Supplemental Files Tables 1-3

Configuration of Latent Classes

Latent Class Analysis 1 – Non-Innovator. The LCA 1 group (non-innovator) was slightly greater than average in factor 1 (risk aversion) mean of 1.33 (95% CI [-5.01, 7.67]). This group under performed in factor 2 (willingness to try new things) mean of -7.27 (95% CI [-12.07,-2.47]), factor 3 (creativity and originality) mean of -3.36 (95% CI [-3.95, -2.78]), and factor 4 (being challenged) mean of -2.3 (95% CI [-2.81, -1.79]) (**Supplemental Table 1).**

Latent Class Analysis 2 – Uncreative. The LCA 2 group (uncreative) was slightly less than average in factor 1 (risk aversion) mean of -0.57 (95% CI [-1.09, -0.06]). This group was average in factor 2 (willingness to try new things**)** mean of -0.37 (95% CI [-0.84, 0.1])**,** lower than average in factor 3 (creativity and originality**)** mean of -1.99 (95% CI [-2.31, -1.67]) and average in factor 4 **(**being challenged) mean of -0.04 (95% CI [-0.29, 0.21]) (Supplemental Table 1).

Latent Class Analysis 3 – Optimal Innovator. The LCA 3 group (optimal innovator) had an average score in all four factors; factor 1 (risk aversion) mean is -0.01 (95% CI [0.1, 0.07]). Factor 2 (willingness to try new things**)** mean of 0.03 (95% CI [-0.04, 0.1]). Factor 3 (creativity and originality) mean of 0.13 (95% CI [0.06, 0.21]). Factor 4 (being challenged) mean of 0. 29 (95% CI [0.24, 0.34]) (Supplemental Table 1).

Latent Class Analysis 4 – Wary Innovator. The LCA 4 (wary innovator) had an average score for factor 1 (risk aversion) mean of 0.32 (95% CI [0.06, 0.59]), factor 2 (willingness to try new things) mean of 0.4 (95% CI [0.21, 0.58]) and factor 3 **(**creativity and originality) mean of 0.29 (95% CI [0.08, 0.51]). This group was lower than average in factor 4 (being challenged) mean of -2.24 (95% CI [-2.46, -2.03]) (Supplemental Table 1).

Supplemental Table 1.

Latent Class Analysis (LCA) with Confidence Intervals.

LCA 1 (Non-innovator) n=2	Mean	Lower Bound	Upper Bound	Margin	Position	Lower 95% CI	Lower 95% CI

	Mean	Lower Bound	Upper Bound	Margin	Position	Lower 95% CI	Lower 95% CI
Factor 1 (risk aversion)	1.33	-5.01	7.67	6.34	0.5	6.34	6.34
Factor 2 (willingness to try new things)	-7.27	-12.07	-2.47	4.8	1.5	4.8	4.8
Factor 3 (creativity and originality)	-3.36	-3.95	-2.78	0.59	2.5	0.59	0.58
Factor 4 being challenged)	-2.3	-2.81	-1.79	0.51	3.5	0.51	0.51

LCA 2 (Uncreative) n=20	Mean	Lower Bound	Upper Bound	Margin	Position	Lower 95% CI	Lower 95% CI
Factor 1 (risk aversion)	-0.57	-1.09	-0.06	0.52	0.5	0.52	0.51
Factor 2 (willingness to try new things)	-0.37	-0.84	0.1	0.47	1.5	0.47	0.47
Factor 3 (creativity and originality)	-1.99	-2.31	-1.67	0.32	2.5	0.32	0.32
Factor 4 being challenged).	-0.04	-0.29	0.21	0.25	3.5	0.25	0.25

LCA 3 (Optimal Innovator) n=274	Mean	Lower Bound	Upper Bound	Margin	Position	Lower 95% CI	Lower 95% CI
Factor 1 (risk aversion)	-0.01	-0.11	0.1	0.11	0.5	0.1	0.11

Factor 2 (willingness to try new things)	0.03	-0.04	0.1	0.07	1.5	0.07	0.07
Factor 3 (creativity and originality)	0.13	0.06	0.21	0.08	2.5	0.07	0.08
Factor 4 being challenged).	0.29	0.24	0.34	0.05	3.5	0.05	0.05

LCA 4 (Wary Innovator) n=33	Mean	Lower Bound	Upper Bound	Margin	Position	Lower 95% CI	Lower 95% CI
Factor 1 (risk aversion)	0.32	0.06	0.59	0.27	0.5	0.26	0.27
Factor 2 (willingness to try new things)	0.4	0.21	0.58	0.19	1.5	0.19	0.18
Factor 3 (creativity and originality)	0.29	0.08	0.51	0.22	2.5	0.21	0.22
Factor 4 being challenged).	-2.24	-2.46	-2/03	0.22	3.5	0.21	0.21

==*Latent Class Analysis (LCA) Groups and Individual Characteristics*==.

A one-way ANOVA compared the innovativeness scores of the LCA groups, demonstrating differences between the LCA groups (p=<0.001). LCA group 3 had the greatest innovativeness score (121.94±9.20) compared to the other LCA groups: LCA 1 (61.00±7.07), LCA 2 (104.85±12.44) and LCA 4 (119.42±8.89). Using a Tukey's test for multiple comparisons we found a statistically significant difference in the innovativeness scores between LCA 3 vs 2 (p=<0.001) and LCA 4 vs 3 (p=<0.001).

	Total Population, n=329	LCA 1 n=2 (non-innovator)	LCA 2 n=20 (uncreative)	LCA 3[a,c] n=274 (optimal innovator)	LCA 4[b,d] n=33 (wary innovator)	t	df	p-value*
Age, yrs (m±sd), n=295	47.17±12.18	62.00±0.00	43.56±12.69	47.42±12.04	46.87±12.06	0.43	2, 291	0.43
Gender, n (%), n=305								
Female	264 (86.6)	0 (0.00)	17 (89.47)	222 (86.96)	27 (84.38)	0.72	4	0.95
Male	33 (10.8)	1 (100.00)	2 (10.53)	26 (10.28)	4 (12.50)			
Other	8 (2.6)	0 (0.00)	0 (0.00)	7 (2.77)	1 (3.12)			
Race, n=305								
Asian	22 (7.2)	0 (0.00)	2 (9.09)	17 (6.69)	3 (9.68)	4.19	6	0.65
Black	36 (11.8)	0 (0.00)	3 (15.79)	30 (11.81)	3 (9.68)			

Other	13 (4.3)	1 (100.00)	14 (73.68)	197 (77.56)	22 (70.97)			
White	234 (76.7)	0 (0.00)	0 (0.00)	10 (3.94)	3 (9.68)			
Ethnicity, n=306								
Hispanic or Latino	15 (4.9)	0 (0.00)	1 (5.26)	13 (5.22)	1 (3.23)	0.23	2	0.89
Highest Level of Education Completed in Nursing, n=306								
Associate Degree	0 (0.0)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	2.79	6	0.83
Baccalaureate Degree	52 (17.0)	0 (0.00)	5 (26.32)	40 (15.75)	7 (21.88)			
Master's Degree	122 (39.9)	0 (0.00)	8 (42.11)	103 (40.55)	11 (34.38)			
Doctor of Nursing Practice	45 (14.7)	0 (0.00)	2 (10.53)	39 (15.35)	4 (12.50)			
PhD or other Doctorate	87 (28.4)	1 (100.00)	4 (21.05)	72 (28.35)	10 (31.25)			
Licensure, n=306								
RN	254 (83.0)	1 (100.00)	15 (78.95)	212 (83.46)	26 (81.25)	0.33	2	0.85
Other	52 (16.99)	0 (0.00)	4 (21.05)	42 (16.54)	6 (18.75)			
From What Type of Program Did You Receive Your Initial, n=301 Nursing Education								
Associate Degree Program	49 (16.3)	1 (100.00)	3 (15.79)	39 (15.66)	6 (18.75)	3.15	6	0.79
Baccalaureate Degree	202 (67.1)	0 (0.00)	15 (78.95)	165 (66.27)	22 (68.75)			
Diploma Program	23 (7.6)	0 (0.00)	1 (5.26)	20 (8.03)	2 (6.25)			

Graduate Program	27 (9.0)	0 (0.00	0 (0.00)	25 (10.04)	2 (6.25)			
Current Position, n=300								
Staff Nurse	30 (10.0)	0 (0.00)	2 (10.53)	24 (9.64)	0 (0.00)	16.39	18	0.57
Nurse Practitioner	19 (6.3)	0 (0.00)	1 (5.26)	16 (6.43)	2 (6.45)			
Clinical Nurse Specialist	12 (4.0)	0 (0.00)	2 (10.53)	9 (3.61)	1 (3.23)			
Nurse Anesthetist	1 (0.3)	0 (0.00)	0 (0.00)	1 (0.40)	0 (0.00)			
Nurse Midwife	2 (0.7)	1 (100.00)	0 (0.00)	1 (0.40)	0 (0.00)			
Nurse Manager	19 (6.3)	0 (0.00)	1 (5.26)	16 (6.43)	2 (6.45)			
Senior Nursing Administrator	25 (8.3)	0 (0.00)	2 (10.53)	18 (7.23)	5 (16.13)			
Faculty member/Researcher	67 (22.3)	0 (0.00)	3 (15.79)	61 (24.50)	3 (9.68)			
Director of Innovation	15 (5.0)	0 (0.00)	1 (5.26)	12 (4.82)	2 (6.45)			
Other	110 (36.7)	0 (0.00)	7 (36.84)	91 (36.55)	12 (38.71)			
Are you satisfied with your current position as a nurse, n=305								
Yes	222 (73.3)	0 (0.00)	16 (84.21)	181 (72.11)	25 (78.12)	1.72	2	0.42
No	81 (26.7)	1 (100.00)	3 (15.79)	70 (21.88)	7 (21.88)			
Are you satisfied with your current institution, n=305								
Yes								

No	223 (73.6)	0 (0.00)	17 (89.47)	180 (71.71)	26 (81.25)	3.90	2	0.14
	80 (26.4)	1 (100.00)	2 (10.53)	71 (28.29)	6 (18.75)			
Do you feel supported by your	Yes							
Nurse Colleagues, n=296	257 (86.8)	0 (0.00)	17 (89.47)	215 (87.04)	25 (86.21)	0.12	2	0.94
Nurse Manager, n=288	217 (75.4)	0 (0.00)	18 (94.74)	177 (73.75)	22 (78.57)	4.35	2	0.11
Executive Leadership, n=298	190 (63.8)	0 (0.00)	13 (68.42)	157 (63.31)	20 (66.67)	0.31	2	0.86
How many years have you worked in Nursing? n=297	21.5±12.7	30.00±0.00	21.66±13.03	21.65±12.71	19.75±12.53	0.03	2, 293	0.74
How many years have you worked as a clinician? n=294	14.6±11.0	15.00±0.00	13.45±10.86	14.79±11.24	13.88±9.58	1.18	2, 290	0.82
How many years have you worked at your current institution? n=296	8.9±9.0	11.00±0.00	7.63±8.62	8.57±8.58	12.59±11.55	5.34	2, 292	0.06
Do you work in a hospital?, n=300								
Yes	129 (43.0)	1 (100.00)	9 (47.37)	102 (40.80)	17 (56.67)	2.93	2	0.23
No	171 (57.0)	0 (0.00)	10 (52.63)	148 (59.20)	13 (43.33)			
Employment Status, n=301								
Employed in healthcare	260 (86.4)	1 (100.00)	15 (78.95)	218 (88.98)	26 (92.86)	2.31	2	0.32
Employed, not in healthcare	33 (11.0)	0 (0.00)	4 (21.05)	27 (11.02)	2 (7.14)			

How many innovation events have you participated in the last 1 year? n=321								
1								
2-3	111 (34.6)	0 (0.00)	14 (73.68)	89 (33.21)	8 (25.00)	15.59	6	0.02
4-5	119 (37.1)	1 (50.00)	3 (15.79)	99 (36.94)	119 (37.07)			
6 or more	46 (14.3)	1 (50.00)	1 (5.26)	40 (14.93)	46 (14.33)			
	45 (14.0)	0 (0.00)	1 (5.26)	40 (14.93)	45 (14.02)			
Have you been exposed to human-centered design/design thinking in the past 1 year:								
Yes								
Activities, n=325	209 (64.3)	1 (50.00)	7 (36.48)	181 (66.79)	20 (60.61)	7.18	2	0.03
Lectures, n=324	224 (69.1)	1 (50.00)	13 (68.42)	192 (71.11)	18 (54.44)	3.80	2	0.15
Other, n=308	227 (73.7)	0 (0.00)	2 (11.76)	70 (27.13)	9 (28.12)	2.00	2	0.37
Projects, n=324	199 (61.4)	1 (50.00)	9 (47.37)	169 (62.59)	20 (60.61)	1.75	2	0.42
Resources, n=324	211 (65.1)	1 (50.00)	10 (52.63)	178 (65.93)	22 (66.67)	1.42	2	0.49
Workshops, n=323	174 (53.9)	0 (0.00)	7 (36.84)	152 (56.51)	15 (45.45)	3.80	2	0.14
Diffusion Categories, n=329								
Innovator	9 (2.74)	0 (0.00)	0 (0.00)	9 (100.00)	0 (0.00)	24.94	4	<0.001 **
Early Adopter	201 (61.09)	0 (0.00)	3 (1.49)	179 (89.05)	19 (9.45)			
Early Majority	117 (35.56)	0 (0.00)	17 (14.53)	86 (73.50)	14 (11.97)			

Late Majority	2 (0.61)	2 (100.00)	0 (0.00)	0 (0.00)	0 (0.00)			
Laggard	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)			
Innovativeness score, n=329	120.3±11.2	61.00±7.07	104.85±12.44	121.94±9.20	119.42±8.89	4.03	2, 324	<0.001

* LCA 1 was removed from bivariate analysis due to small population size (n=2); **Overall, there is a difference in the means but no difference in pairwise analysis; Tukey Test found differences in "How many innovation events have you participated in the last 1 year" a, LCA 3 vs 4 (p=0.02); b, LCA 4 vs 2 (0.03); Tukey Test found differences in Innovativeness Scores and LCA groups: c, LCA 3 vs 2 (p=<0.001); d, LCA 4 vs 2 (p=<0.001).

Supplemental Table 3.

Latent Class Analysis (LCA) Groups and Organizational Characteristics.

An ANOVA of the means for each LCA group found statistically significant differences for willingness to implement innovation methodologies in their day-to-day work (LCA 1: 3.79±1.03 vs LCA 2: 4.43±072 vs LCA 3: 4.63±0.55, p=0.001) and how often they are able to implement innovation methodologies in their day-to-day work (LCA 1: 3.05±0.91 vs LCA 2: 3.40±0.82 vs LCA 3: 3.73±0.91, p=0.02) (Table 4.7). Using a Tukey's test for multiple comparisons we found a statistically significant difference in the willingness to implement methodologies in day-to-day work between LCA 3 vs 2 (p=0.001) and LCA 4 vs 2 (p=<0.001).

	Total Population, n=329	LCA 1* (non-innovator)	LCA 2 (uncreative)	LCA 3[a] (optimal innovator)	LCA 4[b] (wary innovator)	t	df	p-value
Type of Institution, n=(%), n=298								
Rural (3)	20 (6.7)	0 (0.00)	1 (5.26)	16 (6.45)	3 (10.00)	2.46	6	0.87
Suburban (1)	61 (20.5)	1 (100.00)	6 (31.58)	49 (19.76)	5 (16.67)			
Urban (2)	193 (64.8)	0 (0.00)	11 (57.89)	162 (65.32)	20 (66.67)			
Other (4)	24 (8.1)	0 (0.00)	1 (5.26)	21 (8.47)	2 (6.67)			
Magnet Status, n=298								
Yes	126 (42.3)	0 (0.00)	9 (47.37)	102 (41.13)	15 (50.00)	4.60	4	0.33
No	56 (18.8)	1 (100.00)	6 (31.58)	44 (17.74)	5 (16.67)			
Not Applicable	116 (38.9)	0 (0.00)	4 (21.05)	102 (41.13)				

					10 (33.33)			
Do you consider your institution to be innovative, n=297						0.49	2	0.78
Yes	212 (71.4)	0 (0.00)	14 (73.68)	175 (70.85)	23 (76.67)			
No	85 (28.6)	1 (100.00)	5 (26.32)	72 (29.15)	7 (23.33)			
Does your institution support innovative thinking by its nurses? n=296						0.74	2	0.69
Yes	219 (74.0)	0 (0.00)	13 (68.42)	185 (75.20)	21 (70.00)			
No	77 (26.0)	1 (100.00)	6 (31.58)	61 (24.80)	9 (30.00)			
Do you get protected time away from the bedside to work on other projects? n=294						5.06	4	0.28
Yes	56 (19.0)	0 (0.00)	6 (31.58)	45 (18.44)	5 (16.67)			
No	79 (26.9)	1 (100.00)	4 (21.05)	62 (25.41	12 (40.00)			
Not applicable	159 (54.1)	0 (0.00)	9 (47.37)	137 (56.15)	13 (43.33)			

How willing are you to implement innovation methodologies in your day-to-day work? n=323	4.41±0.74	4.50±0.71	3.79±1.03	4.43±072	4.63±0.55	1.29	2	0.001
How often are you able implement innovation methodologies in your day-to-day work? n=324	3.41±0.85	2.50±2.12	3.05±0.91	3.40±0.8	3.73±0.91	0.96	2	0.02**
How often do you encounter obstacles that impede you from being innovative in your day-to-day work? n=323	3.53±0.78	4.00±1.41	3.68±0.67	3.52±0.78	3.50±0.80	0.766	2	0.65
How satisfied are you with the following aspects of your job: Opportunities for advancement, n=296	2.91±1.0	1.00±0.00	3.00±0.94	2.93±1.03	2.70±0.99	0.32	2	0.45
How satisfied are you with the following aspects of your job: Opportunities to be creative, n=298	3.00±1.05	1.00±0.00	3.16±0.77	3.00±1.05	2.9±1.16	3.45	2	0.70
How satisfied are you with the following aspects of your job:	2.97±1.05	1.00±0.00	3.11±0.81	2.96±1.06	3.00±1.10	2.19	2	0.85

Opportunities to be innovative, n=300							
How satisfied are you with the following aspects of your job: Opportunities to lead, n=298	3.13±0.97	1.00±0.00	3.37±0.68	3.12±0.98	3.13±0.96	3.55	2	0.55
How satisfied are you with the following aspects of your job: Time away from clinical responsibilities, n=285	2.81±1.15	1.00±0.00	3.39±1.04	2.77±1.14	2.79±1,13	0.28	2	0.09
How satisfied are you with the following aspects of your job: Work schedule, n=299	3.39±0.82	1.00±0.00	3.47±0.70	3.41±0.80	3.19±0.95	2.39	2	0.34
How satisfied are you with the following aspects of your job: Choice of nursing as a career, n=305	3.60±0.67	4.00±0.00	3.68±0.58	3.60±0.68	3.53±0.67	0.67	2	0.73
How would you rate: Relationship with co-workers, n=298	3.38±0.73	4.00±0.00	3.37±0.68	3.39±0.72	3.23±0.77	0.37	2	0.53

How would you rate: Adequacy of resources, n=298	3.04±0.84	1.00±0.00	3.16±0.69	3.03±0.85	3.13±0.73	2.27	2	0.67
How would you rate: Support from supervisors, n=296	3.10±0.97	1.00±0.00	3.52±0.61	3.09±0.97	2.96±0.98	5.55	2	0.12
How would you rate: Overall work environment, n=298	3.18±0.78	1.00±0.00	3.37±0.60	3.19±0.78	3.03±0.77	2.08	2	0.32
Has your institution offered any of the following:	Yes							
HCD/DT education, n=283	107 (37.8)	0 (0.00)	5 (26.32)	90 (38.14)	12 (44.44)	1.58	2	0.45
HCD/DT lectures, n=283	102 (36.0)	0 (0.00)	4 (21.05)	88 (37.29)	10 (37.04)	2.02	2	0.37
HCD/DT resources, n=282	119 (42.2)	0 (0.00)	5 (26.32)	101 (42.80)	13 (48/15)	2.39	2	0.30
HCD/DT workshops, n=283	100 (35.3)	0 (0.00)	4 (21.05)	86 (36.44)	10 (37.04)	1.85	2	0.40
Innovation education, n=284	166 (58.5)	0 (0.00)	8 (42.11)	141 (59.49)	17 (62.96)	2.42	2	0.30
Innovation lectures, n=284	156 (54.9)	0 (0.00)	8 (42.11)	132 (55.70)	16 (59.26)	1.52	2	0.47
Innovation resources, n=282	174 (61.7)	0 (0.00)	10 (52.63)	148 (62.98)		0.89	2	0.64
Innovation workshops, n=283	139 (49.1)	0 (0.00)	6 (31.58)	120 (50.85)		2.63	2	0.27

					16 (59.26) 13 (48.15)			

*LCA 1 was removed from bivariate analysis due to small population size (n=2); **Overall, there is a difference in the means but no difference in pairwise analysis; Tukey Test found differences in "How willing are you to implement innovation methodologies in your day-to-day work: a, LCA 3 vs 2 (p=0.001); b, LCA 4 vs 2 (p=<0.001).