Supplements for "Distribution Neglect in Performance Evaluations"

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Supplement 1: Materials for racing times study

Scenario Description and Open-Ended Prompt

Imagine for a moment that we discovered a planet with alien life.

On this planet, there are many different species, which come in many different shapes, sizes, and colors. For an experiment, individual aliens were picked at random from the total population of 2 different species--the Grons and the Tuscets.

Those 100 individuals competed in a 100-yard dash, where each individual in the race attempted to go from the start to the finish line as quickly as possible. The results of that 100-yard dash are below:

[INFORMATION PROVIDED BASED ON CONDITION—SEE BELOW]

What differences in the groups of Grons and Tuscets might explain this outcome? Please list possible reasons for this outcome in the order in which they come to mind. Please include all the reasons that you think are valid or relevant.

Displays for information conditions

NOTE: Species name order was randomized within conditions.

Condition 1: Top 10 places

Place	Time	Species
1	**10.003**	Grons
2	**10.127**	Grons
3	**10.205**	Tuscets
4	**10.253**	Grons
5	**10.355**	Grons
6	**10.543**	Grons
7	**10.581**	Grons
8	**10.667**	Grons
9	**10.790**	Grons
10	**10.862**	Tuscets

Condition 2: Top 10 and bottom 10 places

Place	Time	Species
1	**10.003**	Grons
2	**10.127**	Grons
3	**10.205**	Tuscets
4	**10.253**	Grons
5	**10.355**	Grons
6	**10.543**	Grons
7	**10.581**	Grons
8	**10.667**	Grons
9	**10.790**	Grons
10	**10.862**	Tuscets
....	**....**	**....**
91	**19.028**	Grons
92	**19.088**	Tuscets
93	**19.208**	Grons
94	**19.270**	Grons
95	**19.447**	Grons
96	**19.542**	Tuscets
97	**19.635**	Grons
98	**19.691**	Grons
99	**19.830**	Grons
100	**19.868**	Grons

Condition 3: Full distribution

Place	Time	Team
1	**10.003**	Grons
2	**10.127**	Grons
3	**10.205**	Tuscets
4	**10.253**	Grons
5	**10.355**	Grons
6	**10.543**	Grons
7	**10.581**	Grons
8	**10.667**	Grons
9	**10.790**	Grons
10	**10.862**	Tuscets
11	**11.021**	Tuscets
12	**11.052**	Grons
13	**11.173**	Tuscets
14	**11.348**	Grons
15	**11.360**	Grons
16	**11.509**	Tuscets
17	**11.584**	Grons
18	**11.723**	Tuscets
19	**11.830**	Tuscets

20	**11.891**	Tuscets
21	**11.964**	Tuscets
22	**12.122**	Grons
23	**12.238**	Grons
24	**12.348**	Grons
25	**12.428**	Tuscets
26	**12.455**	Tuscets
27	**12.583**	Grons
28	**12.704**	Grons
29	**12.792**	Tuscets
30	**12.897**	Grons
31	**13.019**	Tuscets
32	**13.054**	Grons
33	**13.161**	Grons
34	**13.335**	Grons
35	**13.351**	Tuscets
36	**13.506**	Tuscets
37	**13.572**	Tuscets
38	**13.693**	Tuscets
39	**13.787**	Grons
40	**13.912**	Grons
41	**13.994**	Grons
42	**14.061**	Grons
43	**14.172**	Tuscets
44	**14.346**	Tuscets
45	**14.429**	Tuscets
46	**14.461**	Tuscets
47	**14.634**	Tuscets
48	**14.740**	Grons
49	**14.769**	Tuscets
50	**14.887**	Tuscets
51	**14.982**	Grons
52	**15.107**	Tuscets
53	**15.185**	Grons
54	**15.293**	Tuscets
55	**15.444**	Tuscets
56	**15.526**	Tuscets
57	**15.586**	Tuscets
58	**15.728**	Tuscets
59	**15.813**	Tuscets
60	**15.916**	Grons
61	**16.046**	Tuscets
62	**16.131**	Grons
63	**16.164**	Tuscets
64	**16.335**	Tuscets

65	**16.395**	Tuscets
66	**16.490**	Tuscets
67	**16.627**	Tuscets
68	**16.671**	Tuscets
69	**16.840**	Tuscets
70	**16.887**	Tuscets
71	**17.021**	Tuscets
72	**17.084**	Grons
73	**17.157**	Tuscets
74	**17.332**	Tuscets
75	**17.379**	Grons
76	**17.500**	Tuscets
77	**17.593**	Grons
78	**17.651**	Tuscets
79	**17.824**	Grons
80	**17.909**	Grons
81	**17.990**	Grons
82	**18.121**	Grons
83	**18.204**	Tuscets
84	**18.339**	Grons
85	**18.428**	Tuscets
86	**18.528**	Grons
87	**18.577**	Tuscets
88	**18.679**	Grons
89	**18.772**	Grons
90	**18.873**	Grons
91	**19.028**	Grons
92	**19.088**	Tuscets
93	**19.208**	Grons
94	**19.270**	Grons
95	**19.447**	Grons
96	**19.542**	Tuscets
97	**19.635**	Grons
98	**19.691**	Grons
99	**19.830**	Grons
100	**19.868**	Grons

Condition 4: Full distribution with summary statistics (mean then SD)

Grons average: 14.97
Grons standard deviation (the spread of the times): 3.34
Tuscets average: 14.92
Tuscets standard deviation (the spread of the times): 2.34

Place	Time	Team
1	**10.003**	Grons
2	**10.127**	Grons
3	**10.205**	Tuscets
4	**10.253**	Grons
5	**10.355**	Grons
6	**10.543**	Grons
7	**10.581**	Grons
8	**10.667**	Grons
9	**10.790**	Grons
10	**10.862**	Tuscets
11	**11.021**	Tuscets
12	**11.052**	Grons
13	**11.173**	Tuscets
14	**11.348**	Grons
15	**11.360**	Grons
16	**11.509**	Tuscets
17	**11.584**	Grons
18	**11.723**	Tuscets
19	**11.830**	Tuscets
20	**11.891**	Tuscets
21	**11.964**	Tuscets
22	**12.122**	Grons
23	**12.238**	Grons
24	**12.348**	Grons
25	**12.428**	Tuscets
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28	**12.704**	Grons
29	**12.792**	Tuscets
30	**12.897**	Grons
31	**13.019**	Tuscets
32	**13.054**	Grons
33	**13.161**	Grons
34	**13.335**	Grons
35	**13.351**	Tuscets
36	**13.506**	Tuscets
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63	**16.164**	Tuscets
64	**16.335**	Tuscets
65	**16.395**	Tuscets
66	**16.490**	Tuscets
67	**16.627**	Tuscets
68	**16.671**	Tuscets
69	**16.840**	Tuscets
70	**16.887**	Tuscets
71	**17.021**	Tuscets
72	**17.084**	Grons
73	**17.157**	Tuscets
74	**17.332**	Tuscets
75	**17.379**	Grons
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79	**17.824**	Grons
80	**17.909**	Grons
81	**17.990**	Grons
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87	**18.577**	Tuscets
88	**18.679**	Grons
89	**18.772**	Grons
90	**18.873**	Grons
91	**19.028**	Grons
92	**19.088**	Tuscets
93	**19.208**	Grons
94	**19.270**	Grons
95	**19.447**	Grons
96	**19.542**	Tuscets
97	**19.635**	Grons
98	**19.691**	Grons
99	**19.830**	Grons
100	**19.868**	Grons

Condition 5: Full distribution with summary statistics (SD then mean)
Grons standard deviation (the spread of the times): 3.34
Grons average: 14.97
Tuscets standard deviation (the spread of the times): 2.34
Tuscets average: 14.92

Place	Time	Team
1	**10.003**	Grons
2	**10.127**	Grons
3	**10.205**	Tuscets
4	**10.253**	Grons
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25	**12.428**	Tuscets
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96	**19.542**	Tuscets
97	**19.635**	Grons
98	**19.691**	Grons
99	**19.830**	Grons
100	**19.868**	Grons

Supplement 2: Further analyses for racing times study

In addition to the OLS model that was pre-registered for the racing times study, we also evaluated an equivalent logistic regression model given the binary nature of the outcome variable. As outlined in Table S2-1 below, the pattern of results from this logistic regression closely mirror the reported results from the OLS regression.

Table S2-1: Logistic Regression Results (DV = Variance Reasoning Used)

Condition	***B***	**SE**	***P***
Intercept	-19.57	0.14	< .001
Top 10 & bottom 10	16.87	0.30	< .001
Full distribution	16.17	0.34	< .001
Summary stats (mean, SD)	16.83	0.31	< .001
Summary stats (SD, mean)	16.47	0.37	< .001

N = 1631 responses from 553 respondents
Standard errors are robust, clustered by respondent
All condition coefficients are relative to the *Top 10 places* condition

Supplement 3: Pilot version of racing times study

We carried out a pilot version of the racing times study, with no manipulation of information completeness. This pilot experiment thus featured only Condition 1 (top 10 finishers) from Study 1 in the main manuscript, not Conditions 2-5 with increasing quantities of information.

Methods

Participants. We recruited 100 participants on Amazon's Mechanical Turk, of which 97 completed the study, receiving $0.50 for the 5 minute survey. The average age of participants was 38 (*SD* = 10.5), and 48% of participants were female. The sample size and analysis plan for the study were pre-registered ahead of time (see https://osf.io/923n6/) and the data and code for are posted as well.

Procedure. Participants were presented with a scenario in which a planet with alien life had been discovered with many species of different shapes, sizes, and colors (see Appendix S3). Participants were told that an experiment had been conducted, where "100 individual aliens were picked at random from the total population of 2 different species," and the selected individuals competed in a 100-yard dash. Then, they were provided information about the results of the race for the top-five finishers only. They were told that individuals from one species finished in 1st, 2nd, 4th, and 5th, and the other species had one individual finish in 3rd place. With only this information, participants were asked to list reasons that would make this outcome likely, in the order in which the ideas came to mind.

Explanation type. A pre-registered quantitative coding scheme was used to convert the open-ended, qualitative data generated in the survey into categorical data, interpreting the response as either related to differences in (1) mean, (2) variance, or (3) population size. Codes for (4) vague or (5) off-topic were also included.

Explanation order. Participants were asked to report their explanations in the order in which they came to mind; therefore, we used the position of the reason as ordinal-level information about the order in which each response was thought of.

Numeracy: As potential moderators, we assessed self-reported mathematical reasoning ability (1 = far below average to 7 = far above average), highest level of schooling completed, and number of statistics courses taken.

Results

The 97 participants generated a total of 282 (*M* = 2.91) explanations for the group differences described in the scenario. We asked 3 double-blind research assistants to code the 282 responses using a codebook. After the first round of coding, the 3 coders had full agreement on 247 (88%) of the codes. They then proceeded to discuss the remaining disagreements until consensus had been reached for each response (See Table S3-1 for aggregated results).

Table S3-1. Descriptive Statistics of Response Codes

	Mean	**Variance**	**Population**	**Vague**	**Off-Topic**
Count	215	2	23	35	7
Mean Position (*SD*)	8.51 (1.73)	8.5 (0.71)	9.13 (1.55)	8.71 (1.32)	4.43 (2.99)

Note. 282 responses generated from 97 participants

First, we tested if participants were significantly more likely to generate mean-type responses than variance-type responses. We summed the total number of each type of response for each participant and conducted a t-test comparing the resultant count variables for mean-type responses and variance-type responses to test if mean-type responses were significantly more frequent. The t-test ($t(96) = 12.459$, $d = 2.54$) showed that mean-type responses ($M = 2.22$; $SD = 0.175$) were significantly more frequent ($p < 0.001$) than variance-type responses ($M = 0.02$; $SD = 0.015$). We also conducted a two-way test of proportions that compares the proportion of participants that came up with at least one mean-type response to the proportion of participants that came up with at least one variance-type response. The test of proportions ($z = 12.247$) showed that a significantly ($p < 0.001$) greater proportion of participants generated mean-type responses ($M = 0.897$; $SD = 0.031$) than variance-type responses ($M = 0.021$; $SD = 0.014$).

Next, we tested if participants generated mean-type responses before variance-type responses. Because of the low number of variance-type participant responses (n = 2), we did not expect this analysis to produce meaningful results. Nevertheless, we carried out a pre-registered analysis strategy for assigning value to the position of responses, such that the first response was assigned a value of 10, the second response was assigned a value of 9, the third response was assigned a value of 8, and so on. Table S3-1 shows the average position value for each type of response. Then, we used dummy variables for each type of response to predict the position value. However, the regression model was not significant ($p = 0.380$); therefore, the coefficients for variance and mean-type responses were not compared. Similarly, because only 2 of the 282 reasons were interpreted as variance-related, testing for moderating effects of mathematical ability, number of statistics courses, and educational attainment was not possible.

Appendix S3: Materials for Pilot Version of Racing Times Study

Instructions

"Imagine for a moment that we discovered a planet with alien life. On this planet, there are many different species, which come in many different shapes, sizes, and colors. For an experiment, 100 individual aliens were picked at random from the total population of 2 different species (the Blue Aliens and the Green Aliens), and those 100 individuals competed in a 100 yard dash. The results of that 100 yard dash are below:"

Condition 1:

"Below, you have information about the results from 1st to 5th place only.
Blue Aliens: 1st place, 2nd place, 4th place, and 5th place
Green Aliens: 3rd place
(There is no information provided about results from 6th to 100th place)"

Condition 2:

"Below, you have information about the results from 1st to 5th place only.
Green Aliens: 1st place, 2nd place, 4th place, and 5th place
Blue Aliens: 3rd place
(There is no information provided about results from 6th to 100th place)"

"Please list reasons that would make this outcome likely in the order in which they come to mind. Please include all the reasons that you think are valid or relevant."

"Starting with the first reason that came to mind and going in order to the last reason that came to mind, please copy and paste each reason into a separate text box. If a single sentence or phrase contains multiple reasons, separate each reason into a separate box. In other words, each

box that you fill out should represent a single reason for the results. Then, retype the explanation as clearly as possible (no more than 1 or 2 sentences per reason).

Use as many boxes below as you need to copy all of the reasons you provided and leave the rest blank. Once you have copied all the reasons into separate boxes, leave any remaining empty boxes blank and continue."

Coding Strategy

Three double-blind coders independently coded the full 282 responses using the codebook below. The coders had full agreement on 246 (87.2%) responses after the first round of coding. The coders then reviewed the disagreements and came to a consensus through an iterative discussion of the rationale of their codes on responses where there was disagreement.

Codebook

1 = Average difference. Definition: One species is generally faster than the other. Examples: One species has longer legs than the other species. One species is better trained than the other species.

2 = Variance difference. Definition: One species has more variety in their speeds and therefore have more fast individuals AND more slow individuals. Examples: One species takes longer to become fully mature, so they are slow when young but fast when mature. Some of the species train a lot and others don't train. One species grows much older than the other, so they have more, slower individuals because they are older.

3 = Population size difference. Definition: One species has more individuals selected in the race than the other. Example: More aliens of one species were selected to participate in the race.

4 = Other reasons. Definition: Any other on topic response. Seems to be a response, but doesn't clearly fit the other 3 types of reasons. Example: Random chance.

5 = Off topic. Definition: Any off topic response. Not sincerely trying to answer the question.

6 = Multiple differences in the distributions. Definition: The response could fit multiple of the 1-4 code categories because the distributions seems to differ in multiple ways. Example: Some of the aliens train (implying differences in variance AND means)

Supplement 4: Pilot version of NBA study

In an earlier version of the NBA study, we conducted non-preregistered analyses on a subset of the data reported in the final paper (just 5 seasons in total). The results of this pilot study are reported below.

Methods

Design and sample. Game level data from 5 NBA seasons was collected from 2001 to 2005. Because the independent variables (mean and variance) are aggregates, this data was aggregated to the season level. Therefore, to ensure correct identification of the effect of these aggregated measures on salary, players were included if their contracts were signed in the offseason. Additionally, because we are testing the effect of performance on salary, performance data from a year is used to predict salary of the following year; therefore, players were only included if they had previously been contracted to play in the NBA. This leaves 131 players in the final dataset for the pilot, with an average age of 29 and an average of 6.85 years of experience playing in the NBA.

Measures. The "Game Score" metric is widely used for quantifying the quality of a player's game performance. This metric generates a single performance score by weighting a number in-game actions based on their relative value for the team (Hollinger, 2003, 2005). Specifically, the Game Score is computed with the following equation:

*Game Score = Points Scored + (0.4*Field Goals) - (0.7*Field Goal Attempts) - (0.4*(Free Throw Attempts-Free Throws)) + (0.7*Offensive Rebounds) + (0.3*Defensive Rebounds) + Steals + (0.7*Assists) + (0.7*Blocks) - (0.4*Personal Fouls) - Turnovers*

After the Game Score was computed for each player for each game, season-level statistics were computed and then weighted by the percentage of game minutes each player played in that season. Those season-level statistics are:

Performance mean. The mean of a player's Game Scores across one season.

Performance variability. The standard deviation in the player's performances within one season.

Salary. The salary a player earned for a season.

Team performance. The number of wins a team has in one season.

Control variables. We controlled for age and years in the league, which have been shown to be significantly related to player salary (Barnes & Morgeson, 2007). Moreover, we included dummy variables identifying the player's role as a Forward or Center (as contrasted with Guard). Additionally, we controlled for the trend for a player's Game Scores over the course of a season, operationalized as the unstandardized coefficient of Game Scores in a linear regression over the games for that season, because performance trend has been found to predict evaluations of employees (Barnes et al., 2012; Reb & Cropanzano, 2007; Reb & Greguras, 2010). Finally, we controlled for the previous year's salary and if the player changed teams in the previous year (Barnes et al., 2012).

Analysis

This analysis was conducted in three steps by (1) using performance measures of mean, trend, and variability to predict team wins, (2) using these performance measures to predict individual salary from the following year, and (3) then comparing the relative predictive power of each performance indicator for team wins and player salary. To account for individuals having unequal playing time, their team performances were weighted by the percentage of game minutes

each player played. Because individual performance is dependent on team performance, our individual-level analyses nested individuals within teams.

Results

Tables S4-1 and S4-2 display the means, standard deviations, and correlations of the sample variables at the individual and team levels. In order to test the distribution neglect hypothesis that people underweight variance and overweight mean information, we first needed to establish the effect that variance and mean in individual performance have on overall team performance. To do this, we conducted a hierarchical linear model using Game Score mean, trend, and variability to predict team performance (team wins per season). As Table S4-3 indicates, both mean (β = 22.426; $p < 0.001$) and standard deviation (β = -32.845; $p < 0.001$) of player performance significantly predicts team wins when both are included in the model, suggesting that higher mean performance and lower performance variance across games contribute to more team wins. This demonstrates that both performance dispersion and mean should be important for assessing player value. This in turn enables us to test for distribution neglect by testing if teams underpay consistent players relative to their contribution to team performance.

Table S4-1. Means, Standard Deviations, and Correlations Between Individual Level Variables

Variable	M	SD	1	2	3	4	5	6	7	8
1. Forward	0.389	0.489	--							
2. Center	0.199	0.4	-0.397***	--						
3. Age	29	4.158	-0.004	-0.028	--					
4. Salary	5228702	5178328	0.072	0.061	-0.291**	--				
5. Years in League	6.85	3.42	-0.019	-0.056	0.889***	-0.146	--			
6. Change of Team	0.55	0.499	-0.158	0.027	0.230**	-0.456***	0.144	--		
7. Performance Mean	7.563	4.805	0.103	-0.123	-0.197*	0.850***	-0.056	-0.329***	--	
8. Performance SD	5.38	1.594	0.037	-0.199*	-0.221*	0.618***	-0.119	-0.178*	0.828**	--
9. Performance Trend	0.01	0.157	0.053	0.055	-0.01	0.024	-0.038	-0.036	0.076	0.206*

Notes. *$p < 0.05$; **$p < 0.001$; ***$p < 0.001$; N = 131; Forward and Center are dummy variables coded as 1 for players in the respective position and 0 otherwise.

Table S4-2. Means, Standard Deviations, and Correlations Between Team Level Variables

Variable	M	*SD*	1	2
Performance Trend	0.003	0.015	--	
Performance Mean	3.092	0.605	-0.056	--
Performance SD	2.023	0.280	0.019	0.840***

Note. *$p < 0.05$; **$p < 0.001$; ***$p < 0.001$; N = 146.

Table S4-3. Regression Models of Performance Mean and Standard Deviation Predicting Team Wins

	Model 1			Model 2		
Predictor	**β**	**S.E.**	***t***	**β**	**S.E.**	***t***
Performance Trend	-74.719	55.947	1.336	-34.591	49.465	-0.699
Performance Mean	9.586	1.414	6.778***	22.426	2.304	9.732***
Performance SD				-32.845	4.967	-6.613***

Note. *$p < 0.05$; **$p < 0.001$; ***$p < 0.001$; $N = 146$.

In the second step of the analysis, we identify the relationships between player consistency, mean performance, and the following year's salary. This was done by conducting a second hierarchical linear regression in which individual-level factors predicted player salary the next year (see Table S4-4 for the results). Player mean significantly predicts salary ($\beta = 884059$; $p < 0.001$). We also find that the standard deviation of player performance significantly and negatively predicts subsequent pay ($\beta = -526077$; $p = 0.037$). Thus, reliability of player performance is not completely neglected in player compensation when considered in conjunction with the mean of player performance.

However, we also observe that the t-value for the performance standard deviation ($t = -2.109$) has a smaller magnitude than the t-value of performance mean ($t = 9.420$), which is driven by performance mean having a greater magnitude standardized coefficient and smaller standard error ($\beta = 884059$; $SE = 93845$) than performance standard deviation ($\beta = -526077$; $SE = 249387$). The larger t-value for performance mean suggests that mean is being weighted more heavily when salaries are decided.

Table S4-4. Regression Models of Performance Mean and Standard Deviation Predicting Player Salaries

	Model 1			Model 2		
Predictor	**β**	**S.E.**	***t***	**β**	**S.E.**	***t***
Forward	-373147	685256	-0.545	-24085	468657	-0.051
Center	91228	828425	0.110	1530808	591079	2.590*
Age	-621759	162464	-3.827***	-221054	113807	-1.942
Years in League	142884	202155	0.707	-1946	136378	-0.014
Contract Year	0.670	0	9.423***	0.187	0	3.042**
Team Change	-3164248	634676	-4.986***	-1692273	446537	-3.790***
Performance Trend				-714739	1348722	-0.530
Performance Mean				884059	93845	9.420***
Performance SD				-526077	249387	-2.109*

Notes. *$p < 0.05$; **$p < 0.001$; ***$p < 0.001$; $N = 131$; Forward and Center are dummy variables coded as 1 for players in the respective position and 0 otherwise.

Finally, in the third step of the analysis, we assessed if teams are underweighting the importance of performance variance by testing if performance standard deviation has a significantly larger effect on team wins than it does on player salary. The difference in the effect of performance standard deviation on the two dependent variables was tested using Paternoster, Brame, Mazerolle, and Piquero's (1998) method for comparing coefficients and standard errors across regression models. We found that performance standard deviation predicts team wins significantly better than player salary ($z = 2.109$; $p = 0.035$). This supports the hypothesis that NBA managers underweight the importance of performance dispersion when it comes to compensating their players, even though they do not neglect it entirely. Moreover, we find that performance mean predicts team wins significantly less well than player salary ($z = 9.420$; $p < 0.001$). This suggests that teams overweight the importance of mean performance when assessing player value.

Supplement 5: Materials for assembly line study

Trial & Instructions:

On the next pages, you'll play the role of a manufacturing supervisor in an electronics factory. Throughout the day, you quickly peek at the quality ratings (which range from 0-100) on each assembly line to provide workers with real-time feedback on their performance. Today, you are looking for assembly lines with **[higher overall average / more consistent]** quality ratings.

You will earn a $0.05 bonus for each correct judgment. You will make a total of 10 judgments, meaning that you can earn up to $0.50 bonus for this portion of the study.

Because you are watching these quality ratings in real-time, you will have to make decisions about the data quickly. For each judgment you will have 10 seconds to view the scores and make your decision.

On the next page you will experience an example trial to get a sense of the procedure. This trial will not count towards your bonuses.

Performance scores

Listed below are all the possible comparison sets participants could have seen. The same distributions were seen in the mean goal condition as in the variance goal condition. For example, a participant would have seen row 1 in both the mean condition and the variance condition, but the correct answer may differ depending on the goal given. Note that these are the same pairs that were used in the pilot study (see Supplement 7).

Assembly Line A	Assembly Line B
36, 63, 53, 53, 44, 53, 48, 49, 52, 52	58, 36, 49, 48, 52, 50, 53, 47, 49, 50
65, 71, 69, 73, 80, 68, 88, 49, 72, 55	77, 73, 70, 65, 50, 61, 61, 64, 84, 67
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73, 87, 75, 86, 91, 72, 60, 77, 87, 70

Supplement 6: Further analyses for assembly line study

In addition to the logistic regression models that were pre-registered for the assembly line study, we also evaluated equivalent OLS regression models given our analysis approach in Studies 1 and 5 (which also used binary outcome variables). As outlined in Tables S6-1 and S6-2 below, the pattern of results from these OLS regressions closely mirror the reported results from the logistic regressions. Figure S6-1 provides graphical representations of the interaction effect in Model 5.

Table S6-1: OLS Regression Results (DV = Decision Accuracy)

	Model 1			**Model 2**			**Model 3**		
Condition	***b***	**SE**	***p***	***b***	**SE**	***p***	***b***	**SE**	***p***
Intercept	0.30	0.05	< .001	0.72	0.10	< .001	0.29	0.05	< .001
Decision simplicity	0.51	0.06	< .001				0.56	0.06	< .001
Condition: Variance				-0.04	0.02	.007	-0.06	0.02	< .001

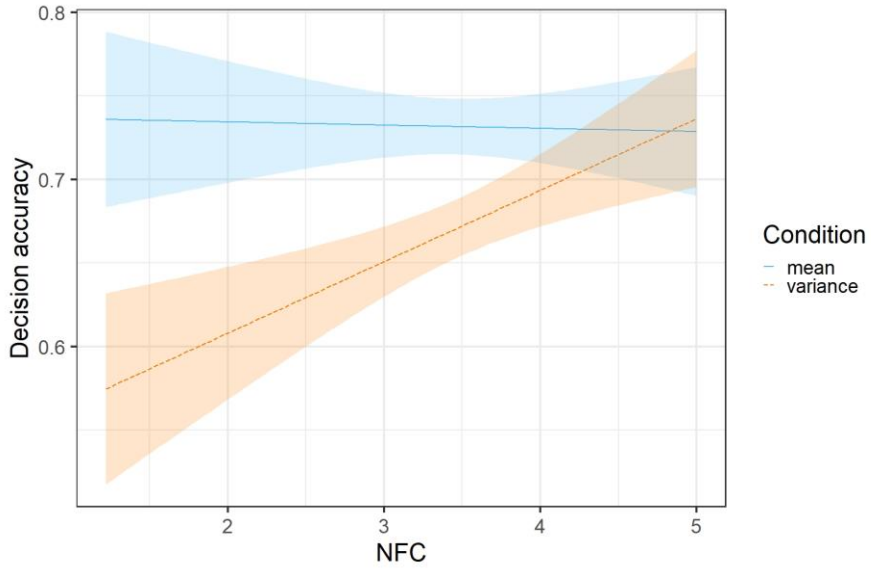
N = 5450 responses from 545 respondents
Mean is the base case for the condition variable
Robust standard errors used clustered by respondent

Table S6-2: Moderated OLS Regression Results (DV = Decision Accuracy)

	Model 4			**Model 5**		
Condition	***B***	**SE**	***P***	***b***	**SE**	***p***
Intercept	0.21	0.06	< .001	0.29	0.07	< .001
Decision simplicity	0.57	0.06	< .001	0.57	0.06	< .001
Condition: Variance	-0.06	0.02	< .001	-0.22	0.08	.005
Need for cognition	0.02	0.01	.058	0.00	0.01	.889
NFC X Condition				0.05	0.02	.037

N = 5440 responses from 544 respondents (incomplete data from one respondent)
Mean is the base case for the condition variable
Robust standard errors used clustered by respondent

Figure S6-1: Interaction of Need for Cognition and Condition on Decision Accuracy



Supplement 7: Pilot for assembly line study

In a non-preregistered pilot study, we asked participants to compare the performance of two employees and identify the employee with the higher mean performance or the greater consistency of performance under strict time constraints (10 seconds). Study 3 in the main manuscript pre-registers the relevant empirical predictions and uses an assembly line paradigm where rapid evaluations of performance have greater verisimilitude.

Methods

Participants. We recruited 202 participants on Amazon's Mechanical Turk. Because participants were instructed not to use a calculator or write down any numbers, two participants were removed from the sample based on a question asking them to self-identify if they cheated in some way. The final sample was thus 200 participants. The average age of participants was 33.46 (*SD* = 12.11), and 43% of participants were female.

Procedure. After completing informed consent, participants were told that they would be evaluating job candidates in a series of quick, timed judgements. Each job candidate had completed a 10-week internship and at the end of each week was scored on the quality of their work. Participants were randomly assigned to either try and pick the candidate with "the higher overall average score" (the mean condition) or the candidate who had performed "most reliably" (the variance condition), where reliability was defined for participants as receiving similar scores from week to week such that their performance was less variable.

Participants made 10 judgements about pairs of candidates and were paid a $0.05 bonus per correct judgement. For each judgment participants would view two candidates (labeled as Candidate A and Candidate B) and the two candidates' sets of 10 scores for a total of 10 seconds. The survey then automatically advanced and prompted participants for their choice of Candidate A or B. All participants completed one trial round, so that they were familiar with the procedure and aware that the values would disappear after 10 seconds.

The values for Candidate A and Candidate B were randomly chosen from a set of 200 possible comparisons (see Appendix S7).

Measures.

Accuracy. For each judgement, participants were given a score of 1 if they chose the correct candidate (the candidate with the higher mean performance in the mean condition or the lower standard deviation in the variance condition) and a score of 0 if they chose the incorrect candidate.

Difficulty. For each possible set of two candidates' performance distributions, we calculated how difficult the task of assessing mean performance versus consistent performance would be in order to generate a normative benchmark. Because mean differences are normally distributed, while variance differences are F-distributed, absolute difference in means are not directly equally difficult to judge as compared to absolute differences in variances. Calculating difficulty thus allows us to better directly compare the task of judging average performance versus consistent performance. To calculate the difficulty of determining the higher performing candidate we calculated the probability that the candidate with the higher sample mean from these ten weeks would have a higher population mean by at least 0.1 performance points as compared to the candidate with the lower sample mean. To calculate the difficulty of determining the more reliably performing candidate, we calculated the ratio of the variances of two candidates and determined the probability that the candidate with the lower sample variance from these ten weeks would have a lower population variance. A difficulty score of 0.99 thus

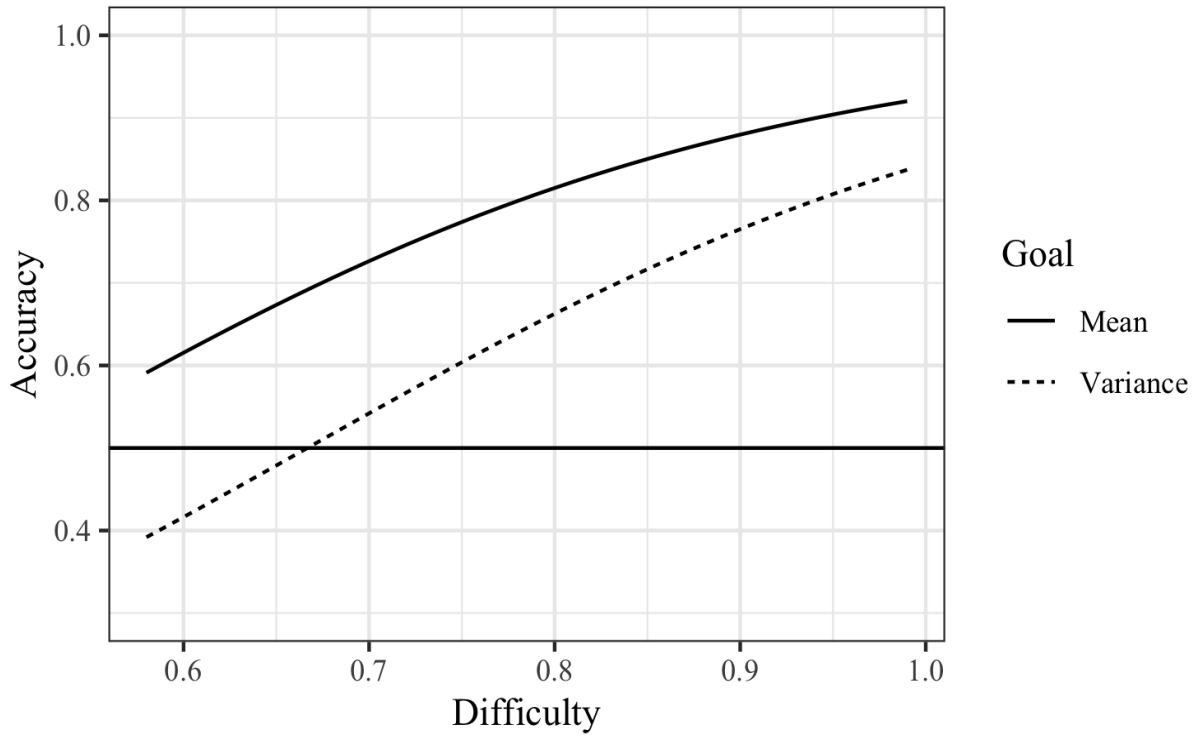
indicated a very easy choice, while a difficulty score of 0.51 would indicate a very difficult choice. Values of the distributions used for participants varied from 0.58 to 0.99.

Results

Of the 2000 decisions made in the study, participants chose the correct candidate 71.15% of the time. When guessing the highest performer (mean), participants were correct 77.7% of the time, but when they were guessing the more consistent performer (variance), this fell to 64.6% of the time.

To determine if individuals were significantly better able to identify comparative average performance than comparative consistent performance, we used a binomial mixed-model regression with a random intercept per participant in which participant goal (mean vs. variance) was used to predict accuracy in choice. In addition, we controlled for the difficulty of the choice so that mean and variance choices were of statistically equivalent difficulty. We found that individuals were significantly worse at judging consistent performance than high average performance under time constraints, (β = -0.81, SE = 0.14, z = 5.88, $p < 0.001$). As shown in Figure S6-1, this was true regardless of choice difficulty.

Figure S6-1. Participant Accuracy in Identifying the Correct Candidate as a Function of Goal and Difficulty



Appendix S7: Materials for pilot

Trial & Instructions:

On the next pages you will be asked to make timed, quick judgments about to job candidates. Each candidate was scored at the end of each week during a 10-week internship. [Your job is to judge as quickly as possible which candidate has performed more reliably over the course of the internship. The more reliably performing candidate will receive ***more similar scores*** from week to week, which is to say their scores will be ***less variable***. / Your job is to judge which candidate has performed with ***a higher overall average score***.]

You will earn a $0.05 bonus for each correct judgment. You will make a total of 10 judgments, meaning that you can earn up to $0.50 bonus for this portion of the study.

For each judgment you will have 10 seconds to view the scores and make your decision. The page will then automatically advance and you will have 10 seconds to mark your guess and hit submit.

On the next page you will experience an example trial. This trial will not count towards your bonuses.

Candidate performance ratings

Listed below are all the possible comparison sets participants could have seen. The same distributions were seen in the mean goal condition as in the variance goal condition. For example, a participant would have seen row 1 in both the mean condition and the variance condition, but the correct answer may differ depending on the goal given.

Candidate A	Candidate B
36, 63, 53, 53, 44, 53, 48, 49, 52, 52	58, 36, 49, 48, 52, 50, 53, 47, 49, 50
65, 71, 69, 73, 80, 68, 88, 49, 72, 55	77, 73, 70, 65, 50, 61, 61, 64, 84, 67
71, 65, 73, 68, 72, 80, 69, 62, 68, 54	55, 71, 56, 69, 64, 65, 67, 60, 68, 71
29, 33, 40, 25, 32, 58, 44, 20, 23, 22	23, 50, 28, 40, 36, 32, 26, 23, 29, 16
54, 52, 48, 55, 57, 56, 47, 49, 50, 55	56, 44, 50, 41, 44, 47, 52, 53, 70, 45
39, 36, 18, 45, 38, 33, 45, 31, 30, 49	32, 31, 28, 37, 36, 38, 39, 38, 21, 42
69, 67, 73, 71, 72, 55, 72, 79, 81, 53	65, 65, 66, 80, 68, 66, 66, 70, 59, 71
74, 86, 76, 85, 52, 70, 59, 66, 81, 70	70, 60, 74, 65, 77, 73, 78, 50, 78, 81
50, 31, 35, 27, 27, 42, 18, 53, 29, 28	33, 37, 36, 30, 32, 29, 48, 27, 13, 37

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73, 87, 75, 86, 91, 72, 60, 77, 87, 70

Supplement 8: Materials for histogram study

Instructions

A Study of Performance Evaluations
The purpose of this study is to examine how supervisors rate the performance of employees. As you know, performance ratings are very important in determining the course of an individual's career. Thus, it is important for us to know how such ratings are being made.

You Are the Regional Supervisor
In this present study we would like you to play the role of a Regional Supervisor. You are in charge of a firm that supplies wholesale appliances to retail outlets. Under your supervision are 35 junior-level sales personnel. Your task is to review their performance over the past 26 weeks and to compare the performances of pairs of two employees. You will be asked to rate the relative performance of 35 pairs of employees. These performance appraisals are used for personnel record keeping and to document your judgment of their overall performance over the pay period in question.

Your Information
You will base your judgments on data for the past 26 weeks. In other words, for each of the 35 salesperson pairs you will see their performances over 26 weeks depicted in [*tables/histograms*]. These performance data for each salesperson show how much money they contributed to the company in Dollar amounts. More specifically, the number for each week expresses how much sales revenue that person brought in relative to a long-term company average as measured over several years and many, many salespersons.

For example, in the example below, the salesperson generated revenue of $800 more than the long-term company average in Week 1, and $2000 less than the long-term company average in Week 2.

Week	Revenue Contribution
Week 1:	800
Week 2:	-2000

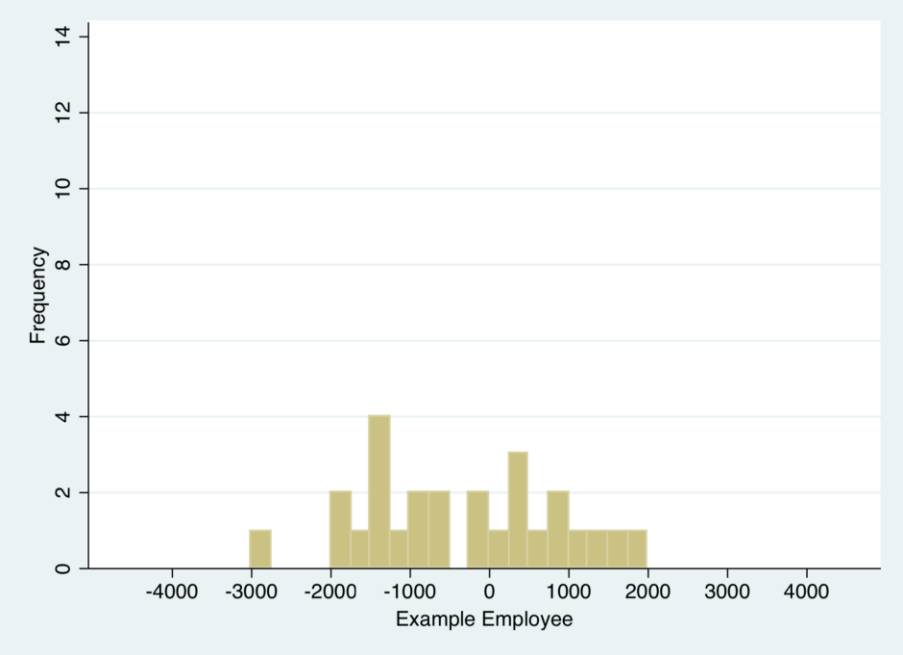
Making Your Evaluations
The [*tables/histograms*] contain all the available information on the 35 employee pairs you need to complete your job. Once you have evaluated an employee pair, you cannot go back and change your evaluation. Therefore, be sure to use enough time to review the information you have and to make your judgments carefully. You will evaluate each employee on the same criteria.

How to Evaluate Performance
For this company, you care just as much about HIGHER AVERAGE performances as you do about MORE CONSISTENT performances. This is because your business model equally depends on selling many products as well as having a consistent and predictable supply chain.

When you were first hired, you were unsure how important consistency was to the company's overall profitability, so you hired a data scientist to analyze the company's revenue over the past 5 years. The data scientist concluded that salespeople that have HIGHER AVERAGE performances and MORE CONSISTENT performances are equally important to the company's profitability. As a result, you implemented bonuses for salespeople selling more as well as high consistency in the number of sales.

Therefore, when evaluating the relative performance of employees, you should equally weight how high the average of the performances are as well as how consistent the performances are for each employee.

Example Employee Histogram



Example Employee Table Data

Revenue Contribution (In US dollars)
-$2,914
-$1,997
-$1,856
-$1,696
-$1,448
-$1,377
-$1,346
-$1,260
-$1,191
-$957
-$787
-$628
-$592
-$217
-$187
$171
$384
$405
$419
$528
$771
$921
$1,151
$1,466
$1,672
$1,809

Comprehension Checks

Above is an example [*table/histogram*]. The x-axis ranges from -$4750 to $4750. This represents the weekly revenue contribution of the employee.

(Table Condition:) [Each entry in the table represents one week's revenue contribution. There are 26 entries for each employee, which represents one entry per week for the past 26 weeks. However, they are in ascending numerical order, so it is not possible to know when each weekly revenue contribution was performed]

(Histogram Condition:) [Each bar represents a range of revenue contribution amounts of $250 (e.g. -$1000 to -$750 or 2000 to 2250). The height of each bar represents the number of weeks that an employee performed at that "revenue contribution" range over the past 26 weeks.]

Please answer the following questions about this [*table/histogram*] to check your understanding of the information presented in the [*table/histogram*].

What is the approximate lowest revenue contribution in a week of the example employee?

-$4000 to -$3750 | -$3000 to -$2750 | -$1500 to -$1250 | -$250 to $0

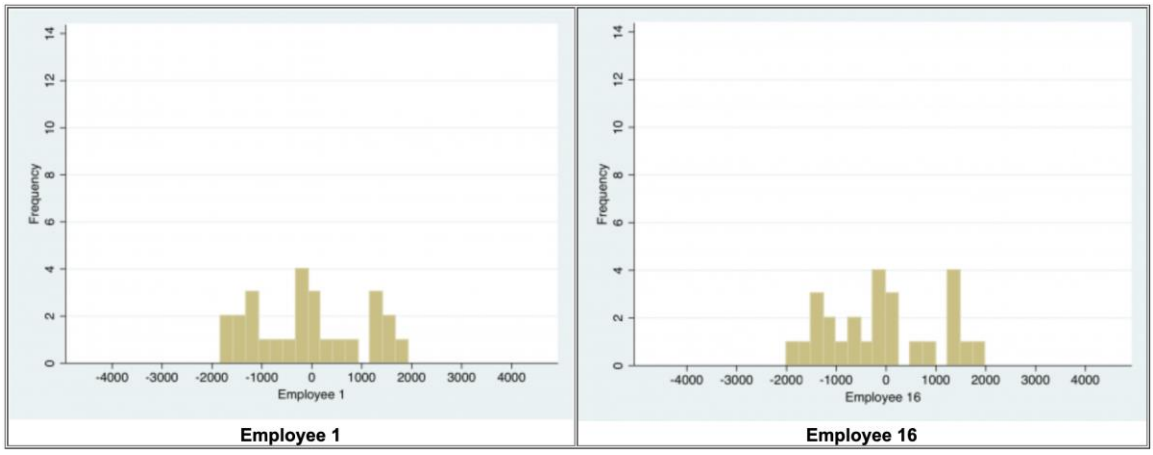
What is the revenue contribution range that the example employee performed in for the greatest number of weeks (highest frequency)?

-$3000 to -$2750 | -$2000 to -$1750 | -$1500 to -$1250 | $250 to $500

How many weeks did the example employee perform at the $250 to $500 revenue contribution level during the past 26 weeks?

0 | 1 | 2 | 3 | 4 | 5 | 6

Histogram Pair 1



Employee 1 **Employee 16**

Table Pair 1

Revenue Contribution (In US dollars)
-$1,817
-$1,727
-$1,422
-$1,370
-$1,314
-$1,202
-$1,140
-$844
-$657
-$566
-$266
-$207
-$102
-$81
-$52
$49
$157
$236
$621
$925
$1,287
$1,350
$1,403
$1,435
$1,504
$1,766

Employee 1

Revenue Contribution (In US dollars)
-$1,817
-$1,727
-$1,422
-$1,370
-$1,314
-$1,202
-$1,140
-$844
-$657
-$566
-$266
-$207
-$102
-$81
-$52
$49
$157
$236
$621
$925
$1,287
$1,350
$1,403
$1,435
$1,504
$1,766

Employee 16

Supplement 9: Materials for grades study

Experimental Conditions

Naïve condition. Respondents answered the open-ended question first and then viewed the histograms on a subsequent screen.

Prompted condition. Respondents viewed the histograms first and then answered the open-ended question on a subsequent screen. We expected that this condition would make the possibility of a skewed distribution more salient, reducing distribution neglect in subsequent open-ended explanations of the above-average effect.

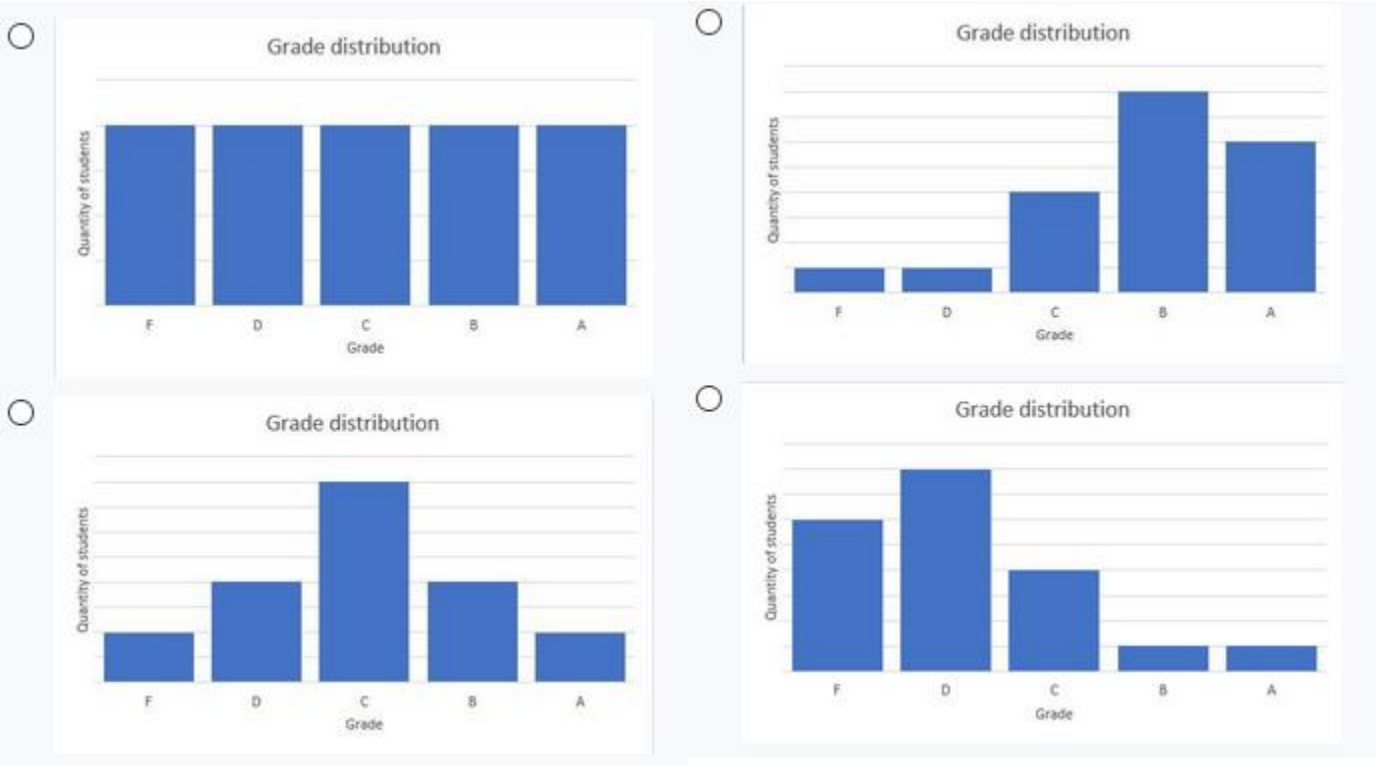
Open-Ended Question

A survey of university students in the United States finds that more than half of them (about 65%) believe they are better-than-average students in terms of their grades.

What might explain this? Please list any and all reasons you can think of in the order in which they come to mind. Please include all the reasons that you think are valid or relevant.

Histograms Prompt

Which of the pictures below do you think most accurately characterizes the distribution of grades among university students in the United States? F is the worst grade and A is the best.



Supplement 10: Further analyses for grades study

In addition to the OLS model that was pre-registered for Study 5, we also evaluated an equivalent logistic regression model given the binary nature of the outcome variable. As outlined in Table S10-1 below, the pattern of results from this logistic regression closely mirror the reported results from the OLS regression.

Table S10-1: Logistic Regression Results (DV = Skew Reasoning Used)

Condition	***b***	**SE**	***p***
Intercept	-2.36	0.13	< .001
Prompted condition	0.18	0.18	.298

N = 1771 responses from 867 respondents
Robust standard errors used clustered by respondent
Condition coefficients are relative to the *Naive* condition

Supplement 11: Potential real-world examples of distribution neglect

Although admittedly speculative, it is worth considering some recent events from the headlines in which distribution neglect may have played a role.

- ***Financial fraud.*** Even experienced financial experts and investigators failed to realize the financial information reported by fraudulent firms such as Bernard L. Madoff Investment Securities and Enron exhibited inadequate volatility, with overly similar profits and growth reported time period after time period (Fung, 2010).

- ***Academic fraud.*** Likewise, numerous expert scientific reviewers missed clear-cut cases of fabricated data in scores of articles by Diederik Stapel and others, studies reporting impossibly little volatility in standard deviations and means (Simonsohn, 2013; Simonsohn, 2014).

- ***Disbelief in climate change.*** Enough members of the public interpret streaks of cold weather as evidence against climate change, which involves not only gradually increasing temperatures but also more volatile and extreme temperatures, that popular publications such as Business Insider, USA Today, Forbes, and The Guardian have dedicated articles to explaining "why cold weather doesn't mean global warming isn't real" (McGowan & Walters, 2017; Roth, 2017; Shepherd, 2017; Spector & Harvey, 2014; Williams, 2018).

- ***Gender stereotypes.*** Women's underrepresentation in STEM fields contributes to strongly held social stereotypes regarding average gender differences in math ability—yet mean gender differences are in fact trivial, and men tend to exhibit greater overall variance in performance (Hedges & Nowell, 1995; Hyde, Fennema, & Lamon, 1990; Hyde & Mertz, 2009).

- ***Athletic contracts.*** Anecdotal cases abound of star athletes whose high mean performance in a streak of games leads to a big signing or new contract, neglecting inconsistencies in long run performance (Seward, 2018; White & Sheldon, 2014).

Like most complex decisions and social phenomena, the above examples are no doubt multiply determined. For instance, recent streaks of peak performance may bias labor contract decisions due to the availability bias (Barnes & Morgeson, 2007; Tversky & Kahneman, 1973; Tversky & Kahneman, 1974), and political beliefs can bias interpretations of scientific evidence related to climate change (Lewandowsky, Oberauer, & Gignac, 2013; Lord, Ross, & Lepper, 1979). However, we suggest that distribution neglect is an additional and novel contributor that these real-world examples may all have in common.

References for S11

Barnes, C. M., & Morgeson, F. P. (2007). Typical performance, maximal performance, and performance variability: Expanding our understanding of how organizations value performance. *Human Performance, 20*(3), 259-274.

Fung, K. (2010). *Numbers rule your world: The hidden influence of probability and statistics on everything you do*. New York: McGraw-Hill.

Hedges, L. V., Nowell, A. (1995). Sex differences in mental test scores, variability, and numbers of high-scoring individuals. *Science, 269*(5220), 41–5.

Hyde, J. S., Fennema, E., & Lamon, S. J. (1990). Gender differences in mathematics performance: A meta-analysis. *Psychological Bulletin, 107*(2), 139.

Hyde, J., & Mertz, J. (2009). Gender, culture, and mathematics performance. *Proceedings of the National Academy of Sciences, 106*(22), 8801-8807.

Lewandowsky, S., Oberauer, K., & Gignac, G. E. (2013). NASA faked the moon landing—therefore,(climate) science is a hoax: An anatomy of the motivated rejection of science. *Psychological Science, 24*(5), 622-633.

Lord, C. G., Ross, L., & Lepper, M. R. (1979). Biased assimilation and attitude polarization: The effects of prior theories on subsequently considered evidence. *Journal of Personality and Social Psychology, 37*(11), 2098.

McGowan, M. & Walters, J. (2017, December 29). Trump's call for some 'good old global warming' ridiculed by climate experts. *The Guardian*. Retrieved September 6, 2018, from https://www.theguardian.com/us-news/2017/dec/29/donald-trump-good-old-global-warming-us-winter

Roth, S. (2017, December 28). It's cold outside, but that doesn't mean climate change isn't real. *USA Today.* Retrieved September 6, 2018, from https://www.usatoday.com/story/weather/2017/12/28/its-cold-outside-but-doesnt-mean-climate-change-isnt-real/987948001/

Seward, J. (2018). From the $60m man who dazzled for Brazil but not at Manchester United to a controversial Liverpool flop: 10 of the worst post-World Cup signings. *Daily Mail.* Retrieved from https://www.dailymail.co.uk/sport/football/article-5795767/10-worst-post-World-Cup-signings.html

Shepherd, M. (2017, December 28). A response for people using record cold U.S. weather to refute climate change. *Forbes*. Retrieved September 6, 2018, from https://www.forbes.com/sites/marshallshepherd/2017/12/28/a-response-for-people-using-record-cold-u-s-weather-to-refute-climate-change/#109c8e335680

Spector, D., & Harvey, C. (2014, November 21). Why cold weather doesn't mean global warming isn't real. *Business Insider.* Retrieved September 6, 2018, from https://www.businessinsider.com/cold-weather-doesnt-discredit-climate-change-2014-11/?IR=T

Simonsohn, U. (2013). Just post it: The lesson from two cases of fabricated data detected by statistics alone. *Psychological Science, 24*(10), 1875-1888.

Simonsohn, U. (2014). Fake Data: Mendel Vs. Stapel [Blog post]. *Datacolada.* Retrieved from http://datacolada.org/19

Tversky, A., & Kahneman, D. (1973). Availability: A heuristic for judging frequency and probability. *Cognitive Psychology, 5*(2), 207-232.

Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science, 185*(4157), 1124-1131.

White, M. H., & Sheldon, K. M. (2014). The contract year syndrome in the NBA and MLB: A classic undermining pattern. *Motivation and Emotion, 38*(2), 196-205.

Williams, A. (2018). Why snow, colder weather conditions don't debunk climate change. *AccuWeather*. Retrieved September 6, 2018, from

https://www.accuweather.com/en/weather-news/why-snow-colder-weather-conditions-dont-debunk-climate-change/70003753

Supplement 12: Range study

In this supplemental study, we posited that when people do think in terms of variance, ranges may be more intuitive than standard deviations. The range of a distribution is least correlated with its variance when extreme or outlying observations cause the range to dramatically increase, while the variance increases comparatively less so. Individuals are disproportionately attentive to outliers in group behavior, to the extent that they may even bias one's judgments of the rest of the distribution (Dannals & Miller, 2017). This suggests that individuals may use the range of a distribution as a proxy for the variance of that distribution because the extreme of the distribution may be more salient than the relative variability within it.

In an experimental context, we examined whether individuals tended to prefer information about ranges versus variance when making decisions (i.e., exhibit a "range bias"). We designed a paradigm in which participants make an incentivized choice using either range or percentile information to aid in their decision. Percentiles capture a measure of dispersion similar to range but are more sensitive to the general variance of the distribution than range values. To the extent individuals prefer range information to percentiles, they lose out on some valuable information and may become more attentive to outliers.

We asked participants to pick between two random number generators and told them that they would be paid the number generated in cents at the end of the study. We told participants that both distributions had the same average but that before picking one, they had the option to receive some information about distributions of the numbers in each number generator. They rated how useful each of two types of information would be in their decision: "The highest and lowest number written on a ball in each machine" vs. "The 10th lowest number and the 10th highest number written on a ball (i.e., the 20th and 80th percentile of the distribution) in each machine."

Methods

Participants. We recruited 234 respondents via Prolific.co, requiring residence in the United States. Participants were required to answer a comprehension check in order to advance in the survey and those who answered incorrectly were paid but removed from data analysis leaving a final sample size of $N = 191$. The median age of participants was 25 years, 42.9% of the sample self-identified as female, and 57.1% self-identified as male.

Procedure. After providing informed consent participants were shown two ball machines like those used in bingo or lotteries and were told they would need to choose between the two machines each of which contained 50 balls. Participants were told that they would receive "a bonus payment equal to the number written on the ball in US cents. For example, if the ball read 56, you would receive $0.56 as your bonus." Furthermore, participants learned that "each machine has a different distribution of numbered balls" and that they would have the opportunity to learn more about each choosing one. Participants then learned that both distributions had an average of 14.49 but the distributions differed in other aspects.

Participants then rated how useful two measures of dispersion ("The highest and lowest number written on a ball in each machine" and "The 10th lowest number and the 10th highest number written on a ball (i.e. the 20th and 80th percentile of the distribution) in each machine") were on a scale from "1," "Not at all Useful" to "7," "Extremely Useful" and were asked in a binary choice which they would prefer to learn. After making their choice participants received their preferred information and made a binary choice of which ball machine they would like to use for their bonus payment generation.

Finally, participants were asked which they would prefer between two gambles: a 10% chance of a bonus of $0.99, and a 90% chance of a bonus of $0.05 or a 44% chance of a bonus of $0.20, and a 56% chance of a bonus of $0.10. Unbeknownst to participants, these percentages closely mapped on to the distributions that they already chose between in the ball machines. This was done to check whether decisions in the ball task matched true risk preferences.

Results

Participants viewed learning the percentiles, $M = 4.87$, $SD = 1.75$, as similarly useful to learning the range, $M = 5.06$, $SD = 1.59$, $t(190) = -1.08$, $p = 0.281$. However, participants were significantly more likely to choose to learn the percentiles, $n = 113$ than the range, $n = 78$, $x^2 = 6.41$, $p = 0.011$. Participants who chose to receive the range information overwhelming chose Machine A, $n = 64$, which featured a heavily skewed distribution where most values were 5 but one outlier was 99 over Machine B, $n = 14$, which featured a more normally distributed set of values around the mean. In contrast participants who chose to receive the percentile information overwhelmingly chose Machine B, $n = 95$ over Machine A, $n = 18$.

We compared these decisions to those that participants made with complete gambling information. Any participant who chose Machine A and then preferred the second gamble or chose Machine B and then preferred the first gamble could be said to have inconsistent risk preferences. Participants made similarly inconsistent decisions with regards to their risk preference regardless of whether they received range information, $n_{inconsistent} = 34$, or percentile information, $n_{inconsistent} = 51$, $x^2 = 0.003$, $p = 0.950$.

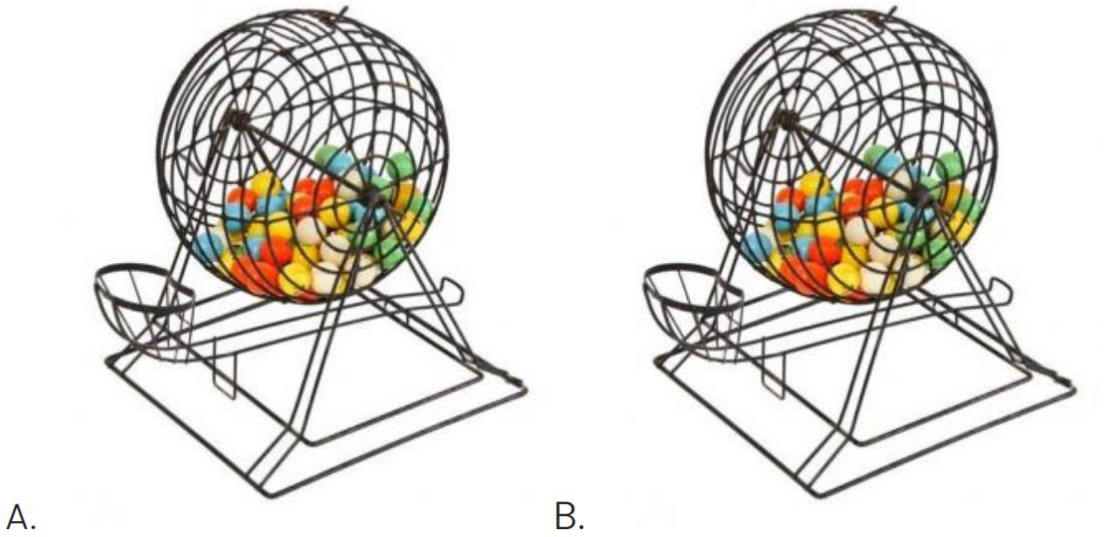
In sum, offering evidence against the hypothesized preference for range information, participants indicated that each type of information was similarly useful, and chose to learn the percentiles significantly more often than the range information.

Reference S12

Dannals, J. E., & Miller, D. T. (2017). Social norm perception in groups with outliers. *Journal of Experimental Psychology: General*, *146*(9), 1342-1359.

Appendix S12: Materials for Range Study

Instructions
In this study you have to pick between two ball machines.



Inside each machine are 50 balls. After you pick one, we'll spin the machine and you'll receive a bonus payment equal to the number written on the ball in US cents. Each machine has a different distribution of numbered balls. Both distributions have the SAME AVERAGE of 14.49 but have other differences. To help you make a decision between the two ball machines we'll give you the opportunity to learn several pieces of information about the distribution of numbers in each.

Please rate how useful you would find each of these in helping you make your decision.
(*1 = Not at all useful, 7 = Extremely useful*)

The highest and lowest number written on a ball in each machine. (2)

The 10th lowest number and the 10th highest number written on a ball (i.e. the 20th and 80th percentile of the distribution) in each machine. (3)

Which would you rather learn to help make your decision?

- The highest and lowest number written on a ball in each machine. (2)
- The 10th lowest number and the 10th highest number written on a ball (i.e. the 20th and 80th percentile of the distribution) in each machine. (3)

Range Choice
You chose the range, or the highest and lowest number. Here's the information on both machines.

Machine A:
Average Number = 14.49
Highest Number = 99
Lowest Number = 5

Machine B:
Average Number = 14.49
Highest Number = 20
Lowest Number = 10

Percentile Choice
You chose the 10th highest and 10th lowest numbers. Here's the information on both machines.

Machine A:
Average Number = 14.49
10th Highest Number = 5
10th Lowest Number = 5

Machine B:
Average Number = 14.49
10th Highest Number = 10
10th Lowest Number = 20

Which machine would you like to use to generate your bonus? After the survey is complete, we'll randomly choose one of the fifty balls in that machine and pay you a bonus within the next 24 hours based on the number on that ball.