in the square that best matches your opinion. Please answer the questions as fully as you feel able to.

Part 1: Comparison of the Tasks

In this section we ask you some questions about the two tasks you just have done.

1. The tool inferred the correct constraint from my example.

Never — Sometimes — Always

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

2. In task 1, if I had used different examples, the tool would have been able to infer the correct constraint.

Never — Sometimes — Always

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

3. In the second task, the tool thinks like the way I think.

Disagree — Agree

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

4. The tool was better able to define constraints in the second task than in the first task.

Disagree — Agree

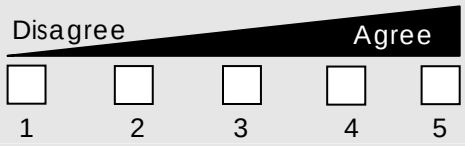
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

5. The tool learned how to define the constraint.

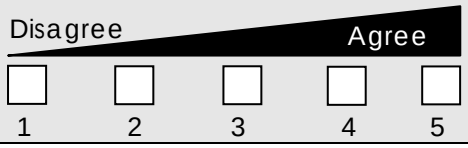
Disagree — Agree

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

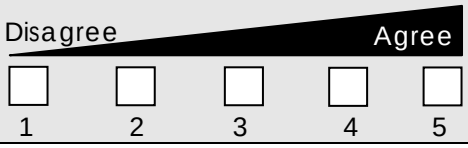
6. Task 1 was easier than task 2.



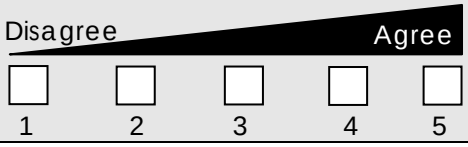
7. Task 2 was easier than task 1



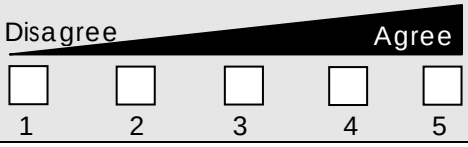
8. It was easy to add a rule using the wizard.



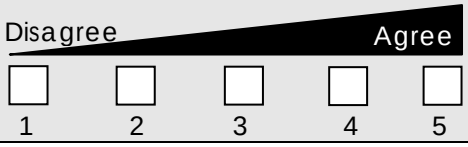
9. The Rule Addition feature was useful.



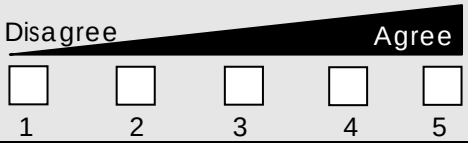
10. The tool learned how to interpret new examples quickly and efficiently.



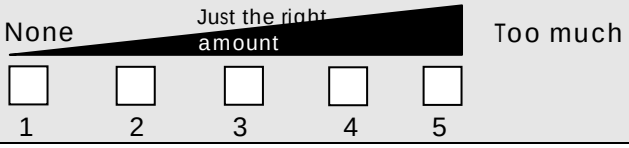
11. I did better in task 2 because I added rules in task 1.



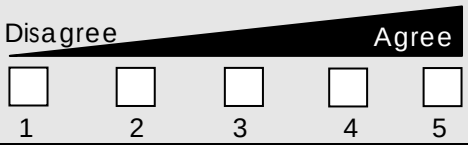
12. I would use Rule Addition feature again if I were using this tool to define constraints.



13. Adding rules requires practice.



14. In task 2 I was able to reuse examples from task 1, but to define different constraints.



Part 2: SYSTEM SUPPORT

In this section we ask you more detailed questions about the three tools.

1. What did you LIKE and DISLIKE about both tool in general?

2. Have you liked the adding rules feature? Why?

3. Do you believe that adding rules feature is a tool customisation? Why?

4. If you asked to change one thing in the tool, what would that thing be?

5. Do you have any other comments on the tool and the adding rules feature? (optional)