

## 2020 Faculty Motivation Study Results Summary:

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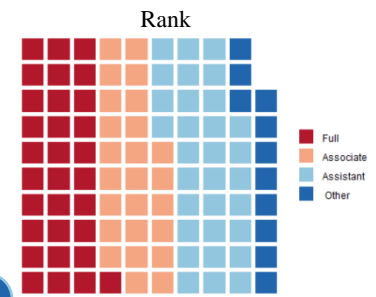
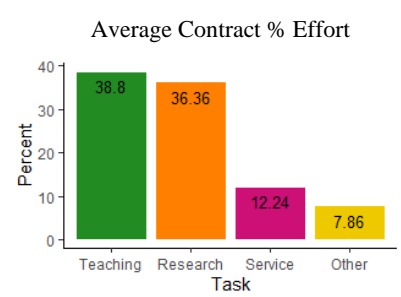
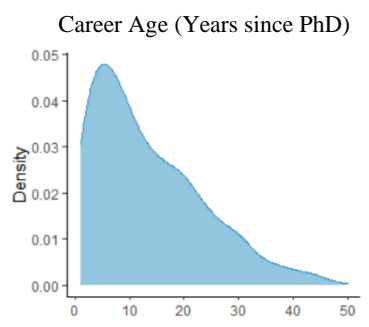
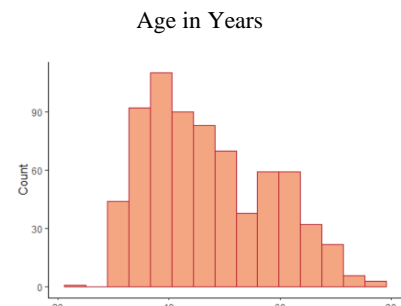
### Overview

**Purpose.** In what ways are university [STEM](#) faculty members motivated to conduct research, and how does motivation 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 2020 prior to the US COVID-19 pandemic shutdown. Their survey responses were paired with Web of Science bibliometric data on number of publications and citations. All figures/plots below represent the full study sample. Below is a summary of the results. Thanks to all of those who participated!

### Who participated?

		Full Sample		
		Count	Percent	
Gender Identity	Man	424	58.3	
	Woman	294	40.4	
	I prefer not to respond	9	1.2	
Racial Identification	White	596	82.9	
	Asian	89	12.4	
	Multiracial	17	2.3	
	Other	12	1.7	
	Black or African American	5	0.7	
	No response	8	1.1	
Ethnicity	Not of Hispanic, Latinx, Spanish origin	670	93.2	
	Yes, of Hispanic, Latinx, Spanish origin	49	6.8	
	No response	8	1.1	
International	No	533	73.8	
	Yes	189	26.2	
	No response	5	0.7	
Underrepresented minority (self-identified)	No	451	62.4	
	Yes	272	37.6	
	No response	4	0.6	
Primary Disciplinary Area	Life sciences	190	27.8	
	Social sciences	105	15.4	
	Engineering	105	15.4	
	Psychology	52	7.6	
	Geoscience	51	7.5	
	Mathematical sciences	42	6.2	
	Chemistry	34	5.0	
	Physics and astronomy	34	5.0	
	Computer, info science and engineering	33	4.8	
	STEM education learning research	32	4.7	
	Materials research	5	0.7	
	No response	44	6.1	
	Academic Rank	Assistant Professor	231	31.8
		Associate Professor	228	31.4
Full Professor		185	25.5	
Instructor/teaching professor		39	5.4	
Other		36	5.0	
Research scientist/analyst		8	1.0	
Tenure Status	Tenured	393	54.1	
	On tenure track but not tenured	214	29.4	
	Not on tenure track	115	15.8	
	Other	5	0.7	



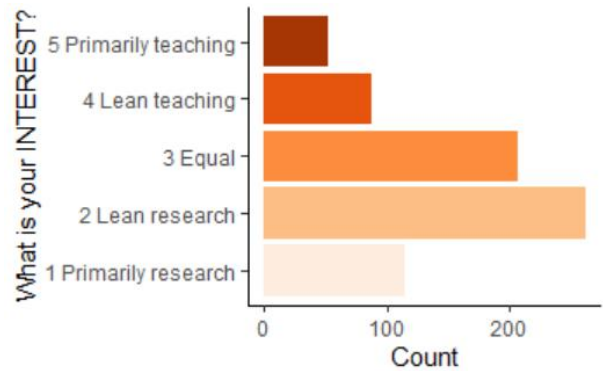
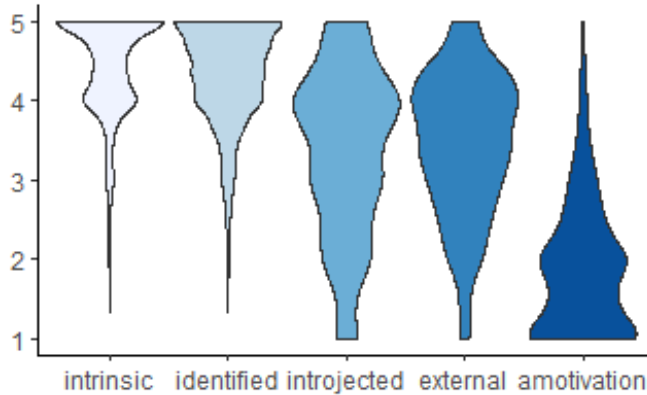
- The full sample included 727 participants
- Participants were from a variety of demographic backgrounds and job types
- Similarities suggest few institution differences across samples

### What type and level of motivation did faculty report?

Measure	Sample Item	Full Sample M(SD)
Intrinsic	It is <b>enjoyable</b> to engage in research.	4.47(0.63)
Identified	My research is <b>important</b> to me.	4.35(0.64)
Introjected	I would feel <b>guilty</b> not engaging in research.	3.35(1.05)
External	Because I am <b>paid</b> to produce research.	3.43(0.90)
Amotivation	Honestly, I <b>don't know</b> why I do research.	1.90(0.85)

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

- Intrinsic and identified motivation were reported at *highest* levels... combined into **AUTONOMOUS** motivation
- Introjected and external motivation were reported at medium levels... combined into **CONTROLLED** motivation
- Amotivation for research was *least* endorsed



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

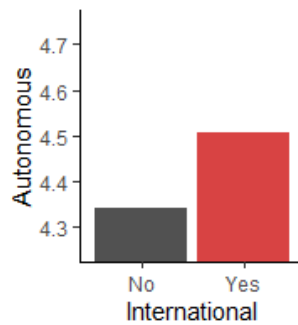
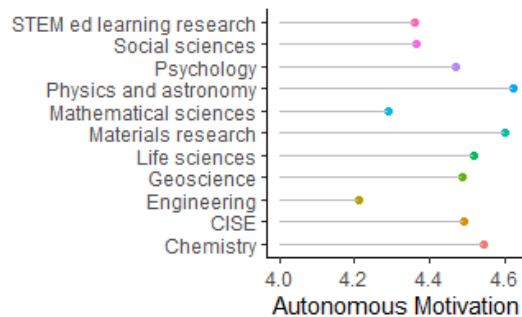
### How did faculty differ on motivation?

All statistics for full sample.

Measure	Men	Women	Majority	URM <sup>1</sup>	Domestic	International	Assist	Assoc	Full
Autonomous	4.44	4.36	4.43	4.37	4.37	4.52*	4.42	4.40	4.54*
Controlled	3.42	3.36	3.38	3.40	3.38	3.42	3.57*	3.48	3.33
Amotivation	1.88	1.91	1.86	1.95	1.94*	1.78	1.82	1.84	1.81

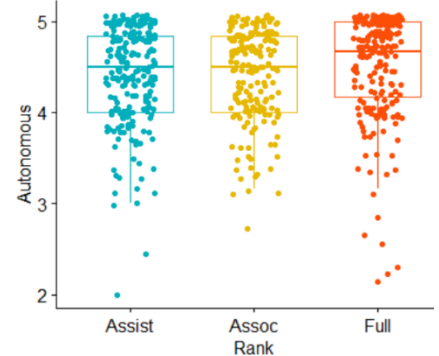
<sup>1</sup>URM = Underrepresented Minority in the STEM fields based on gender, race, and/or ethnicity; Majority = Male, white, not of Hispanic/Latinx/Spanish ethnicity

- No gender, race/ethnicity (URM) differences
- Physics/astronomy faculty had highest autonomous motivation, Engineering had lowest

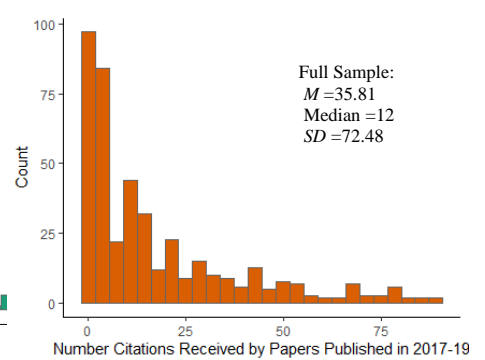
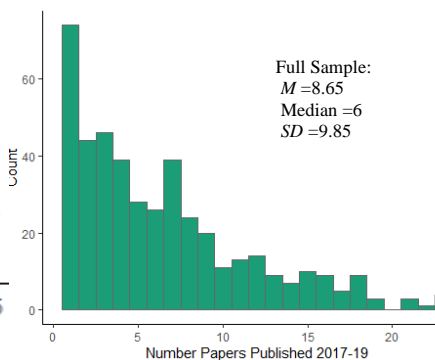
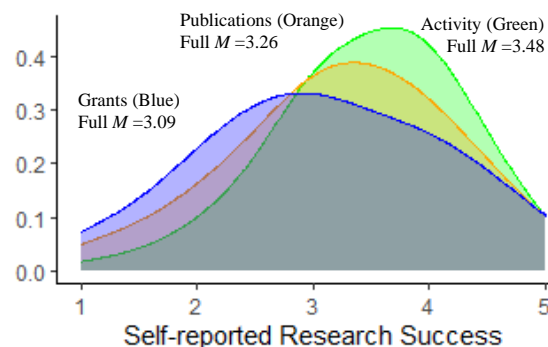


International faculty had higher autonomous motivation and lower amotivation

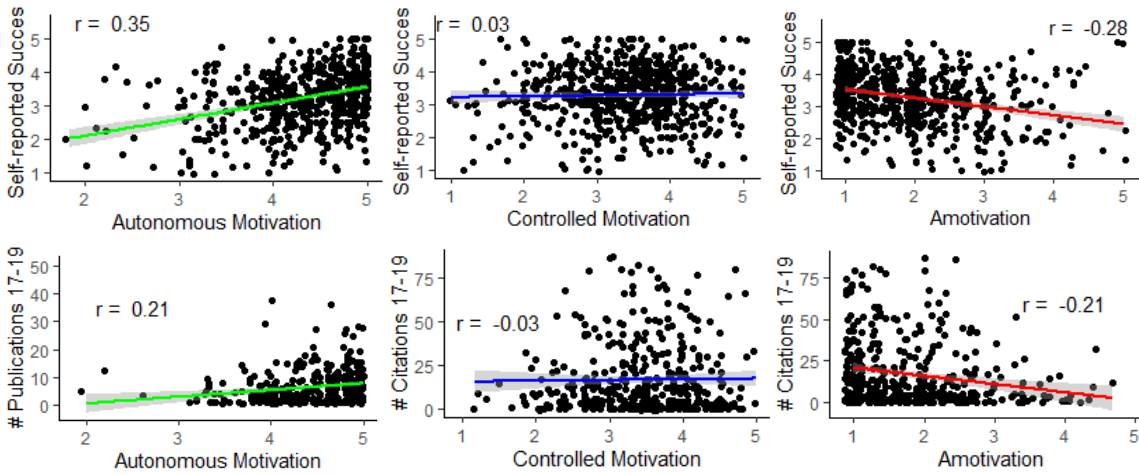
Full profs had the most autonomous motivation; Assistant profs had higher controlled motivation than full



### What level of research success did faculty self-report? Have based on Web of Science?



### Did motivation correlate with research success?



**YES!** Autonomous motivation positively related to research

**NO.** Controlled motivation did not relate to research success

**YES.** Amotivation negatively related to research success

### How do other factors relate to research success?

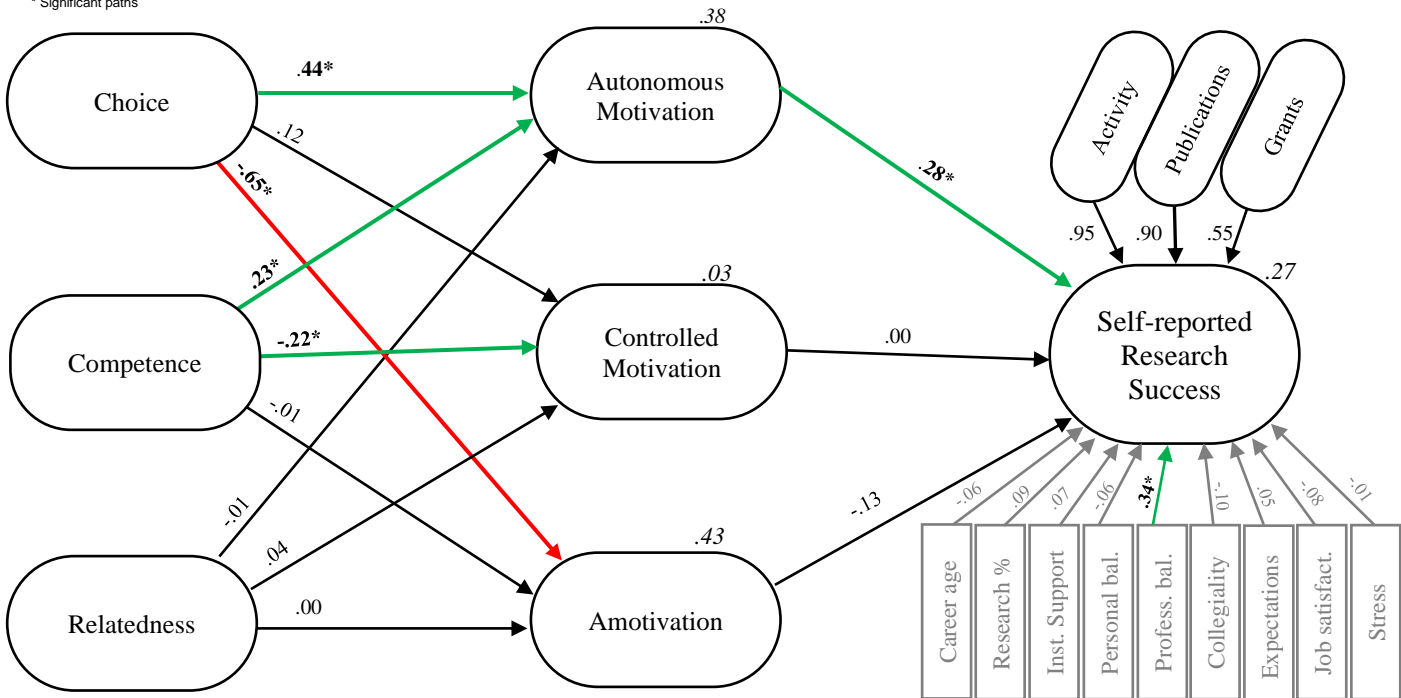
Measure	Definition/Sample Item	M(SD)	r Self-report	r WOS Pubs	r WOS Cites
Career age	Number of years since earning PhD.	13.5(10.2)	.02	.09	.05
Research Percent	Percentage of time in contract devoted to research.	36.4(22.9)	<b>.19*</b>	<b>.19*</b>	.09
Institutional support	Satisfaction with institutions research support (7 items).	3.0(0.8)	<b>.16*</b>	.01	-.04
Personal balance	"I have been able to balance my work and home/personal life." (5 items)	3.2(0.7)	<b>.20*</b>	.09	.07
Professional balance	"I have been able to balance my teaching, research, and service." (5 items)	3.2(0.8)	<b>.38*</b>	<b>.17*</b>	.05
Clear expectations	"I understand what the expectations are for me at work." (4 items)	3.5(0.5)	<b>.24*</b>	.10	.10
Collegiality	"I My department is very supportive." (4 items)	3.8(0.9)	.07	-.01	-.02
Job satisfaction	"Benefits", "Job Security", etc. (10 items)	3.7(0.6)	<b>.14*</b>	.04	.07
Stress	"How often have you... felt nervous and stressed?" (7 items)	2.9(0.7)	<b>-.18*</b>	-.04	.04

Data from full sample. Items averaged by response scale: 1=Strongly disagree, 5=Strongly agree \* Significant correlations (p)

### What predicts motivation, and in turn, how does motivation predict research success?

A structural equation model, based on self-determination theory:

\* Significant paths



- Faculty choice (autonomy) and competence in research were the strongest predictors of autonomous motivation for research (explained 38%).
- Lack of choice strongly predicted amotivation (explained 43%), whereas low competence predicted controlled motivation (explained 3%).
- Autonomous motivation was a significant predictor of research success, even after accounting for nine competing factors (explained 27%).