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2 **Supplementary Information for**
3 **Universalization reasoning guides moral judgment**

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7 **This PDF file includes:**

- 8 Figs. S1 to S12
- 9 Tables S1 to S2
- 10 SI References

11 Data Availability

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

13 Study 1

14 **Materials.** 150 subjects participated in this study, recruited from Amazon MTURK through turkprime and were paid a small
15 amount for their participation. 20 subjects were excluded for failing an attention check. Subjects read 12 short stories, each
16 involving a moral violation. Subjects were asked to indicate if they thought that each of four explanations was a convincing
17 explanation for why that action was wrong.

18 Subjects were presented with the following twelve stories in a randomized order:

19 1. Threshold Problems:

- 20 (a) Ali and his family are on a hike. They stop to eat lunch next to a stream. There is a group of apple trees near the
21 stream. Sometimes the apples from the apple trees roll into the stream and that's OK. But if too many apples end
22 up in the stream, then the ducks will eat them all and get sick. Lots of people hike on this trail every day. Ali picks
23 an apple and eats it for lunch. He doesn't want to carry the apple core with him. So he throws it into the stream.
- 24 (b) Betty is visiting a museum. She is looking at a very old book. If lots of people touch the pages of the book, then
25 over a long time the dirt from their hands will make the book so dirty that no one will be able to read it any more.
26 Betty decides to turn the pages of the book.
- 27 (c) It is story time in Camen's class. The teacher starts reading a story out loud and all the kids in the class are quietly
28 listening to the story. Camen has something he wants to ask. Camen asks his question without raising his hand.

29 2. Utility Maximization Problems:

- 30 (a) Liana has an extra snack today that she doesn't want. Lenny doesn't have a snack at all and asks if he can have
31 Liana's extra one. Liana throws her extra snack in the trash.
- 32 (b) Martin realizes that the roof in his classroom is leaking and the water is about to drip on everyone's art projects.
33 Jenny's art project is very large, so it is being kept in the closet and is not going to get wet. But Martin realizes
34 that if he gets Jenny's project out of the closet, he can use it to protect everyone else's project, even though Jenny's
35 will be destroyed. Martin decides to let the water drip on everyone's projects and they are all ruined except Jenny's.
- 36 (c) Nick sees that the window to the classroom is open and that everyone's homework is about to blow away. Nick
37 picks up his own homework and moves it to safe place, but leaves everyone else's homework there. Everyone else's
38 homework blows away.

39 3. Fairness Problems:

- 40 (a) It is Oscar's turn to give out stickers to the three kids in his group. There are three stickers Oscar can give out.
41 Oscar gives one sticker to Sam, two stickers to John, and no stickers to Emily.
- 42 (b) Penelope's class makes a mess while they are painting. The teacher lets everyone go outside for recess except for
43 Penelope who has to clean up the whole mess.
- 44 (c) Quinn brings cookies to share with his class. He decides to only give the cookies to the boys.

45 4. Harm Problems:

- 46 (a) Phil got angry at his friend and punched him in the face.
- 47 (b) Jane performed a song in the talent show. Anne told her that her performance was terrible.
- 48 (c) Mark is allergic to peanuts. David knows this, but he gives him a salad that has peanuts in it anyway.

49 After each scenario, subjects were asked to indicate if each of four explanations was a convincing explanation for why that
50 action was wrong. (See Fig. S1 below.)

51 The four explanations were as follows:

- 52 1. Because that person could have helped more people.
- 53 2. Because that was unfair.
- 54 3. Because if everyone did that, the outcome would be bad.
- 55 4. Because that harmed someone.

56 Attention check: At the end of the survey, subjects read the following: "Thanks for taking the time to do this survey. This
57 final question is just here to confirm you are paying attention. Please do not answer this question (do not check any of the
58 boxes). Instead, write 'I am paying attention' in the box labeled 'Other' below. Thanks so much for your help!" Subjects were
59 presented with the following options: High School, Associate's Degree, Bachelor's Degree, Professional Degree or PhD, Some
60 College. Subjects were excluded if they checked any of the levels of education or failed to write "I am paying attention" in the
61 free-response box.

Nick sees that the window to the classroom is open and that everyone's homework is about to blow away. Nick picks up his own homework and moves it to safe place, but leaves everyone else's homework there. Everyone else's homework blows away.

Some people think that what the main character did was wrong. Which of the following do you think is a convincing argument for why that was wrong? (Note that you may think that none of these arguments are convincing or that more than one argument is convincing.)

	This IS NOT a convincing argument for why that was wrong	This IS a convincing argument for why that was wrong
Because that person could have helped more people.	<input type="radio"/>	<input type="radio"/>
Because that was unfair.	<input type="radio"/>	<input type="radio"/>
Because if everyone did that, the outcome would be bad.	<input type="radio"/>	<input type="radio"/>
Because that harmed someone.	<input type="radio"/>	<input type="radio"/>



Fig. S1. Options seen by subjects in Study 1.

62 Study 1 Replication

63 Study 1 was replicated using identical stimuli. A similar pattern of results was achieved, as reported below. The only change
64 to the stimuli was as follows. In the Study reported in the main manuscript, subjects were told after each vignette, "Some
65 people think that what the main character did was wrong. Which of the following do you think is a convincing argument for
66 why that was wrong? (Note that you may think that none of these arguments are convincing or that more than one argument
67 is convincing.)" In the replication, the parenthetical instruction was absent.

68 **Materials.** 150 subjects participated in this study, recruited from Amazon MTURK through turkprime and were paid a small
69 amount for their participation. 21 subjects were excluded for failing an attention check.

70 **A. Results.** As predicted, and in line with what we found in Study 1 in the main manuscript, participants strongly preferred
71 universalization to explain why an individual action is wrong in a threshold problem (Figure S2). 74% of responses to the
72 threshold problems indicated that universalization was a good explanation of moral wrongness in that case, significantly more
73 than endorsements of harm-based explanations (24%; $\chi^2(1) = 190, p < .0001$), fairness-based explanations (34%; $\chi^2(1) =$
74 $326, p < .0001$) and utility-maximization-based explanations (16%; $\chi^2(1) = 260, p < .0001$). Conversely, universalization was
75 endorsed less-strongly for the non-threshold cases (45% for harm, $\chi^2(1) = 65, p < .0001$; 33% for fairness, $\chi^2(1) = 126, p < .0001$;
76 36% for utility-maximization; $\chi^2(1) = 110, p < .0001$). This suggests that universalization is invoked both consistently and
77 selectively for threshold cases. Subjects did, however, consider each of the other moral explanations to be valid for the
78 specific category we had predicted *a priori* (82% for harm; 83% for fairness; 69% for utility maximization; Binomial tests, all
79 p 's $< .0001$).

80 1. Study 2a

81 A. Moral Judgments.

82 **B. Materials.** This study was preregistered (see <http://aspredicted.org/blind.php?x=fx3kz7>). 1000 subjects participated in
83 this study, recruited from Amazon MTURK through turkprime and were paid a small amount for their participation. 394
84 subjects were excluded for failing control questions. Subjects were randomly assigned to to the High Interest or the Low
85 Interest Condition and to one of the five contexts (birds, clams, fish, rabbits, mushrooms). Each subject read and responded to
86 one story only.

87 Exclusion criteria (each question is modified slightly to fit the appropriate context): 1. How many people, besides John,
88 would like to use the new hooks if there were no bad effects of doing so?

89 To be included in the study, participants must report 19 in the high interest condition and 0 in the low interest condition.

90 2. How many people regularly fish in Lake Wilson in the summer?

91 To be included, subjects must answer 19, 20, or 21.

92 3. How many people, besides John, are actually going to use the new hooks?

93 To be included, subjects must answer 0.

94 4. Will it make a difference to the fish population if John uses the new hooks?

95 There are three possible answers to this question: (A) It will make the fish population more healthy (B) It will make the
96 fish population less healthy (C) It will not make a difference to the fish population. To be included, subjects must answer (C).

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

101 Subjects read the following stimuli. On each new page, the story appeared again for subjects' reference. Below, we include
102 the text of the stimuli used across the five contexts in the High Interest and Low Interest conditions. For the first story only, we
103 present all the questions asked to subjects. After that, we present only the text of the scenarios. The questions were identical
104 from context to context with the exception of small changes relevant to the context change (eg, "fish" is replaced by "clams").
105 For the first two stories, we bold the differences between the High Interest and the Low Interest conditions for the ease of the
106 reader. Subjects did not see the text in bold.

107 **Context: Clams**

108 **Condition: High Interest**

109 –Page 1–

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

113 Most people who like to dig for clams in Wilson Bay catch about a dozen clams each day and cook them for dinner. These
114 people buy their clamming gear from a small shop on the main road. Up until now, the shop has sold one kind of digging
115 device, a clam tube made out of plastic. But it has recently starting selling a new kind of clam tube made out of aluminum.
116 The new tube allows people to find many more clams than they would with the older tube. There are 20 people who regularly
117 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
118 of the summer, the entire clam population would collapse and there would be no more clams in Wilson Bay ever again. None

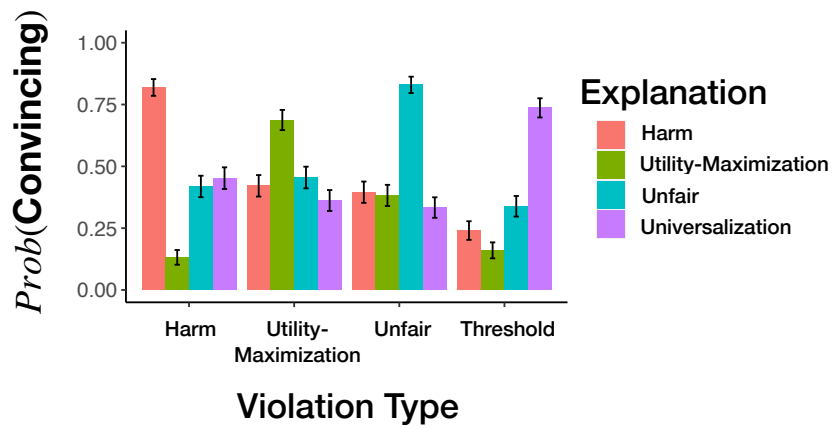


Fig. S2. Results from the Study 1 replication. The data show the same pattern as those reported in Study 1 in the main manuscript. Subjects endorse universalization as an explanation for threshold problems preferentially over harm-based, fairness-based, and utility-based explanations. Likewise, those explanations are selected for the appropriate moral violations. Error bars are standard error of the mean.

119 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
120 and health of the clam population. Those people will be able to catch more clams more quickly, everyone else will still be able
121 to catch the same amount of clams as before, and the clam population would continue to be exactly as large and as healthy as
122 in past years.

123 It is impossible to tell what tube someone is using from a distance, so if someone starts using the new tube, no one else
124 will know about it. No one has bought the new tube yet, however. John would like to use the new tube because he would
125 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
126 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
127 Bay and ask them. John manages to talk to all 20 people who regularly go clamming in the Bay. **When John sits down
128 with each person to talk about the new tube, each person says something like this: “I would love to use that
129 new tube to catch more clams faster, but what would happen if everyone did that? If everyone used the new
130 tube, all the clams would disappear from the bay. I don’t want that to happen, so I’m not going to use the
131 new tube.” John thinks to himself: No one else is going to use the new tube. Under these circumstances, it’s
132 OK for me to use the new tube and catch more clams.** [Note: Bold added here to distinguish between High Interest
133 and Low Interest Conditions. Participants did not see the text in bold.]

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

135 If John starts using the new tube, how many people will know about it? [Free response]

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

137 How many people regularly dig for clams in Wilson Bay in the summer? [Free response.]

138 How many people, besides John, are actually going to use the new tube? [Free response.]

139 –Page 2–

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

141 –Page 3–

142 Is there a rule on the bay that the new tube is forbidden? [Yes/No]

143 –Page 4–

144 Will it make a difference to the clam population if John uses the new tube? [It will make the clam population more healthy
145 / It will make the clam population less healthy / It will not make a difference to the clam population]

146 **Context: Clams**

147 **Condition: Low Interest**

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

151 Most people who like to dig for clams in Wilson Bay catch about a dozen clams each day and cook them for dinner. These
152 people buy their clamming gear from a small shop on the main road. Up until now, the shop has sold one kind of digging
153 device, a clam tube made out of plastic. But it has recently started selling a new kind of clam tube made out of aluminum.
154 The new tube allows people to find many more clams than they would with the older tube. There are 20 people who regularly
155 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
156 of the summer, the entire clam population would collapse and there would be no more clams in Wilson Bay ever again. None
157 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
158 and health of the clam population. Those people will be able to catch more clams more quickly, everyone else will still be able
159 to catch the same amount of clams as before, and the clam population would continue to be exactly as large and as healthy as
160 in past years.

161 It is impossible to tell what tube someone is using from a distance, so if someone starts using the new tube, no one else
162 will know about it. No one has bought the new tube yet, however. John would like to use the new tube because he would
163 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
164 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
165 Bay and ask them. John manages to talk to all 20 people who regularly go clamming in the Bay. **When John sits down
166 with each person to talk about the new tube, each person says something like this: “I’m just not interested
167 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
168 and spend all day clamming. I’m not in any rush and I don’t need to catch more clams. Besides, if everyone
169 used the new tube, all the clams would disappear from Wilson Bay. I don’t want that to happen. But even if
170 there were so many clams in the bay that everyone could use the new tube, I wouldn’t want to use it anyway.”**
171 [Note: Bold added here to distinguish between High Interest and Low Interest Conditions. Participants did not see the text in
172 bold.] 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
173 new tube and catch more clams.

174 **Fish Context**

175 **High Interest Condition**

176 Lake Wilson is a small lake in upstate New York. Each summer, a few dozen families move into small cottages near the lake
177 for the season. The vacationers enjoy boating, swimming, and fishing in the lake and they’ve gotten to know each other over
178 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
179 dinner. These people buy their fishing gear from a small tackle shop on the main road. Up until now, the tackle shop has sold

180 one kind of fishing hook. But it has recently starting selling a new kind of hook that allows people to catch many more fish
181 than they would with the older hook. There are 20 people who regularly fish in Lake Wilson during the summer. If 7 or more
182 people started using the new hook for fishing, then by the end of the summer, the entire fish population would collapse and
183 there would be no more fish in Lake Wilson ever again. None of the vacationers would want that to happen. However, up to
184 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
185 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
186 population would continue to be exactly as large and as healthy as in past years. It is impossible to tell what hook someone is
187 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
188 hooks yet, however. John would like to use the new hooks because he would like to catch more fish faster. He is thinking
189 about whether or not to buy the new hooks. John wants to find out what his neighbors think about the new hooks, so he
190 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
191 people who regularly fish in the lake. When John sits down with each person to talk about the new hooks, each person says
192 something like this: “I would love to use those new hooks to catch more fish faster, but what would happen if everyone did
193 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
194 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
195 OK for me to use the new hooks and catch more fish.

196 **Fish Context**

197 **Low Interest Condition**

198 Lake Wilson is a small lake in upstate New York. Each summer, a few dozen families move into small cottages near the lake
199 for the season. The vacationers enjoy boating, swimming, and fishing in the lake and they’ve gotten to know each other over
200 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
201 dinner. These people buy their fishing gear from a small tackle shop on the main road. Up until now, the tackle shop has sold
202 one kind of fishing hook. But it has recently starting selling a new kind of hook that allows people to catch many more fish
203 than they would with the older hook. There are 20 people who regularly fish in Lake Wilson during the summer. If 7 or more
204 people started using the new hook for fishing, then by the end of the summer, the entire fish population would collapse and
205 there would be no more fish in Lake Wilson ever again. None of the vacationers would want that to happen. However, up to
206 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
207 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
208 population would continue to be exactly as large and as healthy as in past years. It is impossible to tell what hook someone is
209 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
210 hooks yet, however. John would like to use the new hooks because he would like to catch more fish faster. He is thinking about
211 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
212 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
213 who regularly fish in the lake. When John sits down with each person to talk about the new hooks, each person says something
214 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
215 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
216 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
217 lake that everyone could use the new hooks, I wouldn’t want to use them anyway.” John thinks to himself: No one else is going
218 to use the new hooks. Under these circumstances, it’s OK for me to use the new hooks and catch more fish.

219 **Rabbits Context**

220 **High Interest Condition**

221 Stonyville is a small forested town in upstate New York. Each summer, a few dozen families move into small cottages in
222 Stonyville for the season. The vacationers enjoy boating, swimming, and trapping rabbits in the forest of Stonyville and they’ve
223 gotten to know each other over the course of many summers together. Most people who like to trap rabbits in the Stonyville
224 forest catch about a few rabbits each day and cook them for dinner. These people buy their traps from a small hunting shop
225 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
226 allows people to catch many more rabbits than they would with the older trap. There are 20 people who regularly trap rabbits
227 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
228 summer, the entire rabbit population would collapse and there would be no more rabbits in the Stonyville forest ever again.
229 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
230 the size and health of the rabbit population. Those people will be able to catch more rabbits more quickly, everyone else will
231 still be able to catch the same amount of rabbits as before, and the rabbit population would continue to be exactly as large and
232 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
233 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
234 because he would like to catch more rabbits faster. He is thinking about whether or not to buy the new traps. John wants to
235 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
236 rabbits and ask them. John manages to talk to all 20 people who regularly trap rabbits in the Stonyville forest. When John sits
237 down with each person to talk about the new traps, each person says something like this: “I would love to use those new traps
238 to catch more rabbits faster, but what would happen if everyone did that? If everyone used the new traps, all the rabbits would
239 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
240 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.

Rabbits Context

Low Interest Condition

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'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 is going to use the new traps. Under these circumstances, it's OK for me to use the new traps and catch more rabbits.

Birds Context

High Interest Condition

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 hunt more pheasants more quickly, everyone else will still be able to hunt 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 hunt 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 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 hunt 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 hunt more pheasants.

Birds Context

Low Interest Condition

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 hunt more pheasants more quickly, everyone else will still be able to hunt 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

302 to hunt more pheasants faster. He is thinking about whether or not to buy the new gun. John wants to find out what his
303 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
304 them. John manages to talk to all 20 people who regularly hunt pheasants in the Stonyville forest. When John sits down with
305 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
306 really only need to hunt a few pheasants a day, and I like to do that at a leisurely pace and spend all day hunting. I’m not
307 in any rush and I don’t need more pheasants. Besides, if everyone used the new gun, all the pheasants would disappear from
308 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
309 new gun, I wouldn’t want to use it anyway.” John thinks to himself: No one else is going to use the new gun. Under these
310 circumstances, it’s OK for me to use the new gun and hunt more pheasants.

311 **Mushrooms Context**

312 **High Interest Condition**

313 Stonyville is a small forested town in upstate New York. Each summer, a few dozen families move into small cottages in
314 Stonyville for the season. The vacationers enjoy hiking, camping, and foraging for mushrooms in the forest of Stonyville and
315 they’ve gotten to know each other over the course of many summers together. Most people who like to forage for mushrooms
316 gather a basket of mushrooms each day and cook them for dinner. These people buy their foraging gear from a small shop on
317 the main road. Up until now, the shop has sold one kind of mushroom foraging knife. But it has recently starting selling a
318 new kind of knife that allows people to gather mushrooms more quickly and therefore get many more mushrooms than they
319 would with the older knife. There are 20 people who regularly forage for mushrooms in Stonyville during the summer. If 7 or
320 more people started using the new knife for foraging, then by the end of the summer, the entire mushroom population would
321 collapse and there would be no more mushrooms in Stonyville ever again. None of the vacationers would want that to happen.
322 However, up to 3 people can use the new knife with no decrease at all in the mushroom population. Those people will be
323 able to gather more mushrooms more quickly, everyone else will still be able to gather the same number of mushrooms as
324 before, and the mushroom population would continue to be as healthy as in past years. It is impossible to tell what knife
325 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
326 the new knife yet, however. John would like to use the new knife because he would like to gather more mushrooms faster. He is
327 thinking about whether or not to buy the new knife. John wants to find out what his neighbors think about the new knife, so
328 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
329 all 20 people who regularly forage in the Stonyville. When John sits down with each person to talk about the new knife, each
330 person says something like this: “I would love to use that new knife to gather more mushrooms faster, but what would happen
331 if everyone did that? If everyone used the new knife, all the mushrooms would disappear from the forest. I don’t want that to
332 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
333 circumstances, it’s OK for me to use the new knife and gather more mushrooms.

334 **Mushrooms Context**

335 **Low Interest Condition**

336 Stonyville is a small forested town in upstate New York. Each summer, a few dozen families move into small cottages in
337 Stonyville for the season. The vacationers enjoy hiking, camping, and foraging for mushrooms in the forest of Stonyville and
338 they’ve gotten to know each other over the course of many summers together. Most people who like to forage for mushrooms
339 gather a basket of mushrooms each day and cook them for dinner. These people buy their foraging gear from a small shop on
340 the main road. Up until now, the shop has sold one kind of mushroom foraging knife. But it has recently starting selling a
341 new kind of knife that allows people to gather mushrooms more quickly and therefore get many more mushrooms than they
342 would with the older knife. There are 20 people who regularly forage for mushrooms in Stonyville during the summer. If 7 or
343 more people started using the new knife for foraging, then by the end of the summer, the entire mushroom population would
344 collapse and there would be no more mushrooms in Stonyville ever again. None of the vacationers would want that to happen.
345 However, up to 3 people can use the new knife with no decrease at all in the mushroom population. Those people will be
346 able to gather more mushrooms more quickly, everyone else will still be able to gather the same number of mushrooms as
347 before, and the mushroom population would continue to be as healthy as in past years. It is impossible to tell what knife
348 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
349 the new knife yet, however. John would like to use the new knife because he would like to gather more mushrooms faster. He is
350 thinking about whether or not to buy the new knife. John wants to find out what his neighbors think about the new knife, so
351 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
352 all 20 people who regularly forage in the Stonyville. When John sits down with each person to talk about the new knife, each
353 person says something like this: “I’m just not interested in using that new knife. I really only need to gather one basket of
354 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
355 to gather more mushrooms. Besides, if everyone used the new knife, all the mushrooms would disappear from the forest. I
356 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
357 wouldn’t want to use it anyway.” John thinks to himself: No one else is going to use the new knife. Under these circumstances,
358 it’s OK for me to use the new knife and gather more mushrooms.

359 **C. Moral Judgments: Supplemental Results.** In the main text, we report the data collapsed across scenario context. Here we
360 break the data down by context and look for an effect of context on moral judgment. We compared three logistic regressions to
361 predict answers to moral permissibility judgments. Model 1 includes only condition as a predictor. Model 2 includes context as
362 well as condition. Model 3 includes the context x condition interaction. Model 1 fits the data best on AIC and BIC measures.

363 Model 2 shows that there is no main effect of context. Model 3 shows that there is no significant interaction with context.
364 See Fig. S4 for model specifications and comparison statistics. Model comparisons were conducted in R with the package
365 ggstatsplot (1). Data is graphed by context in Fig. S3.

366 As indicated in the preregistration document, we anticipated that answers to the "rule" and "knowledge" control questions
367 would not explain the effect of condition on subjects' moral judgments. There were only two subjects (across all contexts) who
368 answered that there was a rule on the lake forbidding the use of the hook. Judgments about the presence of a rule, therefore,
369 do not explain subjects' moral permissibility judgments.

370 For the knowledge question, we expected the majority of subjects to answer that no one would know about John using the
371 new hook (as indicated in the vignette). However, some subjects reasonably assumed that the person who sold John the hook
372 would know about it or that knowledge of John using the hook would inevitably spread (they sometimes indicated this in the
373 free-response comment box at the end of the study). Do assumptions about knowledge of John's use of the new hook differ
374 across the conditions in a way that could possibly explain our findings? This seems unlikely for several reasons. First, we
375 analyzed the knowledge question by looking at what proportion of subjects in each condition judged that no one would find out
376 about John using the new hook (as opposed to thinking that 1 or more people would find out about it). There is a small but
377 significant difference across the conditions, but the difference goes in the opposite direction than one might expect. That is,
378 subjects were significantly more likely to say that no one will know about the new hook in the Low Interest Condition (20%) as
379 compared to the High Interest Condition (13%; $\chi^2(1) = 5.41, p = .020$, two-tailed, $V_{Cramer} = .09, CI_{95\%} [.01, .17], n = 608$).
380 Moreover, since we found a significant difference between conditions, we conducted a logistic regression to see if answers to the
381 knowledge question could fully explain our finding (as we indicated we would do in the preregistration document), and, in
382 fact, they could not. Once knowledge is added into the model along with condition, there is still a highly significant effect of
383 condition. See Fig. S5 for model comparison specifications and statistics.

384 As an even more conservative check, we can remove participants from our analysis who said that one or more people would find
385 out about John using the new hook. When we do this, there is still a significant difference between the conditions in the proportion
386 of subjects judging John's action morally acceptable with hardly any change in the effect size or confidence interval around the
387 effect (Low Interest: 76%, High Interest: 42%; $\chi^2(1) = 60.79, p < .001$, two-tailed, $V_{Cramer} = .35, CI_{95\%} [.26, .43], n = 507$).

388 **D. Explanation Judgments: Materials.** A different group of 200 subjects were recruited to make explanation judgments. The
389 procedure for this part of the study was similar to that of Study 1, except that subjects read the High Interest fishing scenario
390 used in Study 2a. 60 subjects were excluded for failing an attention check.

391 Subjects were presented with the scenario from the High Interest Condition, fishing context. Importantly, the characters
392 in the story do not use explicit universalization reasoning as they do in the moral judgment scenario, above, which could
393 bias subjects to choose universalization reasoning as the best explanation. Instead, subjects were randomly assigned to one
394 of two conditions, which varied the reason that the fishermen chose to abstain from using the powerful fishing hook. In one
395 condition, the fishermen simply say that using the new hooks is wrong (Wrong Condition), which captures the phenomenon of
396 the fishermen being interested but abstaining from using the hooks for moral reasons without adding additional information.
397 In the other condition, the fishermen say that they abstain from using the new hooks because of their allegiance to traditional
398 fishing methods (Traditionalism Condition; this variation of the scenario is used in Study 2b). The two conditions yield similar
399 patterns of results (see below). Only the results from the Wrong Condition are reported in the main text.

400 Subjects read the following introductory text: "On the following page, you will be asked to read a short story and answer a
401 few simple questions about it. After the survey there will be an opportunity to tell us if something was confusing or unclear."

402 Subjects then read one of the following scenarios.

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

406 Most people who like to fish in Lake Wilson catch a few fish each day and cook them for dinner. These people buy their
407 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
408 has recently starting selling a new kind of hook that allows people to catch many more fish than they would with the older
409 hook.

410 There are 20 people who regularly fish in Lake Wilson during the summer. If 5 or more people started using the new hook
411 for fishing, then by the end of the summer, the entire fish population would collapse and there would be no more fish in Lake
412 Wilson ever again. None of the vacationers would want that to happen. However, up to 3 people can use the new hooks with
413 no decrease at all in the size and health of the fish population. Those people will be able to catch more fish more quickly,
414 everyone else will still be able to catch the same amount of fish as before, and the fish population would continue to be exactly
415 as large and as healthy as in past years.

416 It is impossible to tell what hook someone is using from a distance, so if someone starts using the new hooks, no one else
417 will know about it. No one has bought the new hooks yet, however. John would like to use the new hooks because he would
418 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
419 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
420 and ask them. John manages to talk to the other 19 people who regularly fish in the lake. When John sits down with each
421 person to talk about the new hooks, each person says something like this: "**I would love to use those new hooks to
422 catch more fish faster, but I think it is important to use traditional fishing methods, so I'm not going to use
423 the new hook.**" [Note: Bold used here for emphasis. Subjects did not see text bolded.]

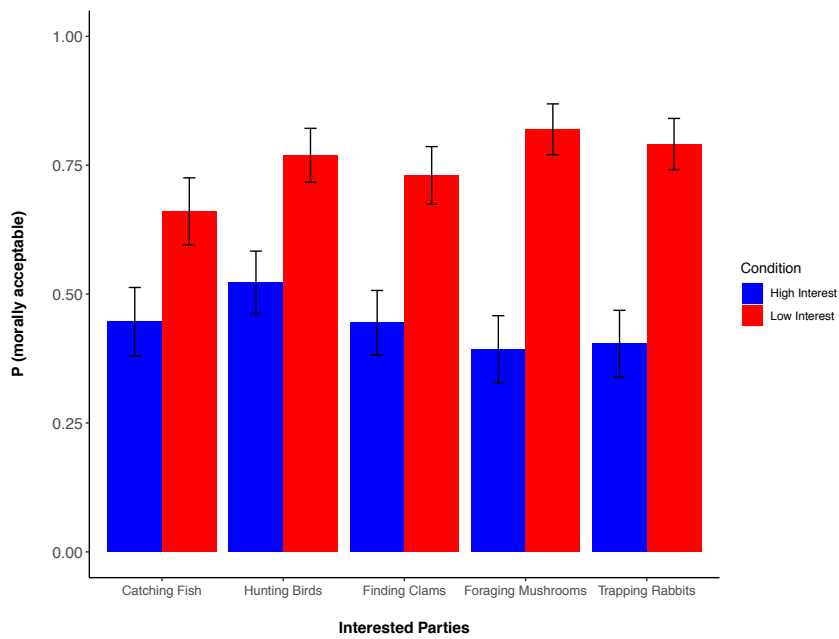


Fig. S3. Results of Study 2a, broken down by context.

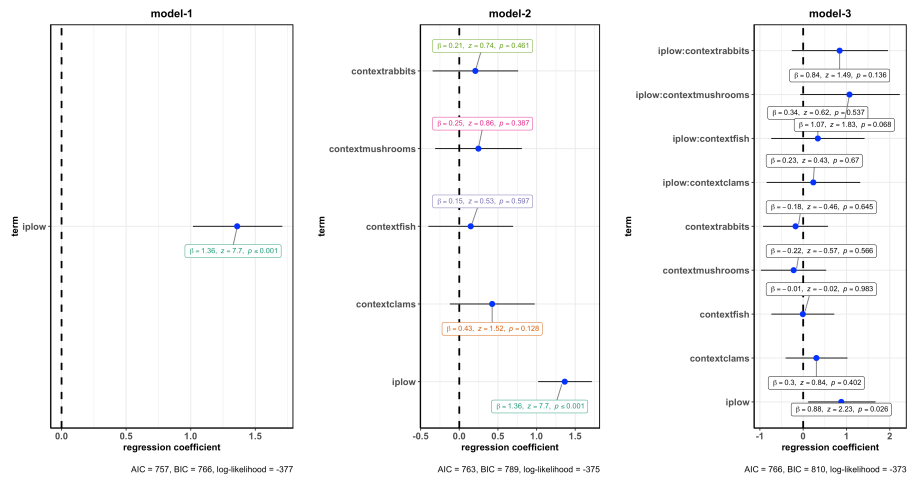


Fig. S4. Comparison of three possible models for Study 2a analysis. Model 1 includes only condition (High Interest/Low Interest) as a predictor. Model 2 includes context as well as condition. Model 3 includes the context x condition interaction. Model 1 fits the data best on AIC and BIC measures. Model 2 shows that there is no main effect of context. Model 3 shows that there is no significant interaction with context.

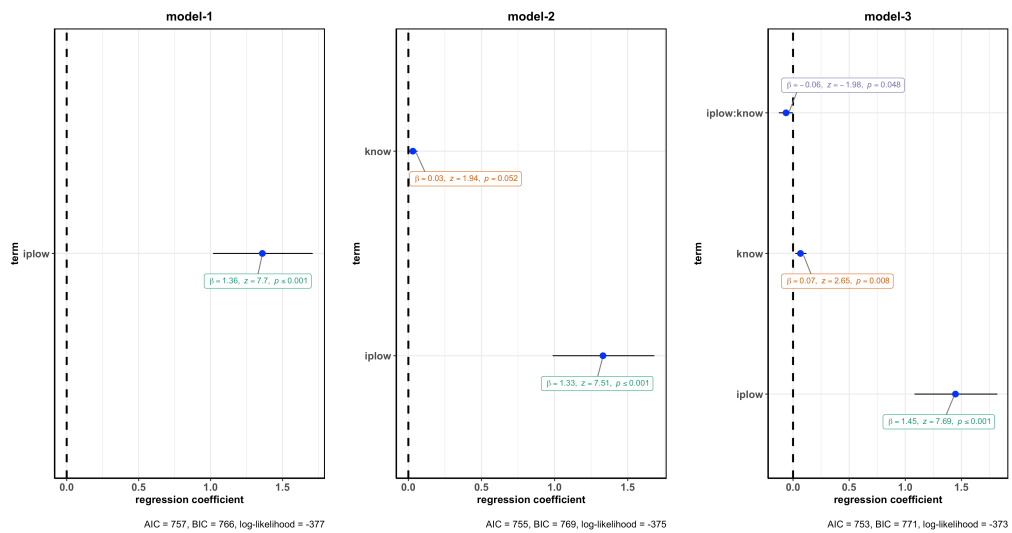


Fig. S5. Model comparisons for Study 2a. Can attributions of knowledge (the number of people who will know about John using the new hook) explain moral judgments? Knowledge attributions were entered into the logistic regression as integers. Three models are compared to predict moral permissibility judgments. The first model includes condition only. The second includes condition and knowledge. The third allows condition and knowledge to interact. The third model explains the data best, when considering AIC and BIC. Even when knowledge is entered into the model, there is still a large and significant impact of condition. Therefore, knowledge alone cannot entirely explain the findings.

424 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
425 new hooks and catch more fish.

426 **Wrong Condition**

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

430 Most people who like to fish in Lake Wilson catch a few fish each day and cook them for dinner. These people buy their
431 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
432 has recently starting selling a new kind of hook that allows people to catch many more fish than they would with the older
433 hook.

434 There are 20 people who regularly fish in Lake Wilson during the summer. If 5 or more people started using the new hook
435 for fishing, then by the end of the summer, the entire fish population would collapse and there would be no more fish in Lake
436 Wilson ever again. None of the vacationers would want that to happen. However, up to 3 people can use the new hooks with
437 no decrease at all in the size and health of the fish population. Those people will be able to catch more fish more quickly,
438 everyone else will still be able to catch the same amount of fish as before, and the fish population would continue to be exactly
439 as large and as healthy as in past years.

440 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
441 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
442 catch more fish faster. He is thinking about whether or not to buy the new hooks. John wants to find out what his neighbors
443 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
444 them. John manages to talk to the other 19 people who regularly fish in the lake. When John sits down with each person to
445 talk about the new hooks, each person says something like this: "**I would love to use those new hooks to catch more
446 fish faster, but I think it's wrong to do that, so I'm not going to use the new hook.**" John thinks to himself:
447 **No one else is going to use the new hooks. Under these circumstances, it's OK for me to use the new hooks
448 and catch more fish.** [Note: Bold used here for emphasis. Subjects did not see text bolded.]

449 Just like in Study 1, subjects were then asked to indicate whether each of four explanations were convincing explanations as
450 to why that was wrong. These explanations were as follows:

- 451 1. Because that person could have helped more people.
- 452 2. Because that was unfair.
- 453 3. Because if everyone did that, the outcome would be bad.
- 454 4. Because that harmed someone.

455 (For the format of these questions, see Fig. S1)

456 **Attention Check**

457 At the end of the survey, subjects read the following: "Thanks for taking the time to do this survey. This final question is
458 just here to confirm you are paying attention. Please do not answer this question (do not check any of the boxes). Instead,
459 write 'I am paying attention' in the box labeled 'Other' below. Thanks so much for your help!" Subjects were presented with
460 the following options: High School, Associate's Degree, Bachelor's Degree, Professional Degree or PhD, Some College. Subjects
461 were excluded if they checked any of the levels of education or failed to write "I am paying attention" in the free-response box.

462 **E. Explanation Judgments: Supplemental Results. Wrong Condition** Participants explicitly endorse universalization as a
463 good explanation for why John's behavior is wrong. Participants endorse universalization (86%) significantly more than harm
464 (25%, $\chi^2(1) = 54.5, p < .001$), utility-maximization (24%, $\chi^2(1) = 56.8, p < .001$) or fairness (56%, $\chi^2(1) = 16.3, p < .001$). See
465 Fig. S6.

466 **Traditionalism Condition** Participants explicitly endorse universalization as a good explanation for why John's behavior
467 is wrong. Participants endorse universalization (83%) significantly more than harm (23%, $\chi^2(1) = 50.6, p < .001$), utility-
468 maximization (19%, $\chi^2(1) = 57.9, p < .001$) or fairness (61%, $\chi^2(1) = 8.0, p < .005$). See Fig. S6.

469 **Study 2b.** This study was preregistered (<https://aspredicted.org/blind.php?x=hd589d>). We preregistered that we would stop
470 data collection when 250 subjects passed the control questions. Therefore, 431 subjects participated in this study, recruited
471 from Amazon MTURK through turkprime and were paid a small amount for their participation. 181 subjects were excluded
472 for failing control questions, leaving 250 subjects included.

473 Subjects read the following instructions prior to beginning the study: "On the following pages you will be asked to read a
474 short story and answer a few pages of questions about it. The story will remain the same from page to page; it is there for
475 your reference. Only the questions will change. After the survey there will be an opportunity to let us know if something was
476 confusing or unclear."

477 Subjects read the following stimuli. On each new page, the story appeared again for subjects' reference. For the first story
478 only, we present all the questions asked to subjects. After that, we present only the text of the scenarios.

479 **Threshold Condition**

480 —Page 1—

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

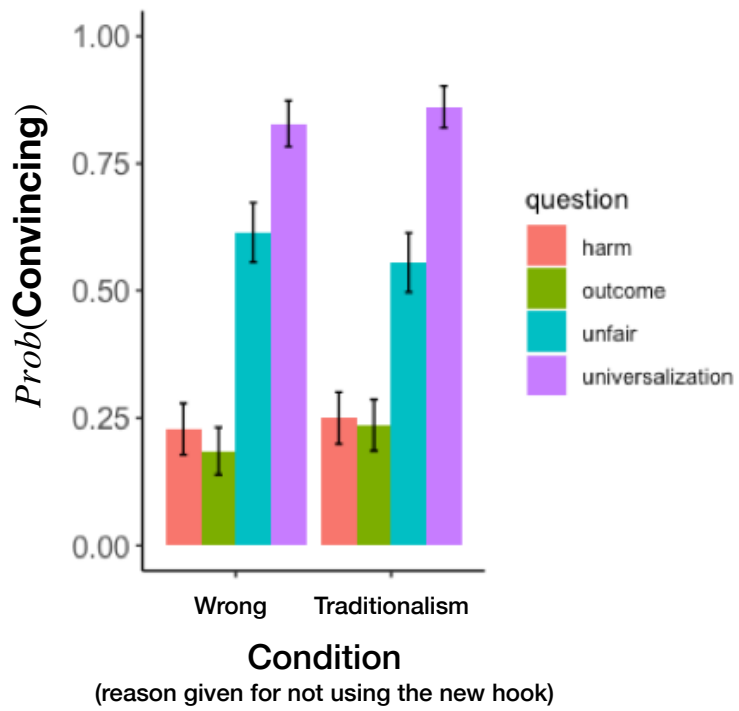


Fig. S6. Results of the explanation judgments from Study 2.

484 Most people who like to fish in Lake Wilson catch a few fish each day and cook them for dinner. These people buy their
485 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
486 has recently starting selling a new kind of hook that allows people to catch many more fish than they would with the older
487 hook.

488 There are 20 people who regularly fish in Lake Wilson during the summer. Only one vacationer, John, knows what will
489 happen if people start using the new hooks. John knows that if 5 or more people started using the new hook for fishing, then
490 by the end of the summer, the entire fish population would collapse and there would be no more fish in Lake Wilson ever again.
491 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
492 the size and health of the fish population. Those people will be able to catch more fish more quickly, everyone else will still be
493 able to catch the same amount of fish as before, and the fish population would continue to be exactly as large and as healthy
494 as in past years.

495 But, John knows that the rest of the vacationers assume nothing bad will happen if everyone starts using the new hook.

496 John wants to find out what his neighbors think about using the new hooks themselves, so he decides he is going to visit the
497 cottages of all the people who fish in Lake Wilson and ask them. John manages to talk to the other 19 people who regularly
498 fish in the lake. When John sits down with each person to talk about the new hooks, each person says something like this: “I
499 would love to use those new hooks to catch more fish faster, but I feel committed to using traditional fishing methods, so I’m
500 not going to use the new hook”.

501 It is impossible to tell what hook someone is using from a distance, so if someone starts using the new hooks, no one else
502 will know about it. No one has bought the new hooks yet. John would like to use the new hooks because he would like to catch
503 more fish faster.

504 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
505 new hooks and catch more fish.

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

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

508 How many people, besides John, would like to catch more fish? [Free Response.]

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

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

511 What do most of the vacationers (besides John) think will happen if everyone starts using the new hooks? [The fish
512 population will collapse/Nothing bad will happen to the fish population]

513 *Note: In the No Threshold Condition, this question reads: What do the vacationers think will happen if everyone starts*
514 *using the new hooks? [The fish population will collapse/Nothing bad will happen to the fish population]*

515 –Page 2–

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

517 –Page 3–

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

519 –Page 4–

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

522 **No Threshold Condition**

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

526 Most people who like to fish in Lake Wilson catch a few fish each day and cook them for dinner. These people buy their
527 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
528 has recently starting selling a new kind of hook that allows people to catch many more fish than they would with the older
529 hook.

530 There are 20 people who regularly fish in Lake Wilson during the summer. John knows that all of them can use the new
531 hooks with no decrease at all in the size and health of the fish population. And, John knows that the rest of the vacationers
532 also assume nothing bad will happen if everyone starts using the hook.

533 John wants to find out what his neighbors think about using the new hooks themselves, so he decides he is going to visit the
534 cottages of all the people who fish in Lake Wilson and ask them. John manages to talk to the other 19 people who regularly
535 fish in the lake. When John sits down with each person to talk about the new hooks, each person says something like this: “I
536 would love to use those new hooks to catch more fish faster, but I feel committed to using traditional fishing methods, so I’m
537 not going to use the new hook”.

538 It is impossible to tell what hook someone is using from a distance, so if someone starts using the new hooks, no one else
539 will know about it. No one has bought the new hooks yet. John would like to use the new hooks because he would like to catch
540 more fish faster.

541 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
542 new hooks and catch more fish.

543 **Exclusion Criteria:** 1. How many people, besides John, are interested in catching more fish? To be included in the study,
544 participants must report the value given for IP in the story (19).

- 545 2. How many people regularly fish in Lake Wilson in the summer? To be included, subjects must answer 19, 20, or 21.
546 3. How many people, besides John, are actually going to use the new hooks? To be included, subjects must answer 0.
547 4. Will it make a difference to the fish population if John uses the new hooks? There are three possible answers to this
548 question: (A) It will make the fish population more healthy (B) It will make the fish population less healthy (C) It will not
549 make a difference to the fish population. To be included, subjects must answer (C).
550 5. What do most of the vacationers (besides John) think will happen if everyone starts using the new hooks? [In the No
551 Threshold Condition: What do the vacationers think will happen if everyone starts using the new hooks?] There are two
552 possible answers to this question: (A) The fish population will collapse (B) Nothing bad will happen to the fish population.
553 Subjects must answer (B) to be included.

554 **Study 2b: Conceptual Replication 1.** This study was preregistered (see <http://aspredicted.org/blind.php?x=9mn2cf>). 350
555 subjects participated in this study, recruited from Amazon MTURK through turkprime and were paid a small amount for their
556 participation. 140 subjects were excluded for failing control questions.

557 Subjects read the following instructions prior to beginning the study: "On the following pages you will be asked to read a
558 short story and answer a few pages of questions about it. The story will remain the same from page to page; it is there for
559 your reference. Only the questions will change. After the survey there will be an opportunity to let us know if something was
560 confusing or unclear."

561 Subjects read the following stimuli. On each new page, the story appeared again for subjects' reference. For the first story
562 only, we present all the questions asked to subjects. After that, we present only the text of the scenarios.

563 **Threshold Condition**

564 —Page 1—

565 Lake Wilson is a small lake in upstate New York. Each summer, a few dozen families move into small cottages near the lake
566 for the season. The vacationers enjoy boating, swimming, and fishing in the lake and they've gotten to know each other over
567 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
568 dinner. These people buy their fishing gear from a small tackle shop on the main road. Up until now, the tackle shop has sold
569 one kind of fishing hook. But it has recently starting selling a new kind of hook that allows people to catch many more fish
570 than they would with the older hook.

571 There are 20 people who regularly fish in Lake Wilson during the summer. If 5 or more people started using the new hook
572 for fishing, then by the end of the summer, the entire fish population would collapse and there would be no more fish in Lake
573 Wilson ever again. None of the vacationers would want that to happen. However, up to 3 people can use the new hooks with
574 no decrease at all in the size and health of the fish population. Those people will be able to catch more fish more quickly,
575 everyone else will still be able to catch the same amount of fish as before, and the fish population would continue to be exactly
576 as large and as healthy as in past years.

577 It is impossible to tell what hook someone is using from a distance, so if someone starts using the new hooks, no one else
578 will know about it. No one has bought the new hooks yet, however. John would like to use the new hooks because he would
579 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
580 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
581 and ask them. John manages to talk to the other 19 people who regularly fish in the lake. When John sits down with each
582 person to talk about the new hooks, each person says something like this: "I would love to use those new hooks to catch more
583 fish faster, but I think it is important to use traditional fishing methods, so I'm not going to use the new hook."

584 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
585 new hooks and catch more fish.

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

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

588 How many people, besides John, would like to catch more fish? [Free Response.]

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

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

591 —Page 2—

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

593 —Page 3—

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

595 —Page 4—

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

598 **No Threshold Condition**

599 Lake Wilson is a small lake in upstate New York. Each summer, a few dozen families move into small cottages near the lake
600 for the season. The vacationers enjoy boating, swimming, and fishing in the lake and they've gotten to know each other over
601 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
602 dinner. These people buy their fishing gear from a small tackle shop on the main road. Up until now, the tackle shop has sold
603 one kind of fishing hook. But it has recently starting selling a new kind of hook that allows people to catch many more fish
604 than they would with the older hook. There are 20 people who regularly fish in Lake Wilson during the summer. All of them
605 can use the new hooks with no decrease at all in the size and health of the fish population.

606 It is impossible to tell what hook someone is using from a distance, so if someone starts using the new hooks, no one else
607 will know about it. No one has bought the new hooks yet, however. John would like to use the new hooks because he would
608 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
609 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
610 and ask them. John manages to talk to the other 19 people who regularly fish in the lake. When John sits down with each
611 person to talk about the new hooks, each person says something like this: “I would love to use those new hooks to catch more
612 fish faster, but I think it is important to use traditional fishing methods, so I’m not going to use the new hook.”

613 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
614 new hooks and catch more fish.

615 **Exclusion Criteria:** 1. How many people, besides John, are interested in catching more fish? To be included in the study,
616 participants must report the value given for IP in the story (19).

617 2. How many people regularly fish in Lake Wilson in the summer? To be included, subjects must answer 19, 20, or 21.

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

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

622 **F. Results.** As predicted by the universalization model, more participants judged the “no threshold” case permissible (91%) than
623 judged the “threshold case” permissible (56%, ($\chi^2(1) = 34.4, p < .001$, two-tailed, $V_{Cramer} = .40, CI_{95\%} [.31, .52], n = 210$, see
624 Fig. S7).

625 **Study 2b: Conceptual Replication 2.** This study was preregistered (<http://aspredicted.org/blind.php?x=5iy565>). 350 subjects
626 participated in this study, recruited from Amazon MTURK through turkprime and were paid a small amount for their
627 participation. 137 subjects were excluded for failing control questions. This study was identical to the original Study 2b
628 (described above) except that the reason that the fishermen give for abstaining from using the new fishing hook is different.
629 They say that they find using the new hook wrong, rather than abstaining from it due to their adherence to traditional fishing
630 practices. See below for precise text of stimuli. The questions asked of subjects and the exclusion criteria are identical to those
631 above. Only the text of the scenarios are given here.

632 **Threshold Condition**

633 Lake Wilson is a small lake in upstate New York. Each summer, a few dozen families move into small cottages near the lake
634 for the season. The vacationers enjoy boating, swimming, and fishing in the lake and they’ve gotten to know each other over
635 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
636 dinner. These people buy their fishing gear from a small tackle shop on the main road. Up until now, the tackle shop has sold
637 one kind of fishing hook. But it has recently starting selling a new kind of hook that allows people to catch many more fish
638 than they would with the older hook.

639 There are 20 people who regularly fish in Lake Wilson during the summer. If 5 or more people started using the new hook
640 for fishing, then by the end of the summer, the entire fish population would collapse and there would be no more fish in Lake
641 Wilson ever again. None of the vacationers would want that to happen. However, up to 3 people can use the new hooks with
642 no decrease at all in the size and health of the fish population. Those people will be able to catch more fish more quickly,
643 everyone else will still be able to catch the same amount of fish as before, and the fish population would continue to be exactly
644 as large and as healthy as in past years.

645 It is impossible to tell what hook someone is using from a distance, so if someone starts using the new hooks, no one else
646 will know about it. No one has bought the new hooks yet, however. John would like to use the new hooks because he would
647 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
648 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
649 and ask them. John manages to talk to the other 19 people who regularly fish in the lake. When John sits down with each
650 person to talk about the new hooks, each person says something like this: “I would love to use those new hooks to catch more
651 fish faster, but I think using them is wrong. So I’m not going to use the new hooks.”

652 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
653 new hooks and catch more fish.

654 **No Threshold Condition**

655 Lake Wilson is a small lake in upstate New York. Each summer, a few dozen families move into small cottages near the lake
656 for the season. The vacationers enjoy boating, swimming, and fishing in the lake and they’ve gotten to know each other over
657 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
658 dinner. These people buy their fishing gear from a small tackle shop on the main road. Up until now, the tackle shop has sold
659 one kind of fishing hook. But it has recently starting selling a new kind of hook that allows people to catch many more fish
660 than they would with the older hook. There are 20 people who regularly fish in Lake Wilson during the summer. All of them
661 can use the new hooks with no decrease at all in the size and health of the fish population.

662 It is impossible to tell what hook someone is using from a distance, so if someone starts using the new hooks, no one else
663 will know about it. No one has bought the new hooks yet, however. John would like to use the new hooks because he would
664 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
665 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

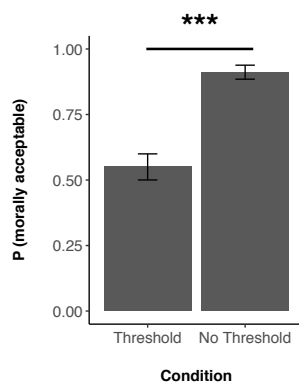


Fig. S7. Results from Study 2b: Conceptual Replication 1. There is a significant difference between the Threshold and No Threshold Conditions, as predicted by universalization (but not by a norms-based model). Error bars are standard error of the mean. *** indicates $p < 0.001$

666 and ask them. John manages to talk to the other 19 people who regularly fish in the lake. When John sits down with each
667 person to talk about the new hooks, each person says something like this: “I would love to use those new hooks to catch more
668 fish faster, but I think using them is wrong. So I’m not going to use the new hooks.”

669 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
670 new hooks and catch more fish.

671 **G. Results.** As predicted by the universalization model, and replicating the effect reported in the original Study 2b, more
672 participants judged the “no threshold” case permissible (83%) than judged the “threshold case” permissible (45%, ($\chi^2(1) =$
673 $33.35, p < .001$, two-tailed, $V_{Cramer} = .40, CI_{95\%} [.28, .52], n = 213$, see Fig. S8).

674 Study 3

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

681 Moral Judgment Group

682 Exclusion Criteria for the Moral Judgment Group: 1. How many people, besides John, would like to use the new motor oil
683 if there were no bad effects of doing so? To be included in the study, participants in the High Interest Condition must answer
684 19 and subjects in the Low Interest Condition must answer 0.

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

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

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

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

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

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

696 Condition: High Interest

697 Context: Tour Boat

698 –Page 1–

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

702 Everybody who makes their livelihood on the water uses a motor boat. The motor boats on Lake Wilson move around the
703 lake relatively slowly, mostly because the engines use a crude form of motor oil. Up until now, the boat shop in town has sold
704 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
705 quickly.

706 This would allow everyone who makes their livelihood on the lake to save time. All the fishermen would be able to move
707 around the lake faster and thereby catch the number of fish they need each day in less time. John would also save time because
708 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
709 oil, John can show everyone all three sites in less time.

710 The new motor oil also releases a compound, BetaX, into the water. Small amounts of BetaX in the water do not effect the
711 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
712 as many tours on Lake Wilson, but the people that make their livelihood by catching fish will have to find different jobs.

713 There are 20 total boaters who operate boats on Lake Wilson: John with his tour boat, and 19 fishermen with their fishing
714 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.
715 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
716 boaters will be able to drive around the lake faster, everybody else will drive around at the same speed as before, and the fish
717 population would continue to be exactly as large and as healthy as in past years.

718 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
719 about it. No one has bought the new motor oil yet, however. John would like to use the new motor oil because he would
720 like the ability to drive around the lake more quickly. He is thinking about whether or not to buy the new motor oil. John
721 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
722 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
723 the lake. When John sits down with each person to talk about the new motor oil, every one of them says something like this:
724 “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?”

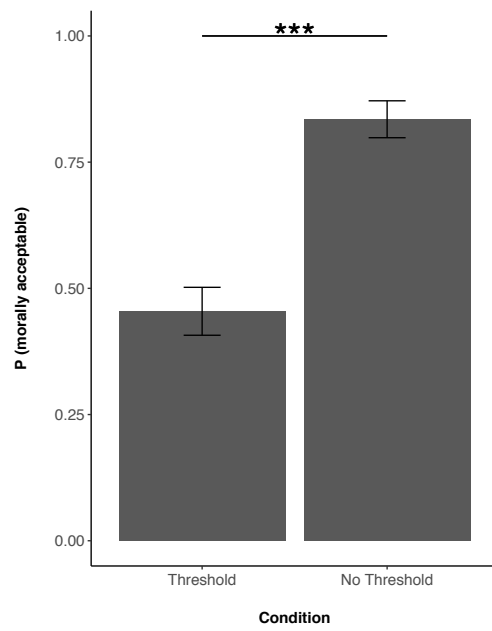


Fig. S8. Results from Study 2b: Conceptual Replication 2. There is a significant difference between the Threshold and No Threshold Conditions, as predicted by universalization (but not by a norms-based model). Error bars are standard error of the mean. *** indicates $p < 0.001$

725 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
726 use the new motor oil."

727 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
728 new motor oil and drive around the lake more quickly.

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

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

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

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

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

734 -Page 2-

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

736 -Page 3-

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

738 -Page 4-

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

741 **Condition: Low Interest**

742 **Context: Tour Boat**

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

746 Everybody who makes their livelihood on the water uses a motor boat. The motor boats on Lake Wilson move around the
747 lake relatively slowly, mostly because the engines use a crude form of motor oil. Up until now, the boat shop in town has sold
748 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
749 quickly.

750 This would allow everyone who makes their livelihood on the lake to save time. All the fishermen would be able to move
751 around the lake faster and thereby catch the number of fish they need each day in less time. John would also save time because
752 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
753 oil, John can show everyone all three sites in less time.

754 The new motor oil also releases a compound, BetaX, into the water. Small amounts of BetaX in the water do not effect the
755 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
756 as many tours on Lake Wilson, but the people that make their livelihood by catching fish will have to find different jobs.

757 There are 20 total boaters who operate boats on Lake Wilson: John with his tour boat, and 19 fishermen with their fishing
758 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.
759 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
760 boaters will be able to drive around the lake faster, everybody else will drive around at the same speed as before, and the fish
761 population would continue to be exactly as large and as healthy as in past years.

762 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
763 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
764 the ability to drive around the lake more quickly. He is thinking about whether or not to buy the new motor oil. John wants
765 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
766 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.
767 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
768 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
769 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
770 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
771 into the lake by the new motor oil, I wouldn't want to use it anyway."

772 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
773 new motor oil and drive around the lake more quickly.

774 **Condition: High Interest**

775 **Context: Fisherman**

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

779 Everybody who makes their livelihood on the water uses a motor boat. The motor boats on Lake Wilson move around the
780 lake relatively slowly, mostly because the engines use a crude form of motor oil. Up until now, the boat shop in town has sold
781 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
782 quickly.

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

785 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
786 oil, Steve can show everyone all three sites in less time.

787 The new motor oil also releases a compound, BetaX, into the water. Small amounts of BetaX in the water do not effect the
788 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
789 as many tours on Lake Wilson, but the people that make their livelihood by catching fish will have to find different jobs.

790 There are 20 total boaters who operate boats on Lake Wilson: Steve with his tour boat, and 19 fishermen with their
791 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.
792 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
793 boaters will be able to drive around the lake faster, everybody else will drive around at the same speed as before, and the fish
794 population would continue to be exactly as large and as healthy as in past years.

795 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
796 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
797 like to use the new motor oil because he would like the ability to drive around the lake more quickly. He is thinking about
798 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
799 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
800 to talk to other 19 people who operate boats on the lake (Steve and the 18 other fishermen). When John sits down with each
801 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
802 move around on the lake more quickly, but what would happen if everyone did that? If everyone used the new motor oil, all
803 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."

804 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
805 new motor oil and drive around the lake more quickly.

806 **Condition: Low Interest**

807 **Context: Fisherman**

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

811 Everybody who makes their livelihood on the water uses a motor boat. The motor boats on Lake Wilson move around the
812 lake relatively slowly, mostly because the engines use a crude form of motor oil. Up until now, the boat shop in town has sold
813 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
814 quickly.

815 This would allow everyone who makes their livelihood on the lake to save time. All the fishermen would be able to move
816 around the lake faster and thereby catch the number of fish they need each day in less time. Steve would also save time because
817 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
818 oil, Steve can show everyone all three sites in less time.

819 The new motor oil also releases a compound, BetaX, into the water. Small amounts of BetaX in the water do not effect the
820 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
821 as many tours on Lake Wilson, but the people that make their livelihood by catching fish will have to find different jobs.

822 There are 20 total boaters who operate boats on Lake Wilson: Steve with his tour boat, and 19 fishermen with their
823 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.
824 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
825 boaters will be able to drive around the lake faster, everybody else will drive around at the same speed as before, and the fish
826 population would continue to be exactly as large and as healthy as in past years.

827 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
828 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
829 like to use the new motor oil because he would like the ability to drive around the lake more quickly. He is thinking about
830 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
831 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
832 to talk to other 19 people who operate boats on the lake (Steve and the 18 other fishermen). When John sits down with each
833 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
834 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
835 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
836 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
837 wouldn't want to use it anyway."

838 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
839 new motor oil and drive around the lake more quickly.

840 **Expected Utility Group**

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

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

844 Subjects read the following instructions prior to beginning the study: "On the following pages you will be asked to read a
845 short story and answer questions about it. The questions on each page of the survey will be different, but the story will remain

846 the same. (The story will appear on each page for your reference.) After the survey there will be an opportunity to let us know
847 if something was confusing or unclear."

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

849 **Condition: High Interest**

850 **Context: Tour Boat**

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

854 Everybody who makes their livelihood on the water uses a motor boat. The motor boats on Lake Wilson move around the
855 lake relatively slowly, mostly because the engines use a crude form of motor oil. Up until now, the boat shop in town has sold
856 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
857 quickly.

858 This would allow everyone who makes their livelihood on the lake to save time. All the fishermen would be able to move
859 around the lake faster and thereby catch the number of fish they need each day in less time. John would also save time because
860 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
861 oil, John can show everyone all three sites in less time.

862 The new motor oil also releases a compound, BetaX, into the water. Small amounts of BetaX in the water do not effect the
863 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
864 as many tours on Lake Wilson, but the people that make their livelihood by catching fish will have to find different jobs.

865 There are 20 total boaters who operate boats on Lake Wilson: John with his tour boat, and 19 fishermen with their fishing
866 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.
867 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
868 boaters will be able to drive around the lake faster, everybody else will drive around at the same speed as before, and the fish
869 population would continue to be exactly as large and as healthy as in past years.

870 Now suppose that:

- 871 1. John decides to use the new motor oil
- 872 2. All of the fishermen also decide to use the new motor oil

873 Please answer the following questions.

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

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

876 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
877 likely than before / The same as before]

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

879 **Condition: Low Interest**

880 **Context: Tour Boat**

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

884 Everybody who makes their livelihood on the water uses a motor boat. The motor boats on Lake Wilson move around the
885 lake relatively slowly, mostly because the engines use a crude form of motor oil. Up until now, the boat shop in town has sold
886 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
887 quickly.

888 This would allow everyone who makes their livelihood on the lake to save time. All the fishermen would be able to move
889 around the lake faster and thereby catch the number of fish they need each day in less time. John would also save time because
890 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
891 oil, John can show everyone all three sites in less time.

892 The new motor oil also releases a compound, BetaX, into the water. Small amounts of BetaX in the water do not effect the
893 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
894 as many tours on Lake Wilson, but the people that make their livelihood by catching fish will have to find different jobs.

895 There are 20 total boaters who operate boats on Lake Wilson: John with his tour boat, and 19 fishermen with their fishing
896 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.
897 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
898 boaters will be able to drive around the lake faster, everybody else will drive around at the same speed as before, and the fish
899 population would continue to be exactly as large and as healthy as in past years.

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

901 Please answer the following questions.

902 **Condition: High Interest**

903 **Context: Fisherman**

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

907 Everybody who makes their livelihood on the water uses a motor boat. The motor boats on Lake Wilson move around the
908 lake relatively slowly, mostly because the engines use a crude form of motor oil. Up until now, the boat shop in town has sold
909 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
910 quickly.

911 This would allow everyone who makes their livelihood on the lake to save time. All the fishermen would be able to move
912 around the lake faster and thereby catch the number of fish they need each day in less time. Steve would also save time because
913 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
914 oil, Steve can show everyone all three sites in less time.

915 The new motor oil also releases a compound, BetaX, into the water. Small amounts of BetaX in the water do not effect the
916 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
917 as many tours on Lake Wilson, but the people that make their livelihood by catching fish will have to find different jobs.

918 There are 20 total boaters who operate boats on Lake Wilson: Steve with his tour boat, and 19 fishermen with their
919 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.
920 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
921 boaters will be able to drive around the lake faster, everybody else will drive around at the same speed as before, and the fish
922 population would continue to be exactly as large and as healthy as in past years.

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

924 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
925 Please answer the following questions.

926 **Condition: Low Interest**

927 **Context: Fisherman**

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

931 Everybody who makes their livelihood on the water uses a motor boat. The motor boats on Lake Wilson move around the
932 lake relatively slowly, mostly because the engines use a crude form of motor oil. Up until now, the boat shop in town has sold
933 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
934 quickly.

935 This would allow everyone who makes their livelihood on the lake to save time. All the fishermen would be able to move
936 around the lake faster and thereby catch the number of fish they need each day in less time. Steve would also save time because
937 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
938 oil, Steve can show everyone all three sites in less time.

939 The new motor oil also releases a compound, BetaX, into the water. Small amounts of BetaX in the water do not effect the
940 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
941 as many tours on Lake Wilson, but the people that make their livelihood by catching fish will have to find different jobs.

942 There are 20 total boaters who operate boats on Lake Wilson: Steve with his tour boat, and 19 fishermen with their
943 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.
944 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
945 boaters will be able to drive around the lake faster, everybody else will drive around at the same speed as before, and the fish
946 population would continue to be exactly as large and as healthy as in past years.

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

948 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
949 Please answer the following questions.

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

952 Study 4a

953 **Materials.** This study was preregistered (see <https://aspredicted.org/blind.php?x=c44jr2>). 700 subjects participated in this
954 study, recruited from Amazon MTURK through turkprime and were paid a small amount for their participation. Subjects
955 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
956 population; once 7 people use the new hook the fish population will go extinct. 10,13 Condition: Up to 10 people can use the
957 new hook with no effect on the fish population; once 13 people use the new hook the fish population will go extinct.

958 Each subject was told that N people are interested in using the new hook. Subjects answered a series of questions about
959 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
960 without replacement from the following values until all values of N were seen by each subject: 0,2,7,8,13,19.

961 Pre-registered Exclusion Criteria:

962 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
963 in the study, participants must report the value given for N in the story. Any participant who gives the wrong answer for any
964 values of N is completely excluded from the study.

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.

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

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

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

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

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

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

983 –Page 1–

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

987 Most people who like to fish in Lake Wilson catch a few fish each day and cook them for dinner. These people buy their
988 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
989 has recently starting selling a new kind of hook that allows people to catch many more fish than they would with the older
990 hook.

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

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

1000 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
1001 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.
1002 When John sits down with each person to talk about the new hooks, this is what he finds out:

1003 **N people say something like this:** "I would love to use those new hooks to catch more fish faster, but what would
1004 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
1005 happen, so I'm not going to use the new hook."

1006 **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
1007 fish a day, and I like to do that a leisurely pace and spend all day fishing."

1008 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
1009 new hooks and catch more fish.

1010 Please answer the following comprehension questions, so we know that you read the story.

1011 If John starts using the new hooks, how many people will know about it? [Free Response.]

1012 How many people, besides John, would like to use the new hooks if there were no bad effects of doing so? [Free Response.]

1013 How many people regularly fish in Lake Wilson in the summer? [Free Response.]

1014 How many people, besides John, are actually going to use the new hooks? [Free Response.]

1015 –Page 2–

1016 Is it morally acceptable for John to use the new hooks? [Yes/No]

1017 –Page 3–

1018 Is there a rule on the lake that the new hooks are forbidden? [Yes/No]

1019 –Page 4–

1020 Will it make a difference to the fish population if John uses the new hooks? [It will make the fish population more healthy/It
1021 will make the fish population less healthy/It will not make a difference to the fish population]

1022 Subjects repeated this process until all the values of N were seen. The color of the bolded text was changed for each new
1023 value of N .

1024 **Supplemental Results/Statistical Details.** A linear regression shows that there was no significant impact of the number of
1025 interested parties on judgments of how many people would know that John was using the new hook ($F = 0.39, t = -0.63, p =$
1026 0.53). Moreover, when knowledge judgments are entered into a regression with interested parties (as well as the interaction),
1027 knowledge is not a significant predictor of moral judgments ($z = -0.14, p = 0.89$) nor is the knowledge \times interested parties
1028 interaction ($z = 0.79; p = 0.43$).

1029 **Study 4b**

1030 **Materials.** This study was pre-registered (see <http://aspredicted.org/blind.php?x=at7cs8>). 300 subjects participated in this
1031 study, recruited from Amazon MTURK through turkprime and were paid a small amount for their participation. Subjects were
1032 randomly assigned to one of two conditions (4,7 Condition and 10,13 Condition) and one of three collective action questions
1033 (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
1034 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
1035 effect on the fish population; once 13 people use the new hook the fish population will go extinct. The three collective action
1036 questions were Everyone's Expected Utility, John's Expected Utility, and Frustrated Means (described below).

1037 Each subject read the story and was asked what would happen if N subjects used the new hook (exact wording varied
1038 depending on the collective action curve, see below). N was chosen at random without replacement from the following values
1039 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
1040 EU, subjects see $N+1$.]

1041 Pre-Registered Exclusion Criteria:

1042 How many people regularly fish in Lake Wilson in the summer? To be included, subjects must answer 20. Any participant
1043 who gives the wrong answer for any values of N is completely excluded from the study.

1044 Exclusions: 18 subjects were excluded from the experiment for failing the control question.

1045 Subjects read the following instructions prior to beginning the study: "On the following pages you will be asked to read a
1046 short story and answer some questions about it. After the survey there will be an opportunity to let us know if something was
1047 confusing or unclear."

1048 Below, we show the stimuli for the 4,7 Condition. The 10,13 condition is identical, except that the numbers 4 and 7 were
1049 replaced by the numbers 10 and 13 (respectively) in the third paragraph.

1050 Lake Wilson is a small lake in upstate New York. Each summer, a few dozen families move into small cottages near the lake
1051 for the season. The vacationers enjoy boating, swimming, and fishing in the lake and they've gotten to know each other over
1052 the course of many summers together.

1053 Most people who like to fish in Lake Wilson catch a few fish each day and cook them for dinner. These people buy their
1054 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
1055 has recently starting selling a new kind of hook that allows people to catch many more fish than they would with the older
1056 hook.

1057 There are 20 people who regularly fish in Lake Wilson during the summer. If 7 or more people started using the new hook
1058 for fishing, then by the end of the summer, the entire fish population would collapse and there would be no more fish in Lake
1059 Wilson ever again. None of the vacationers would want that to happen. However, up to 4 people can use the new hooks with
1060 no decrease at all in the size and health of the fish population. Those people will be able to catch more fish more quickly,
1061 everyone else will still be able to catch the same amount of fish as before, and the fish population would continue to be exactly
1062 as large and as healthy as in past years.

1063 The last two sentences of the story varied by collective action curve question:

1064 Fishermen's Expected Utility: Think about the well-being of all the vacationers combined. How would the vacationers be
1065 affected if the following number of people used the new hooks?

1066 John's Expected Utility: John is one of the people who visits Lake Wilson each summer. John would like to use the new
1067 hooks. How would John be affected if the following number of people also used the new hooks?

1068 Frustrated Means: John is one of the people who visits Lake Wilson each summer. He would like to use the new hooks to
1069 catch more fish than he did last year using the old hooks. Some of John's neighbors are also thinking about using the new
1070 hooks.

1071 Subjects were then asked the following questions, depending on the collective action curve question:

1072 Fishermen's Expected Utility: Imagine that N people use the new hooks. How would the vacationers be affected? [N is
1073 replaced with the values indicated above.] Subjects give a response ranging from -50 to 50 with the scale anchored as follows:
1074 A lot worse off, a little worse off, not affected, a little better off, a lot better off.

1075 John's Expected Utility: Imagine that John and N other people use the new hooks. How would John be affected? [N is
1076 replaced with the values indicated above.] Subjects give a response ranging from -50 to 50 with the scale anchored as follows:
1077 A lot worse off, a little worse off, not affected, a little better off, a lot better off.

1078 Frustrated Means: Imagine that John and N other people use the new hooks. How likely is it that John will be able to catch
1079 more fish than he did last year? [N is replaced with the values indicated above.] Subjects give a response ranging from -50 to
1080 50 with the scale anchored as follows: very unlikely, somewhat unlikely, neither likely nor unlikely, somewhat likely, very likely.

1081 At the end, all subjects were asked the following question: How many people regularly fish in Lake Wilson in the summer?
1082 [Free Response.]

1083 **Supplemental Results/Statistical Details.** We next describe our model fitting and model comparison procedure for Study 4b.

1084 **Model fit using empirical utility function:** Using Equation 1 from the main text (our model of universalization)

$$1085 \quad Prob(\text{Acceptable}; \text{Universalization}) = \frac{1}{1 + e^{\tau(U(0) - U(n_i)) + \beta}} \quad [1]$$

1086 we assigned a probability to each moral judgment collected in Study 4a, restricting our analysis to those participants whose
1087 moral judgments were not uniform across all values of n_i (the number of interested parties). Equation [1] specifies these
1088 probabilities given $U(0) - U(n_i)$ and two free parameters τ and β . In Study 4b we collected an empirical measure of $U(0) - U(n_i)$
1089 for each value of n_i required to model moral judgment data from Study 4a (i.e., 1, 3, 8, 9, 14, and 20) crossed with each of the
1090 relevant utility threshold conditions (i.e., 4-7 or 10-13). We computed the mean of $U(0) - U(n_i)$ across Study 4b participants
1091 for each of these points, and substituted those means into Equation [1]. Using the “optim” function in R, we selected values
1092 of τ and β which, when applied uniformly across all moral judgments and all participants, maximized the likelihood of the
1093 moral judgment data given our model. We applied $\tau = 2$ and $\beta = -3$ as starting points for the optimization procedure, and we
1094 obtained the optimized values $\tau = 0.057$ and $\beta = -1.16$. The minimized sum of the negative log likelihood was $nll = 302.3$ and
1095 the AIC was calculated as $2p + 2nll = 608.8$ where $p = 2$ is the number of free parameters.

1096 **Model fit using idealized utility function:** We next performed the same procedure but substituted idealized values of $U(0) - U(n_i)$
1097 in place of the empirically derived ones described above. The idealized utility function was defined as having a flat positive
1098 utility before the critical threshold and a flat negative utility after the threshold. The precise model predictions within the
1099 "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
1100 because we did not gather subject moral judgments in that range, so there is no data to predict. Therefore, any of the possible
1101 ideal models described in the main text (see the introduction to Study 4) would make nearly identical predictions. We used a
1102 step-function model that is flat before the threshold and after the threshold and fit it to the data using a 2-parameter sigmoid,
1103 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,
1104 for $n_i < \text{threshold}$, $U(0) - U(n_i) = 1$ and for $n_i > \text{threshold}$, $U(0) - U(n_i) = 0$. We fit parameters as above except with
1105 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
1106 likelihood was $nll = 309$ and the AIC was calculated as $2p + 2nll = 621$ where $p = 2$.

1107 In the main text, we include only the data from the Fishermen’s Expected Utility Condition. Here, we report the data
1108 for the other two conditions. The empirical utility functions produced by the John’s Expected Utility and Frustrated Means
1109 Conditions can be found in Figs. S9 and S10 respectively.

1110 **Comparing alternative measures of $U(n)$** As an alternative method of modeling the data without restricting the analysis to
1111 non-uniform responders, we also conducted the following pre-registered analysis of all the collective action data. The purpose
1112 of this analysis was to compare the likelihood of the data from Study 4a given our universalization model when applying each
1113 of the three different utility measures collected in Study 4b: 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 $Prob(\text{Acceptable})$ corresponding to the proportion of participants who judged John’s action impermissible
even when $n_i = 0$ and the proportion of 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

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

1114 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.
1115 We did this separately for each measure of $U(0) - U(n_i)$ collected in Study 4b.

1116 We compared the model fits using their AIC (see Table S2). Individual AIC values are difficult to interpret, so we re-scale
1117 AIC to

$$1118 \quad \Delta_i = AIC_i - AIC_{min}$$

1119 where AIC_{min} is the minimum AIC value of the set of models to be compared. Therefore, Δ_i can be interpreted as the
1120 information loss of using a model other than the best-fitting one and allows for a strength-of-evidence comparison and the
1121 generation of a ranked list of the models (2). The convention for comparing Δ_i values is generally taken to be as follows:
1122 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
1123 models with $\Delta_i > 10$ are taken to have almost no support .

1124 Fishermen’s EU has the lowest AIC of the three models for both thresholds. For the 4,7 threshold, John’s EU has substantial
1125 support when compared to the best model while Frustrated Means has less support. For the 10,13 threshold, John’s EU and
1126 Frustrated Means both have less support than the best model. This suggests that across the two conditions, there is somewhat
1127 greater support for the model that uses Fishermen’s EU to predict moral judgments.

1128 However, none of the models were clearly and consistently superior to all the others across both thresholds (see (2)). For
1129 this reason, we conducted Study 3 (see main text) which differentiates between the models.

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 4b data. These models predict the moral acceptability data reported in Study 4a.

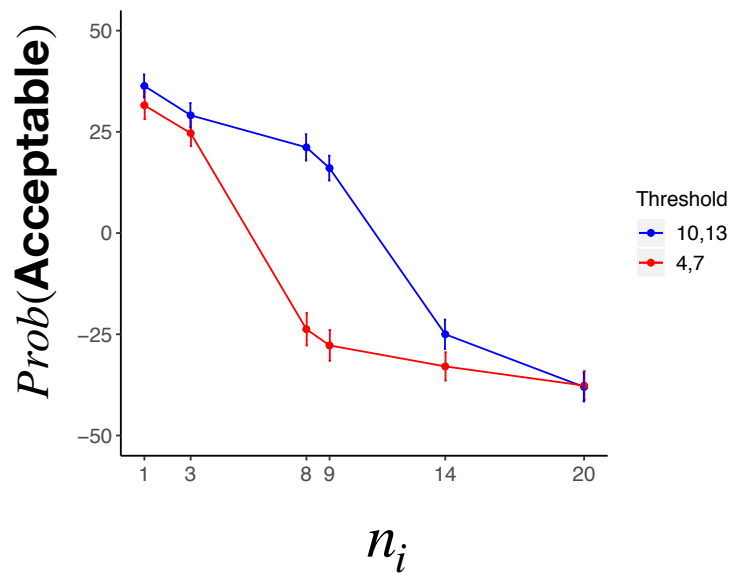


Fig. S9. Empirical utility function produced by asking subjects about John's Expected Utility.

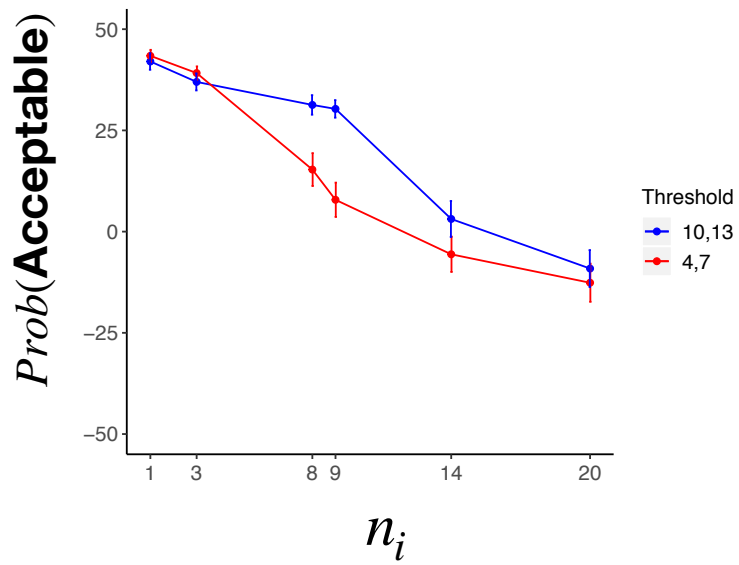


Fig. S10. Curve produced by asking subjects about the likelihood that John's purpose would be undermined.

1130 **Study 5**

1131 **Materials.** 4-11 year old children were recruited for participation in the Boston Common. Parents gave informed consent for
1132 their children to participate. Testing took place in a quiet location outdoors in the Common. Testing sessions were video
1133 recorded and checked in case there was a question about a subject's response. Responses were coded online by a live coder.
1134 Subjects were given a small prize for participating.

1135 191 subjects were included in the analysis (mean age = 7.5 years). 28 additional children were recruited but excluded from
1136 the analysis for failing the screening or control questions.

1137 Children were first told simple stories accompanied by pictures to verify their competence with English and to ensure that
1138 they could use "OK" and "not OK" to make simple moral judgments. Subjects were not corrected if they got any of the
1139 screening questions wrong.

1140 Pictures and animations used for this study are available at github.com/sydneylevine/universalization.

1141 Story 1: This is a story about Billy and Johnny. In this story, Billy hits Johnny.

1142 Was that OK or not OK? [Correct Answer: Not OK]

1143 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
1144 Anne.

1145 Was that OK or not OK? [Correct Answer: OK]

1146 Story 3: Sometimes Jimmy is all alone and sometimes he's with his friends. When he is all alone sometimes he does things
1147 that are OK and sometimes he does things that are not OK.

1148 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
1149 one will see him do it.

1150 Q: If Jimmy steps on the bunny, will anyone see him do it? [Correct Answer: No]

1151 DV: Is it OK or not OK for Jimmy to step on the bunny? [Correct Answer: Not OK]

1152 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
1153 for his mom, no one will see him do it.

1154 Q: If Jimmy makes a picture for his mom, will anyone see him do it? [Correct Answer: No]

1155 DV: Is it OK or not OK for Jimmy to make a picture for him mom? [Correct Answer: OK]

1156 If subjects got any of the screening stories wrong, the study ended after the screening. For subjects that passed the screening,
1157 they went on to the main study. Subjects listened to two stories, counterbalancing condition (High Interest or Low Interest)
1158 and Context (Buckets or Rocks). They were asked a series of control questions during the story. If a child got a control question
1159 wrong, the experimenter repeated that part of the story again and asked the question again. If the child still got the question
1160 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
1161 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.
1162 Analysis of justifications is not presented in this paper.

1163 **Condition: High interest**

1164 **Context: Buckets**

1165 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.

1166 Mary has a toy castle. And she has a bucket. All the other kids have toy castles too and they all have buckets.

1167 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
1168 buckets with water and pour it on their castles.

1169 Q: What does Mary want to do?

1170 Q: Do the other kids want to do that?

1171 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
1172 the lake, then there would be no more water in the lake for the fish.

1173 Q: What would happen if just one person took water from the lake?

1174 If don't know, follow up with: Would there still be water left for the fish?

1175 Q: What would happen if everyone took water from the lake?

1176 If don't know, follow up with: Would there still be water left for the fish?

1177 The kids don't want that to happen. So they never take water from the lake.

1178 Q: Do the kids ever take water from the lake?

1179 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
1180 her castle, no one will see her do it. And she'll do it just this once.

1181 Q: If Mary takes water from the lake, will anyone see her do it?

1182 So, I have a question for you about Mary, are you ready?

1183 DV: Is it OK or not OK for Mary to take water from the lake?

1184 Explain: Why do you think it would be OK/not-OK?

1185 **Condition: Low interest**

1186 **Context: Buckets**

1187 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.

1188 Mary has a toy castle. And she has a bucket. All the other kids have toy castles too.

1189 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
1190 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
1191 water in the lake for the fish.

1192 Q: What would happen if just one person took water from the lake?

1193 If don't know, follow up with: Would there still be water left for the fish?

1194 Q: What would happen if everyone took water from the lake?

1195 If don't know, follow up with: Would there still be water left for the fish?

1196 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
1197 dry. They never take water from the lake because they don't want the water on their castles. Only Mary wants to do that.

1198 Q: What does Mary want to do?

1199 Q: Do the other kids want to do that?

1200 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
1201 her castle, no one will see her do it. And she'll do it just this once.

1202 Q: If Mary takes water from the lake, will anyone see her do it?

1203 So, I have a question for you about Mary, are you ready?

1204 DV: Is it OK or not OK for Mary to take water from the lake?

1205 Explain: Why do you think it would be OK/not-OK?

1206 **Condition: High interest**

1207 **Context: Rocks**

1208 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
1209 made of lots of rocks.

1210 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
1211 other kids have rock collections, too. They would all love to take the rocks from the path and put them in their rock collections.

1212 Q: What does Jacob want to do?

1213 Q: Do the other kids want to do that?

1214 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
1215 the rocks for their rock collections, then there would be no more rocks left on the path.

1216 Q: What would happen if just one person took a rock for his rock collection?

1217 If don't know, follow up with: Would there still be rocks left on the path?

1218 Q: What would happen if everyone took the rocks for their rock collections?

1219 If don't know, follow up with: Would there still be rocks left on the path?

1220 The kids don't want that to happen. So they never take the rocks.

1221 Q: Do the kids ever take the rocks from the path?

1222 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
1223 him do it. And he'll do it just this once.

1224 Q: If Jacob takes a rock from the path, will anyone see him do it?

1225 So, I have a question for you about Jacob, are you ready?

1226 DV: Is it OK or not OK for Jacob to take a rock from the path?

1227 Explain: Why do you think it would be OK/not-OK?

1228 **Condition: Low interest**

1229 **Context: Rocks**

1230 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
1231 made of lots of rocks.

1232 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
1233 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
1234 for their rock collections, then there would be no more rocks left on the path.

1235 Q: What would happen if just one person took a rock for his rock collection?

1236 If don't know, follow up with: Would there still be rocks left on the path?

1237 Q: What would happen if everyone took the rocks for their rock collections?

1238 If don't know, follow up with: Would there still be rocks left on the path?

1239 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
1240 collections. So the other kids never take rocks from the path. Only Jacob wants to do that.

1241 Q: What does Jacob want to do?

1242 Q: Do the other kids want to do that?

1243 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
1244 him do it. And he'll do it just this once.

1245 Q: If Jacob takes a rock from the path, will anyone see him do it?

1246 So, I have a question for you about Jacob, are you ready?

1247 DV: Is it OK or not OK for Jacob to take a rock from the path?

1248 Explain: Why do you think it would be OK/not-OK?

1249 **H. Adults.** 201 adult subjects received the same stimuli as children, except they did not see the screening stories. Adults were
1250 recruited from Amazon MTURK through turkprime and were paid a small amount for their participation. Thirty-three subjects
1251 were excluded for failing control questions. Like children, adults saw two stories, counterbalanced for condition (High Interest
1252 or Low Interest) and context (Buckets or Rocks). The data from both stories is analyzed.

1253 **Supplemental Results/Statistical Details.** We planned to analyze the data from children using a Bayesian analysis, which avoids
1254 the need for a pre-determined sample size (3–6), due to our uncertainty about the effect size for this study and the difficulty of
1255 recruiting subjects. In the results section, we report the Bayes Factor as the main item of analysis, though we also include
1256 p -values to conform with current standards for data reporting.

1257 To test for an effect of age, we compared three models of the data. Model-1 includes condition only, Model-2 includes the
1258 main effect of age, Model-3 includes an age \times condition interaction. In the latter two models, there is no significant effect of
1259 age or the age \times condition interaction and the data is best explained by the model that includes only condition on AIC and
1260 BIC. See Fig. S12. Fig. S11 shows subject responses by age.

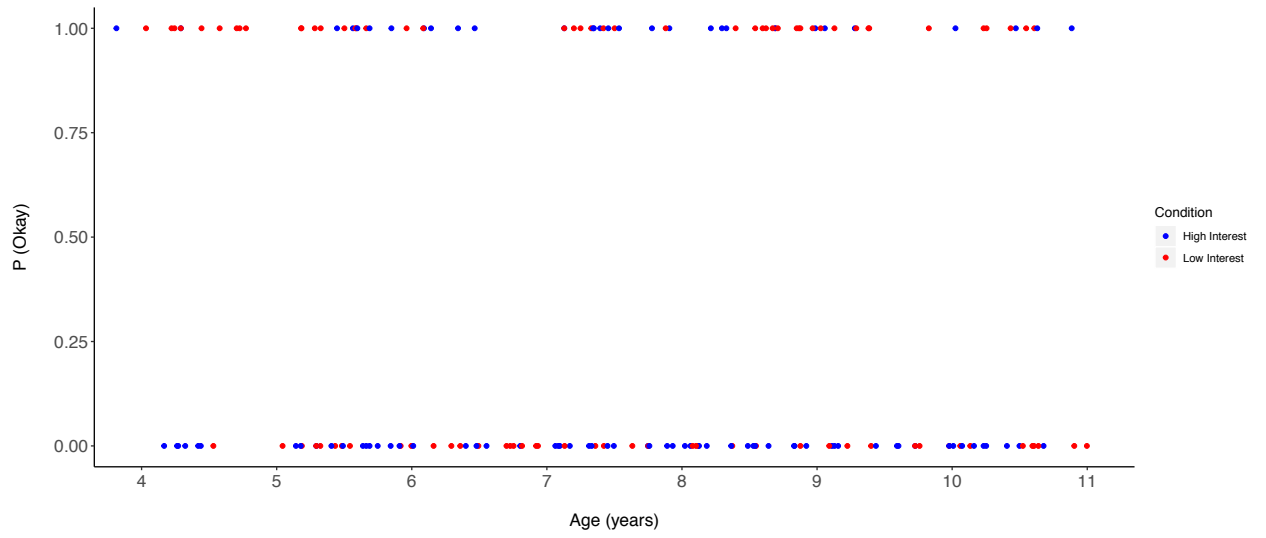


Fig. S11. Scatter plot of children's responses by age and condition. Only answers to the first story are graphed.

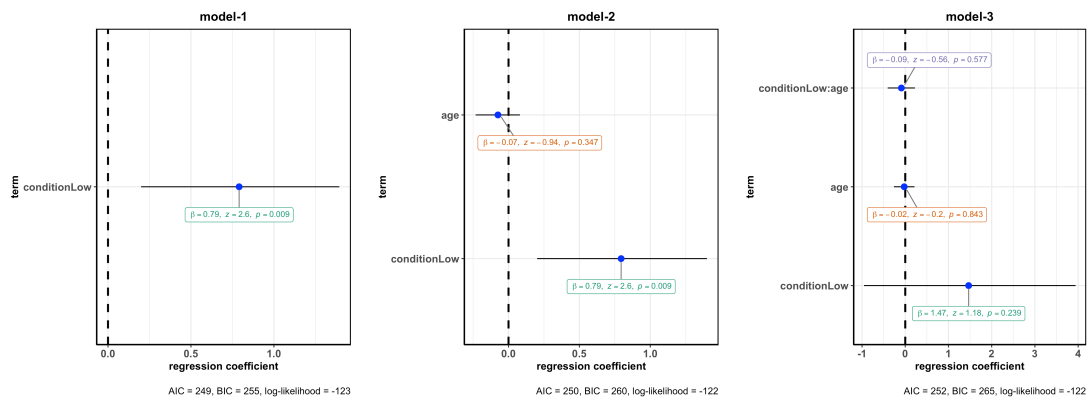


Fig. S12. We compared three models of the data. Model-1 includes condition only, Model-2 includes the main effect of age, Model-3 includes an age \times condition interaction. In the latter two models, there is no significant effect of age or the age \times condition interaction and the data is best explained by the model that includes only condition on AIC and BIC.

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