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Doctoral Student Development in Time of Crisis: Implications of COVID-19 on Well-Being and Academic Development

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COVID-19
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PER UNIVERSITY POLICY,

**FACE COVERINGS ARE
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Motivations

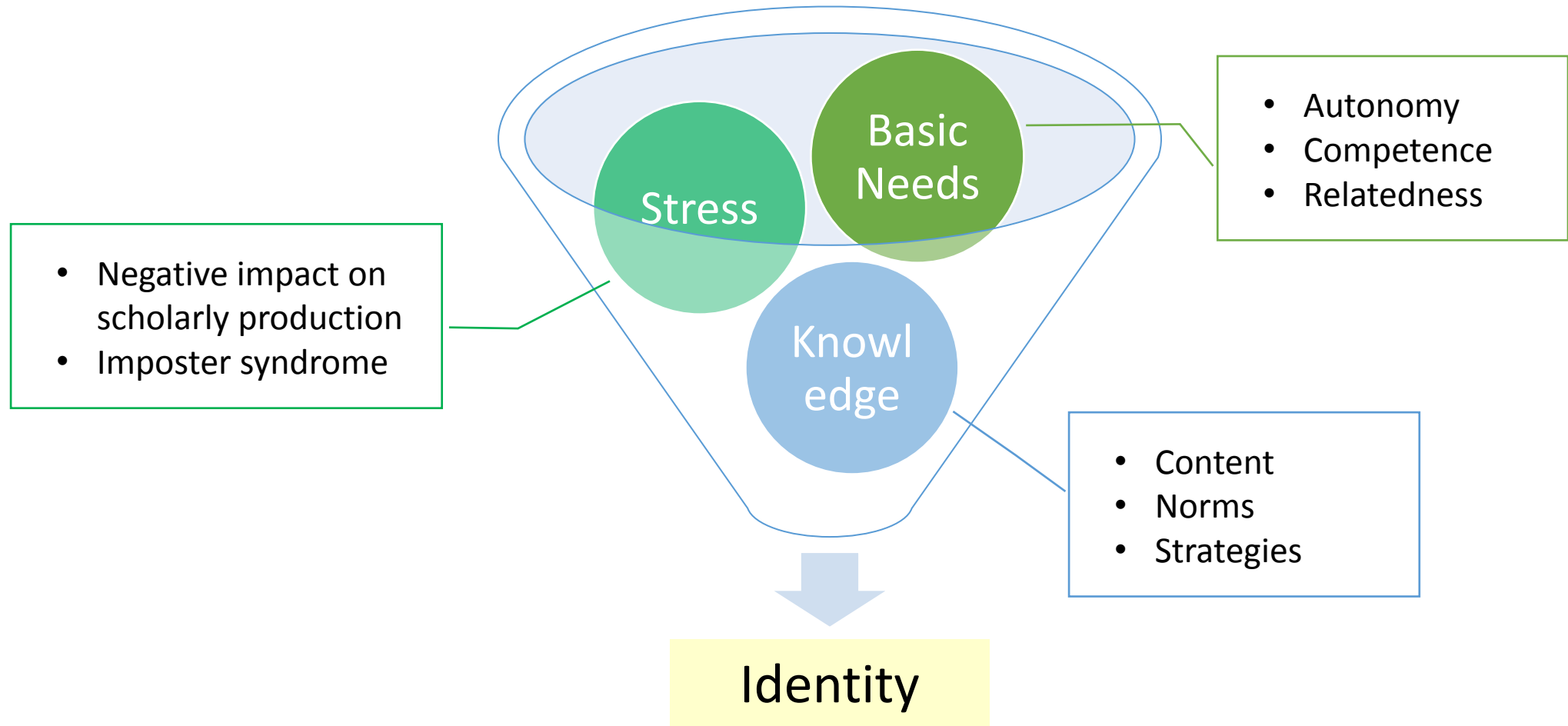
- Initial years of doctoral study represent a critical transitional period
- The journey as a doctoral student can be overtly stressful
- The pandemic resulted in increased alienation, isolation and poor support structures for doctoral students
- The pandemic intensified the inequities affecting a range of students

Research Questions

- How do doctoral students develop across basic needs, knowledge, disciplinary identity, and perceived level of stress during COVID-19?
- Does this development vary by sociodemographic factors?



Doctoral Socialization and Psychosocial Development



Data

- Michigan Doctoral Experience Study (MDES): N=3,604

2017 Survey	2018 Survey	2019 Survey	2020 Survey
2017 Cohort Wave 1	2018 Cohort Wave 1	2019 Cohort Wave 1	2020 Cohort Wave 1
	2017 Cohort Wave 2	2018 Cohort Wave 2	2019 Cohort Wave 2
		2017 Cohort Wave 3	2018 Cohort Wave 3
			2017 Cohort Wave 4



Measures

- **Basic psychological needs (Ryan & Deci, 2000)**

Autonomy ($\alpha=0.84$)	Competence ($\alpha=0.90$)	Relatedness ($\alpha=0.85$)
Freedom to chart own path	Capable at what I do	Like the people I interact with
Decisions reflect what I want	Confident that I can do things well	Included in the groups
Choices express who I am	Competent to achieve my goals	Get along with people
Doing what interests me	Successfully complete difficult tasks	People are friendly

- **Knowledge (Flaster et al., 2020; $\alpha=0.83$)**

Content	Normative	Strategic
foundational literature	Framing research to be appealing	Steps needed to achieve academic goals
theories used in discipline	Standards for good work	



Measures

- **Perceived Stress Scale (PS-4: Cohen et al., 1983; $\alpha = .79$)**

Unable to control the important things in your life

Difficulties were piling up so high that you couldn't control them (reverse coded)

Confident about your ability to handle your problems

Things were going your way (reverse coded)

- **Identity ($\alpha = .69$)**

- Degree of perceived membership and socialization into one's discipline (Weidman et al., 2001; Costello, 2005)

The post-doctoral work I plan to do will advance scholarship in my discipline

I feel like I'm part of an intellectual community composed of faculty and professionals in my discipline

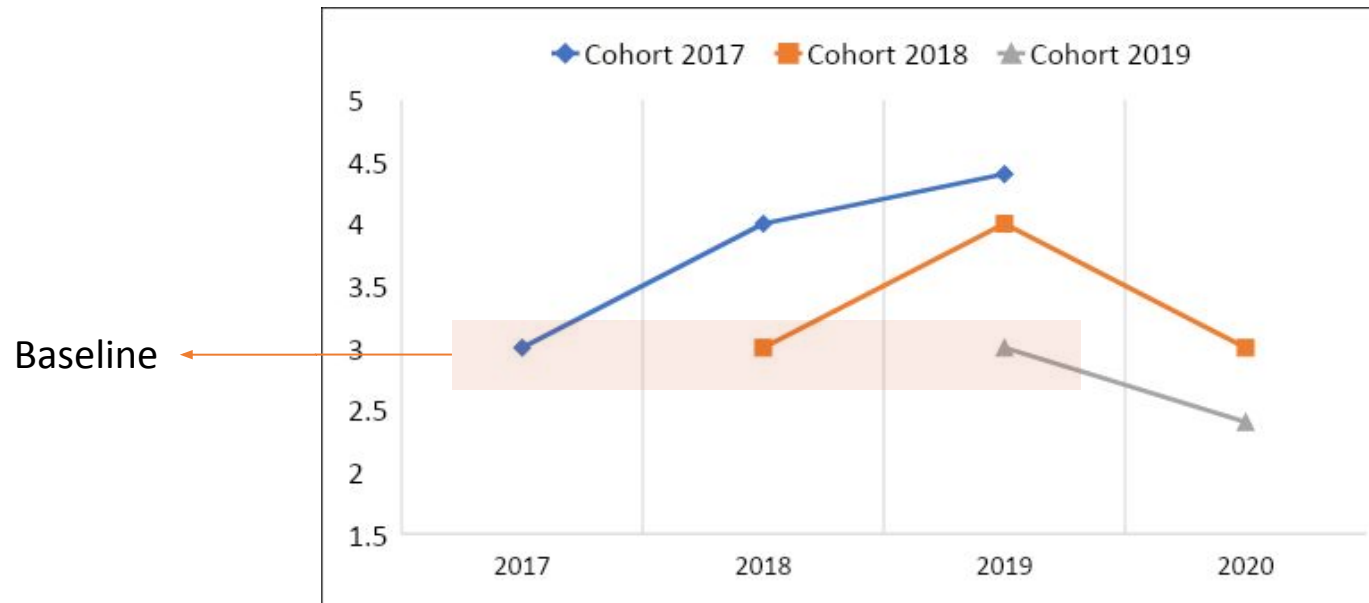
Being a scholar in my discipline is more than just what I do and what I know, it is who I am



Analytical Approach

Q. Is the COVID-19 Pandemic related to a change in doctoral students' development of key outcomes?

- ✓ Compare the development in the outcomes of pre-pandemic cohorts to the development of post-pandemic cohorts



Analytical Approach

- **Multi-level Analysis**
 - ✓ Longitudinal data – wave nested within person
 - ✓ Fixed effects (cohort)
 - ✓ Random intercept (cohort), random slope (covid)
 - ✓ Log-likelihood Ratio (LR) Test for model selection
 - ✓ Subgroup analysis



Effects of the Pandemic on Key Outcomes

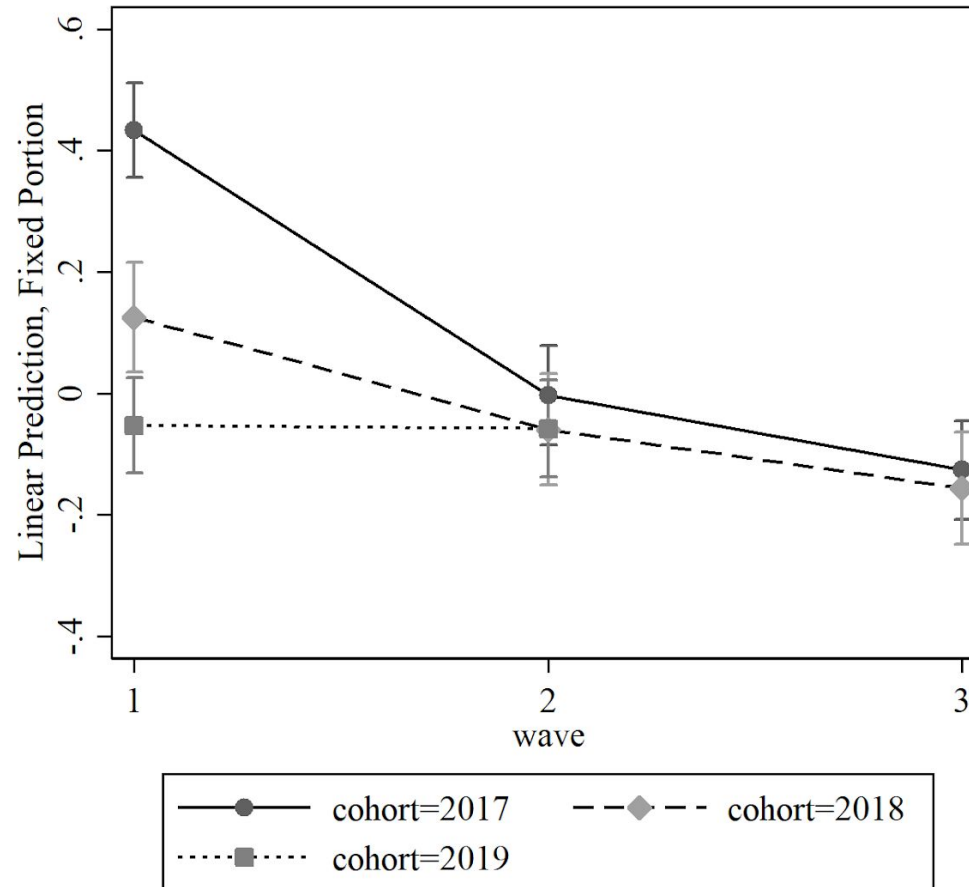
Table 1

	Autonomy	Competence	Relatedness	Knowledge	Identity	Stress
Main effects						
Pandemic year (ref. No)						
Yes	-0.085 (0.081)	-0.041 (0.055)	-0.003 (0.058)	0.001 (0.055)	0.278*** (0.067)	0.301*** (0.061)
Wave (ref. 1 st)						
2 nd	-0.410*** (0.032)	-0.211*** (0.031)	-0.319*** (0.033)	0.121*** (0.031)	-0.433*** (0.045)	0.228*** (0.032)
3 rd	-0.469*** (0.041)	-0.216*** (0.040)	-0.430*** (0.042)	0.258*** (0.040)	-0.559*** (0.045)	0.242*** (0.041)
Pandemic year * Wave (ref. Pandemic year * 3 rd)						
Pandemic year * 2 nd	0.008 (0.081)	-0.100 (0.073)	0.008 (0.076)	-0.070 (0.072)	0.156 (0.081)	0.063 (0.081)
Cohort (ref. 2017)						
2018					-0.367*** (0.062)	
2019					-0.559*** (0.059)	
2 nd wave * 2018 cohort					0.251*** (0.067)	

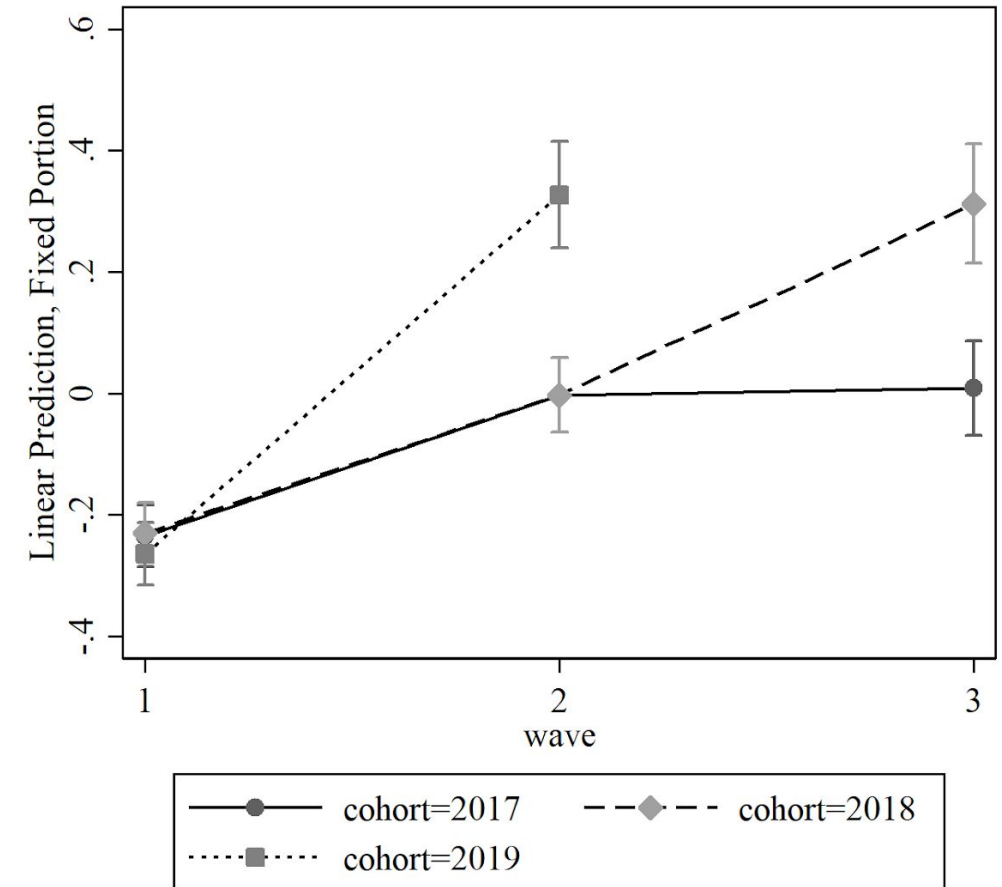
Note: standard errors in parentheses. *p<0.05, **p<0.01, ***p<0.001

Effects of the Pandemic on Key Outcomes

Identity Z-Score by Cohort



Stress Z-Score by Cohort



Heterogeneity by Sociodemographic Factors

Marginal Effects	Male	Female	USPR		International	Low-SES	Mid & High-SES
			Non-URM	URM			
Identity							
Pandemic year	0.303** (0.102)	0.265** (0.090)	0.191* (0.087)	0.597** (0.191)	0.350** (0.126)	0.024 (0.148)	0.337*** (0.076)
Interaction (Pandemic*W2)	0.119 (0.122)	0.184 (0.109)	0.216* (0.106)	+0.042 (0.238)	0.079 (0.149)	0.502* (0.233)	0.093 (0.089)
Stress							
Pandemic year	0.221* (0.091)	0.362*** (0.082)	0.279*** (0.080)	0.554*** (0.164)	0.246* (0.116)	0.408** (0.132)	0.276*** (0.068)
Interaction (Pandemic*W2)	0.115 (0.120)	0.030 (0.109)	0.173 (0.105)	0.481* (0.227)	0.066 (0.149)	0.158 (0.222)	0.074 (0.088)
Autonomy							
Pandemic year	+0.157 (0.091)	+0.024 (0.081)	+0.104 (0.080)	0.078 (0.163)	+0.130 (0.113)	+0.268 (0.147)	+0.050 (0.067)
Interaction (Pandemic*W2)	0.035 (0.120)	-0.018 (0.110)	0.000 (0.107)	-0.086 (0.223)	0.043 (0.148)	0.605* (0.254)	-0.058 (0.088)

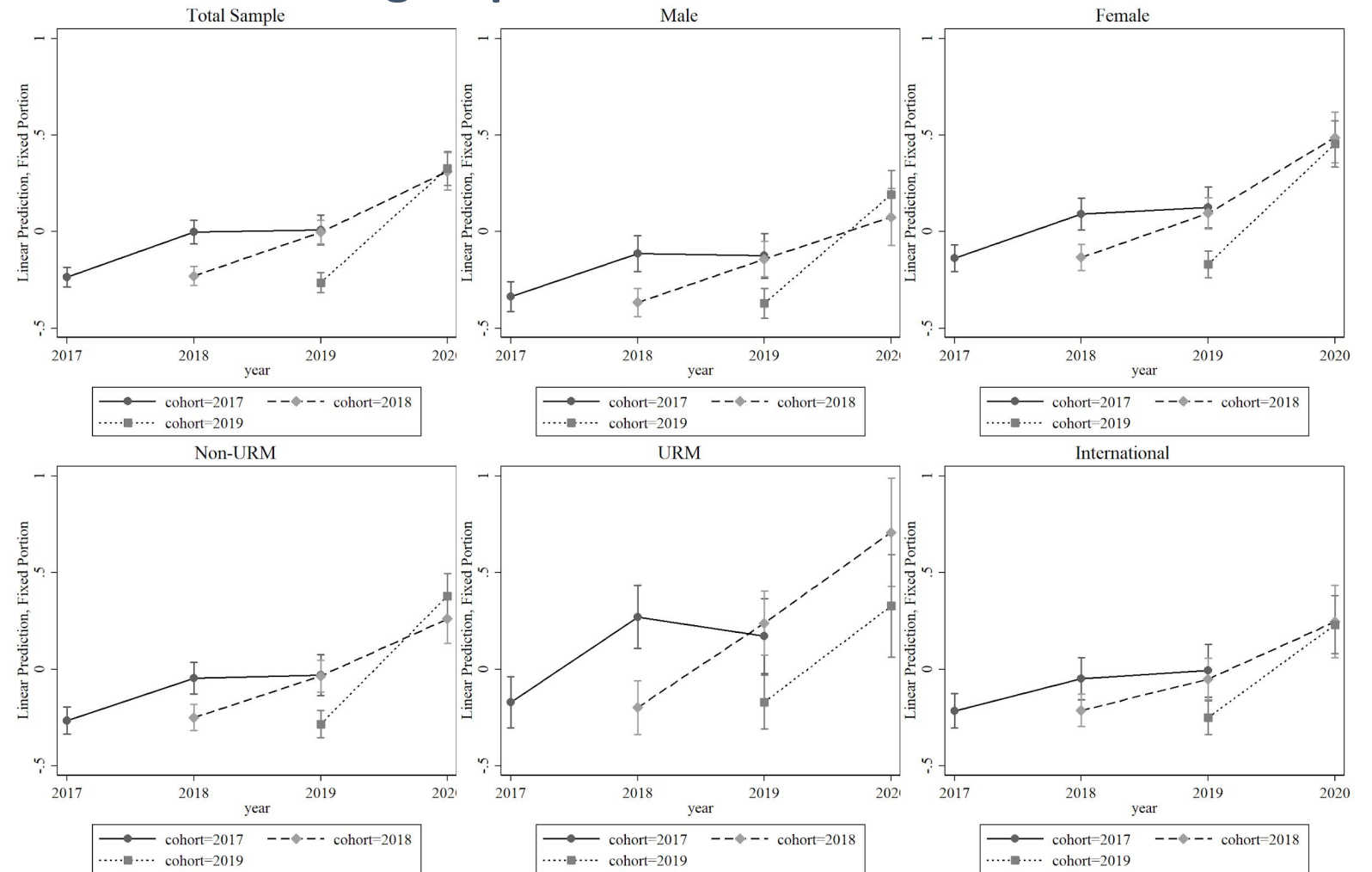
Heterogeneity by Sociodemographic Factors

Marginal Effects	Male	Female	USPR		International	Low-SES	Mid & High-SES
			Non-URM	URM			
Competence							
Pandemic year	-0.109 (0.080)	0.009 (0.076)	-0.018 (0.073)	-0.063 (0.159)	-0.093 (0.098)	-0.308 [*] (0.128)	0.017 (0.061)
Interaction (Pandemic*W2)	-0.041 (0.105)	-0.139 (0.101)	-0.173 (0.097)	0.007 (0.218)	0.007 (0.127)	0.570 ^{***} (0.213)	-0.196 [*] (0.079)
Relativeness							
Pandemic year	-0.136 (0.085)	-0.054 (0.078)	-0.045 (0.074)	0.072 (0.167)	-0.248 [*] (0.109)	-0.202 (0.136)	-0.071 (0.063)
Interaction (Pandemic*W2)	-0.035 (0.111)	0.038 (0.104)	-0.104 (0.098)	-0.194 (0.228)	0.271 (0.141)	0.531 [*] (0.229)	-0.053 (0.082)
Knowledge							
Pandemic year	0.006 (0.081)	-0.008 (0.074)	-0.056 (0.071)	0.137 (0.160)	0.015 (0.101)	-0.162 (0.122)	0.041 (0.061)
Interaction (Pandemic*W2)	-0.009 (0.106)	-0.112 (0.099)	-0.062 (0.094)	-0.268 (0.221)	0.026 (0.131)	0.406 [*] (0.203)	-0.151 (0.079)

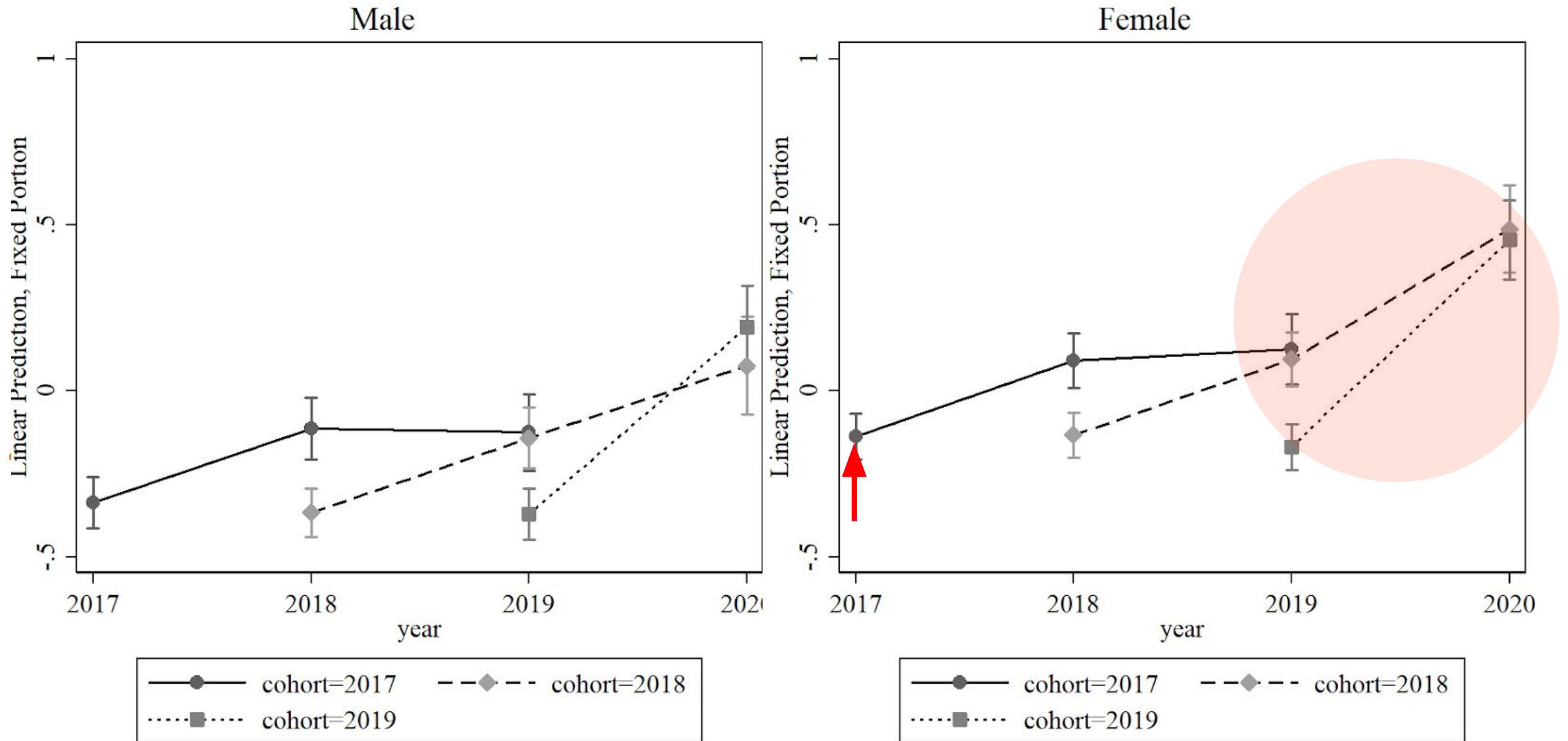
Note: Standard errors in parentheses. URM status is available for the U.S. citizen and permanent residents only. ^{*} $p < 0.05$, ^{**} $p < 0.01$, ^{***} $p < 0.001$.

Heterogeneity

Predicted stress ratings by subgroups

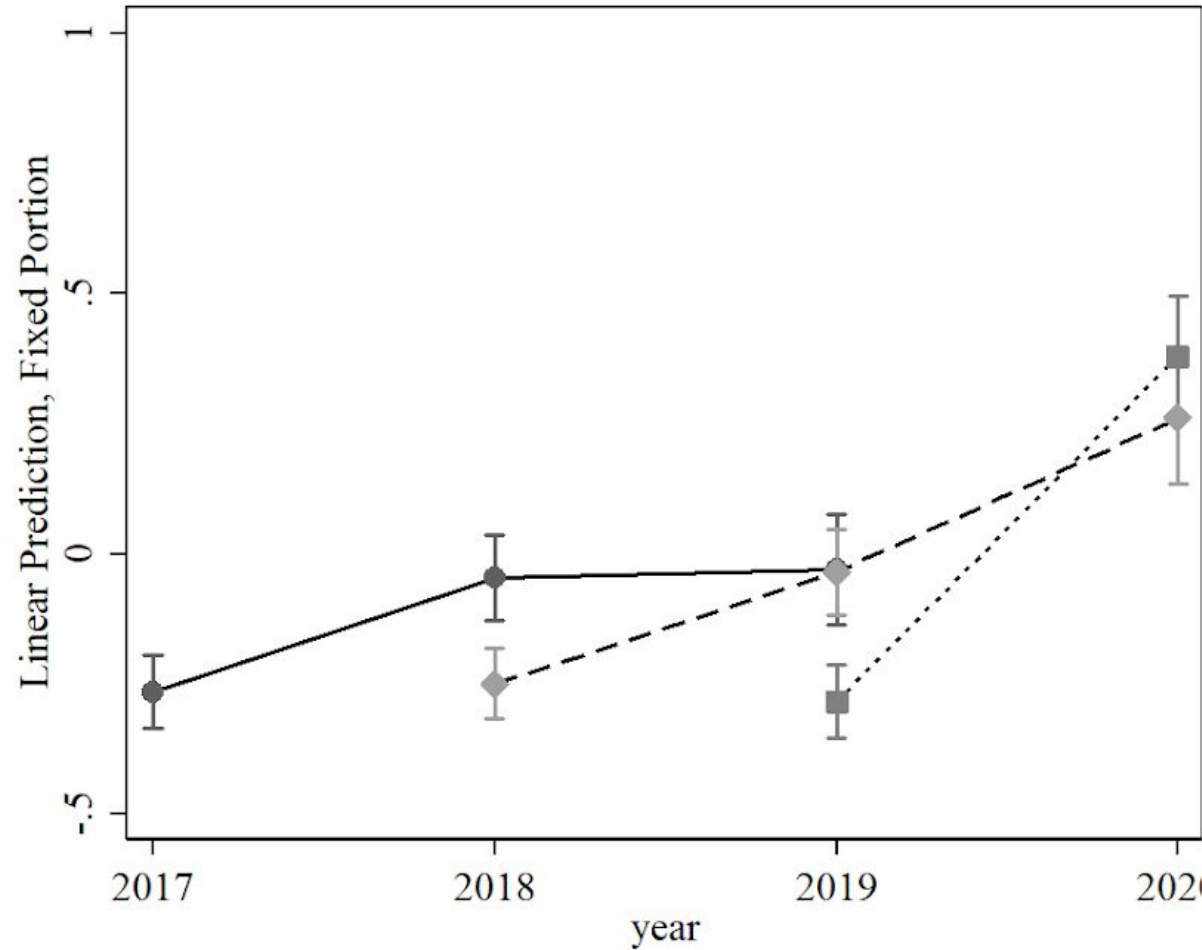


Predicted stress ratings by subgroups

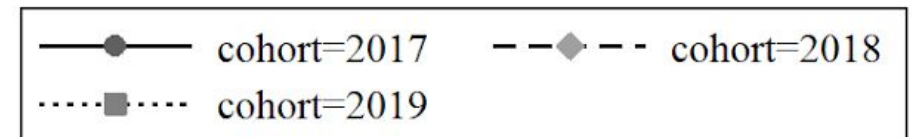
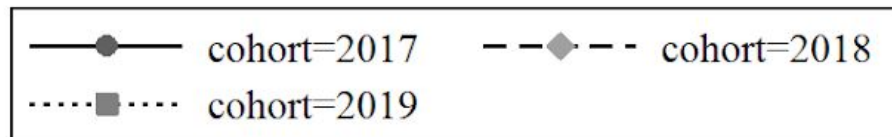
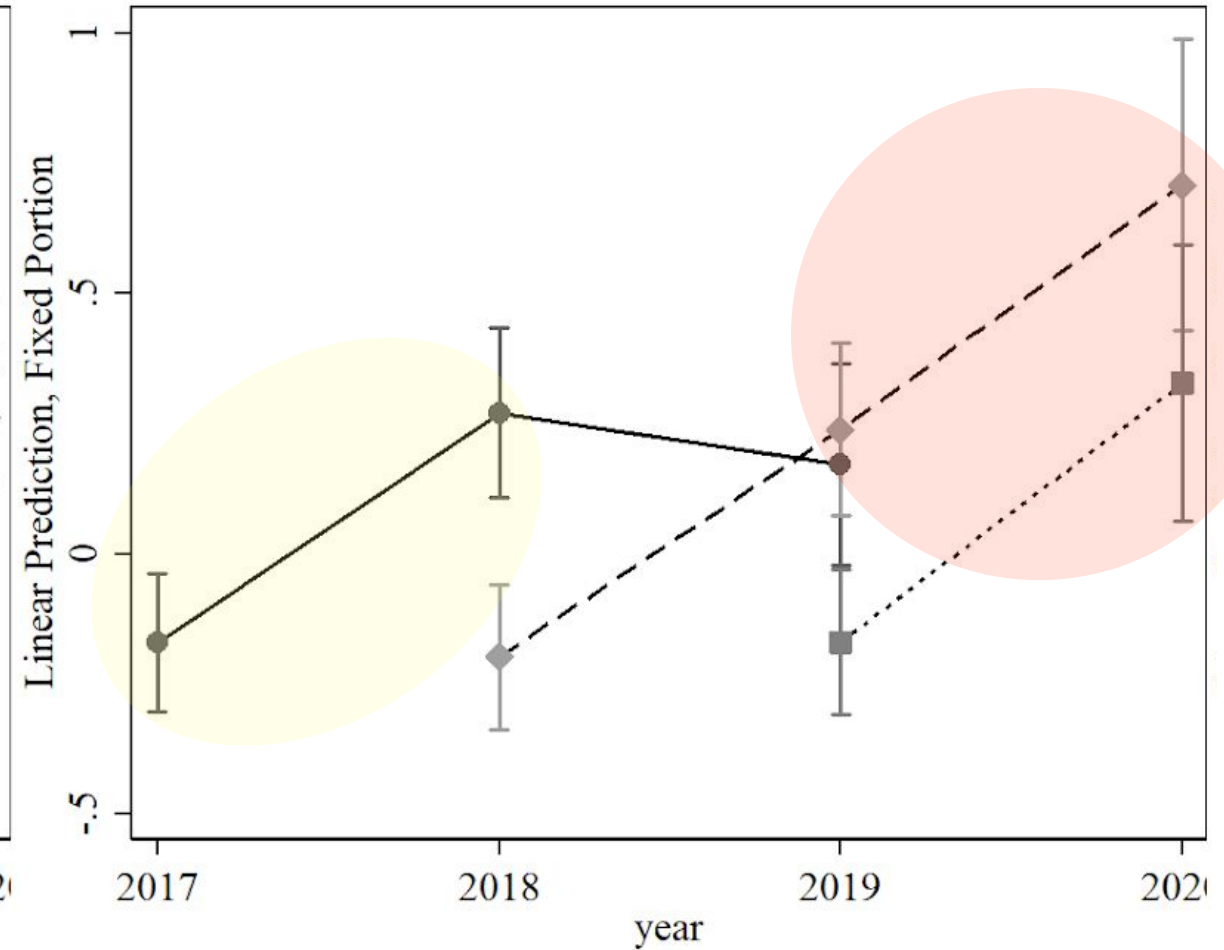


Predicted stress ratings by

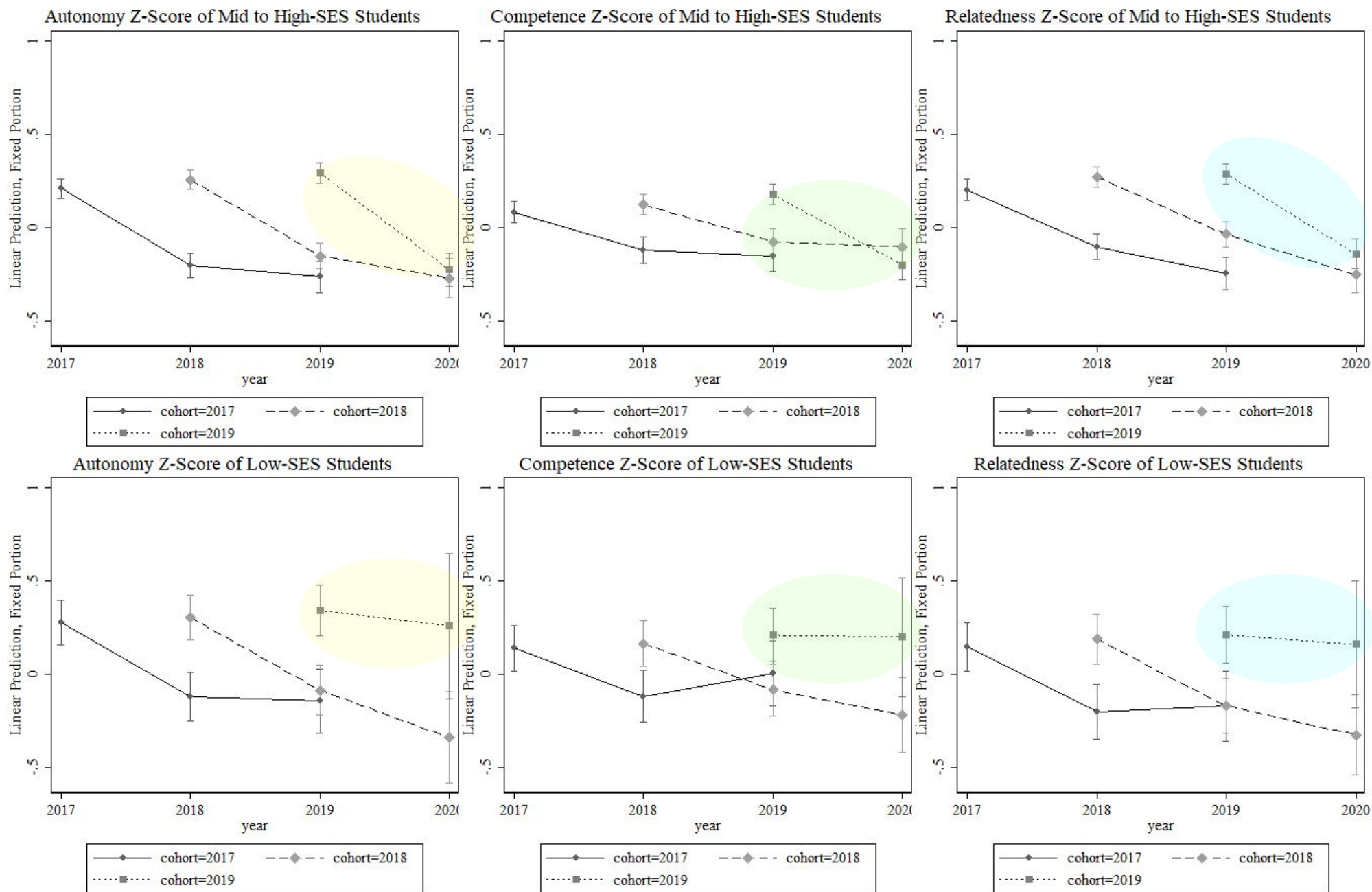
Non-URM

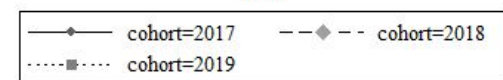
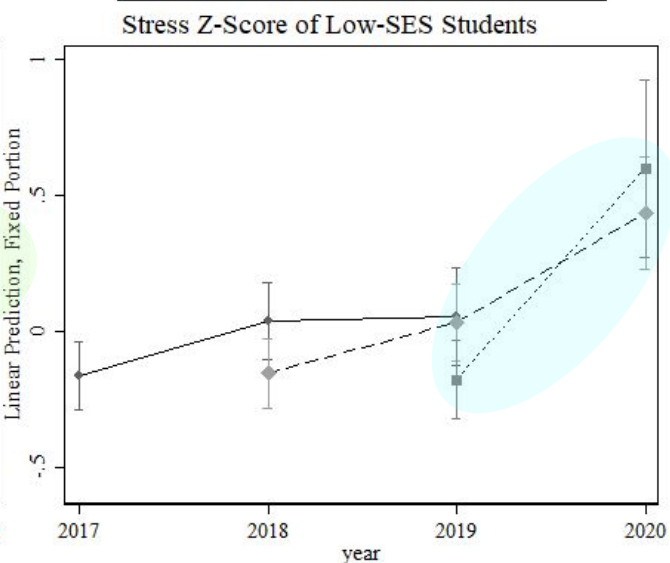
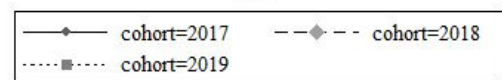
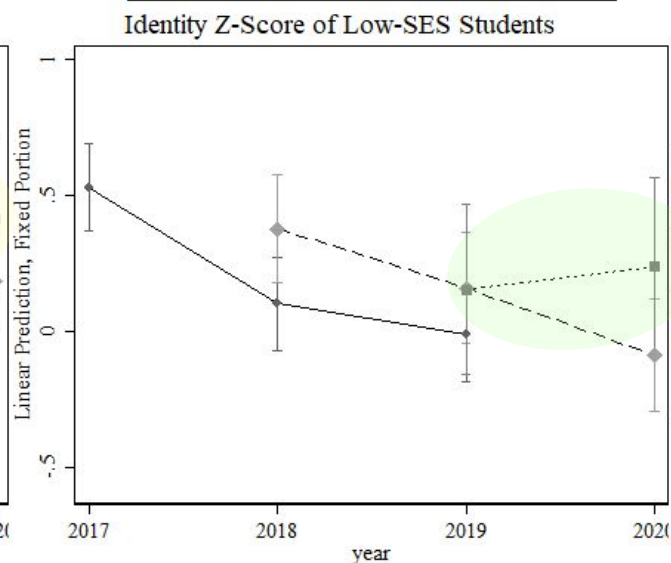
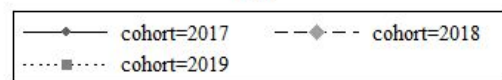
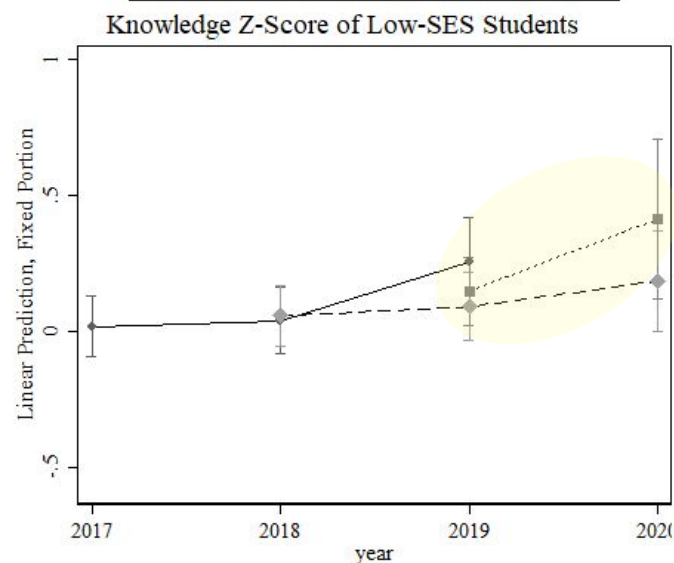
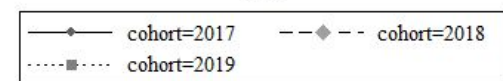
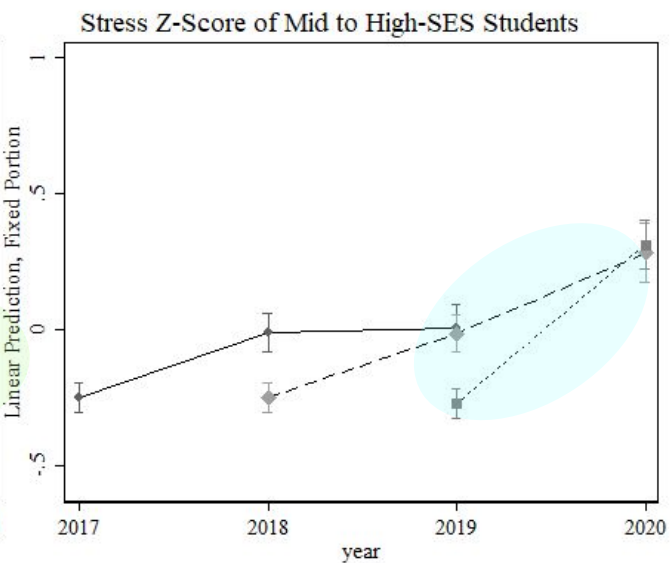
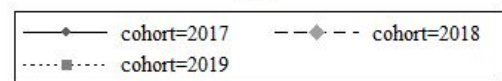
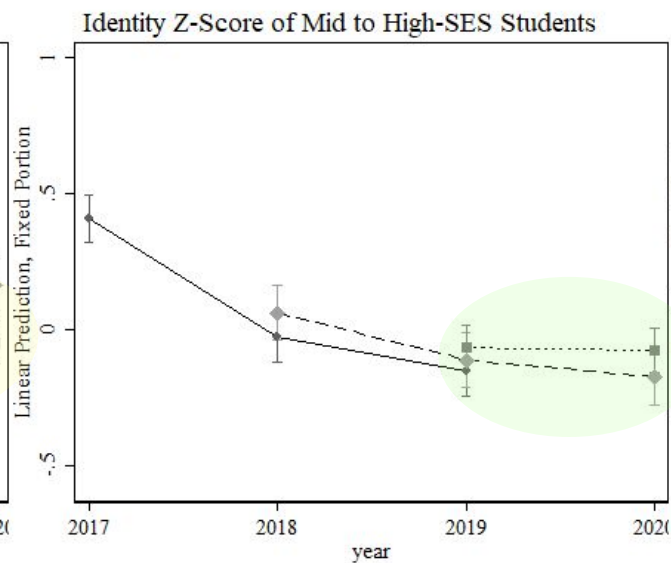
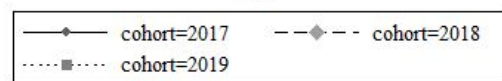
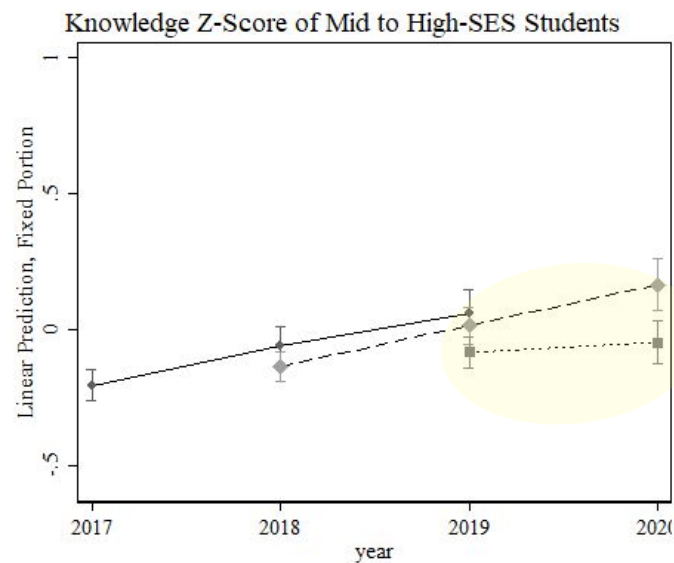


URM



By Socioeconomic Background





Discussions

- **Stress** and **identity** significantly differed during the COVID-19
 - ✓ Substantial increase in stress levels after the pandemic began
 - ✓ Greater for women, URM, and low-SES students
 - ✓ Identity rating increased during the pandemic
 - ✓ Cohort effects in the identity model
- **Low-SES students** experienced the most changes
 - ✓ First-year low-SES students met basic needs during the pandemic
 - Delay of decrease in basic needs?
 - vs
 - Fulfilling basic needs through unconventional ways created by the pandemic?



Thank you!

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Doctoral Socialization

