



# Fostering Undergraduate Nursing Research Success With Q Methodology

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# Objectives and Disclosures

- The learner will:
  - review the benefits and challenges of conducting undergraduate nursing research.
  - identify design features of a Q methodology study that work well for novice researchers.
  - discuss outcomes from select BSN students' Q methodology research projects.
- Desiree Hensel from Indiana University School of Nursing has no conflicts of interest or funding sources to disclose.



# Undergraduate Research

- “An inquiry or investigation conducted by an undergraduate student that makes an original intellectual or creative contribution to the discipline” (Council for Undergraduate Research, 2012, p. 2).
- Considered a high-impact educational practice (Kuh, 2008).
- Promotes deep learning needed for career readiness (National Research Council, 2012).



# Productivity Dilemma

- Logistics may limit faculty willingness to mentor undergraduate research.
- Faculty may be more inclined to support undergraduate research that:
  - Does not require extensive time commitments.
  - Aligns with their program of research.
  - Leads to presentations or publications.

(Burkhart & Hall, 2015; Vessey & DeMarco, 2008; Reitmaier Koehler et al., 2015 )



# Issues with Common Study Designs

## Quantitative Studies

- Experimental studies have complex IRB process.
- Descriptive studies require reliable & valid instruments.
- Recruiting large enough samples sizes for meaningful studies can be difficult with time limitations.

## Qualitative Studies

- The quality of data is often dependent on the ability of the researcher to conduct in-depth interviews.
- Data analysis can be very complex and require extensive faculty time commitments.





# About Q Methodology

- A complete method for quantitatively studying subjectivity developed by William Stevenson.
- Data reflects preferences and is obtained by sorting subjective statements.
- By-person factor analysis is used to identify groups (factors) with like beliefs.

(Simons, 2013; Watts, & Stenner, 2012)



# Q Sample Drawn from Concourse

1. The earlier students become involved in research the more advanced their skills will become.	2. Undergraduate research projects rarely are significant enough to change practice.	3. I get a great deal of satisfaction from mentoring undergraduate research students.
4. Sponsoring undergraduate research is viewed very favorably toward promotion and tenure in my department.	5. Sponsoring undergraduate research is a very time consuming activity not figured into my workload.	6. Undergraduate research projects contribute to my productivity.
7. Trying to find suitable projects is a barrier to conducting undergraduate research.	8. I would like to sponsor more undergraduate projects.	9. It is difficult for students to participate in undergraduate research on top of their packed schedules.
10. The best way to get undergraduates involved in research is to engage them as research assistants.		



# Sorting Instructions

- Read the statements carefully and split them up into 3 piles:
  - One pile for the cards you Agree with
  - One pile for cards you Disagree with
  - One pile for cards you feel Neutral about
- Take the cards from the “Agree” pile and read them again.
  - Select the statement you most agree with and write the number from the card on the sorting sheet below the “2”.
  - From the remaining cards in the “Agree” pile, select the 2 statements you most agree with and record them below “1”.
  - Move right to left until all cards from “Agree” pile are gone.
- Repeat this procedure moving left to right with cards from the “Disagree” pile.
- Fill any remaining open spaces with the “Neutral” pile cards.





# Data Entered into Statistical Program

Least agree



Most Agree

-2	-1	0	1	2
10	7	1	6	3
	2	4	9	
		5		
		8		





# Data Analysis Step 1: Creating A Correlation Matrix

Correlation Matrix Between Sorts

SORTS	1	2	3	4	5	6	7	8	9	10
1 1	100	80	66	47	60	53	42	63	22	62
2 2	80	100	70	50	66	64	49	61	28	70
3 3	66	70	100	77	80	60	60	63	35	79
4 4	47	50	77	100	73	46	60	54	32	69
5 5	60	66	80	73	100	55	55	65	51	74
6 6	53	64	60	46	55	100	49	54	30	55
7 7	42	49	60	60	55	49	100	50	39	50
8 8	63	61	63	54	65	54	50	100	15	78
9 9	22	28	35	32	51	30	39	15	100	5
10 10	62	70	79	69	74	55	50	78	5	100

Thur & Hensel (2016).



# Data Analysis Step 2: Factor Analysis

Loads significant  
at .45 in this  
study

		Loadings	
QSORT		1	2
1	1	0.8011X	0.1407
2	2	0.8183X	0.2256
3	3	0.7982X	0.4210
4	4	0.6517	0.4675
5	5	0.7066	0.5525
6	6	0.6510X	0.3297
7	7	0.5049	0.5644
8	8	0.8407X	0.0970
9	9	-0.0068	0.9356X
10	10	0.9220X	0.0700
% expl.Var.		51	21

Thur & Hensel (2016).



# Data Analysis Step 3: Calculating Factor Scores

Factor Scores with Corresponding Ranks

No.	Statement	No.	Factors			
			1	2	1	2
1	I feel initiation of skin-to-skin in the OR is benefic	1	1.99	1	0.00	21
2	I feel we could successfully improve skin-to-skin in t	2	1.31	5	0.41	15
3	I would like to initiate skin-to-skin more often after	3	1.20	6	-0.41	26
4	Babies are not stable enough after a c-section to init	4	-1.37	34	0.00	21
5	I feel that some women's breasts may be too large to b	5	-0.32	20	0.00	21
6	The mothers are generally too nauseous, sedated, or we	6	0.26	14	0.00	21
7	It would be hard to coordinate equipment to free mom's	7	-0.56	24	1.22	6
8	Heart monitor stickers are in the way for baby to be c	8	-0.51	23	-0.82	30
9	Skin-to-skin after a cesarean section is important	9	1.67	2	0.82	10
10	By the time we are done assessing and cleaning the bab	10	-0.72	26	-1.22	33
11	The nurse monitoring the babies are too busy to stay a	11	-0.35	21	-0.82	30
12	A good time to get baby measurements when baby is on w	12	0.49	12	2.04	1
13	I would feel uncomfortable initiating skin-to-skin bec	13	-0.84	28	-0.41	26
14	It is too cold in the OR to initiate skin-to-skin and	14	-0.15	19	0.41	15
15	Improving skin to skin contact in the OR might reduce	15	0.97	9	-0.41	26
16	Skin-to-skin increases the probability of successful b	16	1.50	4	0.82	10
17	I don't understand why skin-to-skin is that big of a	17	-1.56	36	-0.41	26
18	I would be concerned if I didn't assess the baby and d	18	0.03	16	1.22	6
19	I feel that the OB physicians should advocate for ski	19	1.08	8	0.82	10
20	If mom is unable to do skin-to-skin, I encourage the	20	0.31	13	-1.22	33
21	I am uncomfortable giving the baby it's medications wh	21	-0.72	25	-1.22	33
22	In general, I feel too intimidated by anesthesiologist	22	-0.74	27	-2.04	36
23	The risks of skin-to-skin in the OR outweigh the benef	23	-1.48	35	1.63	3
24	I feel that we don't have the staff to make skin-to-sk	24	-1.07	31	-0.82	30
25	Skin-to-skin with baby would help ease the mother's a	25	1.52	3	0.00	21
26	The standards of exactly when to initiate skin to in t	26	-0.95	30	-1.63	35
27	I have a conversation about skin-to-skin with mcms pr	27	1.19	7	0.41	15
28	I feel that the anesthesiologist is the main obstacle	28	-0.06	18	-1.63	35
29	If procedure takes average time, I feel that initiatin	29	-0.90	29	0.00	21
30	As long as someone held the baby it would be safe to g	30	0.90	10	0.82	10
31	We would be more motivated to improve skin-to-skin in	31	0.53	11	0.41	15
32	It is difficult to fit the baby on the mother's chest	32	-0.02	17	1.22	6
33	I don't feel that interrupting skin-to-skin for a shor	33	-1.11	32	1.63	3
34	I feel that it is hard to change old habits within the	34	-1.24	33	0.41	15
35	If it wasn't discussed prior to the procedure, I would	35	-0.50	22	-0.41	26
36	I feel that to safely initiate skin-to-skin, I would h	36	0.20	15	-0.82	30

Thur & Hensel (2016).



# Final Step: Interpretation Using Factor Arrays and Narratives

No.	Statement	No.	1		2	
			Q-SV	Z-SCR	Q-SV	Z-SCR
1	I feel initiation of skin-to-skin in the OR is beneficial	1	5	1.99*	0	0.00
25	Skin-to-skin with baby would help ease the mother's anxiety	25	4	1.52*	0	0.00
3	I would like to initiate skin-to-skin more often after a ces	3	3	1.20*	-1	-0.41
15	Improving skin to skin contact in the OR might reduce the ne	15	2	0.97*	-1	-0.41
12	A good time to get baby measurements when baby is on warmer	12	1	0.49*	5	2.04
20	If mom is unable to do skin-to-skin, I encourage the suppor	20	1	0.31*	-3	-1.22
36	I feel that to safely initiate skin-to-skin, I would have to	36	1	0.20	-2	-0.82
18	I would be concerned if I didn't assess the baby and do Apga	18	0	0.03	3	1.22
32	It is difficult to fit the baby on the mother's chest with t	32	0	-0.02	3	1.22
28	I feel that the anesthesiologist is the main obstacle in ini	28	0	-0.06*	-4	-1.63
7	It would be hard to coordinate equipment to free mom's arm t	7	-1	-0.56*	3	1.22
22	In general, I feel too intimidated by anesthesiologists to s	22	-2	-0.74*	-5	-2.04
33	I don't feel that interrupting skin-to-skin for a short peri	33	-3	-1.11*	4	1.63
34	I feel that it is hard to change old habits within the OR an	34	-3	-1.24*	1	0.41
4	Babies are not stable enough after a c-section to initiate s	4	-4	-1.37*	0	0.00
23	The risks of skin-to-skin in the OR outweigh the benefits	23	-4	-1.48*	4	1.63
17	I don't understand why skin-to-skin is that big of a deal	17	-5	-1.56	-1	-0.41

## Narrative:

Factor I was characterized by the statement “I feel initiation of skin-to skin in the OR is beneficial.” This group believed skin-to-skin care could help ease a mother’s anxiety and did not feel risks outweighed benefits. One participant explained etc.

Thur, P. & Hensel, D. (2016).



# Why Q Works for Undergraduate Research

- It's meaningful
  - Versatile enough to use in most social sciences
  - Can be used to understand new phenomena
  - Even bad Q samples can give some good data
- It's doable
  - IRB considers it survey research
  - Needs small sample sizes
  - Data analysis can be completed with a free statistical program  
(<http://schmolck.userweb.mwn.de/qmethod/>)
  - Inexpensive to conduct



## Builds Transferable Skills\*

- Synthesizing the concourse builds skills in inquiry and a broader knowledge of human diversity.
- Completing the data analysis strengthens students' mathematical reasoning and quantitative literacy.
- Interpreting factors builds critical thinking skills.

\*Transferable skills from the National Research Council (2012)



# Study 1: Nursing Education

Background: Student wanted to do honors and we wanted help evaluating a poverty simulation.

Research Question: What beliefs do nursing students have about people living in poverty?

Participants: 23 BSN students from 2 campuses.

Q sample: 30 statements from blogs, a focus group, and activity evaluations.

Findings: 3 factors *Judges, Allies, and Observers*

Outcomes: IUSON implemented a tiered approach for poverty education. The study was published in peer-reviewed journal (Work, Hensel, & Decker, 2015).





# Study 2: Quality Improvement

Background: Student working on Baby Friendly unit identified a practice gap.

Research Question: What beliefs do nurses have about providing skin-to-skin care in the operating room after a cesarean birth?

Participants: 10 L&D nurses.

Q sample: 36 statements from discussions & standards.

Findings: 2 viewpoints highlighted benefits and logistics.

Outcomes: Results were used to create a targeted intervention (Thur & Hensel, 2016). The study was accepted for presentation at an international conference and the article was submitted to a peer-reviewed journal.



## Study 3: International Replication

Background: Colleagues from Scotland wanted to replicate a Q study in the US.

Research question: What makes a senior living community homey?

Participants: 5 nurses, 5 residents, 5 family members.

Q sample: 30 statements from original researcher.

Outcomes: The study is in progress, but preliminary results have been accepted for a poster presentation (Kleppe & Hensel, 2016).



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