

Supplementary Materials

Experiment 1

Statistical comparison	S & W	Cause	Relevance
<u>Effect of question within each story condition</u>			
Standard violation	43.02***	30.18***	18.55***
Unintended violation	26.89***	20.78***	10.10*
Ignorant violation	48.80***	35.40***	52.06***
Deception violation	64.42***	73.64***	54.98***
<u>Effect of story within each question condition</u>			
Chemical/event	4.23 ^{ns}	4.36 ^{ns}	10.54 ^{ns}
Person/event	13.71*	6.16 ^{ns}	14.27*
Agent	79.72***	79.37***	62.80***
<u>Difference from standard violation for the agent question condition</u>			
Unintended violation	17.50***	26.43***	16.23***
Ignorant violation	42.46***	38.76***	34.22***
Deception violation	58.41***	53.99***	41.18***

Table 1. Comparison of key statistical tests in S&W and the same tests performed on participants' causal and relevance judgments in Experiment 1.

Materials***Background:***

Tom has a huge garden and loves flowers. Because he has less and less time for gardening lately, he employed two gardeners who take care of the plants on his 30 flower beds: Alex and Benni.

Both can independently decide on their working hours and arrange who cares for which flower beds. They decided that there will be some flower beds which only one of them will take care of and others that they will both take care of, but on alternate days.

Alex and Benni are very reliable and Tom is satisfied with their work. Nevertheless he wants to optimize the plant growth.

Since Tom has read in a magazine that plants grow better when they are fertilized, he decides to let Alex and Benni fertilize his plants. The magazine recommends the use of the chemicals **A X200®** or **B Y33®**, since both are especially effective.

However, Tom also read that it can damage plants when they are exposed to multiple different types of chemicals. Tom therefore decides that he only wants to use one fertilizer. He goes for **A X200®**.

Standard Norm Violation:

Tom instructs Alex and Benni to buy the chemical A X200® and to use only this fertilizer.

Alex volunteers for buying several bottles of this chemical for Benni and himself.

After a few weeks, Tom goes for a walk in his garden. **He realizes that some of his plants are much prettier and bigger than before. However, he also realizes that some of his plants have lost their beautiful color and are dried up.**

That makes Tom very sad and reflective. He wonders whether the drying of his plants might have something to do with the fertilization. He wants to investigate this matter and talks to Alex and Benni.

Alex tells him that he followed Tom's instructions and only bought and used the chemical **A X200®**.

However, Benni tells him that he had used the chemical **B Y33®** instead. He still had some bottles of this chemical in stock at home and wanted to use them up.

Since some flower beds were only fertilized by Alex or only fertilized by Benni, but others by both, Tom asks Alex and Benni to make a detailed plan about which of his 30 flower beds had been fertilized by whom in the last few weeks. Afterwards, he takes a closer look at the flower beds.

He realizes that the plants were bigger and more beautiful where only one single chemical had been used (i.e., only A X200® or only B Y33®).

They were dried up in the flower beds on which both A X200® and B Y33® were applied by the gardeners.

Unintended Norm Violation:

Tom instructs Alex and Benni to buy the chemical A X200® and to use only this fertilizer.

Alex volunteers for buying several bottles of this chemical for Benni and himself.

After a few weeks, Tom goes for a walk in his garden. **He realizes that some of his plants are much prettier and bigger than before. However, he also realizes that some of his plants have lost their beautiful color and are dried up.**

That makes Tom very sad and reflective. He wonders whether the drying of his plants might have something to do with the fertilization. He wants to investigate this matter and talks to Alex and Benni.

Alex tells him that he followed Tom's instruction: "I only bought and used the chemical A X200® which I had funneled into the blue can."

Benni suddenly is startled and says to Alex: "What? You funneled A X200® into the *blue* can? But you told me you had funneled it into the *green* can! That's why I always used the green can!"

Alex replies: "Did I? Then I am sorry!"

Tom remembers that he had filled B Y33® in a green can - long before he had read about the chemicals in his magazine. He had never used it. **So Benni must have accidentally, without knowing it, applied the chemical B Y33®, whereas only Alex applied A X200®.**

Since some flower beds were only fertilized by Alex or Benni, but others by both, Tom asks Alex and Benni to make a detailed plan about which of his 30 flower beds had been fertilized by whom in the last weeks. Afterwards, he takes a closer look at the flower beds.

He realizes that the plants were bigger and more beautiful where only one single chemical had been used (i.e., only A X200® or only B Y33®).

They were dried up in the flower beds on which both A X200® and B Y33® were applied by the gardeners.

Ignorant norm violation:

When Tom meets Alex in the garden shortly afterwards, he instructs him to buy the chemical A X200® and to use only this fertilizer. He also explicitly instructs him to tell Benni to only use A X200®.

Alex volunteers to buy several bottles of this chemical for Benni and himself and to tell Benni about Tom's instruction.

After a few weeks, Tom goes for a walk in his garden. **He realizes that some of his plants are much prettier and bigger than before. However, he also realizes that some of his plants have lost their beautiful color and are dried up.**

That makes Tom very sad and reflective. He wonders whether the drying of his plants might have something to do with the fertilization. He wants to investigate this matter and talks to Alex and Benni.

Alex immediately starts apologizing: "I am sorry! I completely forgot to tell Benni about the rule! I bought and used the chemical **A X200®** but Benni must have used something else because he did not know about the new rule."

Benni tells Tom that Alex had not told him that they were only supposed to use A X200®. He explains: "I have used the fertilizer I previously used; it is called **B Y33®!**"

Tom remembers that he had filled B Y33® in a green can - long before he had read about the chemicals in his magazine. He had never used it. **So Benni must have accidentally, without knowing it, applied the chemical B Y33®, whereas only Alex applied A X200®.**

Since some flower beds were only fertilized by Alex or Benni, but others by both, Tom asks Alex and Benni to make a detailed plan about which of his 30 flower beds had been fertilized by whom in the last weeks. Afterwards, he takes a closer look at the flower beds.

He realizes that the plants were bigger and more beautiful where only one single chemical had been used (i.e., only A X200® or only B Y33®).

They were dried up in the flower beds on which both A X200® and B Y33® were applied by the gardeners.

Deceived Norm Violation:

When Tom meets Alex in the garden shortly afterwards, he instructs him to buy the chemical A X200® and to use only this fertilizer. He also explicitly instructs him to tell Benni to only use A X200®.

Alex volunteers to buy several bottles of this chemical for Benni and himself and to tell Benni about Tom's instruction.

After a few weeks, Tom goes for a walk in his garden. He realizes that some of his plants are much prettier and bigger than before. However, he also realizes that some of his plants have lost their beautiful color and are dried up.

That makes Tom very sad and reflective. He wonders whether the drying of his plants might have something to do with the fertilization. He wants to investigate this matter and talks to Alex and Benni.

After some interrogation, Alex finally confesses that he had told Benni that Tom wanted them to buy and use the chemical B Y33® instead of A X200®. He wanted Benni to use the wrong fertilizer and to get fired because he wanted to have more working hours to earn more money. He himself only used **A X200®**.

Benni tells Tom that Alex had told him that they were only supposed to use B Y33®. He therefore only used **B Y33®** without knowing that Tom actually intended both gardeners to use A X200®.

Since some flower beds were only fertilized by Alex or Benni, but others by both, Tom asks Alex and Benni to make a detailed plan about which of his 30 flower beds had been fertilized by whom in the last weeks. Afterwards, he takes a closer look at the flower beds.

He realizes that the plants were bigger and more beautiful where only one single chemical had been used (i.e., only A X200® or only B Y33®).

They were dried up in the flower beds on which both A X200® and B Y33® were applied by the gardeners.

Control Questions

Which chemical(s) were actually applied by each gardener? (you may select one, both, or neither for each gardener)

	Chemical A X200®	Chemical B Y33®
Alex	<input type="checkbox"/>	<input type="checkbox"/>
Benni	<input type="checkbox"/>	<input type="checkbox"/>

Which chemical(s) did Tom WANT each of the gardeners to use? (you may select one, both, or neither for each gardener)

	Chemical A X200®	Chemical B Y33®
Alex	<input type="checkbox"/>	<input type="checkbox"/>
Benni	<input type="checkbox"/>	<input type="checkbox"/>

Please estimate what percentage of the flowers dried up in each of the categories below (0% = none of the flowers dried up, 100% = all of the flowers dried up). We are looking for an estimate based on the story, you were not given exact numbers.

- Plants that were ONLY fertilized with chemical A X200® (0 – 100)
- Plants that were ONLY fertilized with chemical B Y33® (0 – 100)
- Plants that were fertilized with BOTH chemicals (0 – 100)

Primary Dependent Variables

Causation:

Agent Condition

Who caused the plants to be dried out? (select one or more)

- ☐ Alex
- ☐ Benni

Action Condition

What caused the plants to be dried out? (select one or more)

- ☐ The fertilization by Alex
- ☐ The fertilization by Benni

Artifact Condition

What caused the plants to be dried out? (select one or more)

- The application of chemical A X200®
- The application of chemical B Y33®

Counterfactual Relevance:

Agent Condition

Now suppose that some people are discussing the fact that the flowers dried up and wondering how things could have been different. In thinking about who could have acted differently, please tell us whether it would be relevant or irrelevant to focus on the following people:

	Relevant	Irrelevant
Alex	<input type="checkbox"/>	<input type="checkbox"/>
Benni	<input type="checkbox"/>	<input type="checkbox"/>

Action Condition

Now suppose that some people are discussing the fact that the flowers dried up and wondering how things could have been different. In thinking about what could have happened differently, please tell us whether it would be relevant or irrelevant to focus on the following things:

	Relevant	Irrelevant
The fertilization by Alex	<input type="checkbox"/>	<input type="checkbox"/>
The fertilization by Benni	<input type="checkbox"/>	<input type="checkbox"/>

Artifact Condition

Now suppose that some people are discussing the fact that the flowers dried up and wondering how things could have been different. In thinking about what could have happened differently, please tell us whether it would be relevant or irrelevant to focus on the following things:

	Relevant	Irrelevant
The application of chemical A X200®	<input type="checkbox"/>	<input type="checkbox"/>
The application of chemical B Y33®	<input type="checkbox"/>	<input type="checkbox"/>

Probability Estimates We did not observe an effect of condition on participants' estimates of the percentage of flowers that dried, this was true of estimates when only A X200® was applied, $F(3,435) = 0.06$, $p = 0.981$, when only B Y33® was applied, $F(3,435) = 0.09$, $p = 0.966$, and when both were applied, $F(3,435) = 0.64$, $p = 0.588$. This pattern precisely replicates the one observed in S&W.

Experiment 2

No Norm Violation Vignette

A philosophy department at a small university bought a vending machine to dispense and keep track of office supplies. Currently, the machine has pencils, which you can get by pulling a black lever or a red lever, and erasers, which you can get from the machine by pulling a white lever.

The white lever on the vending machine frequently malfunctions. When pulled, it produces both an eraser and a pencil, but breaks the pencil in the process.

Pencils are often needed by students who are taking tests, but there are usually plenty of pencils and erasers in the vending machine, so both the administrative assistants and the professors are allowed to take pencils and erasers from the machine.

Professor Smith was recently hired at the department. He was told that he is allowed to take pencils and erasers from the vending machine. However, he was not told that the white lever almost always malfunctions.

One morning, Professor Smith and an administrative assistant both go to the vending machine and pull a lever at the same time. The administrative assistant wanted a pencil, so he pulled the black lever. Professor Smith also wanted a pencil and so he pulled the red lever. Both levers worked like they were supposed to, and they both got a pencil from the vending machine.

These were the last two pencils in the vending machine.

Not long after, a student desperately needs a pencil for a test, but when she goes to the vending machine, there are no more pencils. This leads to a serious problem.

Counterfactual Manipulation: Agent condition

We would like you to think about Professor Smith's decision to take a pencil from the vending machine. Please consider and describe one relevant way that things could have gone differently such that the professor would not have taken one of the pencils from the vending machine.

How could things have gone differently such that Professor Smith would not have taken a pencil from the vending machine? What would have happened if Professor Smith had not taken a pencil?

(Please write at least a couple of sentences.)

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Counterfactual Manipulation: Artifact condition

We would like you to think about the way the red lever functioned to produce a pencil from the vending machine. Please consider and describe one relevant way that things could have gone differently such that the red lever would not have functioned to produce one of the pencils from the vending machine.

How could things have gone differently such that the red lever would not have functioned to produce a pencil from the vending machine? What would have happened if the red lever had not produced a pencil?

(Please write at least a couple of sentences.)

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Counterfactual Manipulation: No counterfactual

Now we would like you to consider everything that happened in the story your read.

Please write a description of what actually happened in the story your read.

(Please write at least a couple of sentences.)

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Control Questions

Which levers were actually pulled in the original story you read?

(Please mark all that apply).

- ☐ The red lever
- ☐ The black lever
- ☐ The white lever

Who actually received a pencil in the original story you read?

(Please mark all that apply).

- ☐ Professor Smith
- ☐ The administrative assistant\
- ☐ The student

Causation Questions

Agent Question

Please tell us whether you agree or disagree with the following statement about the original story you read:

Professor Smith caused the problem.

[Slider scale from 0 (Completely disagree) to 100 (Completely agree)]

Artifact Question

Please tell us whether you agree or disagree with the following statement about the original story you read:

The red lever caused the problem.

[Slider scale from 0 (Completely disagree) to 100 (Completely agree)]

Experiment 3***No Norm Violation***

A philosophy department at a small university bought a vending machine to dispense and keep track of office supplies. Currently, the machine has pencils, which you can get by pulling a black lever or a red lever, and erasers, which you can get from the machine by pulling a white lever.

The white lever on the vending machine frequently malfunctions. When pulled, it produces both an eraser and a pencil, but breaks the pencil in the process.

Pencils are often needed by students who are taking tests, but there are usually plenty of pencils and erasers in the vending machine, so both the administrative assistants and the professors are allowed to take pencils and erasers from the machine.

Professor Smith was recently hired at the department. He was told that he is allowed to take pencils and erasers from the vending machine. However, he was not told that the white lever almost always malfunctions.

One morning, Professor Smith and an administrative assistant both go to the vending machine and pull a lever at the same time. The administrative assistant wanted a pencil, so he pulled the black lever. Professor Smith also wanted a pencil and so he pulled the red lever. Both levers worked like they were supposed to, and they both got a pencil from the vending machine.

These were the last two pencils in the vending machine.

Not long after, a student desperately needs a pencil for a test, but when she goes to the vending machine, there are no more pencils. This leads to a serious problem.

Moral Norm Violation

A philosophy department at a small university bought a vending machine to dispense and keep track of office supplies. Currently, the machine has pencils, which you can get by pulling a black lever or a red lever, and erasers, which you can get from the machine by pulling a white lever.

The white lever on the vending machine frequently malfunctions. When pulled, it produces both an eraser and a pencil, but breaks the pencil in the process.

Pencils are often needed by students who are taking tests, so to make sure there are always enough pencils, the philosophy professors are told to buy their own pencils and not take them from the vending machine. Only the administrative assistants are allowed to take pencils from the vending machine. There are plenty of erasers though, so both administrative assistants and professors are allowed to take erasers from the machine.

Professor Smith was recently hired at the department. He was told that he was not allowed to take pencils from the vending machine, but that he was allowed to take erasers. However, he was not told that the white lever almost always malfunctions.

One morning, Professor Smith and an administrative assistant both go to the vending machine and pull a lever at the same time. The administrative assistant wanted a pencil, so he pulled the black lever. Professor Smith also wanted a pencil and so he pulled the red lever. Both levers worked like they were supposed to, and they both got a pencil from the vending machine.

These were the last two pencils in the vending machine.

Not long after, a student desperately needs a pencil for a test, but when she goes to the vending machine, there are no more pencils. This leads to a serious problem.

Functional Norm Violation

A philosophy department at a small university bought a vending machine to dispense and keep track of office supplies. Currently, the machine has pencils, which you can get by pulling a black lever or a white lever, and erasers, which you can get from the machine by pulling a red lever.

The red lever on the vending machine almost always malfunctions. When pulled, it produces both an eraser and a pencil, but breaks the pencil in the process.

Pencils are often needed by students who are taking tests, but there are usually plenty of pencils and erasers in the vending machine, so both the administrative assistants and the professors are allowed to take pencils and erasers from the machine.

Professor Smith was recently hired at the department. He was told that he is allowed to take pencils and erasers from the vending machine. However, he was not told that the red lever almost always malfunctions.

One morning, Professor Smith and an administrative assistant both go to the vending machine and pull a lever at the same time. The administrative assistant wanted a pencil, so he pulled the black lever. Professor Smith wanted an eraser and so he pulled the red lever. The black lever worked like it was supposed to and the administrative assistant got a pencil. However, the red lever malfunctioned, and the professor got an eraser and a completely broken pencil.

These were the last two pencils in the vending machine.

Not long after, a student desperately needs a pencil for a test, but when she goes to the vending machine, there are no more pencils. This leads to a serious problem.

Control Questions

What are each of the levers **supposed** to deliver?

	Pencil	Eraser
Red lever	<input type="checkbox"/>	<input type="checkbox"/>
Black lever	<input type="checkbox"/>	<input type="checkbox"/>

What did each person actually receive from the vending machine after they pulled the lever?

(Check all boxes that apply.)

	Pencils	Erasers
Professor Smith	<input type="checkbox"/>	<input type="checkbox"/>
The administrative assistant	<input type="checkbox"/>	<input type="checkbox"/>

According to the department's rules, which office supplies was each person allowed to take from the vending machine? (Check all boxes that apply.)

	Pencils	Erasers
Professor Smith	<input type="checkbox"/>	<input type="checkbox"/>
The administrative assistant	<input type="checkbox"/>	<input type="checkbox"/>

Manipulation Check Questions

One of the levers could be used to get erasers. How likely was this lever to malfunction?

Please indicate your answer using the scale below (with 0 meaning maximally unlikely and 100 meaning maximally likely)

[Scale from 0 – 100]

Please tell us whether you agree or disagree with this statement about Professor Smith:

It was morally wrong for Professor Smith to pull the red lever.

[Scale from 1 ('Strongly agree') to 7 ('Strongly disagree') with a midpoint of 4 ('Neither agree nor disagree')]

Primary Dependent Variables

Causation:

Agent Condition

Who caused the problem? (select one or more)

- ☐ The administrative assistant
- ☐ Professor Smith

Artifact Condition

What caused the problem? (select one or more)

- ☐ The black lever
- ☐ The red lever

Counterfactual Relevance

Agent Condition

Now suppose that some people are discussing the problem the student had and wondering how things could have been different. In thinking about who could have acted differently, please tell us whether it would be relevant or irrelevant to focus on the following people:

Relevant

Irrelevant

The administrative assistant	<input type="checkbox"/>	<input type="checkbox"/>
Professor Smith	<input type="checkbox"/>	<input type="checkbox"/>

Artifact Condition

Now suppose that some people are discussing the problem the student had and were wondering how things could have been different. In thinking about what could have happened differently, please tell us whether it would be relevant or irrelevant to focus on the following things:

	Relevant	Irrelevant
The black lever	<input type="checkbox"/>	<input type="checkbox"/>
The red lever	<input type="checkbox"/>	<input type="checkbox"/>

Experiment 4

Artifact vignettes

No norm violation

A town sandwiched between a lake and a river recently installed a sophisticated computer to control drainage on the highway that runs past the river. When it rains heavily, the computer sends instructions to open or close different valves to stop the highway from flooding.

The computer controls two overflow valves. One overflow valve leads directly from the storm drain to the lake, the other leads directly from the storm drain to the river, and both are left half-open when it's not raining. In case of very heavy rain, the computer is supposed to open the

lake valve but close the river valve, to stop the river from overflowing its banks and flooding the road.

One day there is a very heavy rainstorm. The computer sends a signal to the lake valve to open and sends a signal to the river valve to close. After receiving this signal, the river valve closes and the lake valve opens, and the river doesn't overflow.

Unfortunately, this storm is unusually heavy. With one valve closed, highway storm drains back up and the highway gets flooded until the rain stops.

Proximal violation vignette

A town sandwiched between a lake and a river recently installed a sophisticated computer to control drainage on the highway that runs past the river. When it rains heavily, the computer sends instructions to open or close different valves to stop the highway from flooding.

The computer controls two overflow valves. One overflow valve leads directly from the storm drain to the lake, the other leads directly from the storm drain to the river, and both are left half-open when it's not raining.

In case of very heavy rain, the computer is supposed to open both the river valve and the lake valve to clear the storm drain as quickly as possible.

One day there is a very heavy rainstorm. The computer sends a signal to the lake valve to open, and sends a signal to the river valve to open. After receiving this signal, the machinery in the river valve malfunctions and it closes, but the lake valve opens.

Unfortunately, this storm is unusually heavy. With one valve closed, highway storm drains back up and the highway gets flooded until the rain stops.

Distal violation vignette

A town sandwiched between a lake and a river recently installed a sophisticated computer to control drainage on the highway that runs past the river. When it rains heavily, the computer sends instructions to open or close different valves to stop the highway from flooding.

The computer controls two overflow valves. One overflow valve leads directly from the storm drain to the lake, the other leads directly from the storm drain to the river, and both are left half-open when it's not raining.

In case of very heavy rain, the computer is supposed to open both valves, but in light rain it is only supposed to open the lake valve and close the river valve.

One day there is a very heavy rainstorm. The computer malfunctions and detects the rain as being very light, so it sends a signal to the lake valve to open and sends a signal to the river valve to close. After receiving this signal, the river valve closes and the lake valve opens.

Unfortunately, this storm is unusually heavy. With one valve closed, highway storm drains back up and the highway gets flooded until the rain stops.

Agent vignettes

No norm violation

A town sandwiched between a lake and a river has a supervisor named Alex who monitors the drainage system on its highway. When it rains heavily, the supervisor tells two mechanics, Sam and Billy, to open or close different valves to stop the highway from flooding. Sam and Billy work in a windowless room, so they can't see whether it's raining, and Alex has to call and tell them when they need to open or close the valves.

Each mechanic is responsible for a different overflow valve. Sam is responsible for an overflow valve that leads directly from the storm drain to the lake. Billy is responsible for an overflow valve that leads directly from the storm drain to the river. Both valves are left half-open when it's not raining.

In case of very heavy rain, Alex is supposed to tell Sam to open the lake valve, and tell Billy to close the river valve, to stop the river from overflowing its banks and flooding the road.

One day there is a very heavy rainstorm. Alex tells Sam to open the lake valve and Billy to close the river valve. After receiving the signal from Alex, Billy closes the river valve, and Sam opens the lake valve, and the river doesn't overflow.

Unfortunately, this storm is unusually heavy. With one valve closed, highway storm drains back up and the highway gets flooded until the rain stops.

Proximal norm violation

A town sandwiched between a lake and a river has a supervisor named Alex who monitors the drainage system on its highway. When it rains heavily, the supervisor tells two mechanics, Sam and Billy, to open or close different valves to stop the highway from flooding. Sam and Billy work in a windowless room, so they can't see whether it's raining, and Alex has to call and tell them when they need to open or close the valves.

Each mechanic is responsible for a different overflow valve. Sam is responsible for an overflow valve that leads directly from the storm drain to the lake. Billy is responsible for an overflow valve that leads directly from the storm drain to the river. Both valves are left half-open when it's not raining.

In case of very heavy rain, Alex is supposed to tell Billy and Sam to open their valves.

One day there is a very heavy rainstorm. Alex tells Sam to open the lake valve, and Billy to open the river valve. However, Billy doesn't like Alex and wants to make him look incompetent. After receiving the signal from Alex, Billy decides to close the river valve, and Sam opens the lake valve.

Unfortunately, this storm is unusually heavy. With one valve closed, highway storm drains back up and the highway gets flooded until the rain stops.

Distal norm violation

A town sandwiched between a lake and a river has a supervisor named Alex who monitors the drainage system on its highway. When it rains heavily, the supervisor tells two mechanics, Sam and Billy, to open or close different valves to stop the highway from flooding. Sam and Billy work in a windowless room, so they can't see whether it's raining, and Alex has to call and tell them when they need to open or close the valves.

Each mechanic is responsible for a different overflow valve. Sam is responsible for an overflow valve that leads directly from the storm drain to the lake. Billy is responsible for an overflow valve that leads directly from the storm drain to the river. Both valves are left half-open when it's not raining.

In case of very heavy rain, Alex is supposed to tell both Billy and Sam to open their valves.

However, Alex doesn't like Billy, and wants to make him look incompetent.

One day there is a very heavy rainstorm. Alex tells Sam to open the lake valve but tells Billy to close the river valve. After receiving the signal from Alex, Billy closes the river valve, and Sam opens the lake valve, and the river doesn't overflow.

Unfortunately, this storm is unusually heavy. With one valve closed, highway storm drains back up and the highway gets flooded until the rain stops.