Supplemental Online Materials

Methods

Experimenters

Training. In all studies, experimenters across all roles were trained in a three-step process. In the first step, experimenters were given an overview of the study protocol and detailed information regarding their specific role in the study. Any questions about their particular role were answered by the graduate student, post-doctoral fellow, or faculty member overseeing the execution of the study (referred to as the supervisor). In the second step, experimenters observed either a trained experimenter or supervisor execute the role with either a real participant or a research assistant serving as a participant. In the third step, experimenters practiced their role with other research assistants serving as practice participants. During this step, experimenters were given feedback on their performance and continued to rehearse their role as necessary. Given frequent turnover of (mostly) volunteer experimenters, when necessary, new experimenters were primarily trained at the beginning of academic semesters. For all studies, experimenters used printed protocols with scripted text that they read to participants to explain the study tasks to them. For the studies reported in this paper, a lab manager, graduate student, or post-doctoral fellow was physically present in the lab while each study session was conducted.

Analytic Approach

Below, we provide SPSS syntax for the type of models conducted in the paper, as well as other analytic options. For each of the specific analyses presented in the paper (as well as the data), see https://osf.io/egqvk/. Below the SPSS syntax, we include example SPSS output, highlighting the relevant part of the output.

1. Two-level model in which the dependent variable is an average physiological reactivity value for each participant across time. Participants are nested within experimenter. A random intercept examines whether intercepts (i.e, average physiological reactivity values) vary from experimenter to experimenter.

```
MIXED pep_reactivity_mean
/FIXED =
/PRINT = SOLUTION TESTCOV
/RANDOM INTERCEPT | SUBJECT(experimenter) COVTYPE(VC).
```

Estimates of Covariance Parameters[a]

Parameter		Estimate	Std. Error	Wald Z	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Residual		102.929015	20.221703	5.090	.000	70.033937	151.274977
Intercept [subject = experimenter]	Variance	.210681	5.834769	.036	.971	.000000	7.89821E+22

a. Dependent Variable: pep_reactivity_mean.

2. Option 1, but with an additional fixed effect for a particular experimenter characteristic (here, experimenter race).

```
MIXED pep_reactivity_mean WITH experimenter_race
/FIXED = experimenter_race
/PRINT = SOLUTION TESTCOV
/RANDOM INTERCEPT | SUBJECT(experimenter) COVTYPE(VC).
```

Estimates of Fixed Effects[a]

Parameter	Estimate	Std. Error	df	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Intercept	-17.285050	1.373387	7.917	-12.586	.000	-20.457859	-14.112241
experimenter_race	-1.402741	1.358613	52.464	-1.032	.307	-4.128425	1.322942

a. Dependent Variable: pep_reactivity_mean.

3. Option 1, but for studies with multiple types of experimenters. Researchers can include separate random statements for each role.

```
MIXED pep_reactivity_mean
/FIXED =
/PRINT = SOLUTION TESTCOV
/RANDOM INTERCEPT | SUBJECT(physioRA) COVTYPE(VC)
/RANDOM INTERCEPT | SUBJECT(experimenter) COVTYPE(VC)
/RANDOM INTERCEPT | SUBJECT(dyad_evaluator) COVTYPE(VC).
```

Estimates of Covariance Parameters[a]

Parameter		Estimate	Std. Error	Wald Z	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Residual		76.707082	19.285610	3.977	.000	46.862700	125.557777
Intercept [subject = physioRA]	Variance	32.674749	31.647911	1.032	.302	4.895089	218.104145
Intercept [subject = experimenter]	Variance	.000000[b]	.000000	.	.	.	.
Intercept [subject = dyad_evaluator]	Variance	3.256971	11.558366	.282	.778	.003105	3416.369535

a. Dependent Variable: pep_reactivity_mean.

b. This covariance parameter is redundant. The test statistic and confidence interval cannot be computed.

4. Option 1, but with separate random intercepts for each of four experimenters. Using this example, researchers can test whether certain experimenters account for more variance than others—in other words, whether experimenter variances are "heterogeneous." This technique can be useful for identifying which particular experimenters might deviate from others. Variable I1 is coded as 1 for Experimenter 1 and 0 for all else. Variables I2 through I4 are coded in a similar manner.

```
MIXED pep_reactivity_mean BY I1 I2 I3 I4
/FIXED =
/PRINT = SOLUTION TESTCOV
/RANDOM =  I1 I2 I3 I4 | subject (experimenter) COVTYPE(VC).
```

Estimates of Covariance Parameters[a]

Parameter		Estimate	Std. Error	Wald Z	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Residual		74.225534	18.717539	3.966	.000	45.279837	121.675128
I1 [subject = experimenter]	Variance	40.892277	34.283012	1.193	.233	7.907083	211.478548
I2 [subject = experimenter]	Variance	.000000[b]	.000000	.	.	.	.
I3 [subject = experimenter]	Variance	.000000[b]	.000000	.	.	.	.
I4 [subject = experimenter]	Variance	.000000[b]	.000000	.	.	.	.

a. Dependent Variable: pep_reactivity_mean.

b. This covariance parameter is redundant. The test statistic and confidence interval cannot be computed.

5. Three-level model in which the dependent variable is physiological reactivity at a particular time point. Time points (Level 1) are nested within participants (Level 2), which are nested within experimenters (Level 3).

```
MIXED pep_reactivity
/PRINT = SOLUTION TESTCOV
/FIXED=
/PRINT = SOLUTION TESTCOV
/RANDOM = intercept | subject (experimenter)
/RANDOM = intercept | subject (experimenter*participantID).
```

Estimates of Covariance Parameters[a]

Parameter		Estimate	Std. Error	Wald Z	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Residual		49.252791	1.191934	41.322	.000	46.971182	51.645228
Intercept [subject = experimenter]	Variance	6.570807	5.803299	1.132	.258	1.163703	37.101809
Intercept [subject = experimenter * participantID]	Variance	26.863814	5.516950	4.869	.000	17.962164	40.176924

a. Dependent Variable: pep_reactivity.

Results

ANS Responses

In Table S1, we present ANS responses during the study tasks (not baseline) across studies.

Table S1

Autonomic nervous system responses across studies

Study Number	Pre-ejection Period				Interbeat Interval			
	M	*SD*	Min.	Max.	*M*	*SD*	Min.	Max.
Study 1 (evaluation)	83.36	15.45	38.00	130.00	613.24	97.47	397.72	939.65
Study 1 (partner interaction)	96.58	11.56	40.00	132.00	727.51	98.70	418.27	1130.84
Study 2 (computer task)	101.00	12.77	49.00	138.00	775.61	120.58	462.52	1231.87
Study 2 (partner interaction)	101.56	12.31	49.00	135.00	786.39	113.87	473.95	1220.58
Study 3	86.79	17.86	37.00	133.00	643.32	121.69	399.91	1092.65
Study 4	97.41	13.41	55.50	133.00	735.28	112.05	474.94	1106.62
Study 5					709.01	122.19	403.07	1146.46
Study 6	99.20	14.40	46.00	135.00	743.22	112.90	426.03	1194.40
Study 7					791.17	111.91	524.42	1151.92
Study 8					697.33	116.70	395.51	1102.04
Study 9 (speech)	107.61	16.57	47.00	152.00	737.99	125.77	402.00	1180.00
Study 9 (confederate interaction)	109.27	14.04	49.00	152.00	772.94	117.88	439.00	1233.00

Table S1 (continued)

Autonomic nervous system responses across studies

Study Number	Respiratory Sinus Arrhythmia				RMSSD			
	M	*SD*	Min.	Max.	*M*	*SD*	Min.	Max.
Study 1 (evaluation only)					25.08	15.69	1.75	113.07
Study 1 (partner interaction only)					36.50	21.13	1.83	159.22
Study 2 (computer task only)					48.22	35.63	5.69	313.81
Study 2 (partner interaction only)					47.95	32.42	6.57	294.04
Study 3					29.73	21.13	2.46	179.83
Study 4					39.41	27.84	4.19	197.83
Study 5	6.48	1.35	2.94	12.47	38.92	25.26	5.44	176.93
Study 6					39.03	21.43	3.03	215.19
Study 7					45.51	20.80	9.13	144.59
Study 8					36.13	21.23	3.11	158.44
Study 9 (speech)	6.39	1.27	0.65	10.60				
Study 9 (confederate interaction)	6.45	1.23	0.61	9.98				

Random Effects

Given that RMSSD is positively skewed, we applied a natural-log transformation to the RMSSD data and present the results of analyses with the transformed data in Table S2.

Table S2

Variance in reactivity of the natural log of RMSSD due to experimenters across studies

Study Number	Source of Variance	Absolute Variance	*SE*	Wald *Z*	*p*
Study 1 (evaluation only)	Physiology RA	0.04	0.05	0.76	.45
	Lead RA	*NA*	*NA*	*NA*	*NA*
	Evaluators	0.003	0.02	0.14	.89
Study 1 (partner interaction only)	Physiology RA	0.003	0.02	0.22	.83
	Lead RA	0.01	0.02	.64	.52
	Evaluators	0.003	0.01	.22	.83
Study 2 (computer task only)	Lead RA	*NA*	*NA*	*NA*	*NA*
Study 2 (partner interaction only)	Lead RA	*NA*	*NA*	*NA*	*NA*
Study 3	Physiology RA	0.03	0.04	0.68	0.50
	Lead RA	*NA*	*NA*	*NA*	*NA*
	Evaluators	*NA*	*NA*	*NA*	*NA*
Study 4	Lead RA	0.003	0.01	0.39	.70
Study 6	Lead RA	0.01	0.01	0.52	.60
Study 7	Lead RA	0.01	0.02	0.78	.44
Study 8	Lead RA	0.01	0.01	0.16	.88

Note. *NA* = covariance parameter was trimmed from the model because there was not enough variance to estimate it.

For readers wondering whether we might have found different results had we not collapsed reactivity over time for each participant, we also examined three-level models in which reactivity was not averaged over time for each participant. Time points were nested within participant, and participants were nested within experimenter. Similar to the results reported in the main text, we did not find any significant variance due to experimenter (see Tables S3 and S4 where the random intercepts for experimenters are presented). In these models, we examine the influence of one type of experimenter at a time, given that models did not often converge with more than one experimenter type in the model simultaneously.

Table S3

Variance in ANS baseline activity due to experimenters using three-level models

Study Number	Source of Variance	Pre-ejection Period				Interbeat Interval			
		Absolute Variance	*SE*	Wald *Z*	*p*	Absolute Variance	*SE*	Wald *Z*	*p*
Study 1	Physiology RA	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
	Lead RA	*NA*	*NA*	*NA*	*NA*	182.12	1419.51	0.13	.90
Study 2	Lead RA	*NA*	*NA*	*NA*	*NA*	314.84	868.17	0.36	.72
Study 3	Physiology RA	3.71	8.28	0.45	.65	*NA*	*NA*	*NA*	*NA*
	Lead RA	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
Study 4	Lead RA	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
Study 5	Lead RA					1268.03	1600.56	0.79	.43
Study 6	Lead RA	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
Study 7	Lead RA					*NA*	*NA*	*NA*	*NA*
Study 8	Lead RA					*NA*	*NA*	*NA*	*NA*
Study 9	Lead RA	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*

Table S3

Variance in ANS baseline activity due to experimenters using three-level models

Study Number	Source of Variance	RSA				RMSSD			
		Absolute Variance	*SE*	Wald *Z*	*p*	Absolute Variance	*SE*	Wald *Z*	*p*
Study 1	Physiology RA					*NA*	*NA*	*NA*	*NA*
	Lead RA					38.83	52.62	0.74	.46
Study 2	Lead RA					*NA*	*NA*	*NA*	*NA*
Study 3	Physiology RA					69.63	110.24	0.63	.53
	Lead RA					*NA*	*NA*	*NA*	*NA*
Study 4	Lead RA					*NA*	*NA*	*NA*	*NA*
Study 5	Lead RA	*NA*	*NA*	*NA*	*NA*	46.08	57.49	0.80	.42
Study 6	Lead RA					54.80	100.22	0.55	.59
Study 7	Lead RA					12.31	31.21	0.39	.69
Study 8	Lead RA					*NA*	*NA*	*NA*	*NA*
Study 9	Lead RA	0.02	0.04	0.58	.56				

Table S4

Variance in ANS reactivity due to experimenters using three-level models

Study Number	Source of Variance	Pre-ejection Period Reactivity				Interbeat Interval Reactivity			
		Absolute Variance	*SE*	Wald *Z*	*p*	Absolute Variance	*SE*	Wald *Z*	*p*
Study 1 (evaluation)	Physiology RA	29.48	27.01	1.09	.28	*NA*	*NA*	*NA*	*NA*
	Lead RA	0.18	5.81	0.03	.98	*NA*	*NA*	*NA*	*NA*
	Evaluators	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
Study 1 (partner interaction)	Physiology RA	2.83	4.13	0.69	.49	*NA*	*NA*	*NA*	*NA*
	Lead RA	8.09	6.47	1.25	.21	*NA*	*NA*	*NA*	*NA*
	Evaluators	2.46	4.88	0.50	.61	*NA*	*NA*	*NA*	*NA*
Study 2 (computer task)	Lead RA	*NA*	*NA*	*NA*	*NA*	263.43	303.77	0.87	.39
Study 2 (partner interaction)	Lead RA	*NA*	*NA*	*NA*	*NA*	19.94	131.23	0.15	.88
Study 3	Physiology RA	6.58	16.98	0.39	.70	213.15	989.19	0.22	.83
	Lead RA	10.51	16.65	0.63	.53	*NA*	*NA*	*NA*	*NA*
	Evaluators	2.82	9.44	0.30	.77	*NA*	*NA*	*NA*	*NA*
Study 4	Lead RA	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
Study 5	Lead RA					38.99	211.87	0.18	.85
Study 6	Lead RA	4.12	6.97	0.59	.56	*NA*	*NA*	*NA*	*NA*
Study 7	Lead RA					2.15	202.32	.01	.99
Study 8	Lead RA					6.76	171.68	0.04	.97
Study 9 (speech)	Lead RA	4.21	5.54	0.76	.45	668.25	461.58	1.45	.15
	Confederate	0.87	4.14	0.21	.83	201.86	311.08	0.65	.52

Study 9 (confederate interaction)	Lead RA	3.10	4.11	0.76	.45	199.25	311.81	0.64	.52
	Confederate	*NA*	*NA*	*NA*	*NA*	422.19	287.04	1.47	.14

Note. *NA* = covariance parameter was trimmed from the model because there was not enough variance to estimate it.

Table S4 (continued)

Variance in ANS reactivity due to experimenters using three-level models

Study Number	Source of Variance	RSA Reactivity				RMSSD Reactivity			
		Absolute Variance	*SE*	Wald *Z*	*p*	Absolute Variance	*SE*	Wald *Z*	*p*
Study 1 (evaluation only)	Physiology RA					23.49	*32.35*	*0.73*	*.47*
	Lead RA					*6.36*	*12.82*	*0.50*	*.62*
	Evaluators					*NA*	*NA*	*NA*	*NA*
Study 1 (partner interaction only)	Physiology RA					16.70	21.58	.77	.44
	Lead RA					9.54	12.57	0.76	.45
	Evaluators					13.76	15.59	0.88	.38
Study 2 (computer task only)	Lead RA					*NA*	*NA*	*NA*	*NA*
Study 2 (partner interaction only)	Lead RA					*NA*	*NA*	*NA*	*NA*
Study 3	Physiology RA					3.81	23.21	0.16	.87
	Lead RA					*NA*	*NA*	*NA*	*NA*
	Evaluators					*NA*	*NA*	*NA*	*NA*
Study 4	Lead RA					0.34	10.98	0.03	.98
Study 5	Lead RA	*NA*	*NA*	*NA*	*NA*	2.13	20.39	0.11	.92
Study 6	Lead RA					12.23	23.47	0.52	.60
Study 7	Lead RA					50.12	59.00	0.85	.40
Study 8	Lead RA					*NA*	*NA*	*NA*	*NA*
Study 9 (speech)	Lead RA	0.02	0.04	0.37	.71				
	Confederate	0.01	0.03	0.42	.68				

Study 9 (confederate interaction)	Lead RA	*NA*	*NA*	*NA*	*NA*
	Confederate	0.01	0.03	0.42	.67

Note. *NA* = covariance parameter was trimmed from the model because there was not enough variance to estimate it.

Discussion

As noted in the main text, we examined only three potential sources of experimenter variance but there are many other characteristics that researchers could consider as well. We include a list of potential characteristics that researchers might also examine here (see Table S6). These characteristics might vary across experimenters and would be relatively easy for researchers to measure and on which to categorize experimenters.

Table S6

Factors associated with experimenters that might influence participant physiological reactivity

1. Gender
2. Race
3. Age
4. Appearance (clothes, facial attractiveness, weight, height, etc.)
5. Scent (related to perfume or body odor, for example)
6. Accent
7. Fluency with the language in which the study is conducted
8. Status in lab
9. Experience in lab
10. Experience with running particular study
11. Knowledge of research study and hypotheses
12. Trait-level differences that can affect behavior, such as racial bias, agreeableness, extraversion, etc.

References for SOM

Allen, J.J., Chambers, A.S., & Towers, D.N. (2007). The many metrics of cardiac chronotropy: A pragmatic primer and a brief comparison of metrics. *Biological Psychology*, 74(2), 243-262.

Lozano, D. L., Norman, G., Knox, D., Wood, B. L., Miller, B. D., Emery, C. F., & Berntson, G. G. (2007). Where to B in dZ/dt. *Psychophysiology, 44*(2007), 113-119. doi:10.1111/j.1469-8986.2006.00468.x