Noticing of Variability: In measurement and chance settings

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Research Questions

1. What hierarchy does students' thinking show in taking notice of variability?
2. What differences are there between levels of thinking of mathematically talented(M-T) and non-talented students(N-T) in noticing of variability?

Participants:
5th graders(N-T 34, M-T 31), 8th graders(N-T 36, M-T 29)
Data collection: Questionnaire and interview
Questionnaire: three tasks in measurement and chance settings
Analysis: Inductive coding and use of SOLO model
Inter-coder reliability: .794

Level	**Hierarchy: Students' thinking at each level**
0	*Not taking notice of omnipresence of variability*: Students believe that all data have the same value.
1	*Unstable of perceiving variability*: Students acknowledge variability in any setting and do not acknowledge variability in any other setting.
2	*No considering variability as an entity*: Students acknowledge variability in all setting but they do not think that variability can have any patterns.
3	*Considering variability as an entity*: Students consider variability as an entity that can have any patterns.
4	*Developing of distribution idea*: Students believe that data are distributed centering around a center such as mean and mode.

<In measurement setting>

	5th graders		8th graders	
	N-T	M-T	N-T	M-T
M	2.24	2.52	2.11	3.17
SD	.496	.626	.979	.889
Cases	34	31	36	29
t-value	1.993		4.524	
p-value	.051		.000***	

Levels	5th graders		8th graders	
	N-T	M-T	N-T	M-T
	Frequency (%)			
0	0 (0.0)	0 (0.0)	4 (11.1)	0 (0.0)
1	1 (2.9)	1 (3.2)	3 (8.3)	2 (6.9)
2	24 (70.6)	14 (45.2)	14 (38.9)	3 (10.3)
3	9 (26.5)	15 (48.4)	15 (41.7)	12 (41.4)
4	0 (0.0)	1 (3.2)	0 (0.0)	12 (41.4)
Total	34 (100.0)	31 (100.0)	36 (100.0)	29 (100.0)

<Conclusion>