Linking Departmental Climate to the Sense of Belonging of Chemistry Graduate Students and Postdocs: Evaluation and Insights from the DCaDEI Survey

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Supplementary Information

SI 1. Departmental Climate around Diversity, Equity, and inclusion survey

Response option: strongly agree, agree, neither agree nor disagree, disagree, strongly disagree, prefer not to answer.

DCaDEI 1: I feel that my research advisor(s): Is/are easy to talk to about my research.

DCaDEI 2: I feel that my research advisor(s): Is/are available when I need advice concerning my research.

DCaDEI 3: I feel that my research advisor(s): Provide(s) constructive feedback on my research project.

DCaDEI 4: I feel that my research advisor(s): Treat(s) my ideas with respect.

DCaDEI 5: I feel that my research advisor(s): Encourage(s) me to attend and present at conferences.

DCaDEI 6: I feel that my research advisor(s): Advocate(s) for me when appropriate.

DCaDEI 7: I feel that my research advisor(s): Foster(s) a collaborative environment with minimal competition between group members.

DCaDEI 8: I feel that my research advisor(s): Provide(s) emotional support when necessary.

DCaDEI 9: I feel that my research advisor(s): Provide(s) non-research advice when necessary.

DCaDEI 10: I feel comfortable: Speaking with my advisor(s) about non-academic career paths.

DCaDEI 11: I feel comfortable: Disclosing mental and/or physical health conditions that may impact my work to my advisor(s)

DCaDEI 12: In my opinion, in the Department of Chemistry, I believe that: exclusionary or offensive behavior is not tolerated.

DCaDEI 13: In my opinion, in the Department of Chemistry, I believe that: harassment of any kind is not tolerated.

DCaDEI 14: In my opinion, in the Department of Chemistry, I believe that: there is sufficient discussion of equity and inclusion.

DCaDEI 15: In my opinion, in the Department of Chemistry, I believe that: there is sufficient action toward improving equity and inclusion.

DCaDEI 16: In my opinion, as a member of the Department of Chemistry, I feel that: members of the department that identify as minorities feel valued and are included.

DCaDEI 17: I feel comfortable: Seeking feedback and/or advice on my work from other faculty.

DCaDEI 18: I feel comfortable: Attending and participating in social events hosted by the Chemistry Graduate Life Committee (CGLC).

DCaDEI 19: In my opinion, as a member of the Department of Chemistry, I feel that: There are faculty members other than my research advisor(s) who are available to me when I need advice.

DCaDEI 20: In my opinion, as a member of the Department of Chemistry, I feel that: I know whom to talk with about any concerns regarding the departmental climate.

DCaDEI 21: In my opinion, as a member of the Department of Chemistry, I feel that: I am valued and included as a member of the department.

SI 2. Sense of Belonging (SoB) Survey

Response options: always relate, often relate, sometimes relate, rarely relate, don't relate

SoB 1

SoB 2

SoB 3

SoB 4

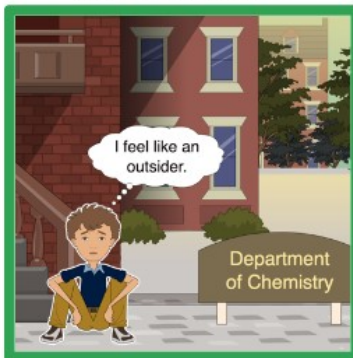SoB 5

SoB 6

SoB 7

SoB 8

SoB 9

Academic support from peers & mentors

SoB 10

Social connectedness

SoB 11

Interactions with faculty

SoB 12

Self-perceptions (*w.r.t.* undefined measures of success)

SoB 13

SI 3. Positively worded narratives for each item:

SoB1: My classmates probably do not get much better grades than I do.

SoB2: I am definitely smart enough to be here.

SoB3: I do not wish there were more faculty I could talk to who would understand the hardships I face.

SoB4: I am grateful to have a supportive social network.

SoB5: I feel so happy and accepted here.

SoB6: I am comfortable talking to my peers about a concern related to the class I'm teaching.

SoB7: Other [students/faculty] are not more productive and scientifically successful than I am.

SoB8: I feel like my [audience/peers] see[s] me as a serious scholar!

SoB9: I have a question about my science. I'm going to ask the rest of my group, they're always helpful!

SoB10: I have a question about my science. I'm going to ask the research group across the hall!

SoB11: I do not feel like an outsider.

SoB12: That was a productive meeting...I'm so glad my advisor values my ideas!

SoB13: I am an independent, confident scientist!

SI 4: Scree plot and Parallel analysis for Exploratory Factor Analysis (EFA) analysis

Scree plot

Non Graphical Solutions to Scree Test
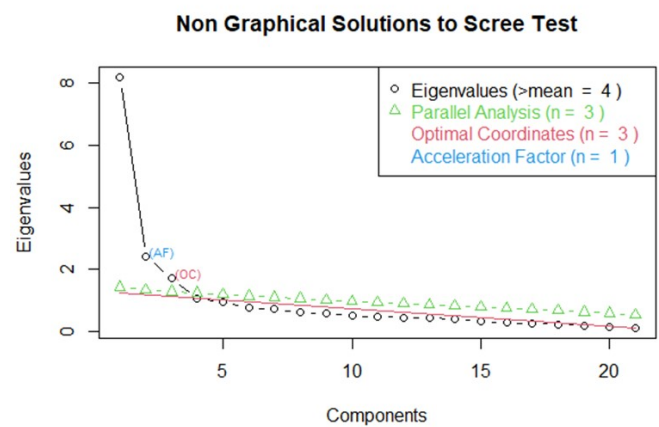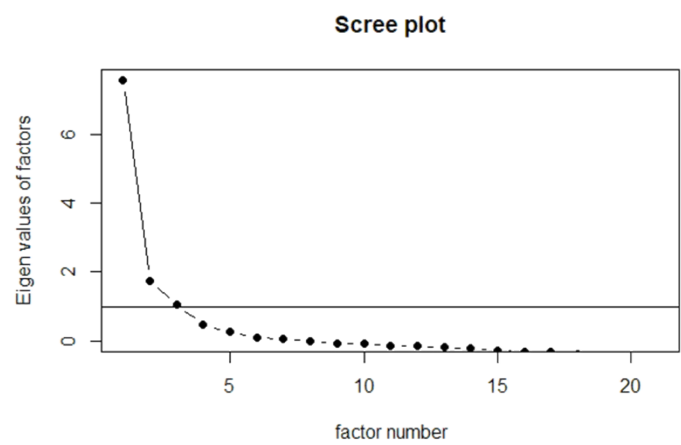
SI 5. Model fit indexes for each Confirmatory Factor Analysis (CFA) model

Model	CFI	TLI	WRMR	RMSEA
1	0.809	0.799	2.667	0.153
2	0.727	0.713	3.160	0.182
3	0.918	0.914	1.772	0.100
4	0.910	0.906	1.855	0.105
5	0.645	0.627	3.712	0.208

SI 6. Correlation matrix for each SoB item

Item#	GSB1	GSB2	GSB3	GSB4	GSB5	GSB6	GSB7	GSB8	GSB9	GSB10	GSB11	GSB12	GSB13
GSB1	1.00	**0.61**	0.27	-0.06	0.14	-0.05	**-0.42**	-0.20	0.01	-0.07	-0.33	0.02	0.27
GSB2		1.00	0.36	-0.02	0.28	-0.10	**-0.48**	0.24	0.03	-0.15	**-0.49**	0.17	**0.48**
GSB3			1.00	0.00	0.31	-0.15	-0.33	0.11	0.16	-0.04	**-0.40**	0.22	0.20
GSB4				1.00	0.28	-0.08	0.02	0.00	0.23	-0.22	0.07	0.04	0.01
GSB5					1.00	-0.04	-0.24	0.11	0.27	-0.08	**-0.45**	0.34	0.32
GSB6						1.00	0.08	-0.12	0.08	0.04	0.17	0.16	0.03
GSB7							1.00	0.07	0.04	-0.05	-0.39	0.16	0.38
GSB8								1.00	0.19	-0.16	0.18	0.22	0.30
GSB9									1.00	-0.29	-0.14	0.13	0.17
GSB10										1.00	0.04	0.08	0.20
GSB11											1.00	0.26	0.30
GSB12												1.00	0.16
GSB13													1.00

SI 7: Kruskal–Wallis _H_ test results for the sense of belonging survey items for both 2019 and 2020 data

Year 2019	SoB1	SoB2	SoB3	SoB4	SoB5	SoB6	SoB7	SoB8	SoB9	SoB10	SoB11	SoB12	SoB13
Kruskal-Wallis H	2.018	19.046	49.651	0.097	32.402	4.624	7.525	0.698	5.017	2.700	27.405	27.702	13.602
df	2	2	2	2	2	2	2	2	2	2	2	2	2
Asymp. Sig.	0.365	0.000*	0.000*	0.952	0.000*	0.099	0.023*	0.705	0.008*	0.259	0.000*	0.000*	0.001*
Year 2020	SoB1	SoB2	SoB3	SoB4	SoB5	SoB6	SoB7	SoB8	SoB9	SoB10	SoB11	SoB12	SoB13
Kruskal-Wallis H	0.914	6.011	9.506	2.487	23.084	4.083	22.886	5.656	10.135	4.148	12.326	35.445	5.154
df	2	2	2	2	2	2	2	2	2	2	2	2	2
Asymp. Sig.	0.633	0.050*	0.009*	0.288	0.000*	0.130	0.000*	0.059	0.006*	0.126	0.002*	0.000*	0.008*

*_p<0.05_