Data Availability

Data and analysis scripts for all studies are available at github.com/sydneylevine/universalization.

Study 1

Materials. This study was preregistered (see http://aspredicted.org/blind.php?x=2qb4nc). 202 subjects participated in this study, recruited from Amazon MTURK through turkprime and were paid a small amount for their participation. (We intended to recruit 200 subjects as we indicated in our preregistration, but 2 additional subjects participated due to an error in the turkprime recruitment service.) Subjects were randomly assigned to to the High Interest or the Low Interest Condition.

Pre-registered Exclusion Criteria: If John starts using the new hooks, how many people will know about it? (To be included in the study, participants must answer 0 or 1.)

How many people, besides John, would like to use the new hooks if there were no bad effects of doing so? (To be included in the study, participants in the High Interest Condition must answer 19 or 20 and participants in the Low Interest Condition must answer 0.)

How many people regularly fish in Lake Wilson in the summer? (To be included, subjects must answer 20.)

Exclusions: For this study, we report a detailed breakdown of subject exclusions to give the reader a general sense of the proportion of subjects that failed each control question. In the studies that follow we simply report the overall number of subjects that were excluded. 53 subjects were excluded for failing control questions, 29 in the High Interest condition and 24 in the Low Interest condition. There were 34 incorrect responses to the "knowledge" manipulation check (18 High Interest condition, 16 Low Interest condition), 29 incorrect responses to the "interest" check (18 High Interest, 11 Low Interest), and 2 incorrect responses to the "fishermen" check (1 High Interest, 1 Low Interest). Some subjects answered more than one question incorrectly.

Subjects read the following instructions prior to beginning the study: "On the following pages you will be asked to read a short story and answer questions about it. The questions on each page of the survey will be different, but the story will remain the same. (The story will appear on each page for your reference.) After the survey there will be an opportunity to let us know if something was confusing or unclear."

Subjects read the following stimuli. On each new page, the story appeared again for subjects' reference. Pages 3 and 4 were presented in randomized order.

Low Interest Condition:

–Page 1–

"Lake Wilson is a small lake in upstate New York. Each summer, a few dozen families move into small cottages near the lake for the season. The vacationers enjoy boating, swimming, and fishing in the lake and they've gotten to know each other over the course of many summers together.

Most people who like to fish in Lake Wilson catch a few fish each day and cook them for dinner. These people buy their fishing gear from a small tackle shop on the main road. Up until now, the tackle shop has sold one kind of fishing hook. But it has recently starting selling a new kind of hook that allows people to catch many more fish than they would with the older hook.

There are 20 people who regularly fish in Lake Wilson during the summer. If 7 or more people started using the new hook for fishing, then by the end of the summer, the entire fish population would collapse and there would be no more fish in Lake Wilson ever again. None of the vacationers would want that to happen. However, up to 3 people can use the new hooks with no decrease at all in the size and health of the fish population. Those people will be able to catch more fish more quickly, everyone else will still be able to catch the same amount of fish as before, and the fish population would continue to be exactly as large and as healthy as in past years.

It is impossible to tell what hook someone is using from a distance, so if someone starts using the new hooks, no one else will know about it. No one has bought the new hooks yet, however. John would like to use the new hooks because he would like to catch more fish faster. He is thinking about whether or not to buy the new hooks.

John wants to find out what his neighbors think about the new hooks, so he decides he is going to visit the cottages of all the people who fish in Lake Wilson and ask them. John manages to talk to all 20 people who regularly fish in the lake. When John sits down with each person to talk about the new hooks, each person says something like this: "I'm just not interested in using those new hooks. I really only need to catch a few fish a day, and I like to do that a leisurely pace and spend all day fishing. I'm not in any rush and I don't need to catch more fish. Besides, if everyone used the new hooks, all the fish would disappear from the lake. I don't want that to happen. But even if there were so many fish in the lake that everyone could use the new hooks, I wouldn't want to use them anyway."

John thinks to himself: No one else wants to use the new hooks. Under these circumstances, it's OK for me to use the new hooks and catch more fish."

Please answer the following comprehension questions, so we know that you read the story.

If John starts using the new hooks, how many people will know about it? [Free Response.]

How many people, besides John, would like to use the new hooks if there were no bad effects of doing so? [Free Response.]

How many people regularly fish in Lake Wilson in the summer? [Free Response.]

–Page 2–

Sydney Levine, Max Kleiman-Weiner, Laura Schulz, Joshua Tenenbaum, Fiery Cushman

Is it morally acceptable for John to use the new hooks? [Yes/No]

–Page 3–

Is there a rule on the lake that the new hooks are forbidden? [Yes/No]

–Page 4–

Will it make a difference to the fish population if John uses the new hooks? [It will make the fish population more healthy/It will make the fish population less healthy/It will not make a difference to the fish population]

High Interest Condition: This condition was identical to the Low Interest Condition, except for the bolded sentences in the story. All questions asked were identical.

–Page 1–

"Lake Wilson is a small lake in upstate New York. Each summer, a few dozen families move into small cottages near the lake for the season. The vacationers enjoy boating, swimming, and fishing in the lake and they've gotten to know each other over the course of many summers together.

Most people who like to fish in Lake Wilson catch a few fish each day and cook them for dinner. These people buy their fishing gear from a small tackle shop on the main road. Up until now, the tackle shop has sold one kind of fishing hook. But it has recently starting selling a new kind of hook that allows people to catch many more fish than they would with the older hook.

There are 20 people who regularly fish in Lake Wilson during the summer. If 7 or more people started using the new hook for fishing, then by the end of the summer, the entire fish population would collapse and there would be no more fish in Lake Wilson ever again. None of the vacationers would want that to happen. However, up to 3 people can use the new hooks with no decrease at all in the size and health of the fish population. Those people will be able to catch more fish more quickly, everyone else will still be able to catch the same amount of fish as before, and the fish population would continue to be exactly as large and as healthy as in past years.

It is impossible to tell what hook someone is using from a distance, so if someone starts using the new hooks, no one else will know about it. No one has bought the new hooks yet, however. John would like to use the new hooks because he would like to catch more fish faster. He is thinking about whether or not to buy the new hooks.

John wants to find out what his neighbors think about the new hooks, so he decides he is going to visit the cottages of all the people who fish in Lake Wilson and ask them. John manages to talk to all 20 people who regularly fish in the lake. When John sits down with each person to talk about the new hooks, each person says something like this: "I would love to use those new hooks to catch more fish faster, but what would happen if everyone did that? If everyone used the new hooks, all the fish would disappear from the lake. I don't want that to happen, so I'm not going to use the new hook."

John thinks to himself: No one else is going to use the new hooks. Under these circumstances, it's OK for me to use the new hooks and catch more fish.

Supplemental Results/Statistical Details. In Study 1, we checked whether participants agreed with our premises about rules and outcomes, namely that no rule exists forbidding the use of the new hook and that no bad effect will occur if John uses the new hook. In the main text, we report the results if all subjects are included in the the analysis, regardless of their answer to the rule and outcome questions. Importantly, however, our main results hold even if we exclude participants who said that John's action would make a difference to the fish population.

13% of subjects in the High Interest condition and 19% in the Low Interest condition said that John's action would decrease the health of the fish population. (No one said that John's action would increase the health of the fish population.) Removing these subjects leaves 61 subjects in the High Interest Condition and 64 subjects in the Low Interest Condition.

The effect we report in the main manuscript still holds: subjects judged John's action to be significantly more morally acceptable in the Low Interest Condition than in the High Interest Condition (Low Interest: 78.1%, High Interest: 45.9%, $\chi^2(1) = 13.8, p < .001$, two-tailed, $V_{Cramer} = .33, CI_{95\%}[.18, .49], n = 125,.$)

Study 1a

Materials. Study 1a was a replication of Study 1 using multiple story contexts. This study was preregistered: https://aspredicted.org/blind.php?x The dependent variables, exclusion criteria, and study design were the same as in Study 1. The only difference was the context of the story. Rather than fishing in a lake, the 4 contexts involved stories where a group of people were foraging for mushrooms, hunting birds, trapping rabbits, or gathering clams. 400 subjects completed the experiment. Subjects were randomly assigned to one of the four contexts and to either the High Interest or Low Interest Condition.

Pre-registered Exclusion Criteria: If John starts using the new hooks, how many people will know about it? (To be included in the study, participants must answer 0 or 1.)

How many people, besides John, would like to use the new hooks if there were no bad effects of doing so? (To be included in the study, participants in the High Interest Condition must answer 19 or 20 and participants in the Low Interest Condition must answer 0.)

How many people regularly fish in Lake Wilson in the summer? (To be included, subjects must answer 20.)

Exclusions: 121 subjects were excluded for failing control questions.

The text for each context is presented below, including the variation for the High Interest and the Low Interest Conditions. The questions asked to subjects were the same as in Study 1 (except that "fish" is replaced by the word "clam", for example).

Subjects read the following instructions prior to beginning the study: "On the following pages you will be asked to read a short story and answer questions about it. The questions on each page of the survey will be different, but the story will remain the same. (The story will appear on each page for your reference.) After the survey there will be an opportunity to let us know if something was confusing or unclear."

Context: Clams

Condition: Low Interest

Wilson Bay is a small bay on the coast of Oregon. Each summer, a few dozen families move into small cottages near the bay for the season. The vacationers enjoy boating, swimming, and digging for razor clams in the bay and they've gotten to know each other over the course of many summers together.

Most people who like to dig for clams in Wilson Bay catch about a dozen clams each day and cook them for dinner. These people buy their clamming gear from a small shop on the main road. Up until now, the shop has sold one kind of digging device, a clam tube made out of plastic. But it has recently starting selling a new kind of clam tube made out of aluminum. The new tube allows people to find many more clams than they would with the older tube.

There are 20 people who regularly dig for clams in Wilson Bay during the summer. If 7 or more people started using the new tube for clamming, then by the end of the summer, the entire clam population would collapse and there would be no more clams in Wilson Bay ever again. None of the vacationers would want that to happen. However, up to 3 people can use the new tube with no decrease at all in the size and health of the clam population. Those people will be able to catch more clams more quickly, everyone else will still be able to catch the same amount of clams as before, and the clam population would continue to be exactly as large and as healthy as in past years.

It is impossible to tell what tube someone is using from a distance, so if someone starts using the new tube, no one else will know about it. No one has bought the new tube yet, however. John would like to use the new tube because he would like to catch more clams faster. He is thinking about whether or not to buy the new tube.

John wants to find out what his neighbors think about the new tube, so he decides he is going to visit the cottages of all the people who go clamming in Wilson Bay and ask them. John manages to talk to all 20 people who regularly go clamming in the Bay. When John sits down with each person to talk about the new tube, each person says something like this: "I'm just not interested in using that new tube. I really only need to catch a few clams a day, and I like to do that at a leisurely pace and spend all day clamming. I'm not in any rush and I don't need to catch more clams. Besides, if everyone used the new tube, all the clams would disappear from Wilson Bay. I don't want that to happen. But even if there were so many clams in the bay that everyone could use the new tube, I wouldn't want to use it anyway."

John thinks to himself: No one else wants to use the new tube. Under these circumstances, it's OK for me to use the new tube and catch more clams.

Context: Clams

Condition: High Interest

Wilson Bay is a small bay on the coast of Oregon. Each summer, a few dozen families move into small cottages near the bay for the season. The vacationers enjoy boating, swimming, and digging for razor clams in the bay and they've gotten to know each other over the course of many summers together.

Most people who like to dig for clams in Wilson Bay catch about a dozen clams each day and cook them for dinner. These people buy their clamming gear from a small shop on the main road. Up until now, the shop has sold one kind of digging device, a clam tube made out of plastic. But it has recently starting selling a new kind of clam tube made out of aluminum. The new tube allows people to find many more clams than they would with the older tube.

There are 20 people who regularly dig for clams in Wilson Bay during the summer. If 7 or more people started using the new tube for clamming, then by the end of the summer, the entire clam population would collapse and there would be no more clams in Wilson Bay ever again. None of the vacationers would want that to happen. However, up to 3 people can use the new tube with no decrease at all in the size and health of the clam population. Those people will be able to catch more clams more quickly, everyone else will still be able to catch the same amount of clams as before, and the clam population would continue to be exactly as large and as healthy as in past years.

It is impossible to tell what tube someone is using from a distance, so if someone starts using the new tube, no one else will know about it. No one has bought the new tube yet, however. John would like to use the new tube because he would like to catch more clams faster. He is thinking about whether or not to buy the new tube.

John wants to find out what his neighbors think about the new tube, so he decides he is going to visit the cottages of all the people who go clamming in Wilson Bay and ask them. John manages to talk to all 20 people who regularly go clamming in the Bay. When John sits down with each person to talk about the new tube, each person says something like this: "I would love to use that new tube to catch more clams faster, but what would happen if everyone did that? If everyone used the new tube, all the clams would disappear from the bay. I don't want that to happen, so I'm not going to use the new tube."

John thinks to himself: No one else is going to use the new tube. Under these circumstances, it's OK for me to use the new tube and catch more clams.

Context: Rabbits

Condition: Low Interest

Stonyville is a small forested town in upstate New York. Each summer, a few dozen families move into small cottages in Stonyville for the season. The vacationers enjoy boating, swimming, and trapping rabbits in the forest of Stonyville and they've gotten to know each other over the course of many summers together.

Sydney Levine, Max Kleiman-Weiner, Laura Schulz, Joshua Tenenbaum, Fiery Cushman

Most people who like to trap rabbits in the Stonyville forest catch about a few rabbits each day and cook them for dinner. These people buy their traps from a small hunting shop on the main road. Up until now, the shop has sold one kind of trap. But it has recently starting selling a new kind of trap that allows people to catch many more rabbits than they would with the older trap.

There are 20 people who regularly trap rabbits in the Stonyville forest during the summer. If 7 or more people started using the new traps for hunting, then by the end of the summer, the entire rabbit population would collapse and there would be no more rabbits in the Stonyville forest ever again. None of the vacationers would want that to happen. However, up to 3 people can use the new traps with no decrease at all in the size and health of the rabbit population. Those people will be able to catch more rabbits more quickly, everyone else will still be able to catch the same amount of rabbits as before, and the rabbit population would continue to be exactly as large and as healthy as in past years.

It is impossible to tell what trap someone is using from a distance, so if someone starts using the new traps, no one else will know about it. No one has bought the new traps yet, however. John would like to use the new traps because he would like to catch more rabbits faster. He is thinking about whether or not to buy the new traps.

John wants to find out what his neighbors think about the new trap, so he decides he is going to visit the cottages of all the people who trap rabbits and ask them. John manages to talk to all 20 people who regularly trap rabbits in the Stonyville forest. When John sits down with each person to talk about the new traps, each person says something like this: "I'm just not interested in using that new traps. I really only need to catch a few rabbits a day, and I like to do that at a leisurely pace and spend all day hunting. I'm not in any rush and I don't need to catch more rabbits. Besides, if everyone used the new traps, all the rabbits would disappear from the forest. I don't want that to happen. But even if there were so many rabbits in the forest that everyone could use the new traps, I wouldn't want to use it anyway."

John thinks to himself: No one else wants to use the new traps. Under these circumstances, it's OK for me to use the new traps and catch more rabbits.

Context: Rabbits

Condition: High Interest

Stonyville is a small forested town in upstate New York. Each summer, a few dozen families move into small cottages in Stonyville for the season. The vacationers enjoy boating, swimming, and trapping rabbits in the forest of Stonyville and they've gotten to know each other over the course of many summers together.

Most people who like to trap rabbits in the Stonyville forest catch about a few rabbits each day and cook them for dinner. These people buy their traps from a small hunting shop on the main road. Up until now, the shop has sold one kind of trap. But it has recently starting selling a new kind of trap that allows people to catch many more rabbits than they would with the older trap.

There are 20 people who regularly trap rabbits in the Stonyville forest during the summer. If 7 or more people started using the new traps for hunting, then by the end of the summer, the entire rabbit population would collapse and there would be no more rabbits in the Stonyville forest ever again. None of the vacationers would want that to happen. However, up to 3 people can use the new traps with no decrease at all in the size and health of the rabbit population. Those people will be able to catch more rabbits more quickly, everyone else will still be able to catch the same amount of rabbits as before, and the rabbit population would continue to be exactly as large and as healthy as in past years.

It is impossible to tell what trap someone is using from a distance, so if someone starts using the new traps, no one else will know about it. No one has bought the new traps yet, however. John would like to use the new traps because he would like to catch more rabbits faster. He is thinking about whether or not to buy the new traps.

John wants to find out what his neighbors think about the new trap, so he decides he is going to visit the cottages of all the people who trap rabbits and ask them. John manages to talk to all 20 people who regularly trap rabbits in the Stonyville forest. When John sits down with each person to talk about the new traps, each person says something like this: "I would love to use those new traps to catch more rabbits faster, but what would happen if everyone did that? If everyone used the new traps, all the rabbits would disappear from the forest. I don't want that to happen, so I'm not going to use the new traps."

John thinks to himself: No one else is going to use the new traps. Under these circumstances, it's OK for me to use the new traps and catch more rabbits.

Context: Birds

Condition: Low Interest

Stonyville is a small forested town in upstate New York. Each summer, a few dozen families move into small cottages in Stonyville for the season. The vacationers enjoy hiking, camping, and hunting pheasants in the forest of Stonyville and they've gotten to know each other over the course of many summers together.

Most people who like to hunt shoot a few birds each day and cook them for dinner. These people buy their hunting gear from a small hunting shop on the main road. Up until now, the hunting shop has sold one kind of gun. But it has recently starting selling a new kind of gun that allows people to shoot more accurately and therefore hunt many more pheasants than they would with the older gun.

There are 20 people who regularly hunt for pheasants in the Stonyville forest during the summer. If 7 or more people started using the new gun for hunting, then by the end of the summer, the entire pheasant population would collapse and there would be no more pheasants in Stonyville ever again. None of the vacationers would want that to happen. However, up to 3 people can use the new gun with no decrease at all in the pheasant population. Those people will be able to catch more pheasants more quickly, everyone else will still be able to catch the same amount of pheasants as before, and the pheasant population

would continue to be as healthy as in past years.

It is impossible to tell what gun someone is using from a distance, so if someone starts using the new gun, no one else will know about it. No one has bought the new gun yet, however. John would like to use the new gun because he would like to catch more pheasants faster. He is thinking about whether or not to buy the new gun.

John wants to find out what his neighbors think about the new gun, so he decides he is going to visit the cottages of all the people who hunt pheasants and ask them. John manages to talk to all 20 people who regularly hunt pheasants in the Stonyville forest. When John sits down with each person to talk about the new gun, each person says something like this: "I'm just not interested in using that new gun. I really only need to catch a few pheasants a day, and I like to do that at a leisurely pace and spend all day hunting. I'm not in any rush and I don't need to catch more pheasants Besides, if everyone used the new gun, all the pheasants would disappear from the forest. I don't want that to happen. But even if there were so many pheasants in the forest that everyone could use the new gun, I wouldn't want to use it anyway."

John thinks to himself: No one else wants to use the new gun. Under these circumstances, it's OK for me to use the new gun and catch more pheasants.

Context: Birds

Condition: High Interest

Stonyville is a small forested town in upstate New York. Each summer, a few dozen families move into small cottages in Stonyville for the season. The vacationers enjoy hiking, camping, and hunting pheasants in the forest of Stonyville and they've gotten to know each other over the course of many summers together.

Most people who like to hunt shoot a few birds each day and cook them for dinner. These people buy their hunting gear from a small hunting shop on the main road. Up until now, the hunting shop has sold one kind of gun. But it has recently starting selling a new kind of gun that allows people to shoot more accurately and therefore hunt many more pheasants than they would with the older gun.

There are 20 people who regularly hunt for pheasants in the Stonyville forest during the summer. If 7 or more people started using the new gun for hunting, then by the end of the summer, the entire pheasant population would collapse and there would be no more pheasants in Stonyville ever again. None of the vacationers would want that to happen. However, up to 3 people can use the new gun with no decrease at all in the pheasant population. Those people will be able to catch more pheasants more quickly, everyone else will still be able to catch the same amount of pheasants as before, and the pheasant population would continue to be as healthy as in past years.

It is impossible to tell what gun someone is using from a distance, so if someone starts using the new gun, no one else will know about it. No one has bought the new gun yet, however. John would like to use the new gun because he would like to catch more pheasants faster. He is thinking about whether or not to buy the new gun.

John wants to find out what his neighbors think about the new gun, so he decides he is going to visit the cottages of all the people who hunt pheasants and ask them. John manages to talk to all 20 people who regularly hunt in the Stonyville. When John sits down with each person to talk about the new gun, each person says something like this: "I would love to use that new gun to catch more pheasants faster, but what would happen if everyone did that? If everyone used the new gun, all the pheasants would disappear from the forest. I don't want that to happen, so I'm not going to use the new gun."

John thinks to himself: No one else is going to use the new gun. Under these circumstances, it's OK for me to use the new gun and catch more pheasants.

Context: Mushrooms

Condition: Low Interest

Stonyville is a small forested town in upstate New York. Each summer, a few dozen families move into small cottages in Stonyville for the season. The vacationers enjoy hiking, camping, and foraging for mushrooms in the forest of Stonyville and they've gotten to know each other over the course of many summers together.

Most people who like to forage for mushrooms gather a basket of mushrooms each day and cook them for dinner. These people buy their foraging gear from a small shop on the main road. Up until now, the shop has sold one kind of mushroom foraging knife. But it has recently starting selling a new kind of knife that allows people to gather mushrooms more quickly and therefore get many more mushrooms than they would with the older knife.

There are 20 people who regularly forage for mushrooms in Stonyville during the summer. If 7 or more people started using the new knife for foraging, then by the end of the summer, the entire mushroom population would collapse and there would be no more mushrooms in Stonyville ever again. None of the vacationers would want that to happen. However, up to 3 people can use the new knife with no decrease at all in the mushroom population. Those people will be able to gather more mushrooms more quickly, everyone else will still be able to gather the same number of mushrooms as before, and the mushroom population would continue to be as healthy as in past years.

It is impossible to tell what knife someone is using from a distance, so if someone starts using the new knife, no one else will know about it. No one has bought the new knife yet, however. John would like to use the new knife because he would like to gather more mushrooms faster. He is thinking about whether or not to buy the new knife.

John wants to find out what his neighbors think about the new knife, so he decides he is going to visit the cottages of all the people who forage for mushrooms and ask them. John manages to talk to all 20 people who regularly forage in the Stonyville. When John sits down with each person to talk about the new knife, each person says something like this: "I'm just not interested in using that new knife. I really only need to gather one basket of mushrooms a day, and I like to do that at a leisurely pace and spend all day foraging. I'm not in any rush and I don't need to gather more mushrooms. Besides, if

everyone used the new knife, all the mushrooms would disappear from the forest. I don't want that to happen. But even if there were so many mushrooms in the forest that everyone could use the new knife, I wouldn't want to use it anyway."

John thinks to himself: No one else wants to use the new knife. Under these circumstances, it's OK for me to use the new knife and gather more mushrooms.

Context: Mushrooms

Condition: High Interest

Stonyville is a small forested town in upstate New York. Each summer, a few dozen families move into small cottages in Stonyville for the season. The vacationers enjoy hiking, camping, and foraging for mushrooms in the forest of Stonyville and they've gotten to know each other over the course of many summers together.

Most people who like to forage for mushrooms gather a basket of mushrooms each day and cook them for dinner. These people buy their foraging gear from a small shop on the main road. Up until now, the shop has sold one kind of mushroom foraging knife. But it has recently starting selling a new kind of knife that allows people to gather mushrooms more quickly and therefore get many more mushrooms than they would with the older knife.

There are 20 people who regularly forage for mushrooms in Stonyville during the summer. If 7 or more people started using the new knife for foraging, then by the end of the summer, the entire mushroom population would collapse and there would be no more mushrooms in Stonyville ever again. None of the vacationers would want that to happen. However, up to 3 people can use the new knife with no decrease at all in the mushroom population. Those people will be able to gather more mushrooms more quickly, everyone else will still be able to gather the same number of mushrooms as before, and the mushroom population would continue to be as healthy as in past years.

It is impossible to tell what knife someone is using from a distance, so if someone starts using the new knife, no one else will know about it. No one has bought the new knife yet, however. John would like to use the new knife because he would like to gather more mushrooms faster. He is thinking about whether or not to buy the new knife.

John wants to find out what his neighbors think about the new knife, so he decides he is going to visit the cottages of all the people who forage for mushrooms and ask them. John manages to talk to all 20 people who regularly forage in the Stonyville. When John sits down with each person to talk about the new knife, each person says something like this: "I would love to use that new knife to catch more mushrooms faster, but what would happen if everyone did that? If everyone used the new knife, all the mushrooms would disappear from the forest. I don't want that to happen, so I'm not going to use the new knife."

John thinks to himself: No one else is going to use the new knife. Under these circumstances, it's OK for me to use the new knife and gather more mushrooms.

Supplemental Results/Statistical Details. We compared three models for the analysis of Study 1a (see Fig. S1: Model 1 includes only condition (High Interest vs Low Interest) as a predictor. Model 2 includes context as well as condition. Model 3 includes the context $\times$ condition interaction. Model 1 fits the data best on AIC and BIC measures. Model 2 shows that there is no main effect of context. Model 3 shows that there is no significant interaction between condition and context. Therefore, we analyze the rest of the data collapsing across context.

As in Study 1, subjects judged John's action to be significantly more morally acceptable in the Low Interest Condition than in the High Interest Condition, when collapsed across contexts($\chi^2_{Pearson}$ (1, n = 279) = 35.15, $VCramer = 0.35$, $CI_{95\%} = [0.25, .45]$, p <.001, two-tailed).

Patterns of responses to the Rule and Outcome questions were also similar to that of Study 1. Most importantly, answer to these questions do not account for the difference in moral acceptability judgments across the conditions. Only 4 out of 279 subjects responded that there was a rule forbidding John from fishing (3 in the High Interest Condition and 1 in the Low Interest Condition). There was no difference across the conditions on answers to the rule measure ($\chi^2(1) = 1.03, p = .310$, two-tailed, n=279).

On the outcome measure, most subjects (82.7% in the High Interest condition; 87.1% in the Low Interest condition) reported that John's action wouldn't make a difference. The remaining subjects said that John's action would decrease overall utility (17.3% in the High Interest condition and 12.9% in the Low Interest condition) and no one said that John's action would increase the health of the fish population. There was no difference across the conditions on answers to the outcome measure ($\chi^2(1) = 1.06, p = .303$, two-tailed, $V_{Cramer} = .06, CI_{95\%}[-.04, .15], n = 279$).

Moreover, our main results hold even if we exclude participants who said that John's action would make a difference to the fish population: subjects judged John's action to be significantly more morally acceptable in the Low Interest Condition than in the High Interest Condition ($\chi^2_{Pearson}$ (1, n = 237) = 31.41, $VCramer = 0.36$, $CI_{95\%} = [0.26, .46]$, p <.001, two-tailed).

Study 2

Materials. This study was preregistered (see https://aspredicted.org/blind.php?x=c44jr2). 700 subjects participated in this study, recruited from Amazon MTURK through turkprime and were paid a small amount for their participation. Subjects were randomly assigned to 1 of 2 conditions. 4,7 Condition: Up to 4 people can use the new hook with no effect on the fish population; once 7 people use the new hook the fish population will go extinct. 10,13 Condition: Up to 10 people can use the new hook with no effect on the fish population; once 13 people use the new hook the fish population will go extinct.

Each subject was told that N people are interested in using the new hook. Subjects answered a series of questions about the story. Subjects then read the same story, the only change being that a new value of N was given. N was chosen at random without replacement from the following values until all values of N were seen by each subject: 0,2,7,8,13,19.
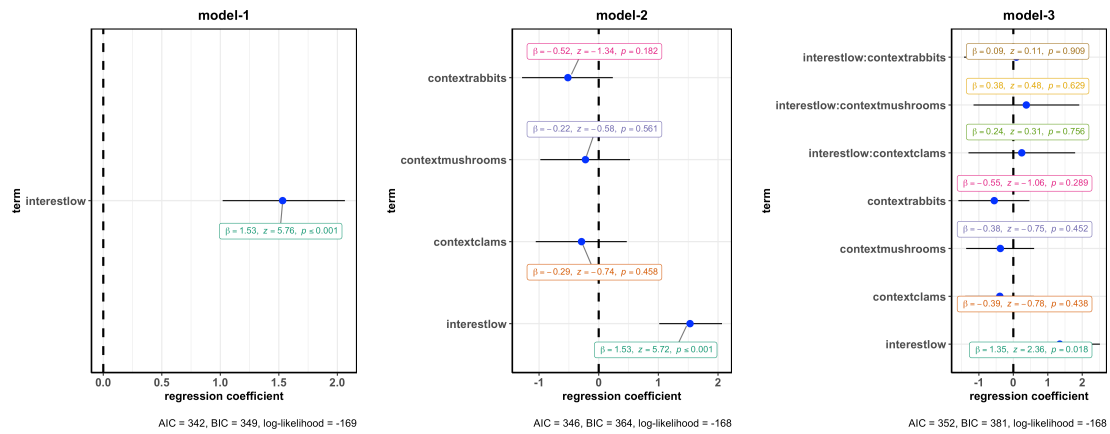
Fig. S1. Comparison of three possible models for Study 1a analysis of the moral acceptability question. Model 1 includes only condition (High Interest vs Low Interest) as a predictor. Model 2 includes context as well as condition. Model 3 includes the context x condition interaction. Model 1 fits the data best on AIC and BIC measures. Model 2 shows that there is no main effect of context. Model 3 shows that there is no significant interaction between condition and context.

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Pre-registered Exclusion Criteria:

1. How many people, besides John, would like to use the new hooks if there were no bad effects of doing so? To be included in the study, participants must report the value given for N in the story. Any participant who gives the wrong answer for any values of N is completely excluded from the study.

2. How many people regularly fish in Lake Wilson in the summer? To be included, subjects must answer 19, 20, or 21. Any participant who gives the wrong answer for any values of N is completely excluded from the study.

3. How many people, besides John, are actually going to use the new hooks? To be included, subjects must answer 0. Any participant who gives the wrong answer for any values of N is completely excluded from the study.

4. Will it make a difference to the fish population if John uses the new hooks? There are three possible answers to this question: (A) It will make the fish population more healthy (B) It will make the fish population less healthy (C) It will not make a difference to the fish population. To be included, subjects must answer (C). Any participant who gives the wrong answer for any values of N is completely excluded from the study.

Exclusions: 350 subjects were excluded from the study for answering 1 or more of the check questions incorrectly in one or more of the conditions.

Subjects read the following instructions prior to beginning the study: On the following pages you will be asked to read a short story and answer a few pages of questions about it. The story will remain largely the same from page to page, but after every few pages of questions, the story will change slightly. When the story changes, we will **bold and color** the part of the story that is different, so you can see the difference easily. After the survey there will be an opportunity to let us know if something was confusing or unclear.

Subjects read the following stimuli. On each new page, the story appeared again for subjects' reference. Presented below is the 4,7 Condition. The 10,13 Condition was identical except that the numbers 10 and 13 replace the numbers 4 and 7 (respectively) in the third paragraph.

–Page 1–

Lake Wilson is a small lake in upstate New York. Each summer, a few dozen families move into small cottages near the lake for the season. The vacationers enjoy boating, swimming, and fishing in the lake and they've gotten to know each other over the course of many summers together.

Most people who like to fish in Lake Wilson catch a few fish each day and cook them for dinner. These people buy their fishing gear from a small tackle shop on the main road. Up until now, the tackle shop has sold one kind of fishing hook. But it has recently starting selling a new kind of hook that allows people to catch many more fish than they would with the older hook.

There are 20 people who regularly fish in Lake Wilson during the summer. If 7 or more people started using the new hook for fishing, then by the end of the summer, the entire fish population would collapse and there would be no more fish in Lake Wilson ever again. None of the vacationers would want that to happen. However, up to 4 people can use the new hooks with no decrease at all in the size and health of the fish population. Those people will be able to catch more fish more quickly, everyone else will still be able to catch the same amount of fish as before, and the fish population would continue to be exactly as large and as healthy as in past years.

It is impossible to tell what hook someone is using from a distance, so if someone starts using the new hooks, no one else will know about it. No one has bought the new hooks yet, however. John would like to use the new hooks because he would like to catch more fish faster. He is thinking about whether or not to buy the new hooks.

John wants to find out what his neighbors think about the new hooks, so he decides he is going to visit the cottages of all the people who fish in Lake Wilson and ask them. John manages to talk to the other 19 people who regularly fish in the lake. When John sits down with each person to talk about the new hooks, this is what he finds out:

N people say something like this: "I would love to use those new hooks to catch more fish faster, but what would happen if everyone did that? If everyone used the new hooks, all the fish would disappear from the lake. I don't want that to happen, so I'm not going to use the new hook."

On the other hand, N people say: "I'm just not interested in using those new hooks. I really only need to catch a few fish a day, and I like to do that a leisurely pace and spend all day fishing."

John thinks to himself: No one else is going to use the new hooks. Under these circumstances, it's OK for me to use the new hooks and catch more fish. Please answer the following comprehension questions, so we know that you read the story.

If John starts using the new hooks, how many people will know about it? [Free Response.]

How many people, besides John, would like to use the new hooks if there were no bad effects of doing so? [Free Response.]

How many people regularly fish in Lake Wilson in the summer? [Free Response.]

How many people, besides John, are actually going to use the new hooks? [Free Response.]

–Page 2–

Is it morally acceptable for John to use the new hooks? [Yes/No]

–Page 3–

Is there a rule on the lake that the new hooks are forbidden? [Yes/No]

–Page 4–

Will it make a difference to the fish population if John uses the new hooks? [It will make the fish population more healthy/It will make the fish population less healthy/It will not make a difference to the fish population]

Subjects repeated this process until all the values of N were seen. The color of the bolded text was changed for each new value of N.

Supplemental Results/Statistical Details. A linear regression shows that there was no significant impact of the number of interested parties on judgments of how many people would know that John was using the new hook ($F = 0.39, t = -0.63, p = 0.53$). Moreover, when knowledge judgments are entered into a regression with interested parties (as well as the interaction), knowledge is not a significant predictor of moral judgments ($z = -0.14, p = 0.89$) nor is the knowledge $\times$ interested parties interaction ($z = 0.79; p = 0.43$).

Study 3

Materials. 1242 subjects participated in this study, recruited from Amazon MTURK through turkprime and were paid a small amount for their participation. Subjects were divided into two groups: the Moral Judgment Group ($n = 840$) and the Expected Utility Group ($n = 402$; 2 additional subjects were accidentally allowed to take the experiment after our 400 subject cap). Subjects in both groups were randomly assigned to one context (Fisherman or Tour Boat) and one condition (High Interest or Low Interest). Subjects in the Moral Judgment Group answered different questions about the scenarios than did subjects in the Expected Utility Group.

Moral Judgment Group

Exclusion Criteria for the Moral Judgment Group: 1. How many people, besides John, would like to use the new motor oil if there were no bad effects of doing so? To be included in the study, participants in the High Interest Condition must answer 19 and subjects in the Low Interest Condition must answer 0.

2. How many boats operate on Lake Wilson? To be included, subjects must answer 20.

3. How many people, besides John, are actually going to use the new motor oil? To be included, subjects must answer 0.

4. Will it make a difference to the fish population if John uses the new motor oil? There are three possible answers to this question: (A) It will make the fish population more healthy (B) It will make the fish population less healthy (C) It will not make a difference to the fish population. To be included, subjects must answer (C).

Exclusions: 284 subjects were excluded from the study for failing one or more control questions.

Subjects read the following instructions prior to beginning the study: "On the following pages you will be asked to read a short story and answer questions about it. The questions on each page of the survey will be different, but the story will remain the same. (The story will appear on each page for your reference.) After the survey there will be an opportunity to let us know if something was confusing or unclear."

Subjects read the following stimuli. On each new page, the story appeared again for subjects' reference.

Condition: High Interest

Context: Tour Boat

–Page 1–

Lake Wilson is a small lake in upstate New York. Each summer, 20 people make their livelihood on the water. All but one of these people makes their livelihood by catching fish and selling them. John makes his livelihood a different way: By giving tours of the lake to tourists on his boat.

Everybody who makes their livelihood on the water uses a motor boat. The motor boats on Lake Wilson move around the lake relatively slowly, mostly because the engines use a crude form of motor oil. Up until now, the boat shop in town has sold only one kind of motor oil. But recently it started selling a new kind of motor oil that allows the boats to move much more quickly.

This would allow everyone who makes their livelihood on the lake to save time. All the fishermen would be able to move around the lake faster and thereby catch the number of fish they need each day in less time. John would also save time because the people who take his tours want to see three sites: the coral reef, the waterfall, and the lake's island. With the new motor oil, John can show everyone all three sites in less time.

The new motor oil also releases a compound, BetaX, into the water. Small amounts of BetaX in the water do not effect the fish. But, if BetaX levels start to exceed 30 parts per million, the fish will die. If the fish die, John will still be able to give just as many tours on Lake Wilson, but the people that make their livelihood by catching fish will have to find different jobs.

There are 20 total boaters who operate boats on Lake Wilson: John with his tour boat, and 19 fishermen with their fishing boats. If 7 or more boaters started using the new motor oil, then by the end of the summer all the fish would be dead. However, up to 3 boaters can use the new motor oil with no decrease at all in the size and health of the fish population. Those boaters will be able to drive around the lake faster, everybody else will drive around at the same speed as before, and the fish population would continue to be exactly as large and as healthy as in past years.

It is impossible to tell what motor oil someone is using, so if somebody starts using the new motor oil, no one else will know about it. No one has bought the new motor oil yet, however. John would like to use the new motor oil because he would like the ability to drive around the lake more quickly. He is thinking about whether or not to buy the new motor oil. John wants to find out what the other people who make their livelihood on the water think, so he decides he is going to visit the cottages of all the people who fish in Lake Wilson and ask them. John manages to talk to the 19 people who regularly fish in the lake. When John sits down with each person to talk about the new motor oil, every one of them says something like this: "I would love to use that new motor oil to move around on the lake more quickly, but what would happen if everyone did that?

     Sydney Levine, Max Kleiman-Weiner, Laura Schulz, Joshua Tenenbaum, Fiery Cushman

If everyone used the new motor oil, all the fish would disappear from the lake. I don't want that to happen, so I'm not going to use the new motor oil."

John thinks to himself: No one else is going to use the new motor oil. Under these circumstances, it's OK for me to use the new motor oil and drive around the lake more quickly.

Please answer the following comprehension questions, so we know that you read the story.

If John starts using the new motor oil, how many people will know about it? [Free Response.]

How many people, besides John, would like to use the new motor oil if there were no bad effects of doing so? [Free Response.]

How many boats operate on Lake Wilson? [Free Response.]

How many people, besides John, are actually going to use the new motor oil? [Free Response.]

–Page 2–

Is it morally acceptable for John to use the new motor oil? [Yes/No]

–Page 3–

Is there a rule on the lake that the new motor oil is forbidden? [Yes/No]

–Page 4–

Will it make a difference to the fish population if John uses the new motor oil? [It will make the fish population more healthy/It will make the fish population less healthy/It will not make a difference to the fish population]

Condition: Low Interest

Context: Tour Boat

Lake Wilson is a small lake in upstate New York. Each summer, 20 people make their livelihood on the water. All but one of these people makes their livelihood by catching fish and selling them. John makes his livelihood a different way: By giving tours of the lake to tourists on his boat.

Everybody who makes their livelihood on the water uses a motor boat. The motor boats on Lake Wilson move around the lake relatively slowly, mostly because the engines use a crude form of motor oil. Up until now, the boat shop in town has sold only one kind of motor oil. But recently it started selling a new kind of motor oil that allows the boats to move much more quickly.

This would allow everyone who makes their livelihood on the lake to save time. All the fishermen would be able to move around the lake faster and thereby catch the number of fish they need each day in less time. John would also save time because the people who take his tours want to see three sites: the coral reef, the waterfall, and the lake's island. With the new motor oil, John can show everyone all three sites in less time.

The new motor oil also releases a compound, BetaX, into the water. Small amounts of BetaX in the water do not effect the fish. But, if BetaX levels start to exceed 30 parts per million, the fish will die. If the fish die, John will still be able to give just as many tours on Lake Wilson, but the people that make their livelihood by catching fish will have to find different jobs.

There are 20 total boaters who operate boats on Lake Wilson: John with his tour boat, and 19 fishermen with their fishing boats. If 7 or more boaters started using the new motor oil, then by the end of the summer all the fish would be dead. However, up to 3 boaters can use the new motor oil with no decrease at all in the size and health of the fish population. Those boaters will be able to drive around the lake faster, everybody else will drive around at the same speed as before, and the fish population would continue to be exactly as large and as healthy as in past years.

It is impossible to tell what motor oil someone is using, so if somebody starts using the new motor oil, no one else will know about it. No one has bought the new motor oil yet, however. John would like to use the new motor oil because he would like the ability to drive around the lake more quickly. He is thinking about whether or not to buy the new motor oil. John wants to find out what the other people who make their livelihood on the water think, so he decides he is going to visit the cottages of all the people who fish in Lake Wilson and ask them. John manages to talk to the 19 people who regularly fish in the lake. When John sits down with each person to talk about the new motor oil, every one of them says something like this: "I'm just not interested in using that new motor oil. I really only want to move my boat slowly. I like going at a leisurely pace and spending all day on the lake. I'm not in any rush and I don't need to speed anything up. Besides, if everyone used the new motor oil, all the fish would disappear from the lake. I don't want that to happen. But even if there was no BetaX released into the lake by the new motor oil, I wouldn't want to use it anyway."

John thinks to himself: No one else is going to use the new motor oil. Under these circumstances, it's OK for me to use the new motor oil and drive around the lake more quickly.

Condition: High Interest

Context: Fisherman

Lake Wilson is a small lake in upstate New York. Each summer, 20 people make their livelihood on the water. All but one of these people makes their livelihood by catching fish and selling them. Steve makes his livelihood a different way: By giving tours of the lake to tourists on his boat.

Everybody who makes their livelihood on the water uses a motor boat. The motor boats on Lake Wilson move around the lake relatively slowly, mostly because the engines use a crude form of motor oil. Up until now, the boat shop in town has sold only one kind of motor oil. But recently it started selling a new kind of motor oil that allows the boats to move much more quickly.

This would allow everyone who makes their livelihood on the lake to save time. All the fishermen would be able to move around the lake faster and thereby catch the number of fish they need each day in less time. Steve would also save time because

the people who take his tours want to see three sites: the coral reef, the waterfall, and the lake's island. With the new motor oil, Steve can show everyone all three sites in less time.

The new motor oil also releases a compound, BetaX, into the water. Small amounts of BetaX in the water do not effect the fish. But, if BetaX levels start to exceed 30 parts per million, the fish will die. If the fish die, Steve will still be able to give just as many tours on Lake Wilson, but the people that make their livelihood by catching fish will have to find different jobs.

There are 20 total boaters who operate boats on Lake Wilson: Steve with his tour boat, and 19 fishermen with their fishing boats. If 7 or more boaters started using the new motor oil, then by the end of the summer all the fish would be dead. However, up to 3 boaters can use the new motor oil with no decrease at all in the size and health of the fish population. Those boaters will be able to drive around the lake faster, everybody else will drive around at the same speed as before, and the fish population would continue to be exactly as large and as healthy as in past years.

It is impossible to tell what motor oil someone is using, so if somebody starts using the new motor oil, no one else will know about it. No one has bought the new motor oil yet, however. John is one of the people who operates a fishing boat. He would like to use the new motor oil because he would like the ability to drive around the lake more quickly. He is thinking about whether or not to buy the new motor oil. John wants to find out what the other people who make their livelihood on the water think, so he decides he is going to visit the cottages of all the people who work on Lake Wilson and ask them. John manages to talk to other 19 people who operate boats on the lake (Steve and the 18 other fishermen). When John sits down with each person to talk about the new motor oil, every one of them says something like this: "I would love to use that new motor oil to move around on the lake more quickly, but what would happen if everyone did that? If everyone used the new motor oil, all the fish would disappear from the lake. I don't want that to happen, so I'm not going to use the new motor oil."

John thinks to himself: No one else is going to use the new motor oil. Under these circumstances, it's OK for me to use the new motor oil and drive around the lake more quickly.

Condition: Low Interest

Context: Fisherman

Lake Wilson is a small lake in upstate New York. Each summer, 20 people make their livelihood on the water. All but one of these people makes their livelihood by catching fish and selling them. Steve makes his livelihood a different way: By giving tours of the lake to tourists on his boat.

Everybody who makes their livelihood on the water uses a motor boat. The motor boats on Lake Wilson move around the lake relatively slowly, mostly because the engines use a crude form of motor oil. Up until now, the boat shop in town has sold only one kind of motor oil. But recently it started selling a new kind of motor oil that allows the boats to move much more quickly.

This would allow everyone who makes their livelihood on the lake to save time. All the fishermen would be able to move around the lake faster and thereby catch the number of fish they need each day in less time. Steve would also save time because the people who take his tours want to see three sites: the coral reef, the waterfall, and the lake's island. With the new motor oil, Steve can show everyone all three sites in less time.

The new motor oil also releases a compound, BetaX, into the water. Small amounts of BetaX in the water do not effect the fish. But, if BetaX levels start to exceed 30 parts per million, the fish will die. If the fish die, Steve will still be able to give just as many tours on Lake Wilson, but the people that make their livelihood by catching fish will have to find different jobs.

There are 20 total boaters who operate boats on Lake Wilson: Steve with his tour boat, and 19 fishermen with their fishing boats. If 7 or more boaters started using the new motor oil, then by the end of the summer all the fish would be dead. However, up to 3 boaters can use the new motor oil with no decrease at all in the size and health of the fish population. Those boaters will be able to drive around the lake faster, everybody else will drive around at the same speed as before, and the fish population would continue to be exactly as large and as healthy as in past years.

It is impossible to tell what motor oil someone is using, so if somebody starts using the new motor oil, no one else will know about it. No one has bought the new motor oil yet, however. John is one of the people who operates a fishing boat. He would like to use the new motor oil because he would like the ability to drive around the lake more quickly. He is thinking about whether or not to buy the new motor oil. John wants to find out what the other people who make their livelihood on the water think, so he decides he is going to visit the cottages of all the people who work on Lake Wilson and ask them. John manages to talk to other 19 people who operate boats on the lake (Steve and the 18 other fishermen). When John sits down with each person to talk about the new motor oil, every one of them says something like this: "I'm just not interested in using that new motor oil. I really only want to move my boat slowly. I like going at a leisurely pace and spending all day on the lake. I'm not in any rush and I don't need to speed anything up. Besides, if everyone used the new motor oil, all the fish would disappear from the lake. I don't want that to happen. But even if there was no BetaX released into the lake by the new motor oil, I wouldn't want to use it anyway."

John thinks to himself: No one else is going to use the new motor oil. Under these circumstances, it's OK for me to use the new motor oil and drive around the lake more quickly.

Expected Utility Group

Criteria for the Expected Utility Group: How boats operate on Lake Wilson? To be included, subjects must answer 20.

Exclusions: 16 subjects were excluded for failing the control question.

Subjects read the following instructions prior to beginning the study: "On the following pages you will be asked to read a short story and answer questions about it. The questions on each page of the survey will be different, but the story will remain the same. (The story will appear on each page for your reference.) After the survey there will be an opportunity to let us know

609 if something was confusing or unclear."

610 Subjects read the following stimuli. On each new page, the story appeared again for subjects' reference.

611 **Condition: High Interest**

612 **Context: Tour Boat**

613 Lake Wilson is a small lake in upstate New York. Each summer, 20 people make their livelihood on the water. All but one
614 of these people makes their livelihood by catching fish and selling them. John makes his livelihood a different way: By giving
615 tours of the lake to tourists on his boat.

616 Everybody who makes their livelihood on the water uses a motor boat. The motor boats on Lake Wilson move around the
617 lake relatively slowly, mostly because the engines use a crude form of motor oil. Up until now, the boat shop in town has sold
618 only one kind of motor oil. But recently it started selling a new kind of motor oil that allows the boats to move much more
619 quickly.

620 This would allow everyone who makes their livelihood on the lake to save time. All the fishermen would be able to move
621 around the lake faster and thereby catch the number of fish they need each day in less time. John would also save time because
622 the people who take his tours want to see three sites: the coral reef, the waterfall, and the lake's island. With the new motor
623 oil, John can show everyone all three sites in less time.

624 The new motor oil also releases a compound, BetaX, into the water. Small amounts of BetaX in the water do not effect the
625 fish. But, if BetaX levels start to exceed 30 parts per million, the fish will die. If the fish die, John will still be able to give just
626 as many tours on Lake Wilson, but the people that make their livelihood by catching fish will have to find different jobs.

627 There are 20 total boaters who operate boats on Lake Wilson: John with his tour boat, and 19 fishermen with their fishing
628 boats. If 7 or more boaters started using the new motor oil, then by the end of the summer all the fish would be dead.
629 However, up to 3 boaters can use the new motor oil with no decrease at all in the size and health of the fish population. Those
630 boaters will be able to drive around the lake faster, everybody else will drive around at the same speed as before, and the fish
631 population would continue to be exactly as large and as healthy as in past years.

632 Now suppose that:

633 1. John decides to use the new motor oil

634 2. All of the fishermen also decide to use the new motor oil

635 Please answer the following questions.

636 Would John be better off, worse off, or the same as he is right now? [Better off / Worse off / The same]

637 Would the fishermen be better off, worse off, or the same as they are right now? [Better off / Worse off / The same]

638 How likely is it that John will save time and still be able to give as many tours as before? [More likely than before / Less
639 likely than before / The same as before]

640 How many boats operate on Lake Wilson? [Free Response]

641 **Condition: Low Interest**

642 **Context: Tour Boat**

643 Lake Wilson is a small lake in upstate New York. Each summer, 20 people make their livelihood on the water. All but one
644 of these people makes their livelihood by catching fish and selling them. John makes his livelihood a different way: By giving
645 tours of the lake to tourists on his boat.

646 Everybody who makes their livelihood on the water uses a motor boat. The motor boats on Lake Wilson move around the
647 lake relatively slowly, mostly because the engines use a crude form of motor oil. Up until now, the boat shop in town has sold
648 only one kind of motor oil. But recently it started selling a new kind of motor oil that allows the boats to move much more
649 quickly.

650 This would allow everyone who makes their livelihood on the lake to save time. All the fishermen would be able to move
651 around the lake faster and thereby catch the number of fish they need each day in less time. John would also save time because
652 the people who take his tours want to see three sites: the coral reef, the waterfall, and the lake's island. With the new motor
653 oil, John can show everyone all three sites in less time.

654 The new motor oil also releases a compound, BetaX, into the water. Small amounts of BetaX in the water do not effect the
655 fish. But, if BetaX levels start to exceed 30 parts per million, the fish will die. If the fish die, John will still be able to give just
656 as many tours on Lake Wilson, but the people that make their livelihood by catching fish will have to find different jobs.

657 There are 20 total boaters who operate boats on Lake Wilson: John with his tour boat, and 19 fishermen with their fishing
658 boats. If 7 or more boaters started using the new motor oil, then by the end of the summer all the fish would be dead.
659 However, up to 3 boaters can use the new motor oil with no decrease at all in the size and health of the fish population. Those
660 boaters will be able to drive around the lake faster, everybody else will drive around at the same speed as before, and the fish
661 population would continue to be exactly as large and as healthy as in past years.

662 Now suppose that: 1. John decides to use the new motor oil 2. None of the fishermen decide to use the new motor oil

663 Please answer the following questions.

664 **Condition: High Interest**

665 **Context: Fisherman**

666 Lake Wilson is a small lake in upstate New York. Each summer, 20 people make their livelihood on the water. All but one
667 of these people makes their livelihood by catching fish and selling them. Steve makes his livelihood a different way: By giving
668 tours of the lake to tourists on his boat.

Everybody who makes their livelihood on the water uses a motor boat. The motor boats on Lake Wilson move around the lake relatively slowly, mostly because the engines use a crude form of motor oil. Up until now, the boat shop in town has sold only one kind of motor oil. But recently it started selling a new kind of motor oil that allows the boats to move much more quickly.

This would allow everyone who makes their livelihood on the lake to save time. All the fishermen would be able to move around the lake faster and thereby catch the number of fish they need each day in less time. Steve would also save time because the people who take his tours want to see three sites: the coral reef, the waterfall, and the lake's island. With the new motor oil, Steve can show everyone all three sites in less time.

The new motor oil also releases a compound, BetaX, into the water. Small amounts of BetaX in the water do not effect the fish. But, if BetaX levels start to exceed 30 parts per million, the fish will die. If the fish die, Steve will still be able to give just as many tours on Lake Wilson, but the people that make their livelihood by catching fish will have to find different jobs.

There are 20 total boaters who operate boats on Lake Wilson: Steve with his tour boat, and 19 fishermen with their fishing boats. If 7 or more boaters started using the new motor oil, then by the end of the summer all the fish would be dead. However, up to 3 boaters can use the new motor oil with no decrease at all in the size and health of the fish population. Those boaters will be able to drive around the lake faster, everybody else will drive around at the same speed as before, and the fish population would continue to be exactly as large and as healthy as in past years.

John is one of the fishermen who operates a boat on Lake Wilson.

Now suppose that: 1. John decides to use the new motor oil 2. All of the other boaters also decide to use the new motor oil Please answer the following questions.

Condition: Low Interest

Context: Fisherman

Lake Wilson is a small lake in upstate New York. Each summer, 20 people make their livelihood on the water. All but one of these people makes their livelihood by catching fish and selling them. Steve makes his livelihood a different way: By giving tours of the lake to tourists on his boat.

Everybody who makes their livelihood on the water uses a motor boat. The motor boats on Lake Wilson move around the lake relatively slowly, mostly because the engines use a crude form of motor oil. Up until now, the boat shop in town has sold only one kind of motor oil. But recently it started selling a new kind of motor oil that allows the boats to move much more quickly.

This would allow everyone who makes their livelihood on the lake to save time. All the fishermen would be able to move around the lake faster and thereby catch the number of fish they need each day in less time. Steve would also save time because the people who take his tours want to see three sites: the coral reef, the waterfall, and the lake's island. With the new motor oil, Steve can show everyone all three sites in less time.

The new motor oil also releases a compound, BetaX, into the water. Small amounts of BetaX in the water do not effect the fish. But, if BetaX levels start to exceed 30 parts per million, the fish will die. If the fish die, Steve will still be able to give just as many tours on Lake Wilson, but the people that make their livelihood by catching fish will have to find different jobs.

There are 20 total boaters who operate boats on Lake Wilson: Steve with his tour boat, and 19 fishermen with their fishing boats. If 7 or more boaters started using the new motor oil, then by the end of the summer all the fish would be dead. However, up to 3 boaters can use the new motor oil with no decrease at all in the size and health of the fish population. Those boaters will be able to drive around the lake faster, everybody else will drive around at the same speed as before, and the fish population would continue to be exactly as large and as healthy as in past years.

John is one of the fishermen who operates a boat on Lake Wilson.

Now suppose that: 1. John decides to use the new motor oil 2. None of the other boaters decide to use the new motor oil Please answer the following questions.

Supplemental Results/Statistical Details. In the main text, we report a collapsed version of the results from the expected utility group. Here, in Table S1 we report the full results.

Study 4

Materials. This study was pre-registered (see http://aspredicted.org/blind.php?x=at7cs8). 300 subjects participated in this study, recruited from Amazon MTURK through turkprime and were paid a small amount for their participation. Subjects were randomly assigned to one of two conditions (4,7 Condition and 10,13 Condition) and one of three collective action questions (yielding a 2×3 design). 4,7 Condition: Up to 4 people can use the new hook with no effect on the fish population; once 7 people use the new hook the fish population will go extinct. 10,13 Condition: Up to 10 people can use the new hook with no effect on the fish population; once 13 people use the new hook the fish population will go extinct. The three collective action questions were Everyone's Expected Utility, John's Expected Utility, and Frustrated Means (described below).

Each subject read the story and was asked what would happen if N subjects used the new hook (exact wording varied depending on the collective action curve, see below). N was chosen at random without replacement from the following values until all values of N were seen by each subject: 0,2,7,8,13,19. [This list is for John's EU and Frustrated Means. For Fishermen's EU, subjects see N+1.]

Pre-Registered Exclusion Criteria:

	Context: Tour Boat, Everyone Acts		
	Fishermen's Utility	John's Utility	Frustrated Means
Better	0.099	0.624	0.802
Same	0.040	0.257	0.099
Worse	0.861	0.119	0.099

	Context: Tour Boat, Only John Acts		
	Fishermen's Utility	John's Utility	Frustrated Means
Better	0.082	0.888	0.918
Same	0.786	0.071	0.041
Worse	0.133	0.041	0.041

	Context: Fisherman, Everyone Acts		
	Fishermen's Utility	John's Utility	Frustrated Means
Better	0.185	0.326	0.533
Same	0.120	0.152	0.087
Worse	0.696	0.522	0.380

	Context: Fisherman, Only John Acts		
	Fishermen's Utility	John's Utility	Frustrated Means
Better	0.074	0.884	0.926
Same	0.726	0.053	0.042
Worse	0.200	0.063	0.032

Table S1. Responses from subjects in the Expected Utility group in Study 3. Cells contain the percentage of subjects that responded better, same, or worse to each of the three questions (Fishermen's Utility, John's utility, and Frustrated Means). See above for the exact wording of each question.

How many people regularly fish in Lake Wilson in the summer? To be included, subjects must answer 20. Any participant who gives the wrong answer for any values of N is completely excluded from the study.

Exclusions: 18 subjects were excluded from the experiment for failing the control question.

Subjects read the following instructions prior to beginning the study: "On the following pages you will be asked to read a short story and answer some questions about it. After the survey there will be an opportunity to let us know if something was confusing or unclear."

Below, we show the stimuli for the 4,7 Condition. The 10,13 condition is identical, except that the numbers 4 and 7 were replaced by the numbers 10 and 13 (respectively) in the third paragraph.

Lake Wilson is a small lake in upstate New York. Each summer, a few dozen families move into small cottages near the lake for the season. The vacationers enjoy boating, swimming, and fishing in the lake and they've gotten to know each other over the course of many summers together.

Most people who like to fish in Lake Wilson catch a few fish each day and cook them for dinner. These people buy their fishing gear from a small tackle shop on the main road. Up until now, the tackle shop has sold one kind of fishing hook. But it has recently starting selling a new kind of hook that allows people to catch many more fish than they would with the older hook.

There are 20 people who regularly fish in Lake Wilson during the summer. If 7 or more people started using the new hook for fishing, then by the end of the summer, the entire fish population would collapse and there would be no more fish in Lake Wilson ever again. None of the vacationers would want that to happen. However, up to 4 people can use the new hooks with no decrease at all in the size and health of the fish population. Those people will be able to catch more fish more quickly, everyone else will still be able to catch the same amount of fish as before, and the fish population would continue to be exactly as large and as healthy as in past years.

The last two sentences of the story varied by collective action curve question:

Fishermen's Expected Utility: Think about the well-being of all the vacationers combined. How would the vacationers be affected if the following number of people used the new hooks?

John's Expected Utility: John is one of the people who visits Lake Wilson each summer. John would like to use the new hooks. How would John be affected if the following number of people also used the new hooks?

Frustrated Means: John is one of the people who visits Lake Wilson each summer. He would like to use the new hooks to catch more fish than he did last year using the old hooks. Some of John's neighbors are also thinking about using the new hooks.

Subjects were then asked the following questions, depending on the collective action curve question:

Fishermen's Expected Utility: Imagine that N people use the new hooks. How would the vacationers be affected? [N is replaced with the values indicated above.] Subjects give a response ranging from -50 to 50 with the scale anchored as follows: A lot worse off, a little worse off, not affected, a little better off, a lot better off.

John's Expected Utility: Imagine that John and N other people use the new hooks. How would John be affected? [N is replaced with the values indicated above.] Subjects give a response ranging from -50 to 50 with the scale anchored as follows: A lot worse off, a little worse off, not affected, a little better off, a lot better off.

Frustrated Means: Imagine that John and N other people use the new hooks. How likely is it that John will be able to catch more fish than he did last year? [N is replaced with the values indicated above.] Subjects give a response ranging from -50 to 50 with the scale anchored as follows: very unlikely, somewhat unlikely, neither likely nor unlikely, somewhat likely, very likely.

At the end, all subjects were asked the following question: How many people regularly fish in Lake Wilson in the summer? [Free Response.]

Supplemental Results/Statistical Details. We next describe our model fitting and model comparison procedure for Study 4.

Model fit using empirical utility function: Using Equation 1 from the main text (our model of universalization)

$$Prob(\text{Acceptable; Universalization}) = \frac{1}{1 + e^{\tau(U(0)-U(n_i))+\beta}} \qquad [1]$$

we assigned a probability to each moral judgment collected in Study 2, restricting our analysis to those participants whose moral judgments were not uniform across all values of n_i (the number of interested parties). Equation [1] specifies these probabilities given $U(0) - U(n_i)$ and two free parameters τ and β. In Study 4 we collected an empirical measure of $U(0) - U(n_i)$ for each value of n_i required to model moral judgment data from Study 2 (i.e., 1, 3, 8, 9, 14, and 20) crossed with each of the relevant utility threshold conditions (i.e., 4-7 or 10-13). We computed the mean of $U(0) - U(n_i)$ across Study 4 participants for each of these points, and substituted those means into Equation [1]. Using the "optim" function in R, we selected values of τ and β which, when applied uniformly across all moral judgments and all participants, maximized the likelihood of the moral judgment data given our model. We applied $\tau = 2$ and $\beta = $ -3 as starting points for the optimization procedure, and we obtained the optimized values $\tau = 0.057$ and $\beta = $ -1.16. The minimized sum of the negative log likelihood was $nll = 302.3$ and the AIC was calculated as $2p + 2nll = 608.8$ where $p = 2$ is the number of free parameters.

Model fit using idealized utility function: We next performed the same procedure but substituted idealized values of $U(0) - U(n_i)$ in place of the empirically derived ones described above. The idealized utility function was defined as having a flat positive utility before the critical threshold and a flat negative utility after the threshold. The precise model predictions within the "threshold region" (i.e., between 4 and 7 in the 4,7 Condition and between 10 and 13 in the 10,13 Condition) are unimportant

Sydney Levine, Max Kleiman-Weiner, Laura Schulz, Joshua Tenenbaum, Fiery Cushman

because we did not gather subject moral judgments in that range, so there is no data to predict. Therefore, any of the possible ideal models described in the main text (see the introduction to Study 4) would make nearly identical predictions. We used a step-function model that is flat before the threshold and after the threshold and fit it to the data using a 2-parameter sigmoid, analogous to Equation [1]. The threshold for the 4,7 condition was set at 4 and for the 10,13 condition was set at 10. Thus, for $n_i <$ threshold, $U(0) - U(n_i) = 1$ and for $n_i >$ threshold, $U(0) - U(n_i) = 0$. We fit parameters as above except with starting points $\tau = 0$ and $\beta = 0$ and resulting optimized values $\tau = 2.37$ and $\beta = 0.847$. The minimized sum of the natural log likelihood was $nll = 309$ and the AIC was calculated as $2p + 2nll = 621$ where $p = 2$.

In the main text, we include only the data from the Fishermen's Expected Utility Condition. Here, we report the data for the other two conditions. The empirical utility functions produced by the John's Expected Utility and Frustrated Means Conditions can be found in Figs. S2 and S3 respectively.

Comparing alternative measures of $U(n)$ As an alternative method of modeling the data without restricting the analysis to non-uniform responders, we also conducted the following pre-registered analysis of all the collective action data. The purpose of this analysis was to compare the likelihood of the data from Study 2 given our universalization model when applying each of the three different utility measures collected in Study 4: Fishermen's EU, John's EU and Frustrated Means.

As above, empirical utility functions were created by taking the average subject response at each number of parties acting (1, 3, 8, 9, 14, 20) for each threshold condition (4,7 or 10,13). We determined the likelihood of the data given a variant of Equation [1] that differs in two key respects. First, it eliminates the bias parameter β. Second, it imposes empirically-derived upper and lower bounds on $Prob$(Acceptable) corresponding to the proportion of participants who judged John's action impermissible even when $n_i = 0$ and the proportion of participants who participants who judged John's action permissible even when $n_i = 20$. In other words, the model bounds accommodate participants who tend to provide uniform moral judgments, applying the logistic function just within the range of participants whose judgments are plausible candidates for universalization. For the 10,13 condition, max $= .80$ and min $= .58$. For the 4,7 condition, max $= .80$ and min $= .60$. Thus, our modified model was

$$Prob(\text{Acceptable}) = \frac{\text{max} - \text{max}}{1 + e^{-\tau(U(0)-U(n_i))}} + \text{min}.$$

As above, we used the optim function of R to find the value of τ that maximized the probability of the data given our model. We did this separately for each measure of $U(0) - U(n_i)$ collected in Study 4.

We compared the model fits using their AIC (see Table **??**). Individual AIC values are difficult to interpret, so we re-scale AIC to

$$\Delta_i = AIC_i - AIC_{min}$$

where AIC_min is the minimum AIC value of the set of models to be compared. Therefore, Δ_i can be interpreted as the information loss of using a model other than the best-fitting one and allows for a strength-of-evidence comparison and the generation of a ranked list of the models (1). The convention for comparing Δ_i values is generally taken to be as follows: models with $\Delta_i \leq 2$ are considered to have substantial support, models with $4 \geq \Delta_i \geq 7$ are taken to have less support and models with $\Delta_i > 10$ are taken to have almost no support .

Fishermen's EU has the lowest AIC of the three models for both thresholds. For the 4,7 threshold, John's EU has substantial support when compared to the best model while Frustrated Means has less support. For the 10,13 threshold, John's EU and Frustrated Means both have less support than the best model. This suggests that across the two conditions, there is somewhat greater support for the model that uses Fishermen's EU to predict moral judgments.

However, none of the models were clearly and consistently superior to all the others across both thresholds (see (1)). For this reason, we conducted Study 3 (see main text) which differentiates between the models.

Study 5

Materials. 4-11 year old children were recruited for participation in the Boston Common. Parents gave informed consent for their children to participate. Testing took place in a quiet location outdoors in the Common. Testing sessions were video recorded and checked in case there was a question about a subject's response. Responses were coded online by a live coder. Subjects were given a small prize for participating.

191 subjects were included in the analysis (mean age = 7.5 years). 28 additional children were recruited but excluded from the analysis for failing the screening or control questions.

Children were first told simple stories accompanied by pictures to verify their competence with English and to ensure that they could use "OK" and "not OK" to make simple moral judgments. Subjects were not corrected if they got any of the screening questions wrong.

Pictures and animations used for this study are available at github.com/sydneylevine/universalization.

Story 1: This is a story about Billy and Johnny. In this story, Billy hits Johnny.

Was that OK or not OK? [Correct Answer: Not OK]

Story 2: This is a story about and Anne. What is Sue holding? That's right, a flower! In this story, Sue gives her flower to Anne.

Was that OK or not OK? [Correct Answer: OK]

Story 3: Sometimes Jimmy is all alone and sometimes he's with his friends. When he is all alone sometimes he does things that are OK and sometimes he does things that are not OK.

Threshold		Fishermen's Expected Utility	John's Expected Utility	Frustrated Means
4,7	Starting point for parameter optimization	0.40	2.00	0.05
	Optimized Beta	0.24	2.36	0.047
	Sum of NLL	653.9	655.1	658.2
	AIC	1310	1312	1318
	Δ_i	0	2	8
10,13	Starting point for parameter optimization	0.40	0.10	0.05
	Optimized Beta	0.32	2.36	0.067
	Sum of NLL	604.2	606.1	606.7
	AIC	1210	1214	1215
	Δ_i	0	4	5

Table S2. Details for optimization of model fits for Study 4 data. These models predict the moral acceptability data reported in Study 2.

Sydney Levine, Max Kleiman-Weiner, Laura Schulz, Joshua Tenenbaum, Fiery Cushman
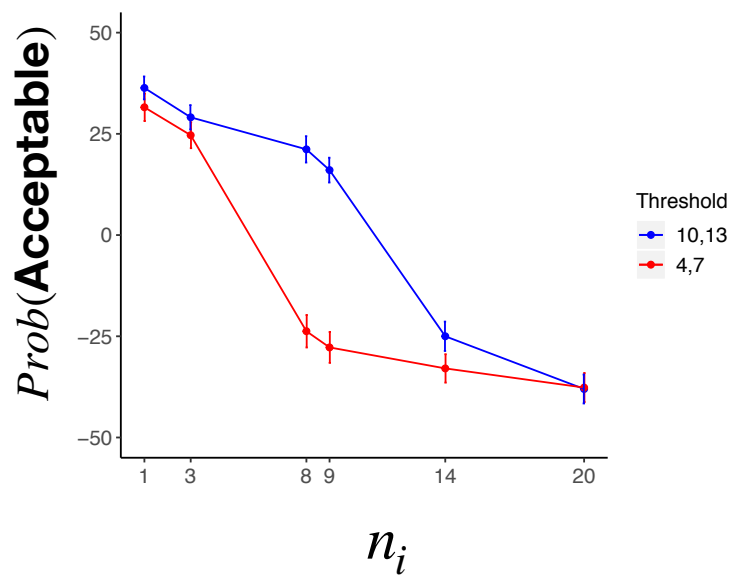
Fig. S2. Empirical utility function produced by asking subjects about John's Expected Utility.
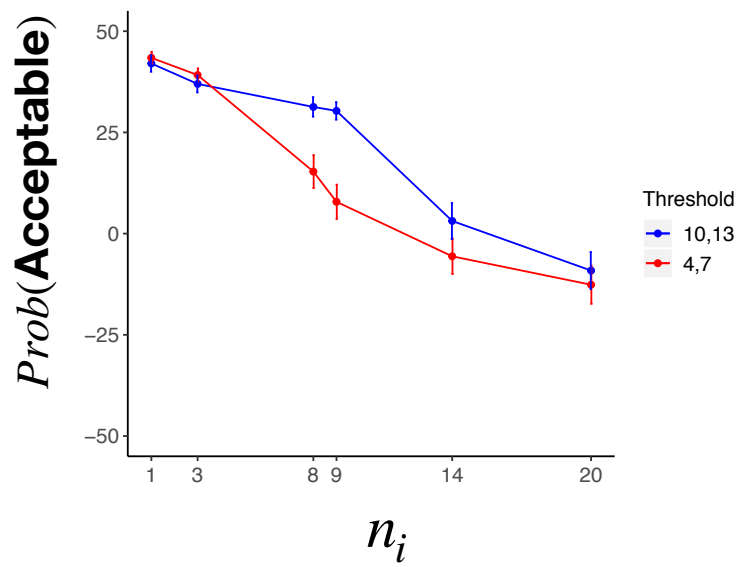
Fig. S3. Curve produced by asking subjects about the likelihood that John's purpose would be undermined.

Sydney Levine, Max Kleiman-Weiner, Laura Schulz, Joshua Tenenbaum, Fiery Cushman

One day Jimmy is all alone. There is no one else around, he is all by himself. He knows that if he steps on this bunny, no one will see him do it.

Q: If Jimmy steps on the bunny, will anyone see him do it? [Correct Answer: No]

DV: Is it OK or not OK for Jimmy to step on the bunny? [Correct Answer: Not OK]

Story 4: One day Jimmy is all alone. There is no one else around, he is all by himself. He knows that if he makes a picture for his mom, no one will see him do it.

Q: If Jimmy makes a picture for his mom, will anyone see him do it? [Correct Answer: No]

DV: Is it OK or not OK for Jimmy to make a picture for him mom? [Correct Answer: OK]

If subjects got any of the screening stories wrong, the study ended after the screening. For subjects that passed the screening, they went on to the main study. Subjects listened to two stories, counterbalancing condition (High Interest or Low Interest) and Context (Buckets or Rocks). They were asked a series of control questions during the story. If a child got a control question wrong, the experimenter repeated that part of the story again and asked the question again. If the child still got the question wrong, he or she was excluded from the study. At the end of the story the subject was asked if it would be OK or not OK for the actor to do the action (e.g., take a rock from the path). They were then asked why they made the judgment that they did. Analysis of justifications is not presented in this paper.

Condition: High interest

Context: Buckets

This is a story about Mary. Mary and her friends are at the lake. The fish in the lake love swimming in the lake water.

Mary has a toy castle. And she has a bucket. All the other kids have toy castles too and they all have buckets.

Mary would like to fill a bucket with water from the lake and pour it on her toy castle. All the other kids want to fill their buckets with water and pour it on their castles.

Q: What does Mary want to do?

Q: Do the other kids want to do that?

If just one person takes water from the lake there will still be plenty of water left for the fish. If everyone takes water from the lake, then there would be no more water in the lake for the fish.

Q: What would happen if just one person took water from the lake?

If don't know, follow up with: Would there still be water left for the fish?

Q: What would happen if everyone took water from the lake?

If don't know, follow up with: Would there still be water left for the fish?

The kids don't want that to happen. So they never take water from the lake.

Q: Do the kids ever take water from the lake?

One day, Mary is at the lake before any of the other kids. She knows that if she fills her bucket with water and pours it on her castle, no one will see her do it. And she'll do it just this once.

Q: If Mary takes water from the lake, will anyone see her do it?

So, I have a question for you about Mary, are you ready?

DV: Is it OK or not OK for Mary to take water from the lake?

Explain: Why do you think it would be OK/not-OK?

Condition: Low interest

Context: Buckets

This is a story about Mary. Mary and her friends are at the lake. The fish in the lake love swimming in the lake water.

Mary has a toy castle. And she has a bucket. All the other kids have toy castles too.

Mary would like to fill a bucket with water from the lake and pour it on her toy castle. If just one person takes water from the lake there will still be plenty of water left for the fish. If everyone takes water from the lake, then there would be no more water in the lake for the fish.

Q: What would happen if just one person took water from the lake?

If don't know, follow up with: Would there still be water left for the fish?

Q: What would happen if everyone took water from the lake?

If don't know, follow up with: Would there still be water left for the fish?

But no one else wants to take water from the lake. They don't want their castles to be wet; they like them to stay nice and dry. They never take water from the lake because they don't want the water on their castles. Only Mary wants to do that.

Q: What does Mary want to do?

Q: Do the other kids want to do that?

One day, Mary is at the lake before any of the other kids. She knows that if she fills her bucket with water and pours it on her castle, no one will see her do it. And she'll do it just this once.

Q: If Mary takes water from the lake, will anyone see her do it?

So, I have a question for you about Mary, are you ready?

DV: Is it OK or not OK for Mary to take water from the lake?

Explain: Why do you think it would be OK/not-OK?

Condition: High interest

Context: Rocks

This is a story about Jacob. Jacob and his friends walk through this park every day. They love to walk on this path that is made of lots of rocks.

Jacob has a rock collection. He would love to take one of the rocks from the path and put it in his rock collection. All the other kids have rock collections, too. They would all love to take the rocks from the path and put them in their rock collections.

Q: What does Jacob want to do?

Q: Do the other kids want to do that?

If just one person took a rock for his rock collection, there would still be plenty of rocks left on the path. If everyone took the rocks for their rock collections, then there would be no more rocks left on the path.

Q: What would happen if just one person took a rock for his rock collection?

If don't know, follow up with: Would there still be rocks left on the path?

Q: What would happen if everyone took the rocks for their rock collections?

If don't know, follow up with: Would there still be rocks left on the path?

The kids don't want that to happen. So they never take the rocks.

Q: Do the kids ever take the rocks from the path?

One day, Jacob is at the park before any of the other kids. He knows that if he takes a rock from the path, no one will see him do it. And he'll do it just this once.

Q: If Jacob takes a rock from the path, will anyone see him do it?

So, I have a question for you about Jacob, are you ready?

DV: Is it OK or not OK for Jacob to take a rock from the path?

Explain: Why do you think it would be OK/not-OK?

Condition: Low interest

Context: Rocks

This is a story about Jacob. Jacob and his friends walk through this park every day. They love to walk on this path that is made of lots of rocks.

Jacob has a rock collection. He would love to take one of the rocks from the path and put it in his rock collection. If just one person took a rock for his rock collection, there would still be plenty of rocks left on the path. If everyone took the rocks for their rock collections, then there would be no more rocks left on the path.

Q: What would happen if just one person took a rock for his rock collection?

If don't know, follow up with: Would there still be rocks left on the path?

Q: What would happen if everyone took the rocks for their rock collections?

If don't know, follow up with: Would there still be rocks left on the path?

But none of the other kids want to take rocks from the path. They don't like rocks that much and they don't have rock collections. So the other kids never take rocks from the path. Only Jacob wants to do that.

Q: What does Jacob want to do?

Q: Do the other kids want to do that?

One day, Jacob is at the park before any of the other kids. He knows that if he takes a rock from the path, no one will see him do it. And he'll do it just this once.

Q: If Jacob takes a rock from the path, will anyone see him do it?

So, I have a question for you about Jacob, are you ready?

DV: Is it OK or not OK for Jacob to take a rock from the path?

Explain: Why do you think it would be OK/not-OK?

A. Adults. 201 adult subjects received the same stimuli as children, except they did not see the screening stories. Adults were recruited from Amazon MTURK through turkprime and were paid a small amount for their participation. Thirty-three subjects were excluded for failing control questions. Like children, adults saw two stories, counterbalanced for condition (High Interest or Low Interest) and context (Buckets or Rocks). The data from both stories is analyzed.

Supplemental Results/Statistical Details. We planned to analyze the data from children using a Bayesian analysis, which avoids the need for a pre-determined sample size (2–5), due to our uncertainty about the effect size for this study and the difficulty of recruiting subjects. In the results section, we report the Bayes Factor as the main item of analysis, though we also include p-values to conform with current standards for data reporting.

To test for an effect of age, we compared three models of the data. Model-1 includes condition only, Model-2 includes the main effect of age, Model-3 includes an age $\times$ condition interaction. In the latter two models, there is no significant effect of age or the age $\times$ condition interaction and the data is best explained by the model that includes only condition on AIC and BIC. See Fig. S5. Fig. S4 shows subject responses by age.
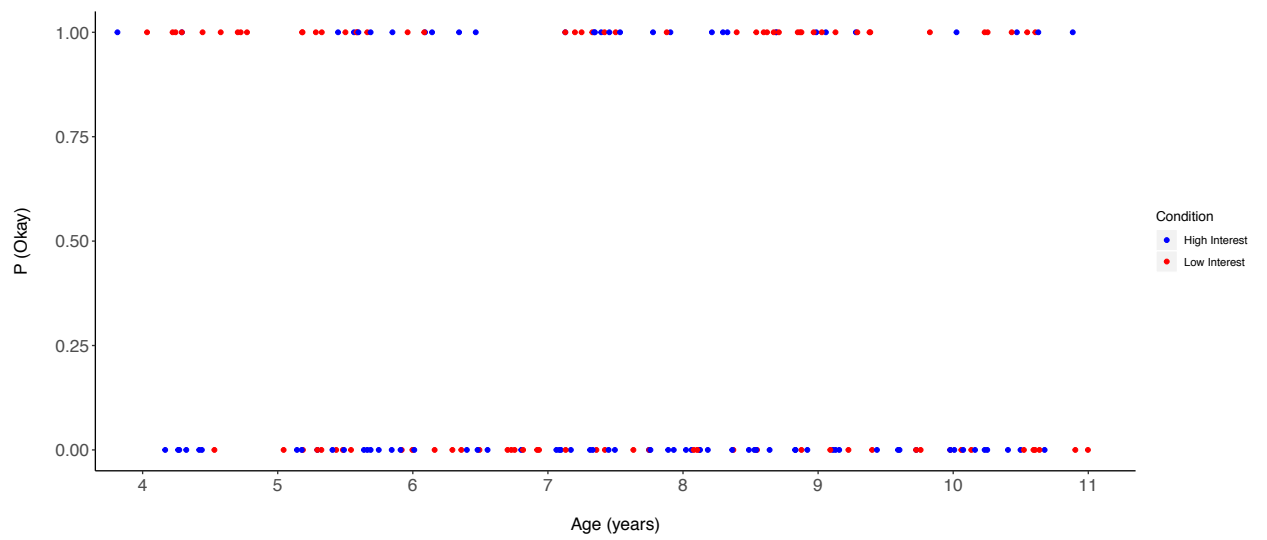
Fig. S4. Scatter plot of children's responses by age and condition. Only answers to the first story are graphed.
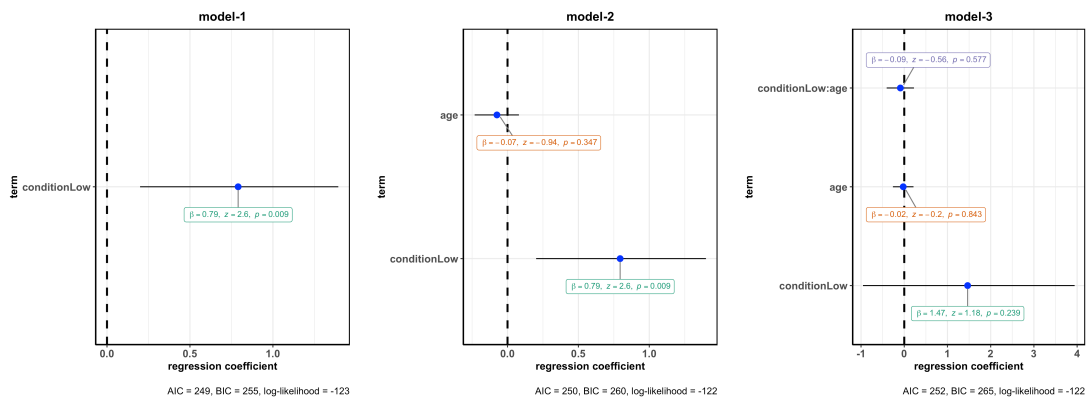
Fig. S5. We compared three models of the data. Model-1 includes condition only, Model-2 includes the main effect of age, Model-3 includes an age × condition interaction. In the latter two models, there is no significant effect of age or the age × condition interaction and the data is best explained by the model that includes only condition on AIC and BIC.

Sydney Levine, Max Kleiman-Weiner, Laura Schulz, Joshua Tenenbaum, Fiery Cushman

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