

The Intuitive Conceptualization and Perception of Variance:
Supplemental Materials

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Materials for Studies 2a and 2b

Trial	Statistical Variance	Mean	Sample Size	Range	Variety
1	13.71	69.99	10	10	6.79
2	13.37	24.93	10	10	6.74
3	13.05	25.06	10	10	6.77
4	25.13	24.92	10	10	2.00
5	18.96	24.90	10	10	2.97
6	18.15	25.07	20	10	3.00
7	25.01	25.00	20	10	2.00
8	24.13	25.08	20	20	8.30
9	56.10	24.85	20	25.6	12.79
10	43.29	24.97	20	14	2.93
11	39.26	24.28	22	20	14.10
12	55.45	24.92	22	20	12.79

Table S1

The sample characteristics (averaged across participants) of the samples drawn from the distributions used in Study 2a.

Trial	Statistical Variance	Mean	Sample Size	Range	Variety
1	40.94	69.18	20	20	13.21
2	43.56	24.94	20	20	13.09
3	25.65	70.01	10	10	2.00
4	25.42	25.07	10	10	2.00
5	17.38	69.98	10	10	3.00
6	16.78	70.08	20	10	3.00
7	17.28	24.93	10	16	3.00
8	17.67	25.13	10	10	3.00
9	65.92	25.11	10	16	2.00
10	56.16	25.11	20	20	12.09
11	28.89	24.95	20	20	13.33
12	22.81	70.04	10	10	3.00

Table S2

The sample characteristics (averaged across participants) of the samples drawn from the distributions used in Study 2b.

Table S3

Distributions used to generate the samples observed by participants in Study 2a.

Distributions used in Study 2a				
	Values	Probability	Range	Sample Size
Trial 1	(65,66,67,68,69, 70,71,72,73,74,75)	(0.091,0.091,0.091,0.091, 0.09,0.091,0.091,0.091,0.091,0.091)	Yes (65,75)	10
Trial 2	(20,21,22,23,24, 25,26,27,28,29,30)	(0.091,0.091,0.091,0.091,0.09, 0.091,0.091,0.091,0.091,0.091)	Yes (20,30)	10
Trial 3	(20,21,22,23,24, 25,26,27,28,29,30)	(0.091,0.091,0.091,0.091,0.09, 0.091,0.091,0.091,0.091,0.091)	Yes (20,30)	10
Trial 4	(20,30)	(0.5,0.5)	No	10
Trial 5	(20,25,30)	(0.33,0.33,0.33)	Yes (20,30)	10
Trial 6	(20,25,30)	(0.33,0.33,0.33)	Yes (20,30)	20
Trial 7	(20,30)	(0.5,0.5)	No	20
Trial 8	(15,16,17,18,19, 20,21,22,23,24 25,26,27,28,29, 30,31,32,33,34,35)	(0.02,0.02,0.02,0.02,0.02, 0.02,0.02,0.02,0.02,0.2,0.6, 0.02,0.02,0.02,0.02,0.02, 0.02,0.02,0.02,0.02,0.02)	Yes (15,35)	20
Trial 9	(11,12,13,14,15, 17,18,19,20,21, 22,23,24,25,26, 27,28,29,30,31, 32,33,34,35, 36,37,38,39)	(0.0275,0.0275,0.0275,0.0275, 0.055,0.0275,0.0275,0.0275, 0.0275,0.0275,0.0275,0.0275,0.0275, 0.0275,0.23,0.0275,0.0275,0.0275, 0.0275,0.0275,0.0275,0.0275,0.0275, 0.0275,0.0275,0.0275,0.0275,0.0275)	No	20

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Table S3 – continued from previous page

Distributions used in Study 2a				
Trial 10	(18,25,32)	(0.45,0.1,0.45)	No	20
Trial 11	(15,16,17,18,19,	(0.048,0.047,0.053,0.042,0.048,	Yes (15,35)	22
	20,21,22,23,24	0.095,0.048,0.047,0.048,0.047		
	25,26,27,28,29,	0.048,0.048,0.047,0.048,0.048,		
	30,31,32,33,34)	0.047,0.048,0.047,0.048,0.048)		
Trial 12	(15,16,17,18,19,	(0.1,0.07,0.06,0.05,0.04,	Yes (15,35)	22
	20,21,22,23,24,	0.04,0.035,0.03,0.03,		
	25,26,27,28,29,	0.03,0.03,0.03,0.03,0.03,0.035,		
	30,31,32,33,34,35)	0.04,0.04,0.05,0.06,0.07,0.1)		

Table S4

Distributions used to generate the samples observed by participants in Study 2b.

Distributions used in Study 2a				
	Values	Probability	Range	Sample Size
Trial 1	(60,61,62,63,	(0.048,0.048,0.048,0.046,	Yes (60,80)	20
	64,65,67,68,69,	0.094,0.096,0.048,0.048,0.048,		
	70,71,72,73,74,	0.048,0.048,0.046,0.048,0.048,		
	75,76,77,78,79,80)	0.048,0.046,0.048,0.048,0.048)		
Trial 2	(15,16,17,	(0.048,0.048,0.048,0.046,	Yes (15,35)	20
	18,19,20,	0.046,0.048,0.048,0.048,0.048,		
	21,22,23,24,25,	0.048,0.048,0.048,0.048,		
	26,27,28,29,30,	0.046,0.048,0.048,0.048,		
	31,32,33,34,35)	0.046,0.048,0.048,0.048)		

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Table S4 – continued from previous page

Distributions used in Study 2a				
Trial 3	(65,75)	(0.5,0.5)	Yes (65,75)	10
Trial 4	(20,30)	(0.5,0.5)	Yes (20,30)	10
Trial 5	(65,70,75)	(0.33,0.33,0.33)	Yes (65,70,75)	10
Trial 6	(65,70,75)	(0.33,0.33,0.33)	Yes (65,70,75)	20
Trial 7	(17,25,33)	(0.035,0.93,0.035)	Yes (17,25,33)	10
Trial 8	(20,25,30)	(0.33,0.33,0.33)	Yes (20,25,30)	10
Trial 9	(17,33)	(0.5,0.5)	Yes (17,33)	10
Trial 10	(15,16,17,18,19,20, 21,22,23,24,25, 26,27,28,29,30, 31,32,33,34,35)	(0.1,0.07,0.06, 0.05,0.045,0.04, 0.04,0.04,0.03,0.02,0.01, 0.02,0.03,0.04,0.04,0.04, 0.045,0.05,0.06,0.07,0.1)	Yes (15,35)	20
Trial 11	(15,16,17,18,19,20, 21,22,23,24,25, 26,27,28,29,30, 31,32,33,34,35)	(0.002,0.014,0.027, 0.037,0.048,0.056, 0.063,0.069,0.0715,0.074,0.076, 0.074,0.0715,0.068,0.063,0.056, 0.049,0.038,0.027,0.014,0.002)	Yes (15,35)	20
Trial 12	(65,70,75)	(0.49,0.02,0.49)	Yes (65,70,75)	10

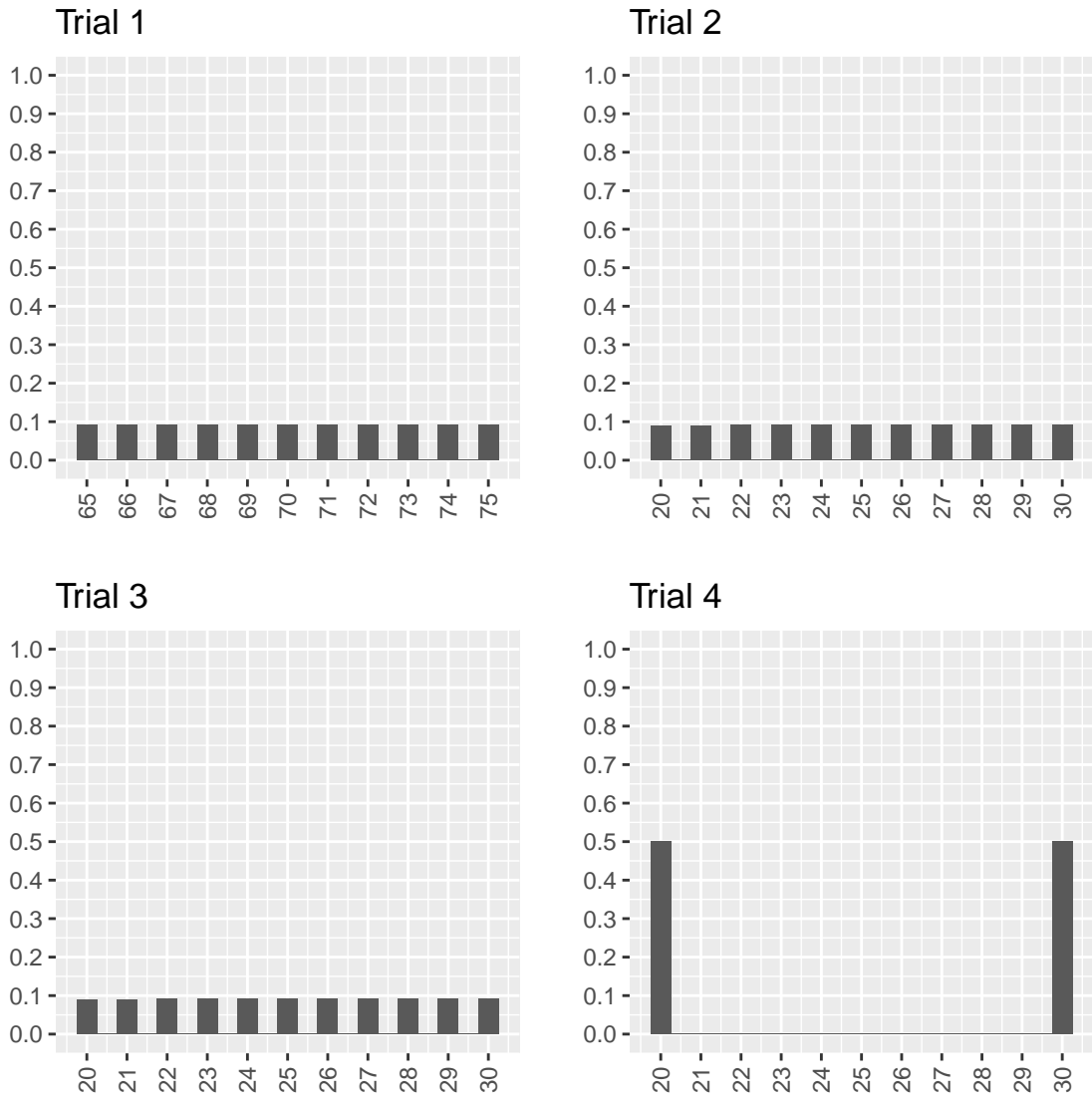


Figure S1. Distributions used to generate the samples observed by participants in Study 2a. Trials 1-4.

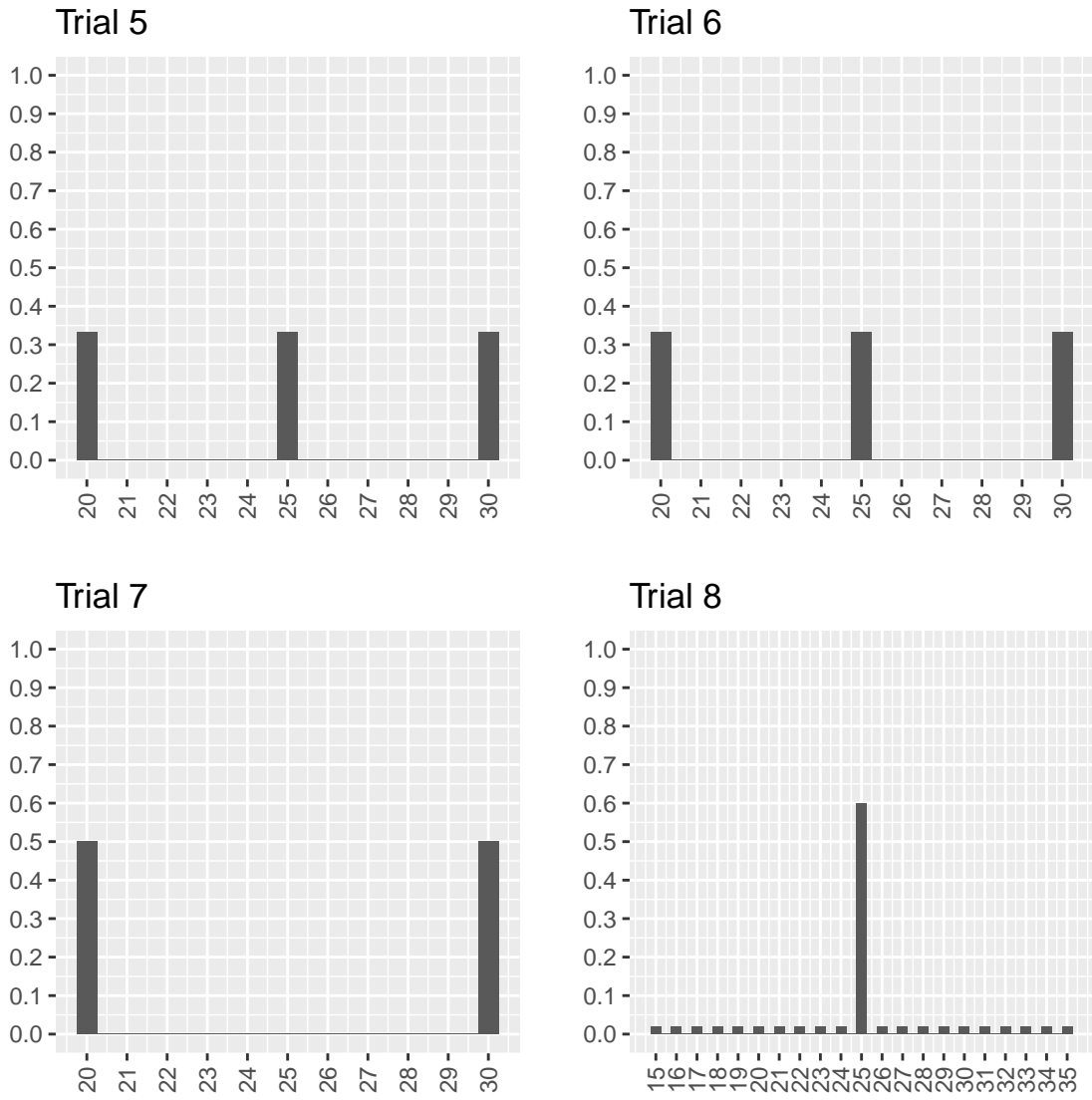


Figure S2. Distributions used to generate the samples observed by participants in Study 2a. Trials 5-8.

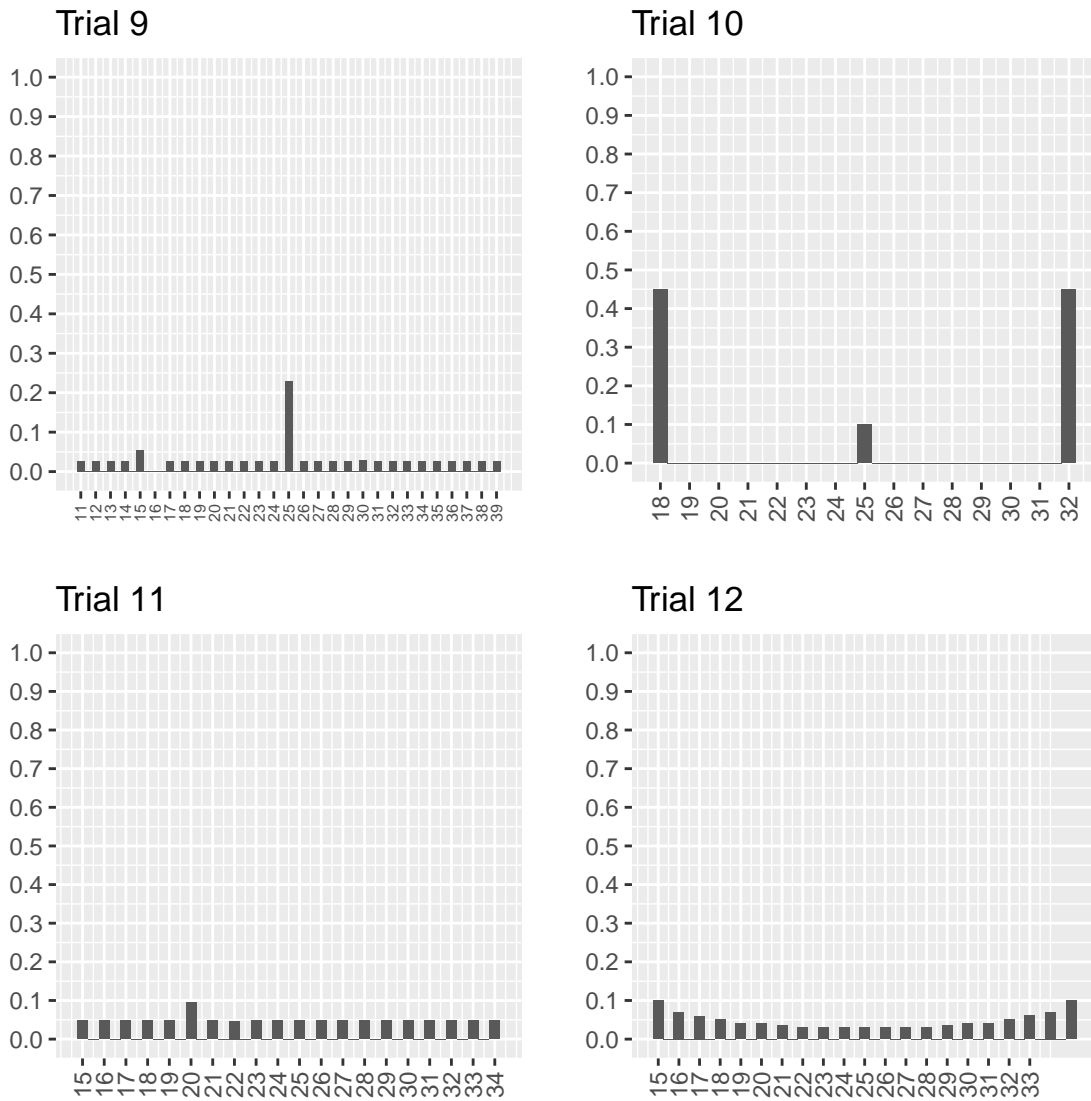


Figure S3. Distributions used to generate the samples observed by participants in Study 2a. Trials 9-12. Due to a technical issue, there are inconsistencies in the distributions in Trials 9 and 11. The results reported in the main manuscript are based on samples drawn from the distributions containing the inconsistencies.

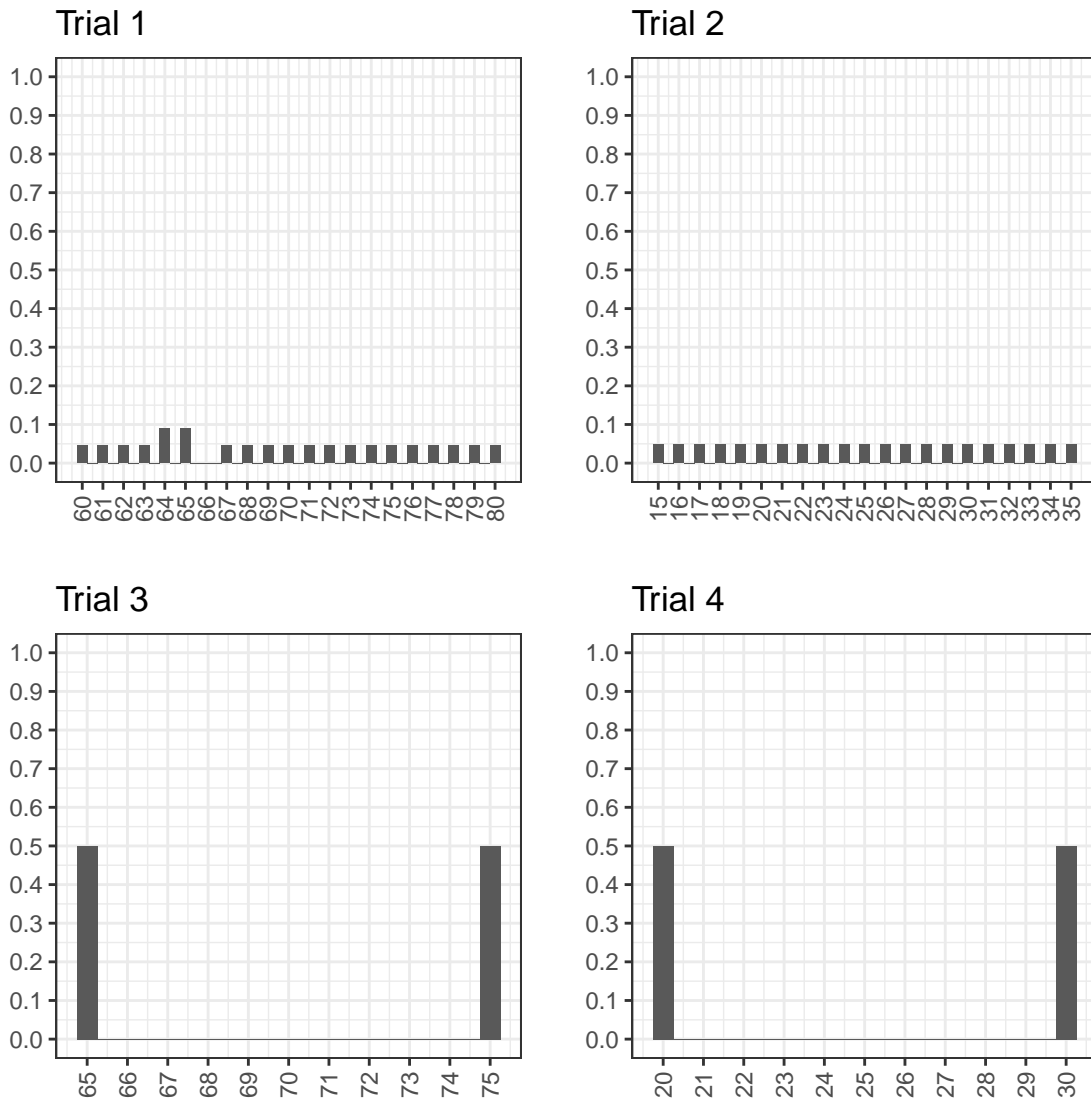


Figure S4. Distributions used to generate the samples observed by participants in Study 2b. Trials 1-4. Due to a technical issue, there is an inconsistency in the distribution in Trials 1. The results reported in the main manuscript are based on samples drawn from the distribution containing the inconsistency.

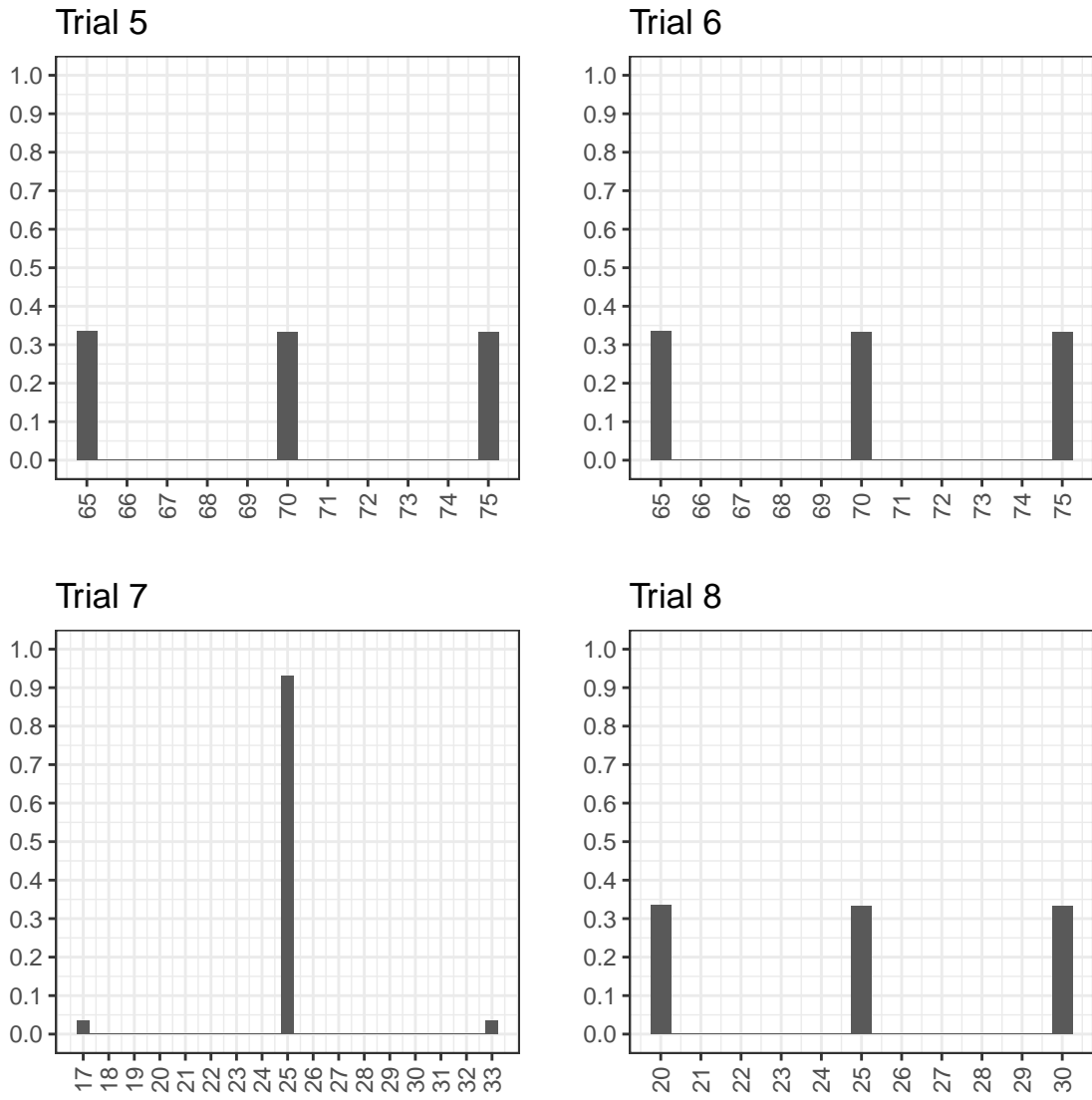


Figure S5. Distributions used to generate the samples observed by participants in Study 2b. Trials 5-8.

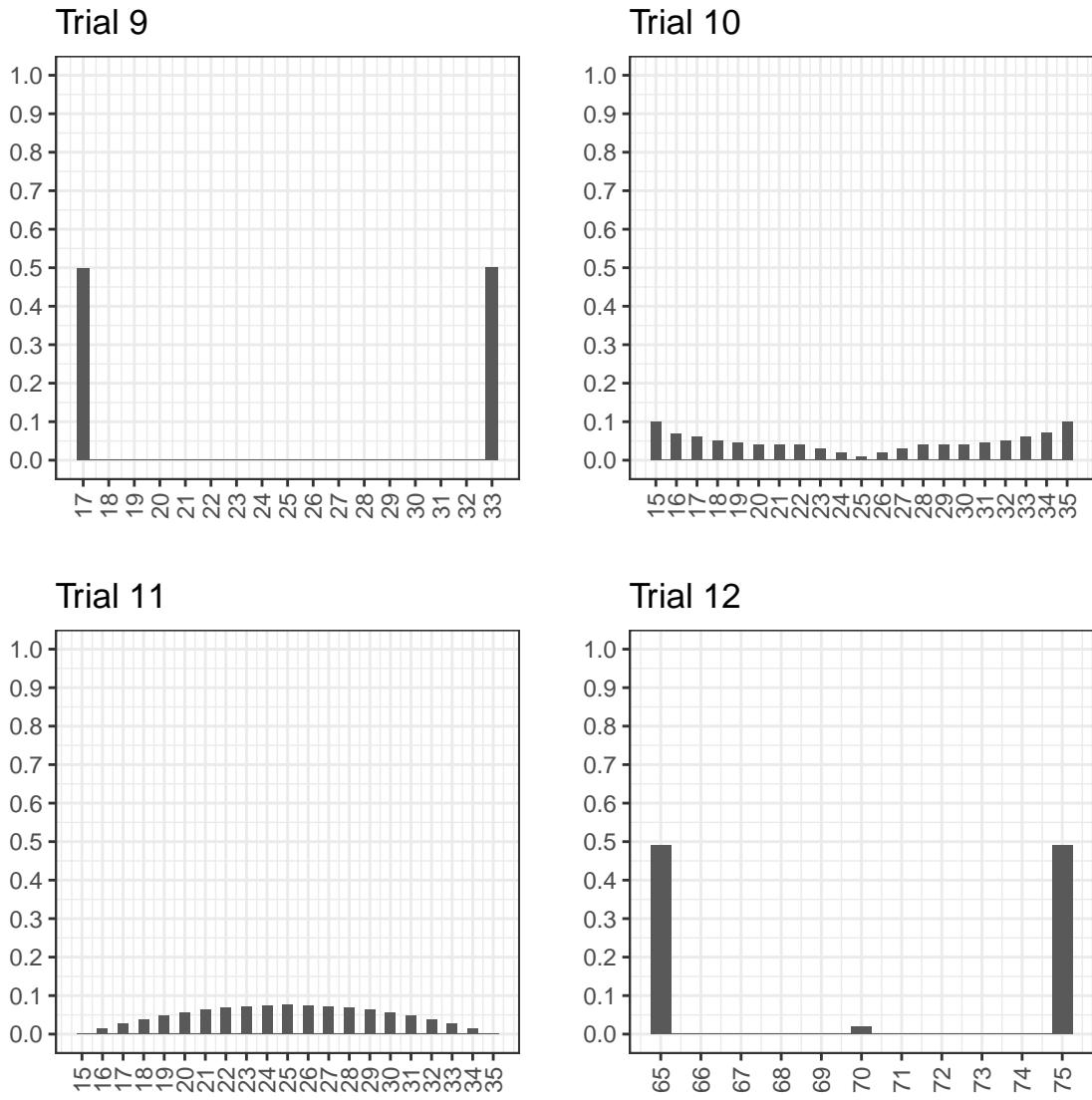


Figure S6. Distributions used to generate the samples observed by participants in Study 2b. Trials 9-12.




Figure S7. Illustration accompanying the following note about variance during the familiarization part: “One way to think about variance is that it reflects the accuracy when guessing numbers that are randomly drawn from a set of numbers. Imagine that after seeing a set of numbers, five numbers are randomly drawn from this set one after another and you are asked to guess each number. The HIGHER the variance of a set is, the HIGHER will be the average error of your 5 guesses.” .

You just observed a set of numbers. Please **indicate on the scale** how much **variance**, in your view, **this set has**.

To indicate your judgment, please click on **the respective location on the scale** and **adjust the bar** to match your assessment. Then **confirm** your response by **clicking "Next"**.

NOTE: One way to think about variance is that it reflects the accuracy when guessing numbers that are randomly drawn from this set of numbers. Imagine that after seeing a set of numbers, 5 numbers are randomly drawn from this set one after another and you are asked to guess each number. The HIGHER is the variance of a set, the HIGHER will be the average error of your 5 guesses.



VERY LOW VARIANCE 0 10 20 30 40 50 60 70 80 90 100 VERY HIGH VARIANCE

Figure S8. Screenshot of the variance judgment question used in Studies 2a, 2b, and Study 3. Participants were asked to judge the variance of the sequence on a scale from 0 (= “very low variance”) to 100 (= “very high variance”).



Figure S9. Correlogram of the independent variables used in regression analysis of variance judgments in Study 2a



Figure S10. Correlogram of the independent variables used in regression analysis of variance judgments in Study 2b

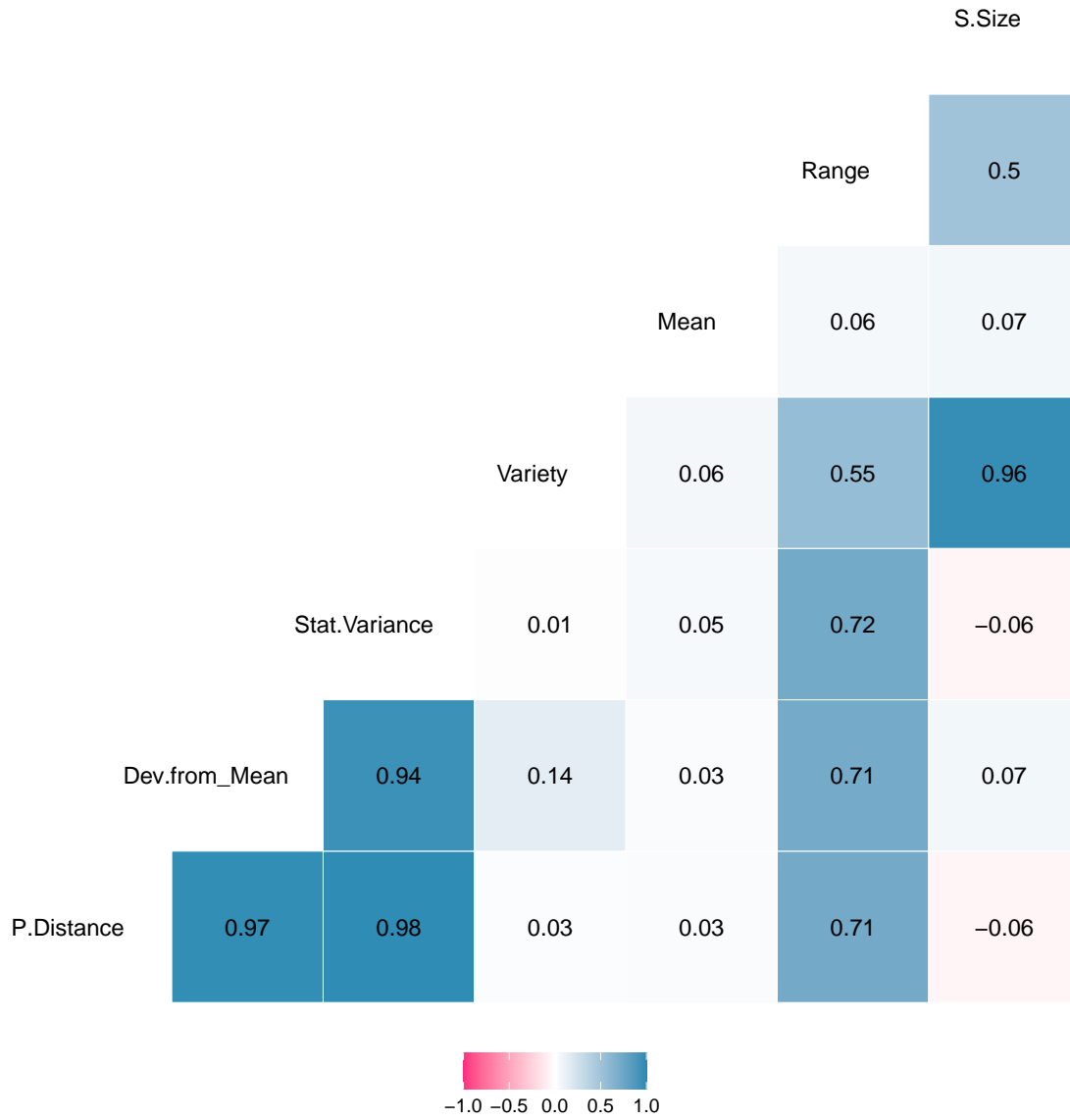


Figure S11. Correlogram of the independent variables used in regression analysis of variance judgments in Study 3

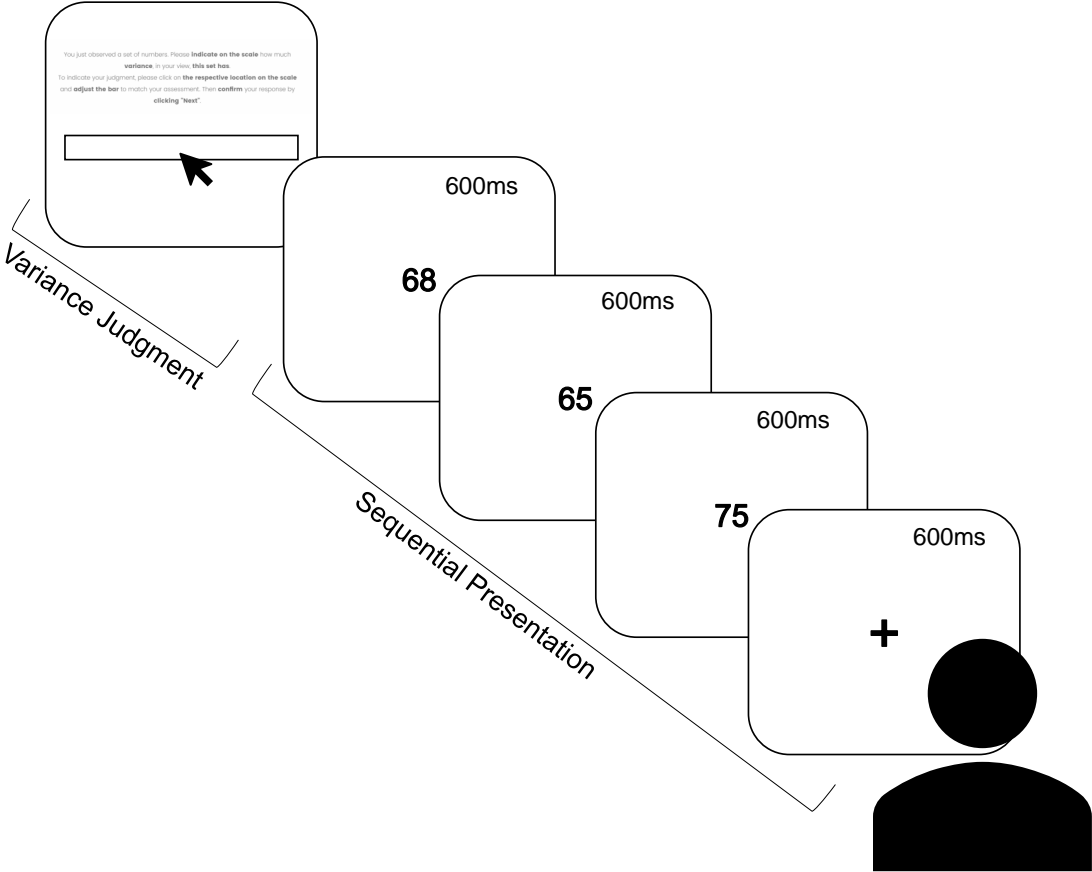


Figure S12. A visual depiction of the experimental procedure during one trial in the test phase of Studies 2a, 2b and 3.