

# LIES, DAMN LIES & STATISTICS, TT RESEARCH: The past informs the future

# Statistics

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TTIA CONGRESS

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$$s^2 = \frac{1}{n} \sum (x_i - \bar{x})^2 \quad s_x^2 = \frac{1}{n-1} \sum (x_i - \bar{x})^2$$

$$\bar{x} = \frac{1}{n} \sum x_i$$

$$s_x = \sqrt{\frac{1}{n-1} \sum (x_i - \bar{x})^2}$$

$$y = a + bx \quad \mu = np$$



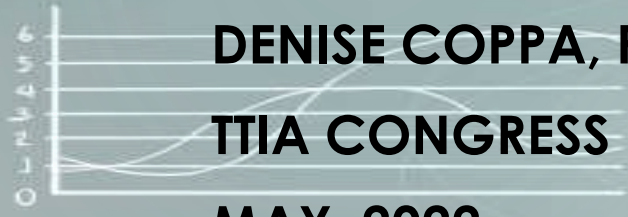
$$b = r \frac{s_y}{s_x} \quad a = \bar{y} - b\bar{x}$$

$$\hat{p} = \frac{x_1 + x_2}{n_1 + n_2}$$

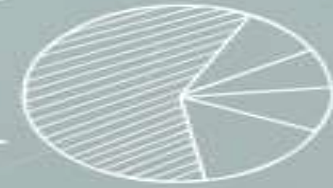
$$\bar{x} = \frac{x_1 + x_2 + x_3 + \dots + x_n}{n}$$

$$H_0: p = p_0$$

$$SE = \sqrt{\frac{\hat{p}(1-\hat{p})}{n}} \quad z = \frac{\hat{p} - p_0}{\sqrt{p_0(1-p_0)}}$$



$$ME = z^* \frac{\sigma}{\sqrt{n}}$$



$$SE = \sqrt{\frac{\hat{p}_1(1-\hat{p}_1)}{n_1} + \frac{\hat{p}_2(1-\hat{p}_2)}{n_2}}$$

$$P(A/B) = P(A) + P(B) - P(A, B)$$

$$P = 1 - P(A)$$

$$CI = (\hat{p}_1 - \hat{p}_2) \pm z^*(SE)$$

$$S = \frac{1}{n-2} \sum_{i=1}^n (y_i - \hat{y})^2$$

***“THERE IS NOT A SUFFICIENT BODY  
OF DATA...TO ESTABLISH IT AS A  
UNIQUE & EFFICACIOUS HEALING  
MODALITY”***

ROSA, 1998

- THE PRACTICE IS BASED ON MYSTICISM, NOT ON SCIENCE.
- SO...I GUESS THIS REALLY **DOESN'T WORK!!!**
- **TIME TO REDEFINE THE “SCIENCE”**

**MY MIND IS  
MADE UP,  
DON'T  
CONFUSE ME  
WITH  
THE FACTS**







# WHAT WOULD DEE SAY???

- ▶ AS A MEANS TO ...”AUTHENTIC COMMUNICATION...OUR PRESENT...AVENUE OF INQUIRY...[streams from] EXPERIENTIAL KNOWING”
- ▶ “KNOWING... [the results of investigation] CAN BE A PROFOUND UNDERSTANDING GAINED THROUGH SENTIENCE (FEELING, RATHER THAN THINKING, THAT CAN OCCUR WITHOUT WORDS.”
- ▶ SO...THERE HAS TO BE A “...BIMODAL PATH...” TO DESCRIBE AND EXPLAIN THE ESSENCE OF HEALING THROUGH TT. KRIEGER, 2021
- ▶ **NO RANDOMIZED CONTROLLED TRIAL WILL EVER ADEQUATELY DESCRIBE THE HEALING EXPERIENCE, LET ALONE THE RESULTS OF THE HEALING ACT!!**

## So what do you now know????

- Fundamental patterns of knowing (Carper 1978)  
4 ways of knowing
- 1. Empirical – technical rationality – scientific knowledge.
- 2. Aesthetic – innate response – intuition.
- 3. Personal – knowing self – the ability to trust self.
- 4. Ethical – moral knowledge – making judgements about what is right or wrong.

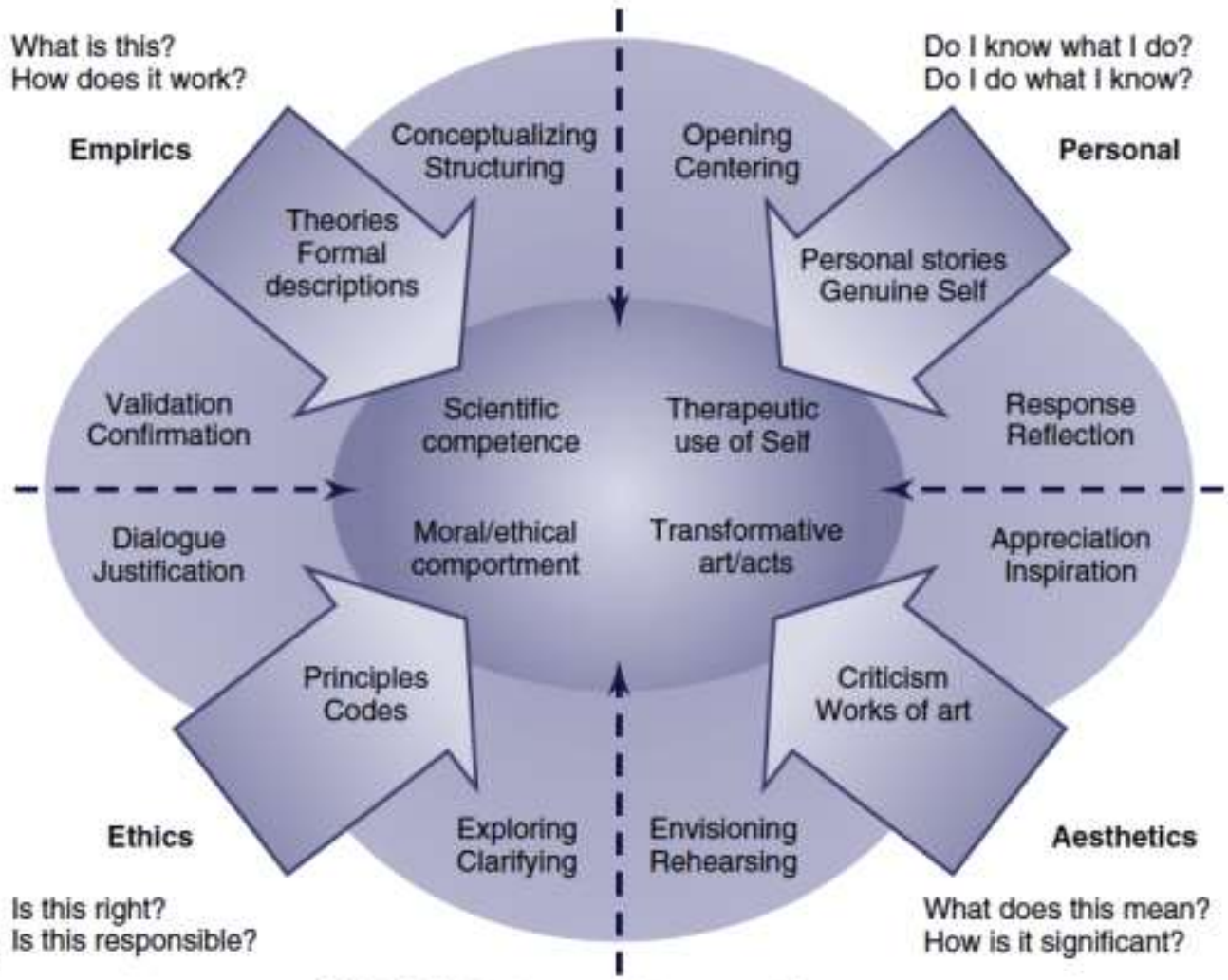


FIG. 1.2 Fundamental Patterns of Knowing.

# CARPER'S WAYS OF KNOWING Updated

CHINN & KRAMER, 2018

f0015

## Some Myths About Research

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- ❑ The purpose of research is to “prove” or “confirm” a theory.
- ❑ Research findings are presented as complete and conclusive answers.
- ❑ There is a hierarchy of research methodology that places true “experimental” research at the top.



"If I had asked people what they wanted, they would have said faster horses."  
- Henry Ford



QUESTIONS COME TO MIND THAT GIVE  
CLUE TO DIRECTION OF THE STUDY





**Both quantitative & qualitative based research findings (Mixed methods)**



**Most valuable if practice based**



**The “researcher” is the person who asks the question, regardless of background**




**Process: thinking, planning, implementing (the study), analyzing, informing**



**Theory underlying the practice or practice underlying the theory**

# HUMAN SCIENCE RESEARCH



# Comparison of quantitative and qualitative methods

## QUALITATIVE

Multiple realities

Reality is socially constructed

Reality is context interrelated

Holistic

Reasoning is inductive

Discovery of meaning is the basis of knowledge

Develops theory

## QUANTITATIVE

Single reality

Reality is objective

Reality is context free

Reductionistic

Reasoning is deductive and inductive

Cause-and-effect relationships are the bases of knowledge

Tests theory

# SETTING THE STAGE: OVER 30 YEARS OF RESEARCH

BUT NOT THE ONLY WAY WE KNOW THIS WORKS.

- ▶ KRIEGER (1974), N=64. quasi-experimental. Significant increase HGB. 2 groups. Significant increase in mean post-test TT group. No random assignment
- ▶ KRIEGER, PEPPER, ANCOLI (1979). Describe physiologic responses of healer & healee. Results: all had EEG, EMG, galvanic skin responses, EKG, hand temp & Electro-oculographic leads during tx. Krieger: had unusual amount of fast Beta activity on EEG (continuous focus). Patients: relaxed, high amplitude alpha activity (deep relaxation)
- ▶ ANXIETY STUDIES: HEIDT (1979); QUINN (1982); PARKES (1985). All used STAI. 2 had significant decrease, one (Parkes), no difference.
- ▶ KELLER & BZDEK (1986): EFFECTS OF TT ON TENSION HA. Experimental, pre/post test, N=60 . TX: 5 min. Has op def of TT. WELL DESIGNED!!

# A LOOK BACK AT PAIN RESEARCH IN TT. *Compare past w/ present*

- ▶ **POST OP PAIN STUDY** (MEEHAN, 1993). 3 groups. Hypothesis that TT would significantly reduce pain vs placebo not supported BUT TT group on secondary analysis used less pain medication. TT group waited significantly longer time to requesting PRN pain RX than MTT & controls. (replicated)
- ▶ **TT EFFECT ON CANCER PAIN/FATIGUE** (AGHABATI, ET AL, 2010). RCT-3 groups. No random sample, so not experimental. Random assignment. N=90. = groups. TT more effective in decreasing pain/fatigue
- ▶ **TT FOR POST-SURGICAL PAIN IN ELDERLY** (MCCORMACK, 2009). 3 groups. N=90.No random selection. random assignment to 3 groups. Memorial pain scale, Tellgen absorption scale, health attribution scale. Exp. Group 73% better pain scores. 10 min tx.
- ▶ **TT EFFECT ON POST-SURGICAL PAIN** (COAKLEY, DUFFY, 2010). 2 groups. N=21. VAS. BOTH GROUPS DEC IN CORTISOL & PAIN.

# ADDITIONAL PAIN STUDIES

## *Older, but worth while!!*

- ▶ GORDON, et. Al. ( 1998). EFFECTS TT ON OA OF KNEE. N=25, MIXED METHODS!, IV: TT; DV: PAIN, FUNCTION LEVEL, WELL-BEING. 2 GROUPS. SIGNIFICANT DEC IN PAIN, FATIGUE, COPING IN TT GROUP.
- ▶ PECK (1997). EFFECTIVENESS OF TT FOR PAIN, ELDERS, DEGEN ARTHRITIS. N=82. convenience sample, but randomized to 2 groups, pre/post quasi exper. Design. Only 75% completion, but RESULTS: TT signif decrease in pain, but control group significantly less distress than TT group.
- ▶ LIN, TAYLOR (1998). EFFECTS OF TT IN PAIN, ANXIETY IN ELDERLY. N=90. RANDOMIZED TO 3 GROUP, convenience sample. IV: TT; DV: chronic pain/ anxiety. RESULTS: NRS (PAIN SCALE) SIGNIFICANT REDUCTION. STAI: SIGNIFICANT REDUCTION. No effect on Cortisol levels.

# MORE TO PONDER

## CHILDREN (past 10 years)

- ▶ JOHNSTON, ET AL (2013). TT NOT THERAPEUTIC IN PRE-TERM NB'S: N=55. RCT: 2 GROUPS. 5MIN SESSIONS, NO DIFFERENCE IN GROUPS
- ▶ RAMADA, ET AL (2013) N=40 (< 1 MO.OLDS).PRE/POST. ONLY SINGLE 20 MIN. SESSION. RESULTS: IMPROVED VS & BMR.

## VERY RECENT

- ▶ ALP & YUCEL (2021). EFFECT OF TT ON COMFORT & ANXIETY. N=30. RANDOMLY ASSIGNED TO 2 MATCHED GROUPS (age, gender, educ. Level, similar co-morbidity rates). No power analysis, but outcomes; 5 days of TT tx. Experimental group showed significantly more comfort and less anxiety.

# EFFECT OF TT ON BACK PAIN IN ADULTS: AN EXPERIMENTAL PILOT

- ← HYPOTHESIS: ADULTS, HOSPITALIZED WITH BACK PAIN, WHO RECEIVED TT + STANDARD PHARMACOLOGICAL TX, WOULD DEMONSTRATE A DECREASE IN PAIN, MEASURED BY THE 1. QBPDS & 2. NPRS SCORE AFTER 4 DAYS, COMPARED TO THE CONTROL GROUP.
- ← DESIGN: PRE-TEST/ POST TEST RANDOMIZED CONTROL TRIAL (PILOT STUDY)
- ← METHOD: QBPDS: LIKERT SCALE OF VARIOUS ACTIVITIES. NPRS: 11 POINT NUMERIC MEASURE OF PAIN.
- ← PROCEDURE: 9 NURSES , 60 LESSONS OVER 6 DAYS ON TT. NO INTER-RATER RELIABILITY MENTIONED. 4 DAYS OF TX. CONTROL GROUP: STANDARD PHARM TX. INTERVENTION GROUP: STANDARD PHARM TX + TT TX.
- ← RESULTS: AT BASELINE: BOTH GROUPS = SCORES. STATISTICALLY SIGNIFICANT DECREASE IN SCORES ON QBPDS AND NPRS IN INTERVENTION GROUP, COMPARED TO CONTROL GROUP
- ← ANALYSIS: COMPARISON OF MEANS ( $\chi^2$  & T-TEST). ANOVA (COVARIANCE COMPARABILITY). VARIANCE EXPLAINED BY DIFFERENCE IN THE 2 GROUPS.



# TT HAS SIGNIFICANT EFFECTS ON MOUSE BREAST CANCER METASTASIS/ IMMUNE RESPONSES. NOT TUMOR SIZE.

- H: 1. TUMOR SIZE WOULD REDUCE AFTER TT. 2. METASTASIS WOULD BE DECREASED AFTER TT. 3. IMMUNE SYSTEM MARKERS WOULD DECREASE AFTER TT.
- DESIGN: 3 GROUP PRE/POST EXPERIMENTAL DESIGN WITH REPEATED MEASURES
- METHOD: 2 TT P'S. 10 MIN TX. 2 MICE/ TX. TTP'S ALTERNATED. CONTROL GROUP: PUT IN FLASK SAME AMT OF TIME. NO TX.
- RESULTS: METASTASIS SIGNIFICANTLY REDUCED IN TREATMENT GROUP. TT REDUCED IMMUNE SYSTEM ACTIVITY. NO DIFFERENCE IN TUMOR SIZE/ WT.

**GRONOWICZ, ET AL, 2015**



# TT FOR NAUSEA IN BREAST CANCER PATIENTS ON CHEMO

- ← HYPOTHESIS: FREQUENCY & DURATION OF NAUSEA WOULD BE DECREASED IN THE TT GROUP > PLACEBO > CONTROL (NO TX).
- ← DESIGN: 3 GROUP , PRE/POST TEST EXPERIMENTAL DESIGN WITH REPEATED MEASURES
- ← SAMPLE: N=108. ALL GROUPS (36).
- ← METHODS: SAMPLE PURPOSIVE, BUT RANDOMLY ASSIGNED TO GROUPS. TX FOR AVG: 21.38 MIN.
- ← RESULTS: TT SHOWED STATISTICALLY SIGNIFICANT REDUCTION IN THE DURATION, FREQUENCY AND INTENSITY OF NAUSEA IN PATIENTS RECEIVING CHEMO THERAPY.

VANAKI, ET AL, 2016

# CASE-CONTROL, PILOT TO EVALUATE THE FEASIBILITY OF TT IN PREVENTING RADIATION DERMATITIS IN BCA WOMEN

- ← DESIGN: INCORRECTLY STATED. ACTUALLY: 2 GROUP, QUASI EXPERIMENTAL , PRE/POST TEST W/ REPEATED MEASURES
- ← SAMPLE: CONVENIENCE. 17 IN TX GROUP. 32 IN SEQUENTIAL CONTROL COHORT.
- ← NO POWER ANALYSIS
- ← PROCEDURE: TT PROVIDERS (3 YRS EXPERIENCE). 3 TT TX/ WEEK X 5 WEEKS.
- ← RESULTS: FEASIBILITY (ALL PTS KEPT ALL APPTS. NO BURDEN ON THE CA UNIT). NO DIFFERENCE IN ASSESSMENT OF COSMETIC/ TOXICITY CHANGES OR TIME TO DEVELOP POST RADIATION DERMATITIS.

## TT STIMULATES PROLIFERATION OF HUMAN CELLS IN CULTURE

- ← HYPOTHESES: (3) FIBROBLASTS, TENOCYTES & OSTEOBLASTS WOULD BE INCREASED IN TT GROUP > PLACEBO > CONTROL
- ← DESIGN: 3 GROUP, PRE/POST TEST W/REPEATED MEASURES
- ← METHOD: 3 TT P'S (5 YRS EXP). 10 MIN TX, 2 X/ WK. PLACEBO GROUP. P'S NO TT EXPERIENCE, SAME TYPE TISSUE CULTURE
- ← RESULTS: TT GROUP STATISTICALLY SIGNIFICANT INCREASE IN ALL 3 CELL TYPES > PLACEBO (SHAM) > CONTROL
- ← IN-VITRO ONLY

GRONOWICZ, ET AL, 2008



# QUALITATIVE STUDY EXAMPLES

**RESULTS IN MANY CASES FROM  
INDUCTION. DON'T KNOW ANSWER TO  
QUESTION.**

**Shields (2008). *The lived experience  
of receiving TT In people with heart  
failure.***

**Coppa (2008). *The internal process  
of TT.***

# LIVED EXPERIENCE OF RECEIVING TT IN PEOPLE WITH HEART FAILURE

- ▶ RESEARCH QUESTION: WHAT IS THE LIVED EXPERIENCE OF INDIVIDUALS, DX WITH HEART FAILURE, AFTER RECEIVING TT.
- ▶ METHOD: HERMENEUTICAL-PHENOMENOLOGICAL.
- ▶ PROCEDURE: CONVENIENCE SAMPLE OF 6 INDIVIDUALS WITH HEART FAILURE. 4 WEEKLY TT TX BY QTP. FOLLOWED BY F2F OPEN ENDED INTERVIEWS. PRIMARY QUESTION: "WHAT HAS YOUR EXPERIENCE OF RECEIVING TT BEEN LIKE?"
- ▶ RESULTS: 7 META THEMES/ 13 THEMATIC FOUNDATIONS. EX: "MY HEART IS OPEN" (OPENNESS, WILLINGNESS TO HELP OTHERS), "LIVING SLOW" (LOSS, COURAGE), "MY HEART IS NOT FAILING" (HOPE, LIVING)

# THE INTERNAL PROCESS OF THERAPEUTIC TOUCH

- ▶ RESEARCH QUESTION: “WHAT IS THE NATURE OF THE PROCESS OF TT & ITS COMPONENTS AS PRACTICED WITH ADULTS AND FT INFANTS & HOW IS IT PERCEIVED BY THE NURSES CONDUCTING THE TREATMENTS?”
- ▶ DESIGN: DESCRIPTIVE QUALITATIVE DESIGN USING FIELDWORK & IN-DEPTH INTERVIEWS.
- ▶ SAMPLE: PURPOSIVE. N= 5 NURSES (QTTP'S), EACH WITH 2 TREATMENTS
- ▶ METHOD: PARTICIPANT OBSERVATION, IN-DEPTH INTERVIEWS. CLIENT HOMES
- ▶ ANALYSIS: TRANSCRIBED DATA . INTERPRETED COMPARED TO EACH OTHER. CONSTANT COMPARITIVE ANALYSIS W/LITERATURE ON THE PROCESS OF TT.
- ▶ RESULTS: PROVIDES EMPIRICAL DATA CONFIRMING RELIABILITY OF THE KRIEGER/KUNZ METHOD OF TT. LAYS THE GROUNDWORK FOR OPERATIONAL DEFINITION OF TT TO BE USED IN QUAL OR QUAN STUDIES.

publication  
conclusion  
reviewer  
synthesis  
construct  
selection  
systematic  
research  
**BIAS**  
evidence  
appraising  
outcome  
meta-analysis  
reporting  
locating  
validity



