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Preliminary Results of a Study Investigating Aviation Students' Intentions to use Virtual Reality for Flight Training

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PRELIMINARY RESULTS OF A STUDY INVESTIGATING AVIATION STUDENT'S INTENTIONS TO USE VIRTUAL REALITY FOR FLIGHT TRAINING

STEPHANIE G. FUSSELL, PHD CANDIDATE

DR. DOTHANG TRUONG, CHAIR

DR. DAVID CROSS, DR. ROBERT THOMAS, DR. CHANG-GEUN OH, COMMITTEE MEMBERS

OUTLINE

- Background
- Research Questions & Purpose
- Proposed Research Theoretical Framework and Hypotheses
- Survey Instrument
- Results of the Pilot Study
- Discussion & Next Steps

AVIATION, VR, AND EDUCATION

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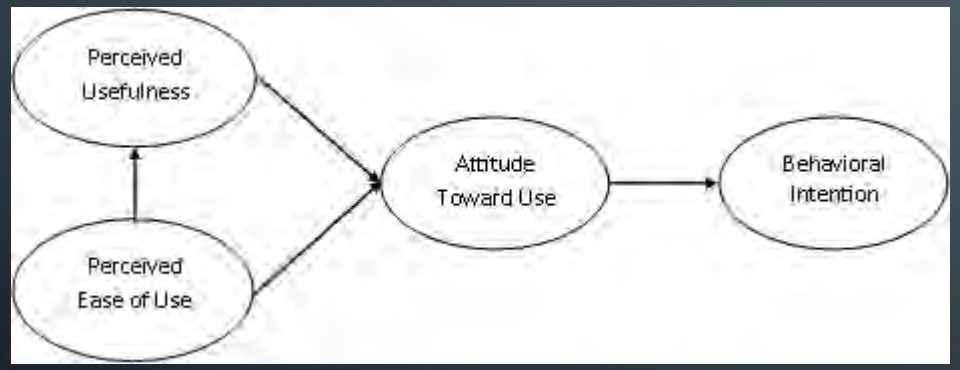
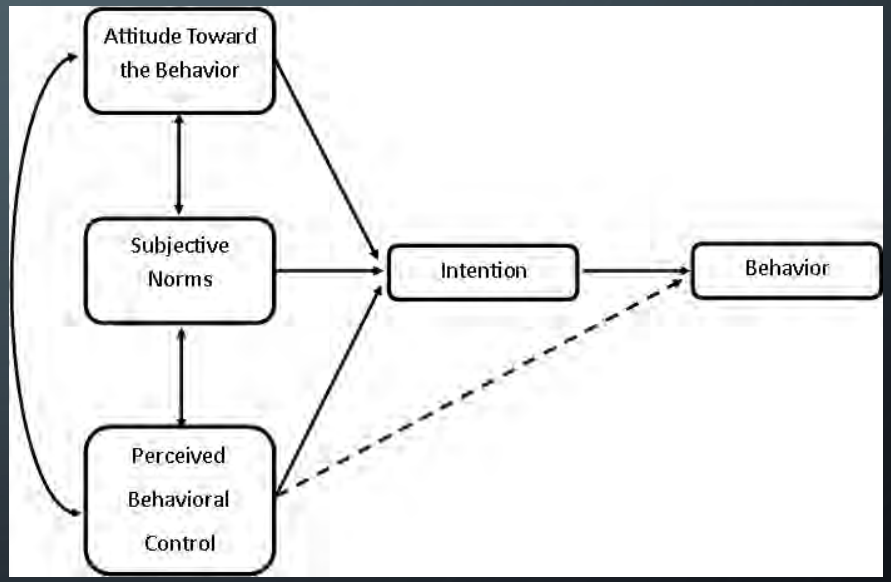
FOUNDATION THEORIES OF THE STUDY

TECHNOLOGY ACCEPTANCE MODEL (TAM)



Davis, Bagozzi, and Warshaw (1989)

THEORY OF PLANNED BEHAVIOR (TPB)



Ajzen (1991)

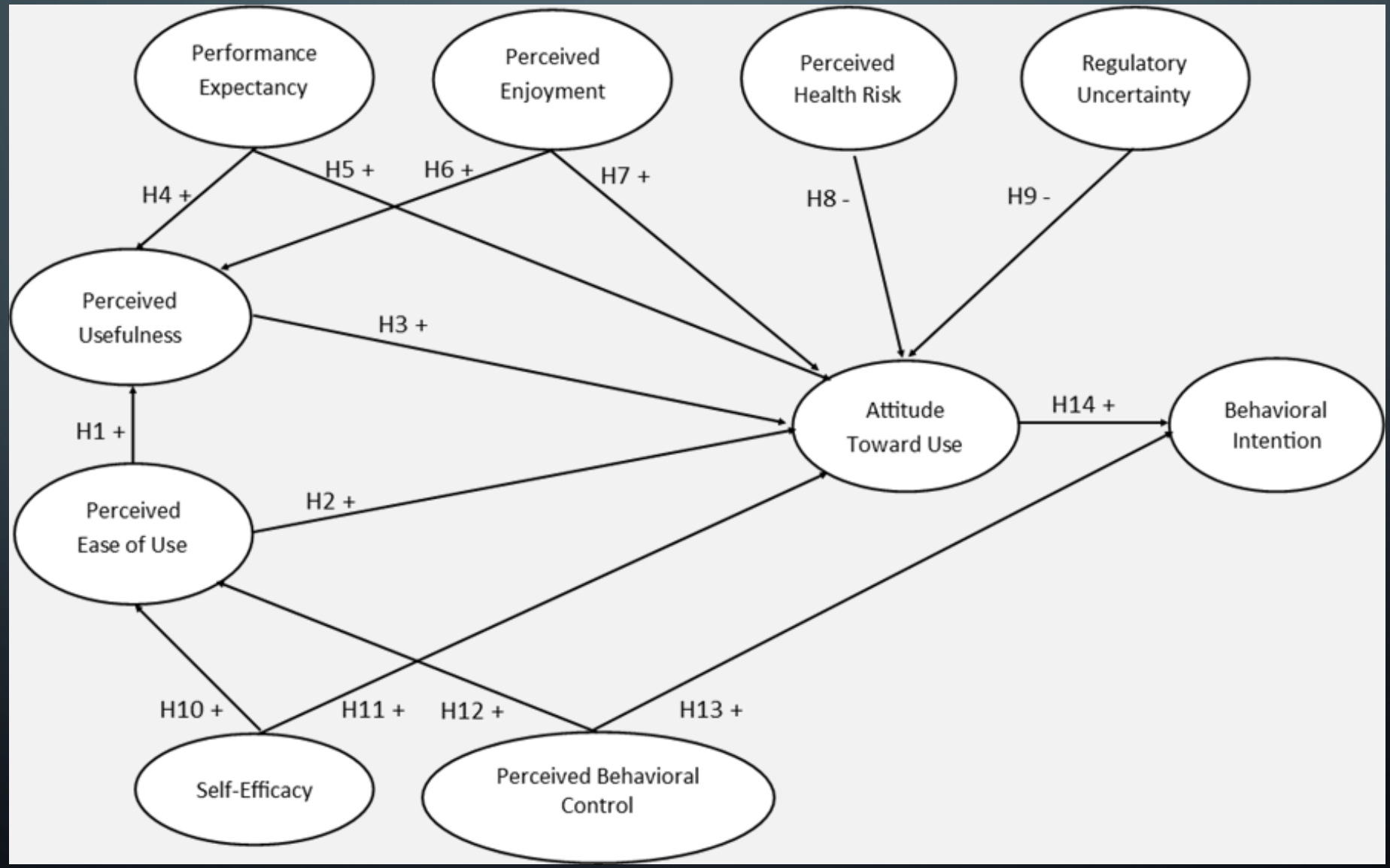
RESEARCH QUESTIONS & PURPOSE

What factors influence aviation students' intentions to use VR technology for flight training?

How do these factors impact students' intentions to use VR technology for flight training?

To what extent do these factors influence aviation students' intentions to use VR technology for flight training?

PROPOSED RESEARCH THEORETICAL FRAMEWORK AND HYPOTHESES



SURVEY INSTRUMENT

Designed using foundation theories and previous, validated instruments

Accessed via email with link to online survey platform

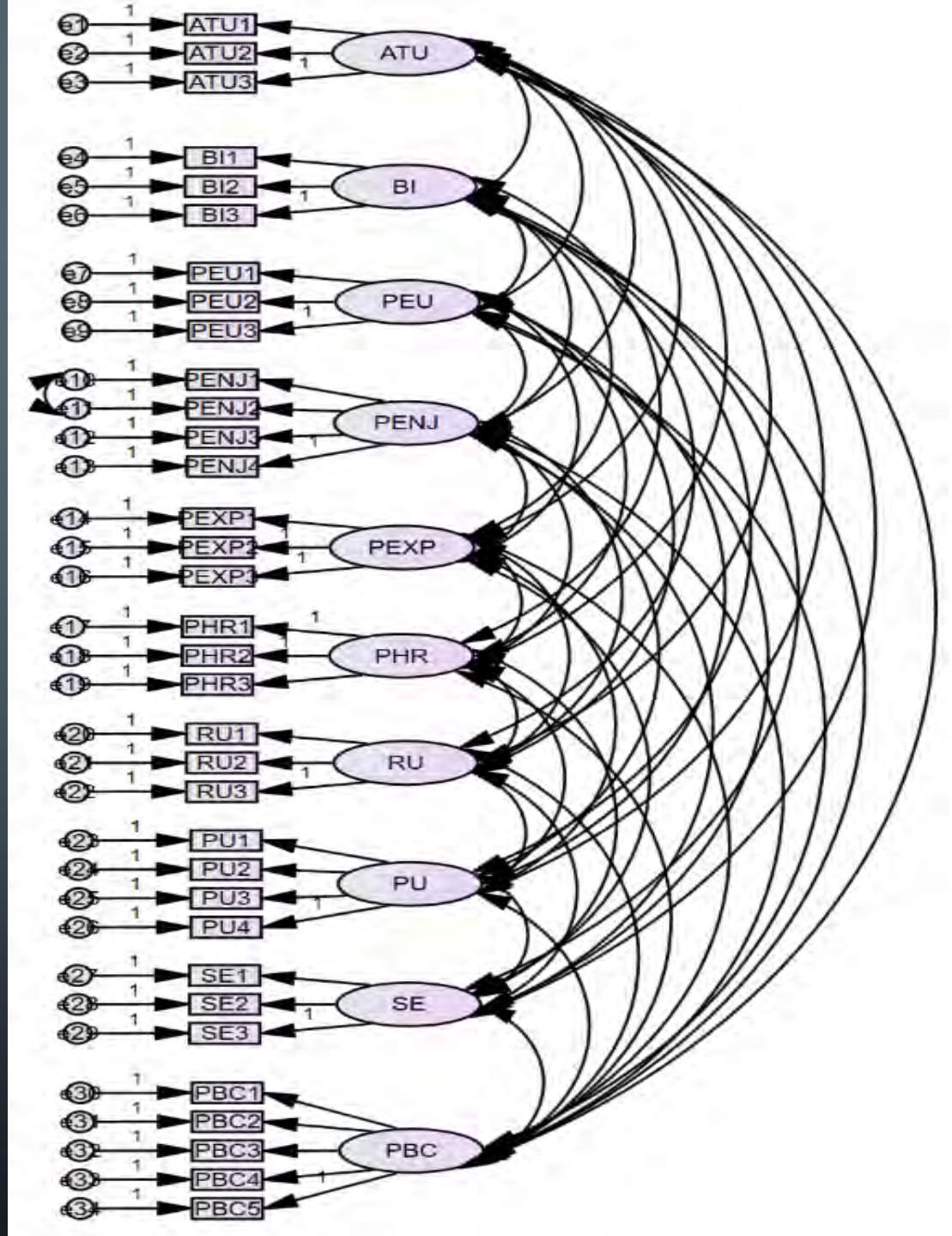
Section 1: purpose of study, consent form, screening questions

Section 2: demographic data (11)

Section 3: Likert response items to assess latent constructs (34)

RESULTS OF THE PILOT STUDY: CFA AND SEM RESULTS

- Factor Perceived Health Risk (PHR) had low Cronbach's alpha value of 0.40; changes required
- Factor Regulatory Uncertainty (RU) had low construct reliability of 0.67 but acceptable low Cronbach's alpha value; no change required



RESULTS OF THE PILOT STUDY

	N	Mean	Std. Deviation	Skewness	Kurtosis
ATU_All	42	3.76	1.21	-0.74	-0.13
BI_All	42	3.59	1.20	-0.62	-0.40
PEU_All	42	3.45	1.06	-0.29	-0.21
PENJ_All	42	3.88	1.00	-0.78	0.37
PEXP_All	42	3.02	0.93	-0.05	-0.09
PHR_All	42	2.83	0.82	-0.06	-0.71
RU_All	42	3.07	1.01	-0.15	-0.16
PU_All	42	3.34	1.07	-0.34	-0.08
SE_All	42	3.58	1.03	-0.50	0.21
PBC_All	42	3.44	1.05	-0.25	-0.68

RESULTS OF THE PILOT STUDY

		BI_All	ATU_All	PEU_All	PENJ_All	PEXP_All	PHR_All	RU_All	PU_All	SE_All	PBC_All
BI_All	Pearson Correlation	1	.841**	.805**	.643**	.614**	.030	-.212	.785**	.420**	.531**
	Sig. (2-tailed)		.000	.000	.000	.000	.850	.178	.000	.006	.000
ATU_All	Pearson Correlation	.841**	1	.762**	.581**	.512**	.079	-.072	.763**	.367*	.400**
	Sig. (2-tailed)	.000		.000	.000	.001	.619	.649	.000	.017	.009
	N	42	42	42	42	42	42	42	42	42	42

Coefficient	**Relationship**
Between +0.35 and -0.35	Weak or none
Between ±0.35 and ±0.65	Moderate
Between ±0.65 and ±1.0	Strong

DISCUSSION AND NEXT STEPS

Potential support of original TAM factors: PEU, PU, ATU, and BI

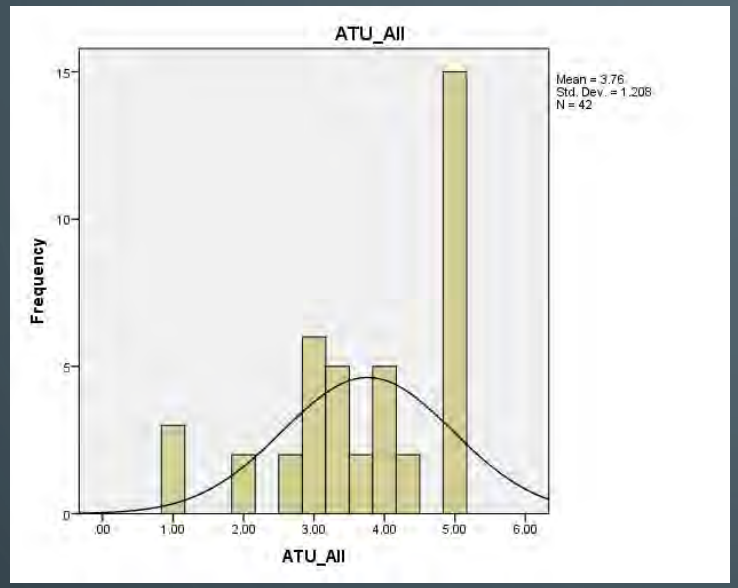
Potential support of factors supported by the literature: PENJ, PEXP, PBC, and SE

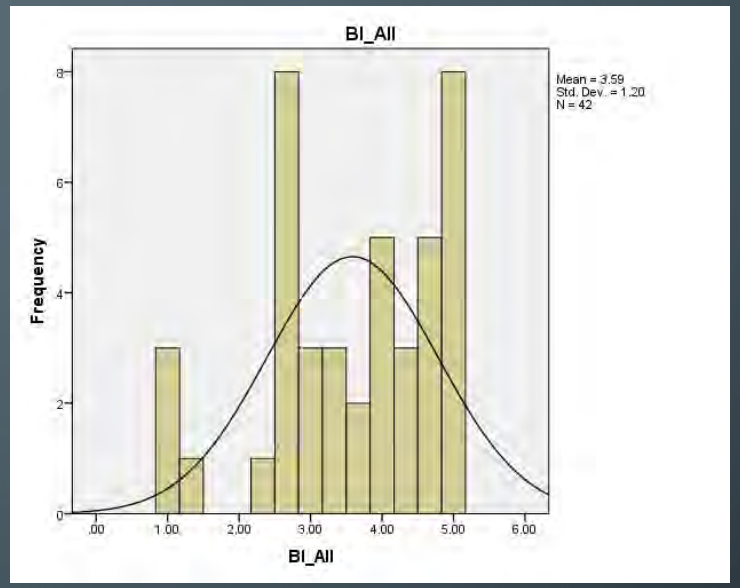
Potential lack of support of new factors for the model: PHR and RU

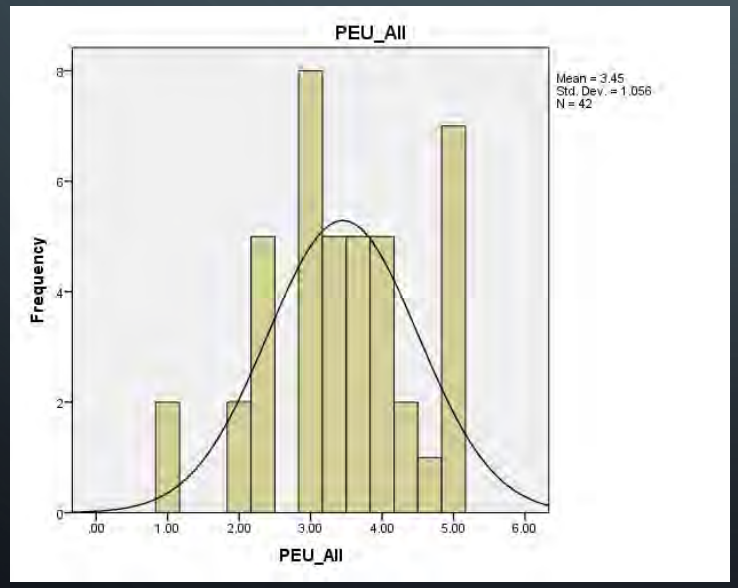
QUESTIONS, COMMENTS, CONCERNS?

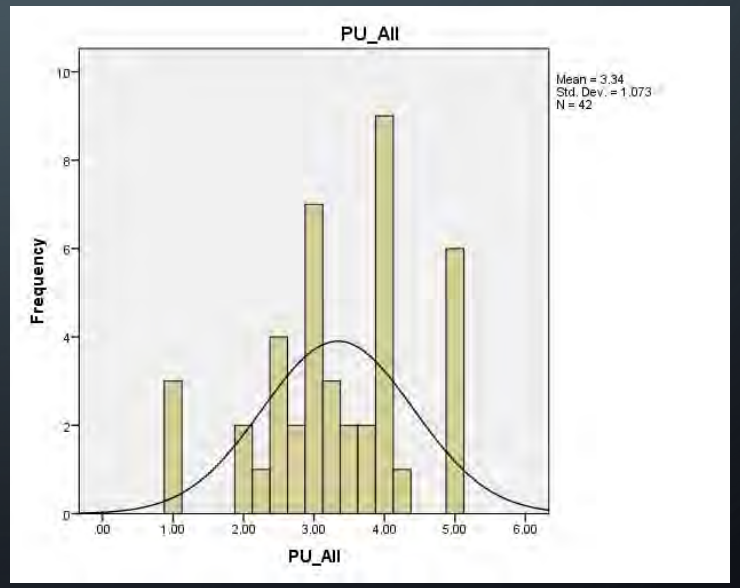
THANK YOU.

HISTOGRAMS OF ATU, BI, PEU, &PU

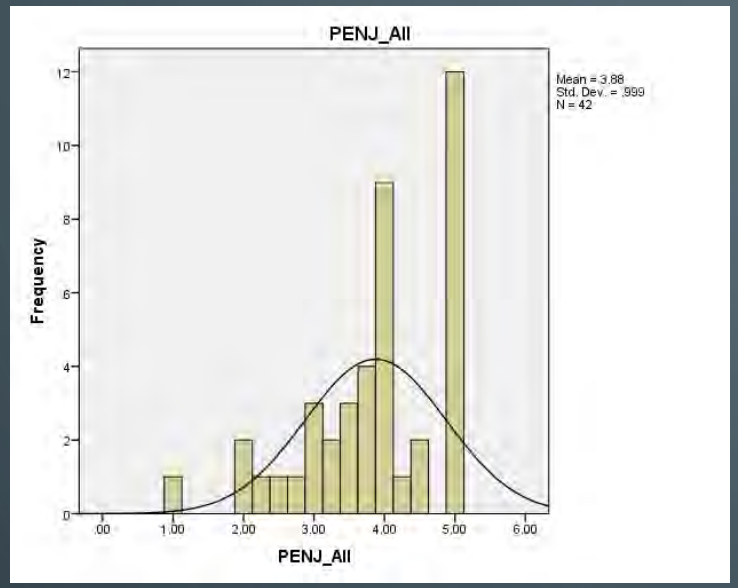


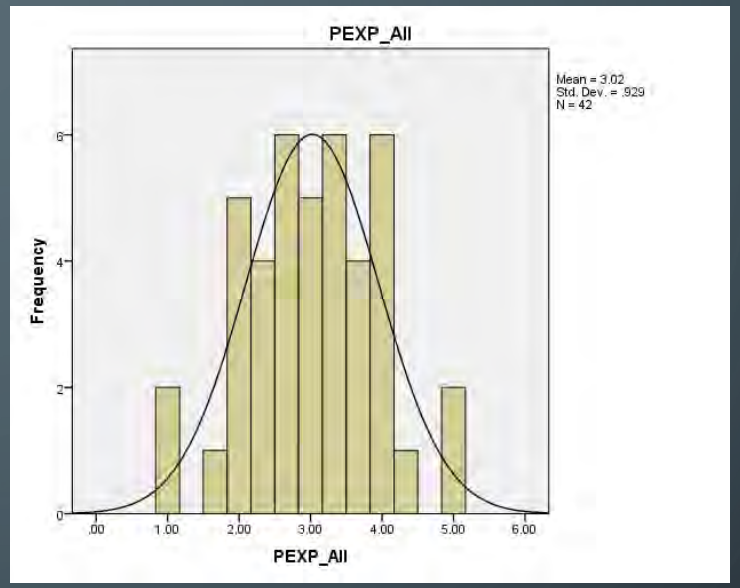


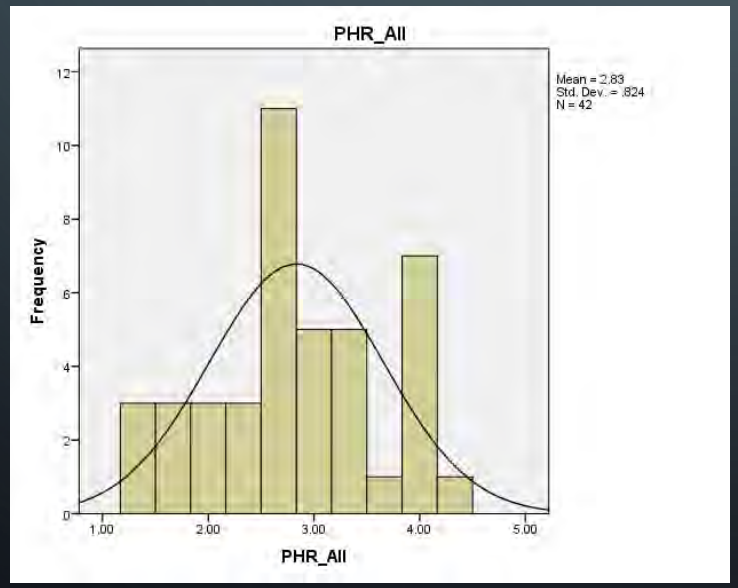


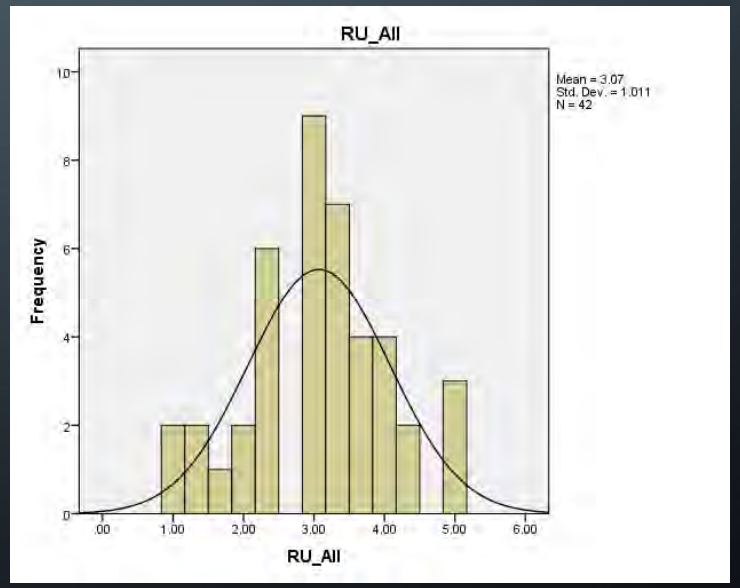


HISTOGRAMS OF PENJ, PEXP, PHR, & RU

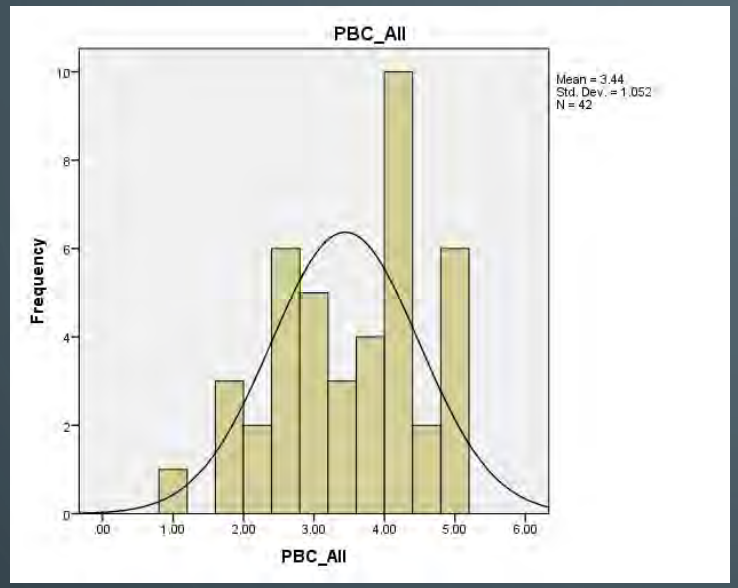


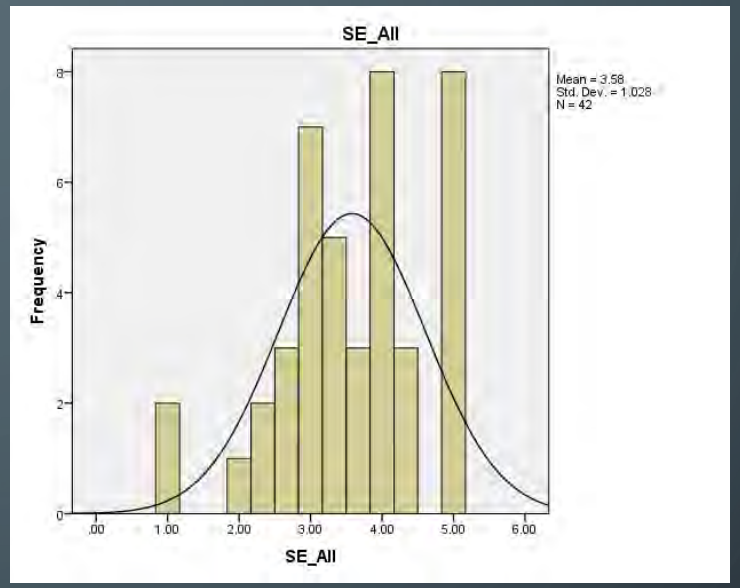






HISTOGRAMS OF PBC & RU





OPERATIONAL DEFINITIONS OF THE PROPOSED MODEL CONSTRUCTS

Factor	Definition
Attitude toward use	The degree to which a student has a favorable or unfavorable appraisal or evaluation of VR for flight training.
Behavioral intention	An indication of how hard a student is willing to try or how much effort they are planning to exert in order to use VR for flight training.
Perceived behavioral control	The extent to which an aviation student feels able to control using VR technology for flight training.
Perceived ease of use	The degree to which a student believes that using VR for flight training would be free of effort.
Perceived enjoyment	The degree to which using VR for flight training is perceived to be enjoyable in its own right apart from any performance consequences that may be anticipated.

Factor	Definition
Performance expectancy	The degree to which a student believes that using VR for flight training will improve flight performance as compared to an FTD.
Perceived health risk	The perception a student forms and revises based on the possible health risks of using VR for flight training.
Perceived usefulness	The degree to which a student believes that using VR for flight training would enhance his or her performance.
Regulatory uncertainty	The degree to which the lack of FAA regulations regarding the use of VR for flight training impacts attitude toward the technology.
Self-efficacy	Perception of one's flight skills in the virtual and real-world environments.