THE PERCEIVED PREVALENCE, CAUSE, AND PREVENTION OF RESEARCH MISCONDUCT: RESULTS FROM A SURVEY OF FACULTY AT AMERICA'S TOP 100 UNIVERSITIES

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The 6th World Conference on Research Integrity - Hong Kong - June 2019

Study Objectives

Prevalence

- Data Fabrication, Data Falsification, Plagiarism, Authorship Fraud, & Grant Fraud

Cause

- High Strain, Low Sanction Risk, Low Self-Control, & Social Learning

Prevention

- Formal Sanctions, Informal Sanctions, Reduce Strain, & Prevention Efforts

Methods

- Stratified random sample
  - Top 100 American Research Universities (Phillips et al., 2013)
  - Natural, social, & applied sciences
  - Tenured/tenure-track faculty
- Cross-sectional design
- Mixed-mode survey (online & mail)
  - Conducted during the 2016-17 academic year
  - 613 participants

Sample Characteristics (N = 613)

	Mean or %			Mean or %
Age (in years)	55.43	Rank -	Assistant Professor	24.3%
Male	69.3%		Associate Professor	24.8%
Racial/Ethnic Minority	17.5%		Professor	38.3%
Experience (in years)	22.60		Distinguished	12.6%
# Refereed Publications	68.98	Branch of Science -	Natural	36.5%
U.S. Citizen	90.0%		Social	34.6%
			Applied	28.9%

Prevalence

Second-Order Confirmatory Factor Model using WLSMV for Research Misconduct

	First Order				
Item	Data Fabrication	Data Falsification	Plagiarism	Authorship Fraud	Grant Fraud
1	.840				
2	.826				
3	.886				
4	.840				
5	.761				
6		.763			
7		.858			
8		.909			
9			.665		
10			.671		
11			.588		
12			.652		
13			.680		
14			.738		
15				.792	
16				.744	
17				.667	
18				.798	
19				.496	
20				.726	
21				.705	
22					.736
23					.761
24					.840
25					.728
26					.672
27					.705

	Second Order				
Factors	Research Misconduct				
Data Fabrication	.830				
Data Falsification		.711			
Plagiarism			.812		
Authorship Fraud				.769	
Grant Fraud					.832

Note. N = 600. Model fit statistics: Root Mean Square Error of Approximation = .072 (90% CI = .068 to .076); Comparative Fit Index = .930; and Tucker-Lewis Index = .923.

Perceived Prevalence of Research Misconduct

		M	SD	N
Data Fabrication (α = .86)		**1.92**	**.49**	**592**
1	Fabricating data so that a desired outcome is found	2.01	.59	604
2	Fabricating parts of a grant proposal to be more competitive	2.12	.69	599
3	Adding fictitious data to a real data set to provide additional statistical validity	1.87	.59	593
4	Fabricating results from a pilot study to appear attractive to a funding agency	1.96	.64	593
5	Creating data from a study that was never actually conducted	1.67	.56	595
Data Falsification (α = .83)		**2.71**	**.69**	**593**
6	Not testing whether a desired outcome can withstand robustness checks	2.90	.80	597
7	Not reporting results that are contrary to the desired outcome	2.71	.79	601
8	Not reporting statistical evidence that calls the desired outcome into question	2.52	.81	596
Plagiarism (α = .76)		**2.24**	**.48**	**604**
9	Using another author's exact language without giving appropriate credit	2.38	.70	609
10	Presenting another study's tables or figures without giving appropriate credit	2.01	.63	606
11	Publishing a previously published study under a different title at another journal	2.01	.73	606
12	Willful failure to appropriately credit prior research in the same substantive area	2.63	.79	604
13	Publishing a previously published study under a different title in another language	1.97	.70	604
14	Failing to obtain written permission for previously published material	2.44	.75	604
Authorship Fraud (α = .82)		**2.61**	**.54**	**595**
15	Accepting authorship credit on a paper without making a substantive contribution	3.07	.82	604
16	Not giving authorship credit to someone who made a substantive contribution	2.47	.76	602
17	Arranging authorship in a way that doesn't reflect each author's contribution	2.86	.80	601
18	Giving someone authorship credit who did not make a substantive contribution	2.92	.82	600
19	Not accepting authorship credit on a paper after making a substantive contribution	1.92	.70	599
20	Failing to acknowledge individuals whose contributions deserve such recognition	2.62	.73	600
21	Submitting a paper for publication without the approval of all listed authors	2.41	.80	595
Grant Fraud (α = .81)		**2.34**	**.56**	**585**
22	Using grant funds to cover personal expenses	2.09	.71	590
23	Charging a grant for work that was not performed	2.17	.76	588
24	Submitting a false financial statement to a funding agency	1.91	.63	586
25	Using grant funds to attend a conference and then not, or barely, showing up	2.45	.78	591
26	Applying for grants to do work that is already done	2.63	.91	591
27	Using funds from one source to pay for personnel working on an unrelated project	2.81	.82	595

Note. Closed-ended response set ranged from 1 (*never*) to 4 (*often*).

Cause

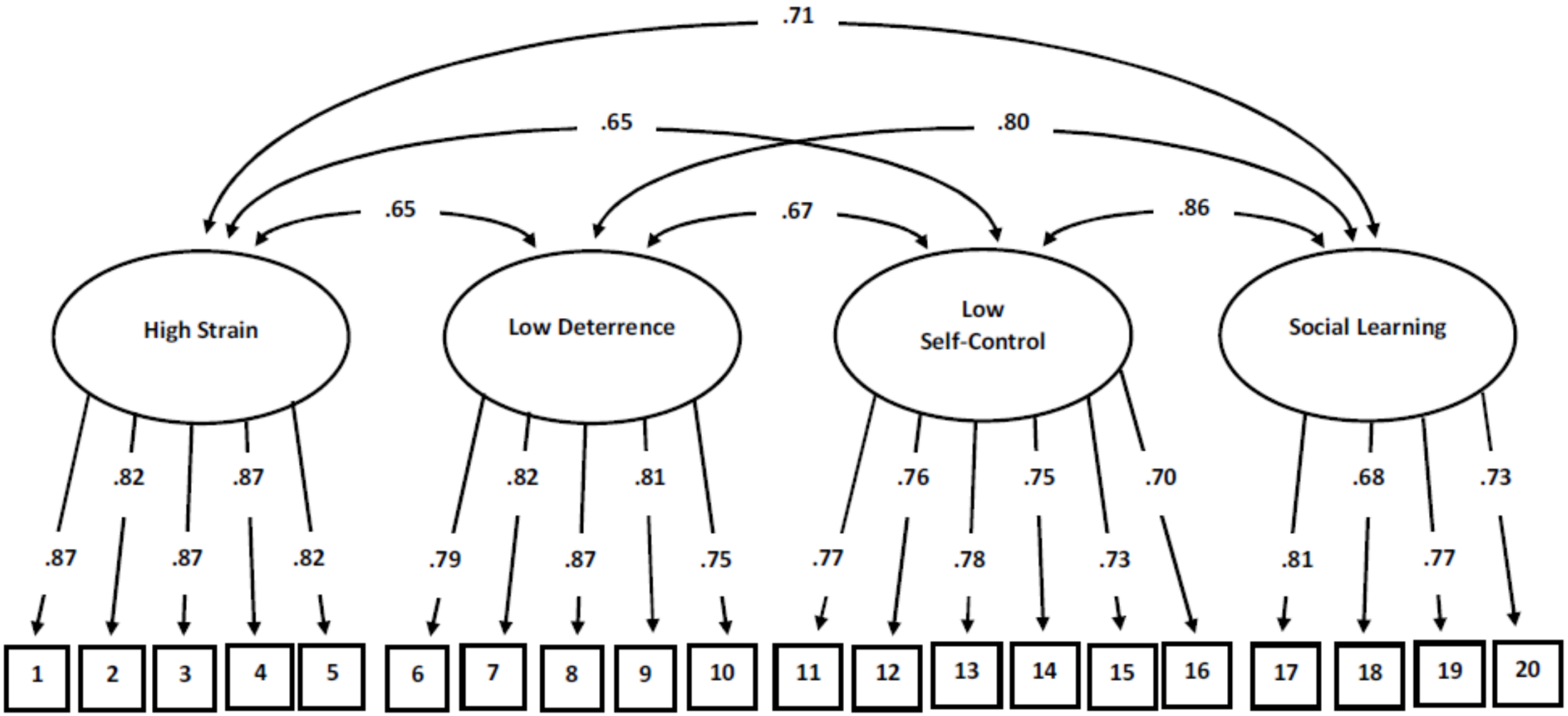

Figure 1. A four-factor confirmatory model with ordinal data for perceptual causes of research misconduct scales (N = 586). Entries are standardized loadings; all *p*-values are significant at the .001 level (two-tailed test). The results indicate that the model fits the data well: Root Mean Square Error of Approximation = 0.068 (90% CI = .062 to .074); Comparative Fit Index = .960; and Tucker-Lewis Index = .954.

Perceived Causes of Research Misconduct

		Mean	SD	N
High strain (α = .88)		**2.01**	.56	578
1.	There is a lot of pressure to meet tenure requirements.	2.09	.66	580
2.	There is a lot of pressure to obtain external funding.	2.11	.73	578
3.	There is a lot of pressure to build a reputation in one's field.	2.07	.67	578
4.	There is a lot of pressure to publish one's work in high impact journals.	2.11	.72	578
5.	There is a lot of pressure to meet departmental annual review criteria.	1.71	.67	578
Low deterrence (α = .83)		1.74	.53	574
6.	Insufficient censure for research misconduct by the university.	1.58	.66	578
7.	Insufficient censure for research misconduct by professional organizations.	1.59	.68	575
8.	Insufficient informal censure for research misconduct by one's peers.	1.65	.69	576
9.	Low likelihood of detecting research misconduct via the peer review process.	1.97	.69	575
10.	Low likelihood of detecting research misconduct through the lack of scientific replication.	1.90	.71	575
Low self-control (α = .82)		1.61	.46	576
11.	Researchers who prefer to take shortcuts.	1.89	.68	582
12.	Researchers who have trouble working toward long-term goals.	1.53	.63	577
13.	Researchers who act without thinking through long-term consequences.	1.66	.67	577
14.	Researchers who have trouble controlling themselves.	1.50	.63	577
15.	Researchers who are easily discouraged by rejection.	1.48	.58	577
16.	Researchers who are self-indulgent.	1.61	.66	577
Social learning (α = .73)		**1.51**	.47	578
17.	Research learn they can get away with research misconduct.	1.74	.72	578
18.	Some researchers receive admiration from their peers for successful research misconduct.	1.28	.56	579
19.	The belief that "publishing at any cost necessary" is common among researchers.	1.65	.67	579
20.	The belief that research misconduct is "not a big deal" is common among researchers.	1.37	.59	578

Note. Closed-ended response set ranged from 1 (*not at all*) to 3 (*very much*).

Prevention

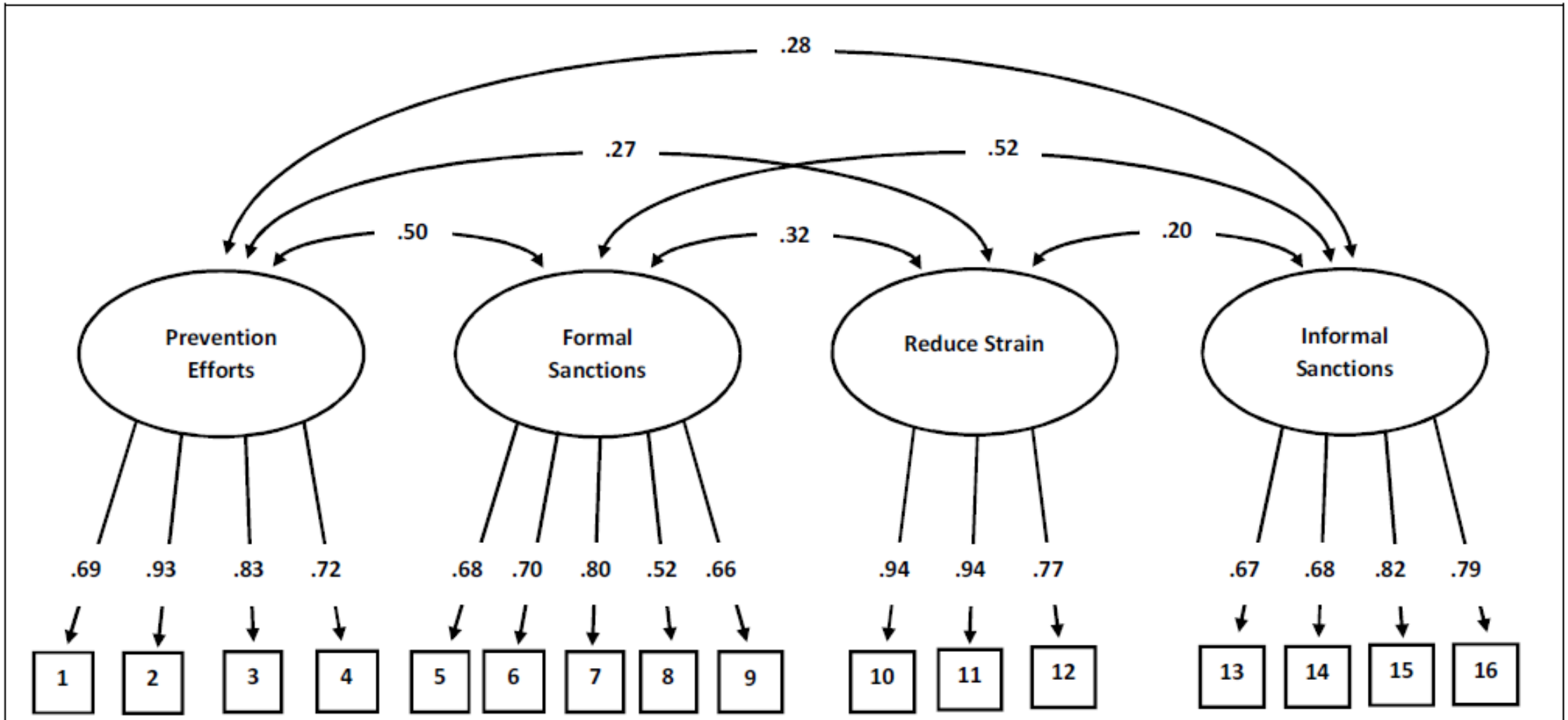

Figure 1. A four-factor confirmatory model with ordinal data for perceived solutions for research misconduct scales (N = 601). Entries are standardized loadings; all *p*-values are significant at the .001 level (two-tailed test). The results indicate that the model fits the data well: Root Mean Square Error of Approximation = 0.09 (90% CI = .08 to .10); Comparative Fit Index = .95; and Tucker-Lewis Index = .94.

Preventing Research Misconduct

		Mean	SD	N
Prevention Efforts (α = .82)		**2.41**	.741	589
1.	Requiring doctoral students to attend workshops on ethical research practices	2.63	.870	594
2.	Providing grant writing workshops to junior faculty →	2.28	.964	591
3.	Providing mentoring programs to junior faculty	2.59	.959	596
4.	Having journals regularly publish ethical guidelines →	2.15	.894	596
Formal Sanctions (α = .75)		**3.07**	.607	585
5.	Establishing harsher penalties for researchers who commit research misconduct →	3.41	.737	591
6.	Increasing protections for whistleblowers, such as lab staff, who expose research misconduct	3.07	.854	590
7.	The establishment of due process requirements to guide research misconduct investigations	2.81	.870	588
8.	Criminalizing serious forms of research misconduct →	3.14	.970	588
9.	Professional associations establishing formal sanctions for research misconduct	2.92	.850	593
Reduce Strain (α = .87)		2.76	.844	593
10.	Reducing the pressure to secure external funding	2.91	.945	595
11.	Reducing pressure to publish one's work in high impact journals	2.90	.941	594
12.	Reducing departmental annual performance review expectations	2.46	.963	593
Informal Sanctions (α = .72)		2.96	.685	589
13.	Peers refusing to review presumed wrongdoer's papers and grant applications	2.87	1.018	593
14.	Individual researchers refusing to cite the presumed wrongdoer's work	2.77	.979	592
15.	Individuals writing letters of complaint to relevant professional societies regarding presumed wrongdoer's misconduct	2.96	.890	591
16.	Individuals writing letters of complaint to the presumed wrongdoer's university	3.25	.832	593

Note. Closed-ended response set ranged from 1 (*no effect*) to 4 (*major effect*).

Latent Class Analysis

Thank You!

謝謝

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This project was supported by Grant No. ORIIR160028-04-00 and ORIIR150018-01 awarded by The Office of Research Integrity (ORI), U.S. Department of Health and Human Services. The opinions, findings, and conclusions or recommendations expressed in this publication/program/exhibition are those of the authors, and do not necessarily reflect those of the Department of Health and Human Services.