Supplementary Information for:

Programmers show distinct, language-like brain responses to violations in form and meaning when reading code

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Supplementary Table 1.
Mixed ANOVA results for code acceptability judgments.

Effect	***df***	***F***	***p***	η_p^2
Between-subjects effects				
Expertise	1.00	0.27	.604	0.01
Error (Expertise)	43.00			
Within-subjects effects				
Semantic P.	1.00	19.88	<.001	0.32
Semantic P. x Expertise	1.00	3.42	.071	0.07
Error (Semantic P.)	43.00			
*Syntactic V.	1.00	140.32	<.001	0.77
*Syntactic V. x Expertise	1.00	25.62	<.001	0.37
Error (Syntactic V.)	43.00			
Semantic P. x Syntactic V.	1.00	0.39	.538	0.01
Semantic P. x Syntactic V. x Expertise	1.00	0.00	.955	0.00
Error (Semantic P. x Syntactic V.)	43.00			

Note. Semantic P. = Semantic Plausibility; Syntactic V. = Syntactic Validity. The Greenhouse-Geisser correction for inhomogeneity of variance was applied to all reported statistics. *significant at a familywise alpha of .05.

Supplementary Table 2.
Mixed ANOVA results for the N400 window (300-500 ms).

See Excel file.

Supplementary Table 3.
Mixed ANOVA results for the P600 window (500-800 ms).

See Excel file.

Supplementary Table 4.
Mixed ANOVA results at the Fz electrode location for the P600 window (500-800 ms).

Effect	***df***	***F***	***p***	η_p^2
Between-subjects effects				
Expertise	1.00	3.76	.059	0.08
Error (Expertise)	43.00			
Within-subjects effects				
Semantic P.	1.00	0.55	.464	0.01
Semantic P. x Expertise	1.00	0.06	.806	0.00
Error (Semantic P.)	43.00			
**Syntactic V.	1.00	52.15	<.001	0.55
*Syntactic V. x Expertise	1.00	4.93	.032	0.10
Error (Syntactic V.)	43.00			
Semantic P. x Syntactic V.	1.00	0.00	.993	0.00
Semantic P. x Syntactic V. x Expertise	1.00	2.26	.140	0.05
Error (Semantic P. x Syntactic V.)	43.00			

Note. Semantic P. = Semantic Plausibility; Syntactic V. = Syntactic Validity. The Greenhouse-Geisser correction for inhomogeneity of variance was applied to all reported statistics. *significant at an unadjusted alpha of .05; **significant at a Bonferroni-adjusted alpha of .05/3.

Supplementary Table 5.
Mixed ANOVA results at the Cz electrode location for the P600 window (500-800 ms).

Effect	***df***	***F***	***p***	η_p^2
Between-subjects effects				
**Expertise	1.00	8.91	.005	0.17
Error (Expertise)	43.00			
Within-subjects effects				
Semantic P.	1.00	1.02	.319	0.02
Semantic P. x Expertise	1.00	2.07	.157	0.05
Error (Semantic P.)	43.00			
**Syntactic V.	1.00	65.14	<.001	0.60
*Syntactic V. x Expertise	1.00	5.34	.026	0.11
Error (Syntactic V.)	43.00			
Semantic P. x Syntactic V.	1.00	0.33	.566	0.01
Semantic P. x Syntactic V. x Expertise	1.00	0.97	.331	0.02
Error (Semantic P. x Syntactic V.)	43.00			

Note. Semantic P. = Semantic Plausibility; Syntactic V. = Syntactic Validity. The Greenhouse-Geisser correction for inhomogeneity of variance was applied to all reported statistics. *significant at an unadjusted alpha of .05; **significant at a Bonferroni-adjusted alpha of .05/3.

Supplementary Table 6.
Mixed ANOVA results at the Pz electrode location for the P600 window (500-800 ms).

Effect	***df***	***F***	***p***	η_p^2
Between-subjects effects				
**Expertise	1.00	9.85	.003	0.19
Error (Expertise)	43.00			
Within-subjects effects				
Semantic P.	1.00	0.81	.373	0.02
Semantic P. x Expertise	1.00	2.76	.104	0.06
Error (Semantic P.)	43.00			
**Syntactic V.	1.00	50.04	<.001	0.54
**Syntactic V. x Expertise	1.00	6.97	.012	0.14
Error (Syntactic V.)	43.00			
*Semantic P. x Syntactic V.	1.00	4.08	.0498	0.09
Semantic P. x Syntactic V. x Expertise	1.00	0.09	.762	0.00
Error (Semantic P. x Syntactic V.)	43.00			

Note. Semantic P. = Semantic Plausibility; Syntactic V. = Syntactic Validity. The Greenhouse-Geisser correction for inhomogeneity of variance was applied to all reported statistics. *significant at an unadjusted alpha of .05; **significant at a Bonferroni-adjusted alpha of .05/3.

Supplementary Table 7.
Descriptive statistics for participant demographic information.

See Excel file.

Supplementary Table 8.
Two-tailed Welch's independent samples *t*-tests comparing Python Experts and Python Novices on demographic information.

See Excel file.