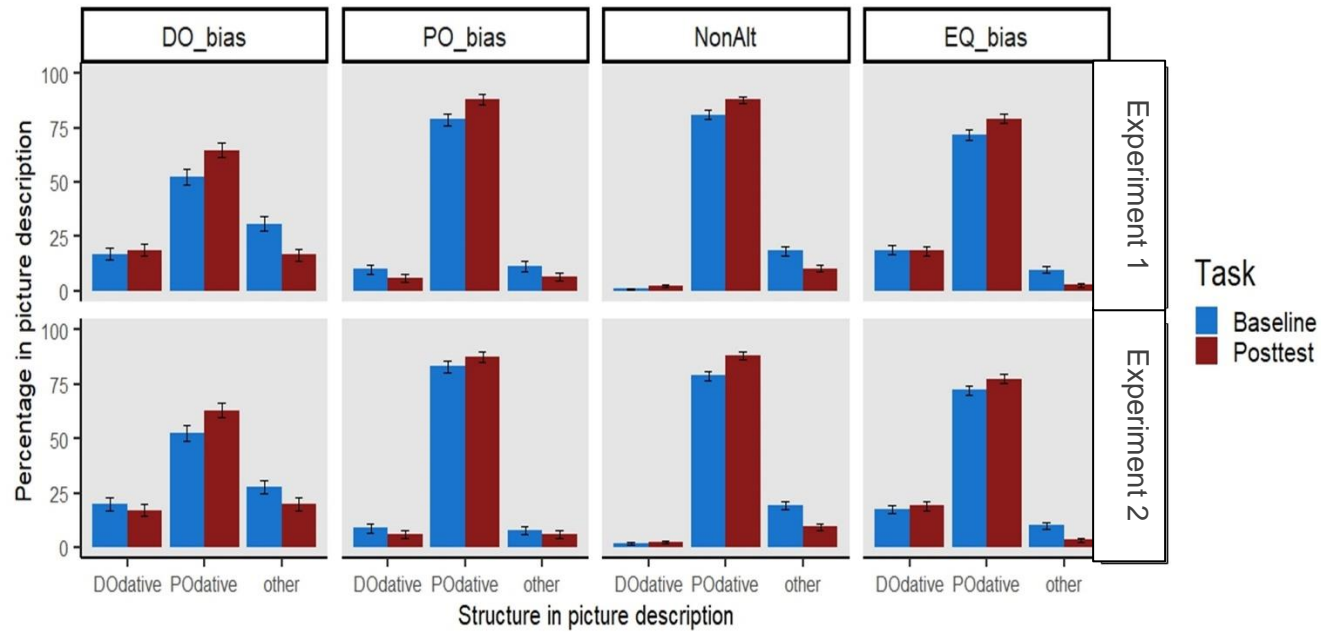


**Figure S1.** Experiments 1 and 2. Percentage of sentences produced in picture descriptions by structure, task, and verb type.



*Note.* Error bars represent standard errors of the means.

**Table S1.** Experimental items used in the priming task. DO- and PO-bias verbs listed in prime sentences.

1.	Prime sentence	The grandmother will tell/whisper the boy the story. The grandmother will tell/whisper the story to the boy.
	Target sentence	The tailor will show the model the dress. The tailor will show the dress to the model.
2.	Prime sentence	The seller will charge/send the buyer the goods. The seller will charge/send the goods to the buyer.
	Target sentence	The millionaire will give the librarian the house. The millionaire will give the house to the librarian.
3.	Prime sentence	The wizard will tell/whisper the queen the secret. The wizard will tell/whisper the secret to the queen.
	Target sentence	The maid will serve the guests the soup. The maid will serve the soup to the guests.
4.	Prime sentence	The bank will pay/hand the winner the jackpot. The bank will pay/hand the jackpot to the winner.
	Target sentence	The principal will teach the class the formula. The principal will teach the formula to the class.
5.	Prime sentence	The company will owe/transfer the creditor the money. The company will owe/transfer the money to the creditor.
	Target sentence	The schoolgirl will show the teacher the drawing. The schoolgirl will show the drawing to the teacher.

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6.	Prime sentence	The broker will charge/send the client the commission. The broker will charge/send the commission to the client.
	Target sentence	The CEO will give the driver the car. The CEO will give the car to the driver.
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7.	Prime sentence	The customer will pay/hand the driver the fare. The customer will pay/hand the fare to the driver.
	Target sentence	The waiter will serve the journalist the wine. The waiter will serve the wine to the journalist.
<hr/>		
8.	Prime sentence	The wife will tell/whisper the neighbour the rumor. The wife will tell/whisper the rumor to the neighbour.
	Target sentence	The coach will teach the player the tactics. The coach will teach the tactics to the player.
<hr/>		
9.	Prime sentence	The governor will charge/send the citizen the letter. The governor will charge/send the letter to the citizen.
	Target sentence	The scientist will show the politician the chart. The scientist will show the chart to the politician.
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10.	Prime sentence	The banker will owe/transfer the depositor the fee. The banker will owe/transfer the fee to the depositor.
	Target sentence	The minister will give the conductor the piano. The minister will give the piano to the conductor.
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11.	Prime sentence	The businessman will charge/send the investor the tax. The businessman will charge/send the tax to the investor.

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	Target sentence	The flight attendant will serve the passenger the sandwich. The flight attendant will serve the sandwich to the passenger.
12.	Prime sentence	The company will owe/transfer the bank the loan. The company will owe/transfer the loan to the bank.
	Target sentence	The father will teach the son the game. The father will teach the game to the son.
13.	Prime sentence	The employer will pay/hand the worker the wage. The employer will pay/hand the wage to the worker.
	Target sentence	The pirate will show the captain the flag. The pirate will show the flag to the captain.
14.	Prime sentence	The mother will tell/whisper the toddler the story. The mother will tell/whisper the story to the toddler.
	Target sentence	The nun will give the bagger the food. The nun will give the food to the beggar.
15.	Prime sentence	The teacher will owe/transfer the headmaster the debt. The teacher will owe/transfer the debt to the headmaster.
	Target sentence	The barman will serve the cowboy the drink. The barman will serve the drink to the cowboy.
16.	Prime sentence	The judge will charge/send the attorney the costs. The judge will charge/send the costs to the attorney.
	Target sentence	The mother will teach the daughter the recipe. The mother will teach the recipe to the daughter.

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17.	Prime sentence	The dean will pay/hand the student the scholarship.
		The dean will pay/hand the scholarship to the student.
	Target sentence	The estate agent will show the pensioner the apartment.
		The estate agent will show the apartment to the pensioner.

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18.	Prime sentence	The solicitor will pay/hand the premium to the insurer.
		The solicitor will pay/hand the premium to the insurer.
	Target sentence	The queen will give the refugees the clothes.
		The queen will give the refugees the clothes.

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19.	Prime sentence	The suspect will tell/whisper the judge the truth.
		The suspect will tell/whisper the truth to the judge.
	Target sentence	The bartender will serve the dancers the beer.
		The bartender will serve the beer to the dancers.

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20.	Prime sentence	The tenant will pay/hand the landlord the rent.
		The tenant will pay/hand the rent to the landlord.
	Target sentence	The nanny will teach the child the rules.
		The nanny will teach the rules to the child.

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21.	Prime sentence	The merchant will charge/send the customer the package.
		The merchant will charge/send the package to the customer.
	Target sentence	The player will show the coach the trophy.
		The player will show the trophy to the coach.

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22.	Prime sentence	The wholesaler will charge/send the shopkeeper the goods.
		The wholesaler will charge/send the goods to the shopkeeper.

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	Target sentence	The queen will give the priest the book. The queen will give the book to the priest.
23.	Prime sentence	The grocer will owe/transfer the supplier the expense. The grocer will owe/transfer the expense to the supplier.
	Target sentence	The woman will serve the husband the pasta. The woman will serve the pasta to the husband.
24.	Prime sentence	The trader will owe/transfer the farmer the payment. The trader will owe/transfer the payment to the farmer.
	Target sentence	The grandfather will teach the boy the poem. The grandfather will teach the poem to the boy.
25.	Prime sentence	The athlete will tell/whisper the trainer the secret. The athlete will tell/whisper the secret to the trainer.
	Target sentence	The scientist will show the assistant the notebook. The scientist will show the notebook to the assistant.
26.	Prime sentence	The retailer will owe/transfer the registrar the tax. The retailer will owe/transfer the tax to the registrar.
	Target sentence	The CEO will give the analyst the desk. The CEO will give the desk to the analyst.
27.	Prime sentence	The chairman will pay/hand the financier the bonus. The chairman will pay/hand the bonus to the financier.
	Target sentence	The editor will serve the typist the cake. The editor will serve the cake to the typist.

28.	Prime sentence	The hairdresser will tell/whisper the lady the rumor.
		The hairdresser will tell/whisper the rumor to the lady.
	Target sentence	The surgeon will teach the student the technique.
		The surgeon will teach the technique to the student.
29.	Prime sentence	The guarantor will owe/transfer the creditor the debt.
		The guarantor will owe/transfer the debt to the creditor.
	Target sentence	The doctor will show the nurse the diploma.
		The doctor will show the diploma to the nurse.
30.	Prime sentence	The couple will tell/whisper the family the news.
		The couple will tell/whisper the news to the family.
	Target sentence	The prince will give the rider the horse.
		The prince will give the horse to the rider.
31.	Prime sentence	The agent will charge/send the traveller the ticket.
		The agent will charge/send the ticket to the traveller.
	Target sentence	The waiter will serve the customer the pizza.
		The waiter will serve the pizza to the customer.
32.	Prime sentence	The tour guide will charge/send the tourist the fee.
		The tour guide will charge/send the fee to the tourist.
	Target sentence	The tutor will teach the pupil the answer.
		The tutor will teach the answer to the pupil.
33.	Prime sentence	The comedian will tell/whisper the singer the joke.
		The comedian will tell/whisper the joke to the singer.

	Target sentence	The student will show the professor the poster. The student will show the poster to the professor.
34.	Prime sentence	The defendant will pay/hand the clerk the fine. The defendant will pay/hand the fine to the clerk.
	Target sentence	The master will give the butler the ring. The master will give the ring to the butler.
35.	Prime sentence	The debtor will owe/transfer the lawyer the payment. The debtor will owe/transfer the payment to the lawyer.
	Target sentence	The waitress will serve the pianist the wine. The waitress will serve the wine to the pianist.
36.	Prime sentence	The manufacturer will charge/send the retailer the price. The manufacturer will charge/send the price to the retailer.
	Target sentence	The guide will teach the climber the instructions. The guide will teach the instructions to the climber.
37.	Prime sentence	The accountant will pay/hand the employee the salary. The accountant will pay/hand the salary to the employee.
	Target sentence	The musician will show the teenager the guitar. The musician will show the guitar to the teenager.
38.	Prime sentence	The publisher will owe/transfer the author the refund. The publisher will owe/transfer the refund to the author.
	Target sentence	The king will give the general the cannon. The king will give the cannon to the general.



39.	Prime sentence	The supplier will charge/send the client the costs.
		The supplier will charge/send the costs to the client.
	Target sentence	The wizard will serve the princess the poison.
		The wizard will serve the poison to the princess.
40.	Prime sentence	The secretary will tell/whisper the manager the rumor.
		The secretary will tell/whisper the rumor to the manager.
	Target sentence	The lawyer will teach the intern the schedule.
		The lawyer will teach the schedule to the intern.
41.	Prime sentence	The player will owe/transfer the agent the money.
		The player will owe/transfer the money to the agent.
	Target sentence	The knight will show the monk the sword.
		The knight will show the sword to the monk.
42.	Prime sentence	The patient will pay/hand the pharmacist the money.
		The patient will pay/hand the money to the pharmacist.
	Target sentence	The minister will give the servant the album.
		The minister will give the album to the servant.
43.	Prime sentence	The mountaineer will tell/whisper the hiker the plan.
		The mountaineer will tell/whisper the plan to the hiker.
	Target sentence	The secretary will serve the boss the pudding.
		The secretary will serve the pudding to the boss.
44.	Prime sentence	The participants will owe/transfer the organizer the fee.
		The participants will owe/transfer the fee to the organizer.

	Target sentence	The singer will teach the boy the lyrics. The singer will teach the lyrics to the boy.
45.	Prime sentence	The official will charge/send the entrepreneur the document. The official will charge/send the document to the entrepreneur.
	Target sentence	The artist will show the businessman the painting. The artist will show the painting to the businessman.
46.	Prime sentence	The policeman will tell/whisper the president the news. The policeman will tell/whisper the news to the president.
	Target sentence	The ballerina will give the girl the costume. The ballerina will give the costume to the girl.
47.	Prime sentence	The attorney will pay/hand the sheriff the bill. The attorney will pay/hand the bill to the sheriff.
	Target sentence	The soldier will serve the officer the whiskey. The soldier will serve the whiskey to the officer.
48.	Prime sentence	The newlyweds will pay/hand the landlord the deposit. The newlyweds will pay/hand the deposit to the landlord.
	Target sentence	The magician will teach the clown the trick. The magician will teach the trick to the clown.

*Note.* For PO target sentences in Experiment 2, the equi-biased target verbs (i.e., “show”, “give”, “serve”, and “teach”) were replaced by their semantically matched non-alternating counterparts (i.e., “display”, “donate”, “carry”, and “explain”).

**Table S2.** Experiments 1 and 2. Models for baseline production data

	Estimate	SE	z-value	p-value
<b>(a) Experiment 1</b>				
(Intercept)	1.38	0.28	4.99	< .001
VerbType (DO-bias)	-1.30	0.44	-2.95	<b>.003</b>
VerbType (PO-bias)	0.41	0.45	0.93	.352
VerbType (non-alternating)	1.06	0.40	2.65	<b>.008</b>
<i>Formula in R: P<sub>O</sub>dative~ VerbType +(1+VerbType/Participant)+(1/Item)</i>				
<b>(b) Experiment 2</b>				
(Intercept)	1.33	0.24	5.60	< .001
VerbType (DO-bias)	-1.22	0.35	-3.49	<b>.001</b>
VerbType (PO-bias)	0.84	0.38	2.21	<b>.027</b>
VerbType (non-alternating)	0.48	0.31	1.57	.117
<i>Formula in R: P<sub>O</sub>dative~ VerbType +(1+VerbType/Participant)+(1/Item)</i>				

Note. SE, standard error. Levels of Verb Type set to +1 for DO-bias, 0 for PO-bias, 0 for non-alternating, and -1 for EQ-bias.

**Table S3.** *Experiments 1 and 2. Joint analysis of baseline and posttest*

	Estimate	SE	z-value	p-value
<u>Production of PO dative sentences</u>				
(Intercept)	1.35	0.20	6.64	< .001
Task (baseline vs. posttest)	0.68	0.27	2.52	<b>.012</b>
VerbType (DO-bias)	-1.26	0.33	-3.81	<b>&lt; .001</b>
VerbType (PO-bias)	0.64	0.34	1.88	<b>.060</b>
VerbType (non-alternating)	0.75	0.29	2.59	<b>.010</b>
Experiment	0.01	0.12	0.08	.938
Task:VerbType (DO-bias)	-0.02	0.46	-0.05	.957
Task:VerbType (PO-bias)	-0.16	0.49	-0.33	.742
Task:VerbType (non-alternating)	0.28	0.40	0.69	.489
Task:Experiment	0.06	0.14	0.47	.640
VerbType (DO-bias):Experiment	-0.02	0.12	-0.14	.887
VerbType (PO-bias):Experiment	-0.14	0.13	-1.15	.252
VerbType (non-alternating):Experiment	0.17	0.14	1.22	.222
Task:VerbType (DO-bias):Experiment	0.01	0.16	0.05	.962
Task:VerbType (PO-bias):Experiment	0.15	0.19	0.81	.415
Task:VerbType (non-alternating):Experiment	-0.20	0.16	-1.22	.223
<i>Formula in R: POdative~Task*VerbType*Experiment+(1+VerbType*Task/Participant)+(1+Experiment/Item)</i>				

*Note.* SE, standard error. Levels of Verb Type set to +1 for DO-bias, 0 for PO-bias, 0 for non-alternating, and -1 for EQ-bias. Levels of Experiment set to +1 for Experiment 1 and -1 for Experiment 2.

**Table S4.** *Cross-experiment traditional time-window analyses for PO target sentences*

Statistical Comparisons	Temporal Regions of Interest											
	VERB				DETERMINER1				NOUN1			
	Estimate	SE	<i>t</i> -value	<i>p</i> -value	Estimate	SE	<i>t</i> -value	<i>p</i> -value	Estimate	SE	<i>t</i> -value	<i>p</i> -value
<b>(a) <u>Comparison of PO-prime-PO-target conditions</u></b>												
(Intercept)	0.55	0.25	2.19	.033	-0.03	0.25	-0.13	.895	-0.51	0.24	-2.12	.036
Experiment	-0.06	0.09	-0.66	.513	-0.43	0.16	-2.73	<b>.008</b>	-0.17	0.19	-0.88	.378
<i>Formula in R: Elog~Experiment+(1/Participant)+(1/Item)</i>												
<b>(b) <u>Comparison of DO-bias PO-prime-PO-target conditions</u></b>												
(Intercept)	0.38	0.29	1.29	.200	0.00	0.31	0.01	.993	-0.82	0.30	-2.77	.006
Experiment	-0.23	0.16	-1.51	.136	-0.66	0.22	-3.05	<b>.003</b>	0.13	0.24	0.56	.578
<i>Formula in R: Elog~Experiment+(1/Participant)+(1/Item)</i>												

*Note.* *SE*, standard error. Levels of Experiment are +1 for Experiment 2 and -1 for Experiment 1.