Reactive phenotype social environment correlation, runaway winner and loser effects, and the magnification of inequality

SUPPLEMENTAL METHODS

1: Reading passages (2 of a possible 8; the other six varied based on competitive context, character school level, and winner name/winning school name). Passages were identical in experiments 1 and 2, only the questions differed.

1.1: Athletic passage: (school level = elementary school, winner/winning school name = Jamie/East Hills).

The sun is shining. The crowd, which includes many proud family members, roars with excitement. These two schools haven't faced off all season, but they're eager to compete in this year's regional under-11 soccer championship. The enthusiasm of two fourth-grade players stands out: Jamie, who plays for East Hills elementary school, and Morgan, who plays for West Lake elementary school. As both teams walk onto the pitch, they hear their friends, families, and other spectators cheering. Jamie and Morgan, as the captains of their respective teams, meet with the referee to determine who will start with the ball. Jamie wins the coin toss and heads to centerfield to take first possession of the ball.

The whistle blows. Jamie passes the ball back to East Hills' striker, who strides up the field with the ball. Morgan, knowing that they must intercept the ball, moves to cut off East Hills' striker. As Morgan approaches the ball, they misstep and let East Hills' striker move towards Morgan's goalie. Simultaneously, Jamie moves directly across from East Hills' striker, right outside of West Lake's goal crease, waiting for a potential pass. East Hills' striker charges towards the net, but West Lake's goalie doesn't see Jamie, who is standing in the perfect position––a couple meters to the right of the goalie. East Hills' striker fakes a shot and lobs the ball right to Jamie, who leaps and heads the ball perfectly into the net! Jamie secures the first goal for East Hills elementary school!

Now, Morgan's team begins with possession. Morgan passes the ball back to the West Lake defenseman, who runs down the field. Morgan rushes towards the goal while keeping an eye on the defenseman. Morgan signals their defenseman to pass the ball–– Morgan is open in front of the net! Morgan gets the ball, aligns with the net, and shoots the ball towards the goalie! The ball sails towards the goalie, who blocks it and sends it out of play. "No!" Morgan thinks. Although the ball went out of play, it was off East Hills' goalie. Now, Morgan has a chance to kick the ball in from the corner. Morgan picks the ball up and carries it to the corner. Morgan signals the West Lake players to stand in the goal crease, implying that they'll need to head it into the goal. Morgan backs up and kicks the ball in–– but it sails right over the goal crease! West Lake tries to recover the play after Morgan's corner kick, but Morgan can see that the ball has bounced out of play.

Jamie's team now holds possession of the ball––Jamie's goalie kicks the ball from East Hills' goal line, and the ball lands just over the centerline, a few paces from Jamie. Jamie expertly gets a foot on the ball and controls it with ease. Now, facing West Lake's goal line, Jamie sees Morgan rushing towards the ball and Jamie to make a defensive play. Morgan wants to steal the ball! As Morgan rushes towards the ball, Jamie waits… At the last moment, just as Morgan moves to take the ball, Jamie sees a gap open between Morgan's legs. Jamie quickly shoots the ball between Morgan's legs and runs towards West Lake's goalie. Carrying the ball at full speed towards the goalie, Jamie swiftly moves past West Lake's last defender. A breakaway! Jamie has prepared for this moment since East Hills

started soccer practices earlier that spring––Jamie knows the goalie will push out of the net to cut off any shooting angles. West Lake's goalie advances, just as Jamie expected. Morgan watches in terror, helpless, as Jamie rushes towards West Lake's goalie. Jamie approaches the crease and quickly fakes a shot––for a second, it looks like the ball will go low to the goalie's left side. The goalie extends their arms and dives to the left, giving Jamie the perfect opportunity to chip the ball over the goalie, who is now lying flat on the ground. As the final seconds of the game pass by, the ball floats over West Lake's goalie and slowly bounces into the net! Jamie has secured East Hills elementary school the win!

1.2: Academic passage: (character school level = high school, winner/winning school name = Morgan/West Lake).

The Judge's bell dings. Yet another competitor has been eliminated from this year's annual under-18 regional spelling bee. When the day started, 90 competitors began on stage. Now, as the clock passes 4:00 PM, only 15 remain. All 15 look determined to win. Two twelfth-grade competitors in particular, however, brim with enthusiasm for the event: Morgan, who represents West Lake high school, and Jamie, who represents East Hills high school. Most of their enthusiasm stems from the rules of this regional spelling bee. Most spelling bees have a "one-strike and you're out" rule: if you misspell a single word, you're eliminated. However, this year, the spelling bee implemented a two-of-three format. During each round, each competitor hears three words, of which they must spell at least two correctly to advance to the next round.

Jamie had scraped by up to this point, finding things far harder than expected. However, Jamie still wanted to win. The judges called: "next contestant, Jamie, to the microphone." Jamie rose out of their chair, walked to the microphone, and listened to the judges provide three words to spell: "Your first word is 'alogia', your second is 'catharsis', and your third is 'unsanctimonious." Jamie looked worried. As the rounds progressed, the words got more difficult. However, Jamie hadn't prepared for words like this. Jamie had no clue how to spell "alogia" or "sanctimonious", but vaguely remembered catharsis. Jamie would have to guess the first and last words. Jamie started by repeating the word out loud, and then spelled it: "Alogia. A-l-o-…g-i-a?" Correct! Jamie thought they remembered the next word, but their mind began to race: "Does it start with a K or a C? Whatever, I'll just guess." They began: "Catharsis. K-a-t-h-a-r-s-i-s." The bell dinged, indicating a wrong answer. Jamie needed to get this next word "sanctimonious", or else he'd be going home. They thought that asking a clarifying question might help: "Is that 'sank', like, 'I sank my feet into the sand?'" Jamie asked the judges. "We can't answer that," they responded. Jamie then asked if the judges could use it in a sentence. They promptly replied: "The priest behaved sanctimoniously that afternoon." Jamie nodded their head, knowing that the best bet would be to go with a gut instinct. They started: "Sanctimonious. S-a-n-…k-t-i-m-o-n-i-o-u-s." Ding! Jamie misspelled the word. Getting only one of their three words correct, Jamie and East Hills high school would place tenth in this year's regional spelling bee. Jamie exited the stage.

Now, the judges called on Morgan to come up to the microphone. Morgan promptly got up, looking forward to the words the judges would provide. Morgan loved spelling. The judges began: "Your first word is 'unapologetically', your second is 'orthogonality', and your third is 'loquacious'." Morgan smiled; they remembered seeing all three words and immediately recalled the spelling of the first two. Morgan began: "Unapologetically. U-n-a-p-o-l-o-g-e-t-i-c-a-l-l-y." Correct! Quickly, Morgan started the second: "Orthogonality. O-r-t-h-o-g-o-n-a-l-i-t-y." Correct! Morgan had a hunch about how to spell the third word

"loquacious", but instead of rushing into it, asked the judges about the word's language of origin. If the word originated from Latin, Morgan could be sure about its spelling. "The word's language of origin is Latin", the judges responded. Morgan's hunch was correct! A Latin origin meant the third, fourth, and fifth letters would be "q-u-a." Morgan began by pronouncing the word: "Loquacious. L-o-q-u-a-c-i-o-u-s." Correct! Morgan spelled all three words correctly, allowing advancement to the final round.

Now only 2 spellers remained: Morgan and another competitor. As this was the final round, the words got exceedingly difficult. Plus, the one-strike rule now applied: if you misspelled one word, you were eliminated. Morgan was called up second, and the other competitor had just spelled a word incorrectly. Morgan now had a chance to eliminate the other competitor and place first in this year's regional spelling bee. The judges gave Morgan the word: "Brusqueness". Morgan knew this one! They had studied it during their months of preparation. They began spelling: "Brusqueness. B-r-u-s-q-u-e-n-e-s-s." Correct! Morgan wins this year's under-18 regional spelling bee, securing the win for West Lake high school!

2: Allocation task questions:

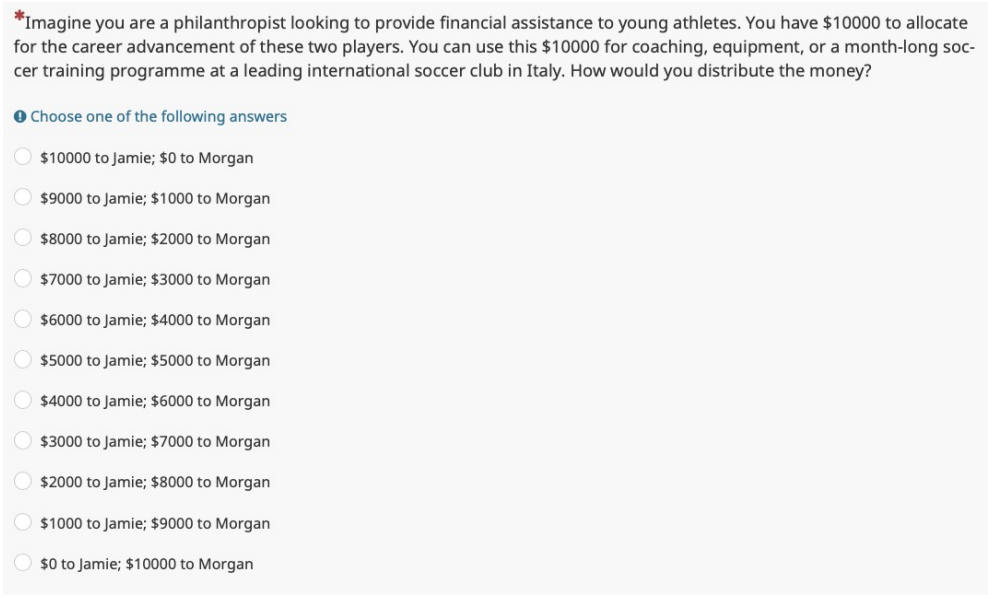


Figure S1: [Experiment 1] Money allocation question asked to participants who read the athletic passage. Based on the passage, participants always saw "winner name, loser name".

Figure S2: [Experiment 1] Coaching hours allocation question asked to participants who read the athletic passage. Based on the passage, participants always saw "winner name, loser name".

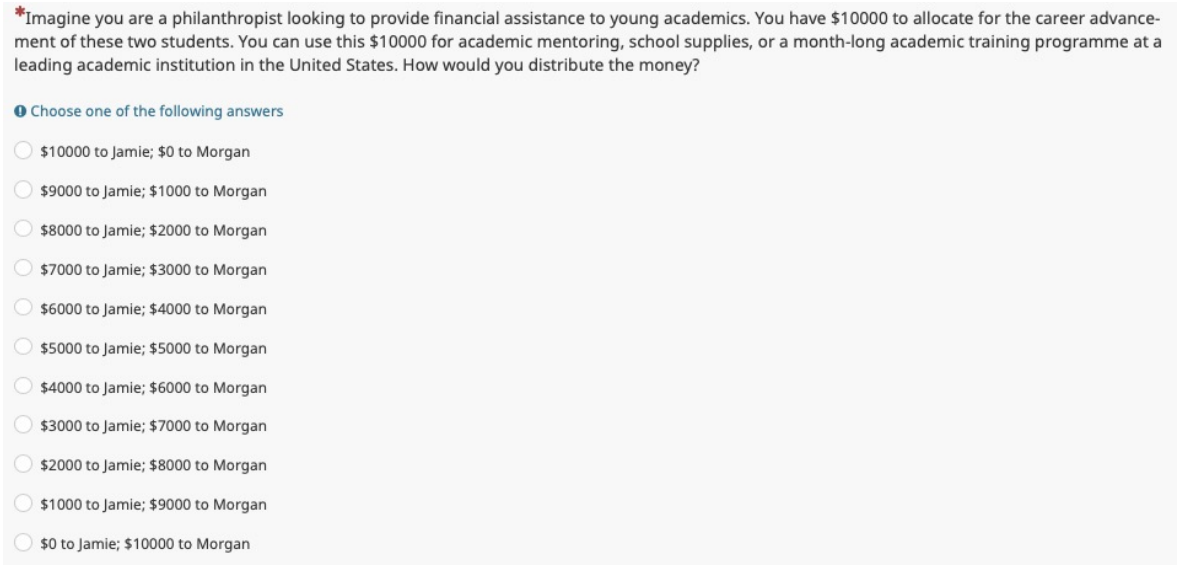


Figure S3: [Experiment 1] Money allocation question asked to participants who read the academic passage. Based on the passage, participants always saw "winner name, loser name".

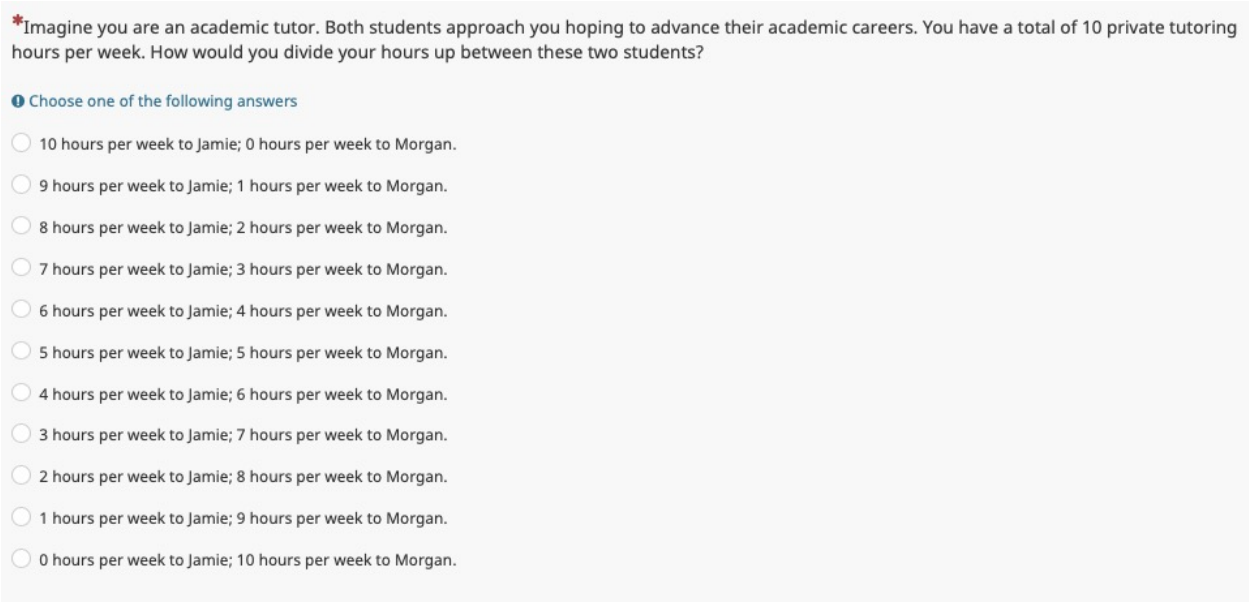


Figure S4: [Experiment 1] Coaching hours allocation question asked to participants who read the academic passage. Based on the passage, participants always saw "winner name; loser name".

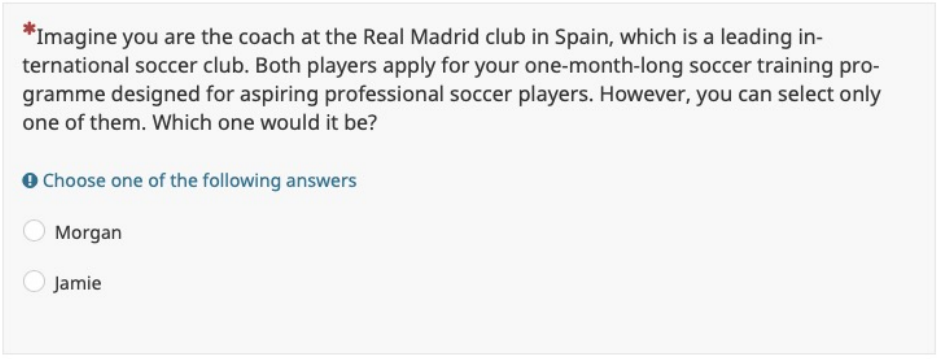


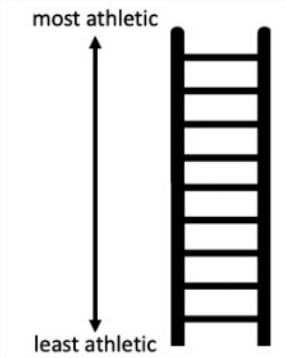
Figure S5: [Experiment 2] Training program question asked to participants who read the athletic passage. The order of options was randomized.

Figure S6: [Experiment 2] Training program question asked to participants who read the academic passage. Based on the passage, participants always saw "winner name; loser name". The order of options was randomized.

3: Perception of population variation questions (identical for experiments 1 and 2)

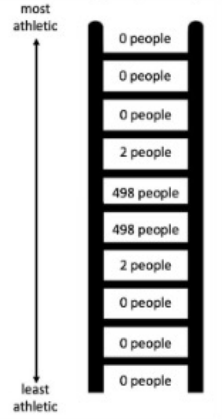
Athleticism variation question:

*Imagine we have a population of 1000 people. How do you perceive athletic ability in that population? Are most people very athletic, somewhat athletic, or not very athletic? Now, imagine a ladder where higher on the ladder is greater athletic ability and lower on the ladder is less athletic ability. How do you perceive people would be arranged on this ladder?

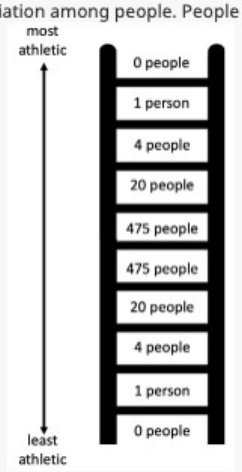


Choose one of the following answers

○ I believe that, in terms of athleticism, there is very little variation among people. People are grouped very largely towards the middle of the ladder.



○ I believe that, in terms of athleticism, there is little variation among people. People are grouped largely towards the middle of the ladder.



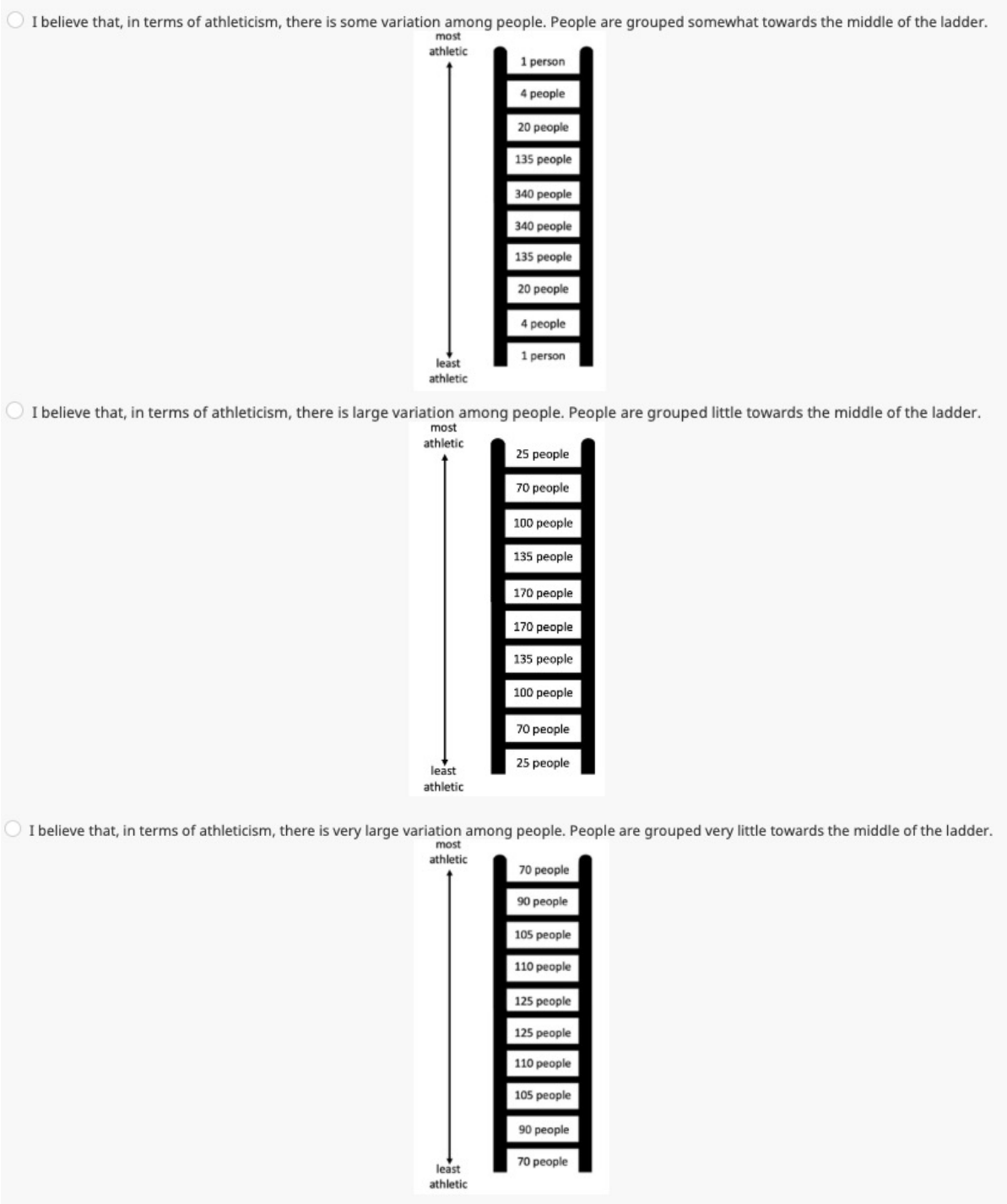
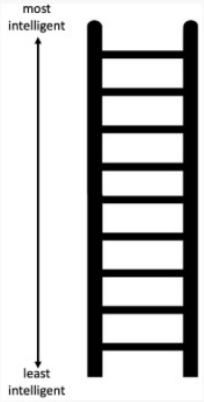


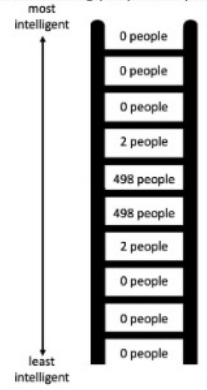
Figure S7: Question on perception of population variation in athleticism. Note: there was more space between each answer on the actual survey so that participants would not mismatch words and images (i.e., so participants would know that the written portion matched the image below it). All participants answered the athleticism variation question first and answered the intelligence variation question second.

Intelligence variation question:

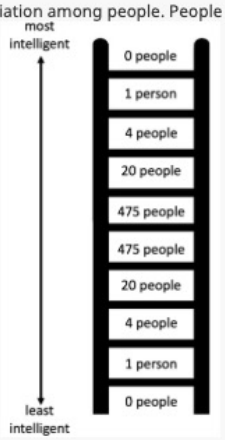
*Imagine we have a population of 1000 people. How do you perceive intelligence in that population? Are most people very intelligent, somewhat intelligent, or not very intelligent? Now, imagine a ladder where higher on the ladder is higher intelligence and lower on the ladder is lower intelligence. How do you perceive people would be arranged on this ladder?



○ I believe that, in terms of intelligence, there is very little variation among people. People are grouped very largely towards the middle of the ladder.



○ I believe that, in terms of intelligence, there is little variation among people. People are grouped largely towards the middle of the ladder.



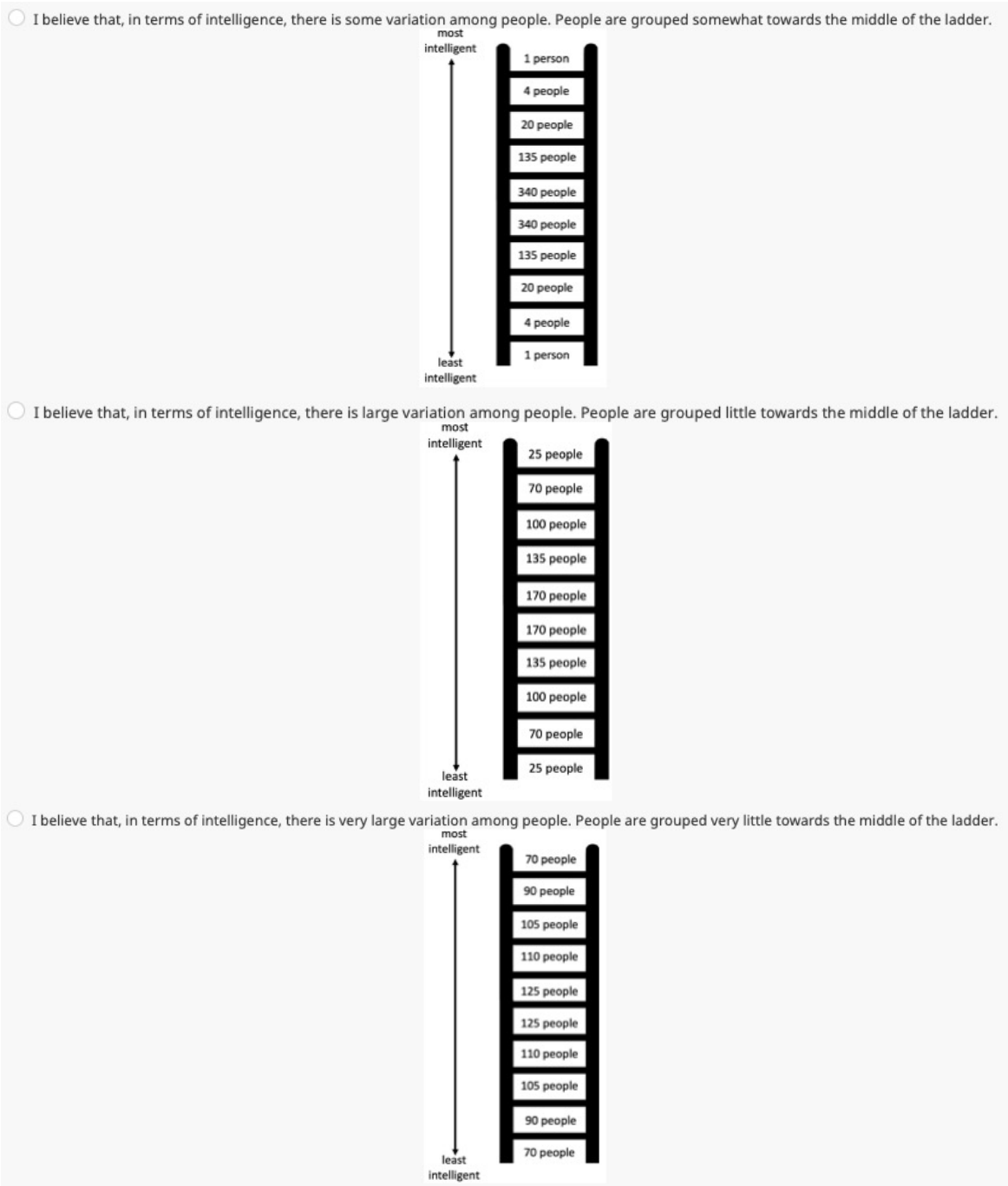


Figure S8: Question on perception of population variation in intelligence. Note: there was more space between each answer on the actual survey so that participants would not mismatch words and images (i.e., pick the above image instead of the below image for the written prompt). All participants always answered the "athleticism" variation question and then the "intelligence" variation question.

SUPPLEMENTAL RESULTS

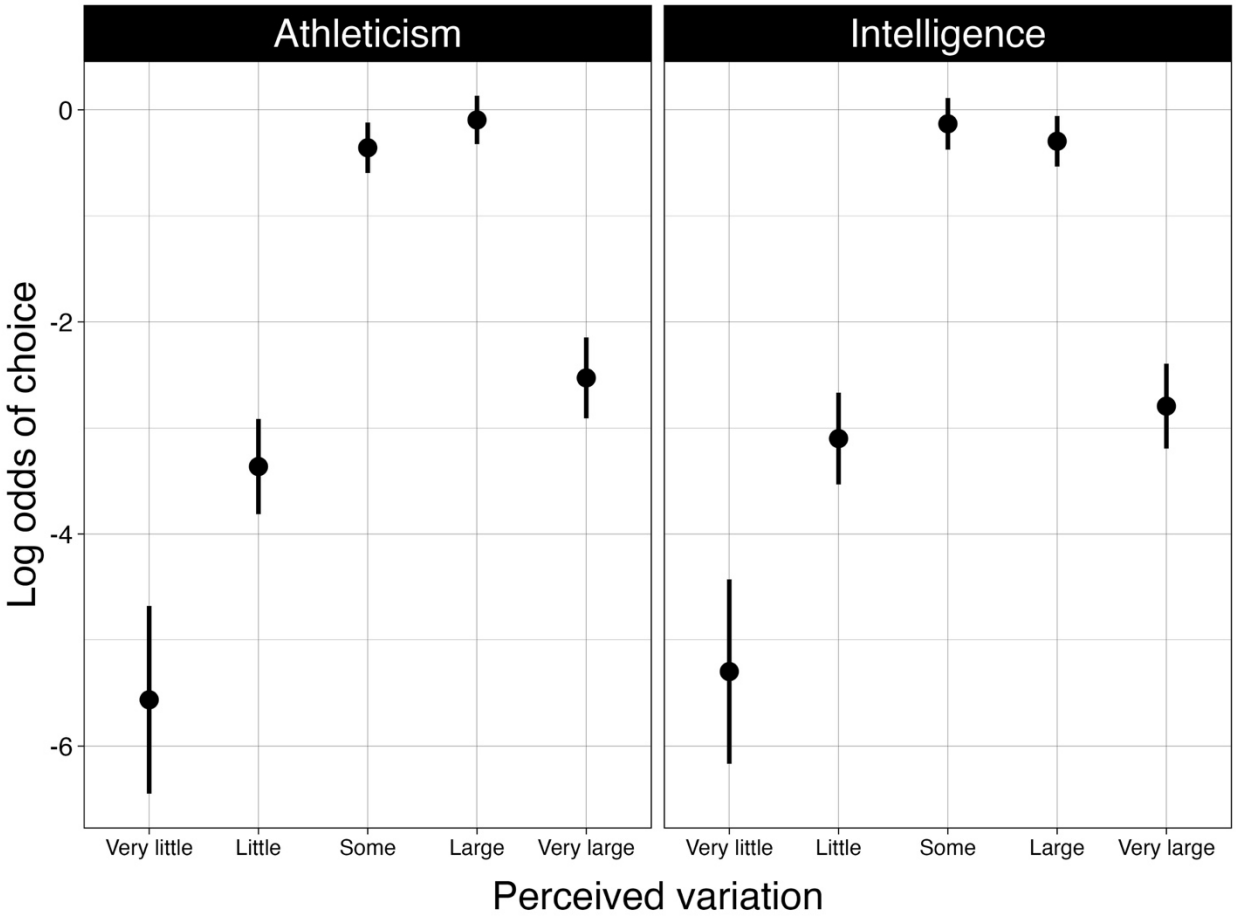


Figure S9: Estimated marginal means plot based on our cumulative link mixed model for perceived population variation. Points are estimated marginal means and bars are 95% confidence intervals.

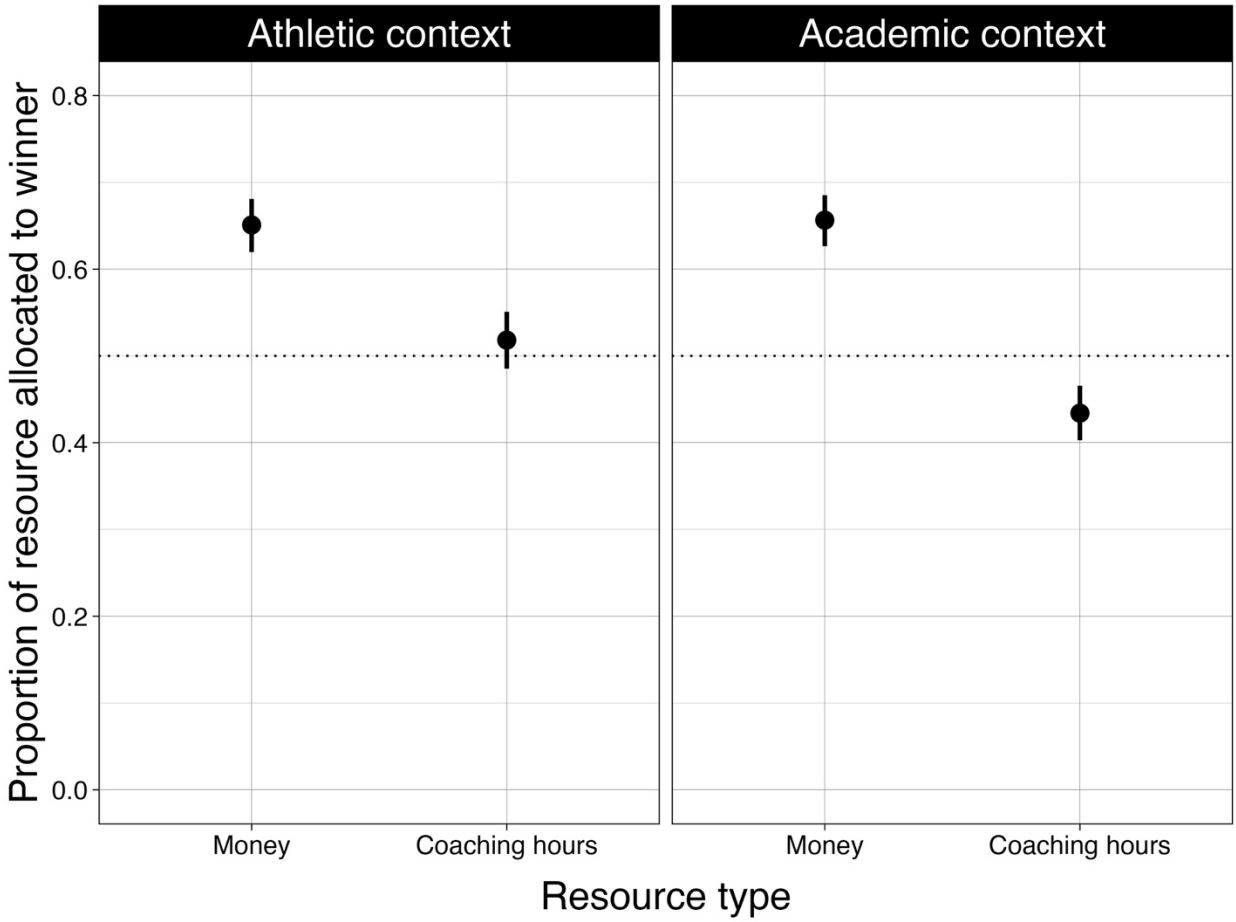


Figure S10: Estimated marginal means plot based on our beta generalized linear mixed model of allocation preference. Points are estimated marginal means and bars are 95% confidence intervals. Proportion values are back-transformed from the log odds scale.