

2021 Faculty Motivation Study Results Summary:

FULL SAMPLE

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Overview

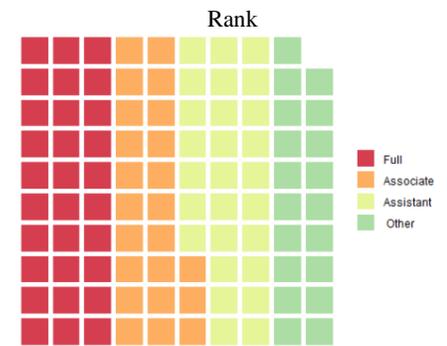
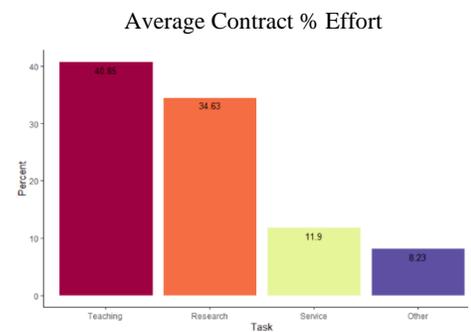
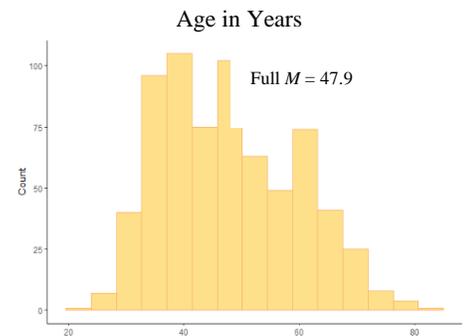
Purpose. To examine what emotions university [STEM](#) faculty members experience regarding their research, and test how emotions relate to their research success.

Methodology. STEM faculty from 10 Doctoral Universities (R2 Higher Research Activity Carnegie Classification) completed an online survey in February of 2021. Their survey responses were paired with Web of Science bibliometric data on the number of publications and citations. All figures/plots below represent the full study sample.

Below is a summary of the results. Thanks for participating!

Who participated?

| | | Full Sample | | |
|---|--|---------------------|---------|------|
| | | Count | Percent | |
| Gender Identity | Man | 404 | 56.6 | |
| | Woman | 298 | 41.7 | |
| | I prefer not to respond | 9 | 1.3 | |
| | Another gender identity | 3 | 0.42 | |
| racial Identification | White | 574 | 81.9 | |
| | Asian | 90 | 12.8 | |
| | Multiracial | 19 | 2.7 | |
| | Black or African American | 15 | 2.1 | |
| | Other | 3 | 0.4 | |
| | No response | 13 | 1.8 | |
| Ethnicity | Not of Hispanic, Latinx, Spanish origin | 651 | 92.1 | |
| | Yes, of Hispanic, Latinx, Spanish origin | 56 | 7.9 | |
| | No response | 7 | 1.0 | |
| International | No | 533 | 75.3 | |
| | Yes | 175 | 24.7 | |
| | No response | 6 | 0.8 | |
| Underrepresented minority (self-identified) | No | 435 | 61.3 | |
| | Yes | 275 | 38.7 | |
| | No response | 4 | 0.6 | |
| Primary Disciplinary Area | Life sciences | 169 | 25.4 | |
| | Social sciences | 106 | 15.9 | |
| | Engineering | 106 | 15.9 | |
| | Psychology | 54 | 8.1 | |
| | Mathematical sciences | 40 | 6.0 | |
| | Computer, info science and engineering | 39 | 5.9 | |
| | Chemistry | 38 | 5.7 | |
| | Geoscience | 38 | 5.7 | |
| | STEM education learning research | 35 | 5.3 | |
| | Physics and astronomy | 34 | 5.1 | |
| | Materials research | 7 | 1.1 | |
| | No response | 48 | 6.7 | |
| | Academic Rank | Assistant Professor | 194 | 27.2 |
| | | Associate Professor | 164 | 23.0 |
| Full Professor | | 216 | 30.3 | |
| Instructor/teaching professor | | 74 | 10.4 | |
| Other | | 59 | 8.3 | |
| Research scientist/analyst | | 6 | 0.8 | |
| Tenure Status | Tenured | 368 | 51.6 | |
| | On tenure track but not tenured | 178 | 25.0 | |
| | Not on tenure track | 159 | 22.3 | |
| | Other | 8 | 1.1 | |



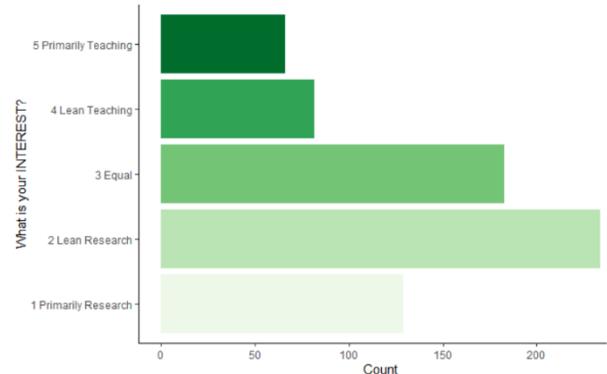
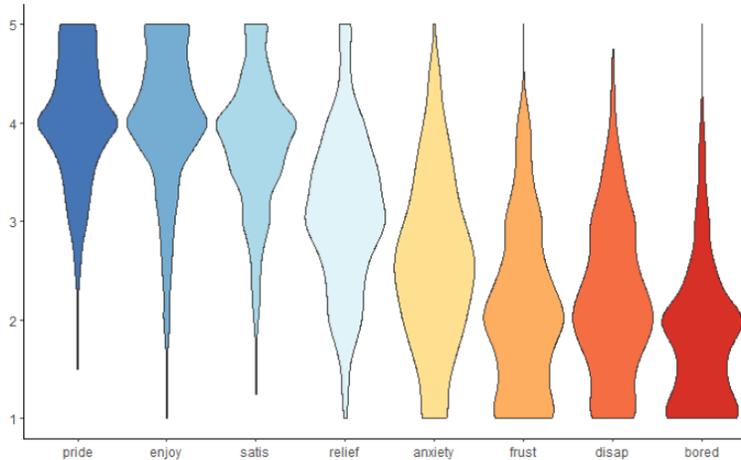
- The full sample included 714 participants.
- Participants were from a variety of demographic backgrounds and job types.
- Similarities suggest institution samples were highly generalizable to the full sample.

What level of emotions for research did faculty report?

| Measure | Sample Item | Full Sample M(SD) |
|----------------|--|----------------------|
| Pride | I am <i>proud</i> of my research. | 4.01(.64) |
| Enjoyment | I <i>enjoy</i> research. | 3.99(.74) |
| Satisfaction | My research makes me feel <i>satisfied</i> . | 3.79(.68) |
| Relief | Conducting research brings me <i>relief</i> . | 3.11(.80) |
| Anxiety | I often <i>worry</i> about my research. | 2.57(.86) |
| Frustration | Research <i>frustrates</i> me. | 2.12(.82) |
| Disappointment | I often feel <i>disappointed</i> by my research. | 2.20(.78) |
| Boredom | I get <i>bored</i> while conducting research. | 1.83(.71) |

Response scale: 1=Strongly disagree, 5=Strongly agree; Text emphasis added for summary report.

- **POSITIVE ACTIVATING** emotions of pride, enjoyment, and satisfaction were reported at the **highest** levels
- **NEGATIVE DEACTIVATING** emotions of boredom, disappointment, and frustration were **least** reported
- **NEGATIVE ACTIVATING** anxiety and **POSITIVE DEACTIVATING** relief were reported at **medium** levels



Most faculty reported their interests as "leaning research" or equally in teaching and research.

How did faculty differ on emotions?

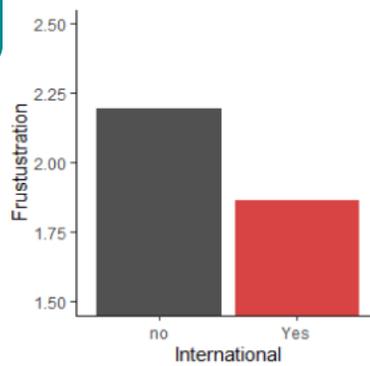
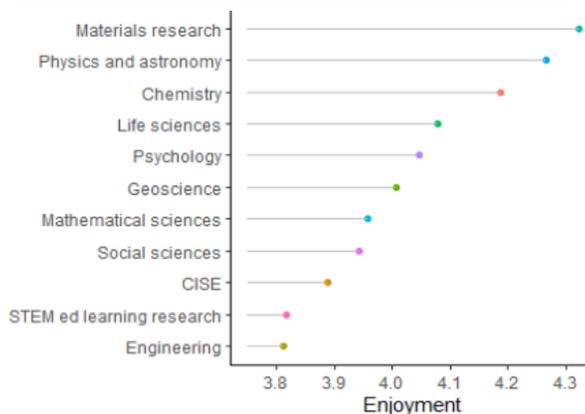
All statistics for full sample. Statistically significant t-test differences indicated by * and ANOVA post-hoc comparisons by differences in superscript letters.

| Measure | Men | Women | Majority | URM ¹ | Domestic | International | Assist | Assoc | Full |
|----------------|------|--------------|----------|------------------|--------------|---------------|-------------------------|-------------------------|-------------------------|
| Pride | 3.99 | 4.05 | 4.00 | 4.05 | 3.98 | 4.12* | 4.06 | 3.92 ^b | 4.10^a |
| Enjoyment | 4.02 | 3.93 | 4.00 | 3.97 | 3.94 | 4.15* | 4.04 | 3.93 ^b | 4.14^a |
| Satisfaction | 3.82 | 3.72 | 3.80 | 3.77 | 3.73 | 3.97* | 3.81 | 3.68 ^b | 3.91^a |
| Relief | 3.15 | 3.05 | 3.11 | 3.13 | 3.04 | 3.33* | 3.15 | 3.05 | 3.21 |
| Anxiety | 2.47 | 2.72* | 2.52 | 2.65 | 2.62* | 2.41 | 2.80^a | 2.62^a | 2.40 ^b |
| Frustration | 2.09 | 2.15 | 2.12 | 2.09 | 2.19* | 1.87 | 2.17 | 2.14 | 1.99 |
| Disappointment | 2.14 | 2.28* | 2.18 | 2.23 | 2.25* | 2.06 | 2.32^a | 2.27^a | 2.01 ^b |
| Boredom | 1.81 | 1.86 | 1.80 | 1.87 | 1.85 | 1.76 | 1.86^a | 1.82 | 1.69 ^b |

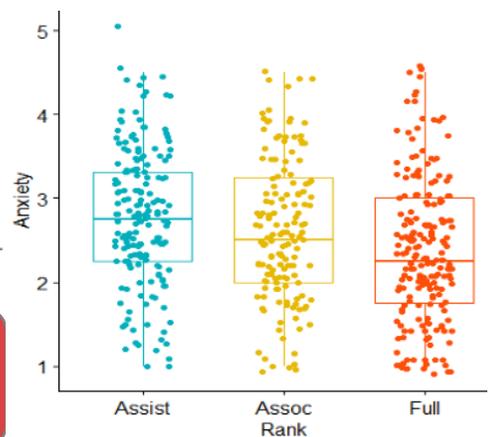
¹URM = Underrepresented Minority in the STEM fields based on gender, race, and/or ethnicity; Majority = Male, white, not of Hispanic/Latinx/Spanish ethnicity

- Women reported more anxiety and disappointment
- No URM differences were observed
- Materials research faculty had highest enjoyment

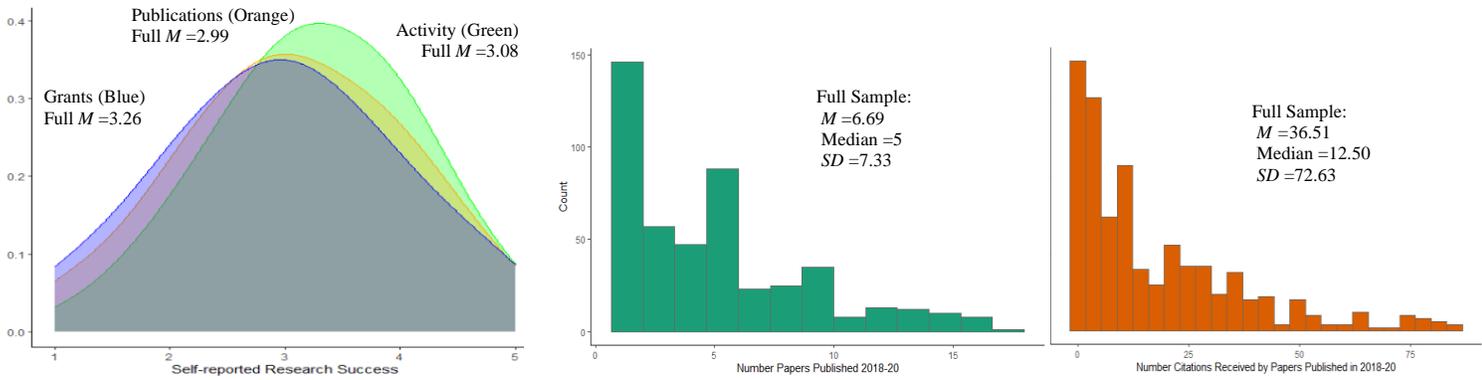
- Assistant profs had the most anxiety, disappointment, and boredom, while full profs had the most pride, joy, and satisfaction



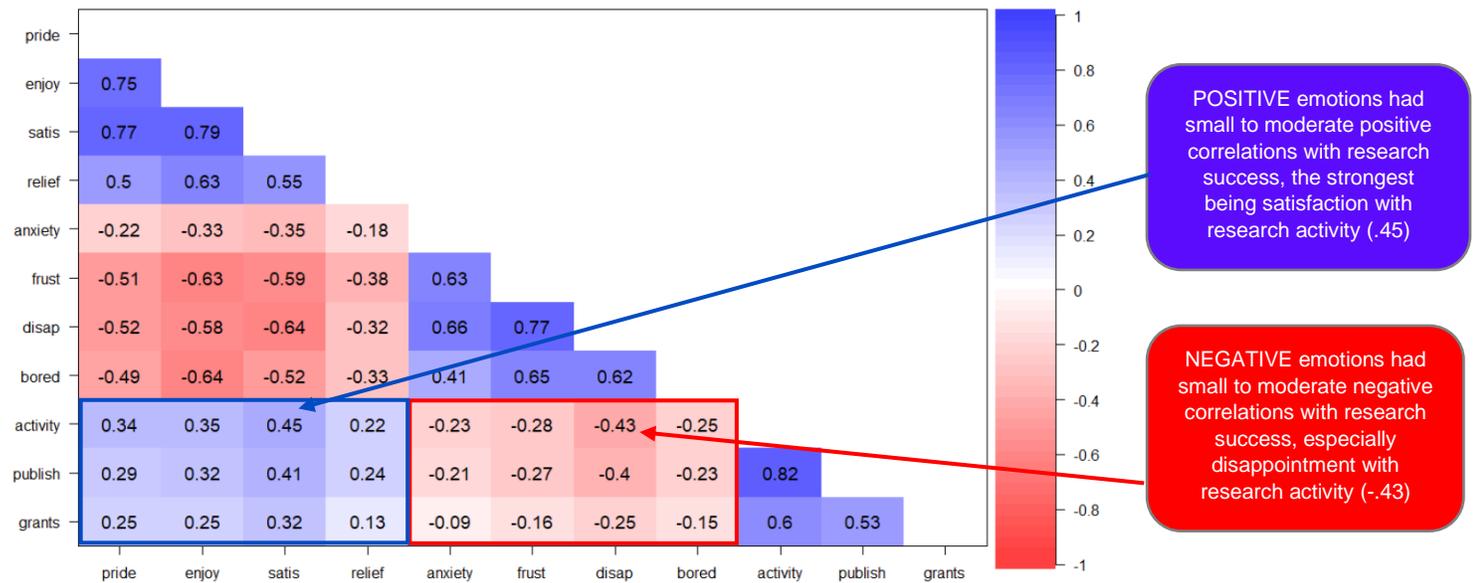
International faculty had more pride, joy, satisfaction, relief, and less anxiety, frustration, and disappointment



What level of research success did faculty self-report? ... have based on Web of Science?



How did faculty emotions correlate with their research success?



How do other factors correlate with research success?

| Measure | Definition/Sample Item | M(SD) | r Self-report | r WOS Pubs | r WOS Cites |
|------------------|--|------------|---------------|------------|-------------|
| Career age | Number of years since earning PhD. | 13.8(10.8) | .09 | .19* | .12 |
| Research Percent | Percentage of time in contract devoted to research. | 34.6(24.4) | .32* | .13 | .12 |
| Job satisfaction | "Benefits", "Job Security", etc. (10 items) | 3.63(.65) | .17* | .09 | .04 |
| Control | "I have a great deal of control over my research performance." (4) | 3.99(.65) | .35* | .22* | .17* |
| Value | "It is important to me that I do well on research." (4 items) | 4.07(.71) | .34* | .22* | .18* |
| Stress | "How often have you... felt nervous and stressed?" (7 items) | 3.01(.79) | -.24* | -.03 | .01 |
| COVID stress | "I worried about catching COVID-19." (6 items) | 2.96(1.12) | -.03 | -.02 | .01 |

Data from full sample. Items averaged by response scale: 1=Strongly disagree, 5=Strongly agree for all scales except COVID stress: 0 Not at all, 1 Slightly, 2 Moderately, 3 Very, 4 Extremely
 * Significant correlations (r)

What predicts emotions, and in turn, how does emotion predict research success?

A structural equation model, based on Pekrun's Control-Value Theory of Emotions:

