



CONDUCTING RESEARCH IN THE FIELD OF ART THERAPY

LONDON, UK
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STATS
HELP

ANTON SVENDROVSKI
MBA, MSc (Math), B.CompSc
IBM SPSS Certified

INTRODUCTION

- **Anton Svendrovski**
- **MBA, MSc (Math), B.CompSc**
- **Based in Toronto, Canada**
- **Founder and Principal Statistician at StatsHelp**
- **11 years experience**
- **Over 1200 customers in 12 countries**
- **Helping art therapy students**
- **Frequent speaker at conferences**



LADY TASTING TEA



THE DESIGN OF EXPERIMENTS

The Design of Experiments (1935)

One of the first chapters of this textbook written by Fisher is the essay, "Mathematics of a Lady Tasting Tea."



Ronald Fisher

Mathematics of a Lady Tasting Tea

By SIR RONALD A. FISHER

STATEMENT OF EXPERIMENT

A LADY declares that by tasting a cup of tea made with milk she can discriminate whether the milk or the tea infusion was first added to the cup. We will consider the problem of designing an experiment by means of which this assertion can be tested. For this purpose let us first lay down a simple form of experiment with a view to studying its limitations and its characteristics, both those which appear to be essential to the experimental method, when well developed, and those which are not essential but auxiliary.

MASTERCLASS OUTLINE

- **WHAT IS RESEARCH?**
- **WHY DO RESEARCH?**
- **RESEARCH QUESTION**
- **FINDING THE ANSWER**
- **MOST COMMONLY USED RESEARCH DESIGNS**
- **COMMUNICATING THE KNOWLEDGE**
- **ELEMENTS OF GOOD RESEARCH**
- **TYPES OF DATA USED IN RESEARCH**
- **DESCRIPTIVE AND INFERENTIAL AREAS OF STATISTICS**
- **OVERVIEW OF INFERENTIAL STATISTICAL TESTS**
- **STATISTICS VS PRACTICAL SIGNIFICANCE**
- **SUMMARY OF RESEARCH PROCESS STEPS**
- **HOW TO LEARN MORE**
- **Q&A SESSION AND AN OPEN DISCUSSION**

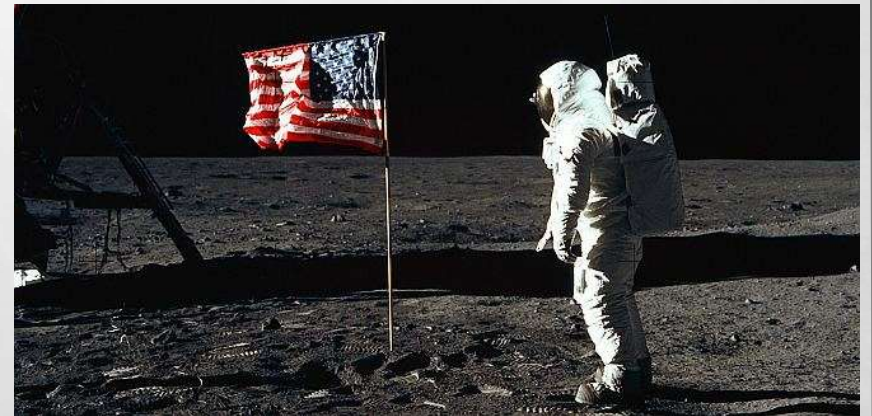
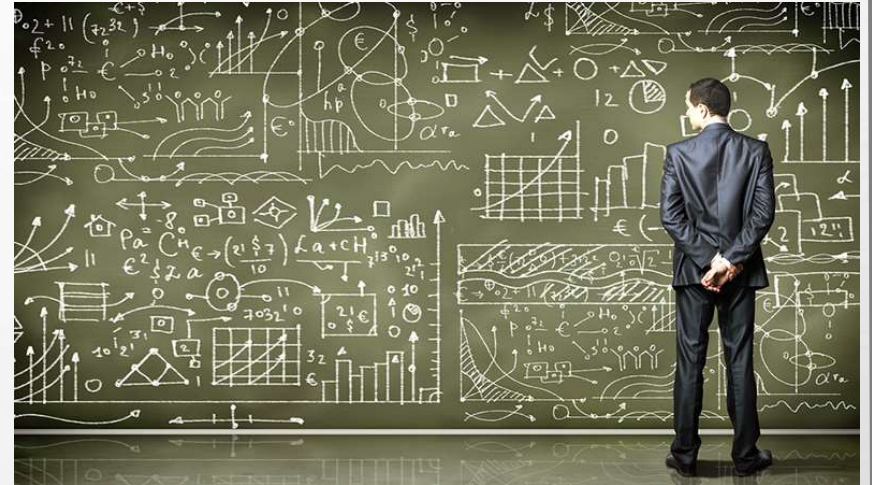
WHAT IS RESEARCH?

- 1. ASKING A QUESTION**
- 2. FINDING THE ANSWER**
- 3. COMMUNICATING THE KNOWLEDGE**



WHY DO RESEARCH?

- **BUILDING KNOWLEDGE**
- **PROVIDING UNDERSTANDING**
- **HUMAN CURIOSITY**
- **BEING FIRST**
- **HELPING SOCIETY**



STEP 1: RESEARCH QUESTION

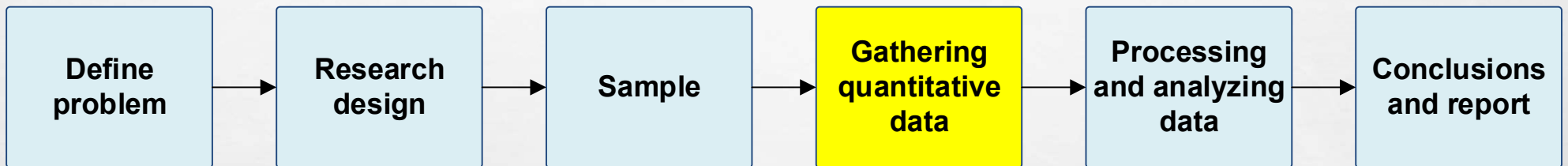
- 1. WHY DO PARTICIPANTS CHOOSE ART THERAPY?**
- 2. DOES ART THERAPY INTERVENTION X EFFECTIVELY REDUCE PARTICIPANTS' ANXIETY AFTER 5 SESSIONS?**
- 3. IS THERE AN ASSOCIATION BETWEEN THE AGE OF PARTICIPANTS AND THE NUMBER OF ART THERAPY SESSIONS ATTENDED?**
- 4. IS THERE A DIFFERENCE BETWEEN ART THERAPY INTERVENTION X AND INTERVENTION Y IN INCREASING THE PARTICIPANTS' SENSE OF BELONGING?**
- 5. IS THERE A CONSENSUS IN PUBLISHED STUDIES REGARDING THE EFFECTIVENESS OF INTERVENTION X?**

STEP 2: FINDING AN ANSWER

- 1. QUALITATIVE APPROACH**
- 2. QUANTITATIVE APPROACH**
- 3. MIXED DESIGN METHODOLOGY**



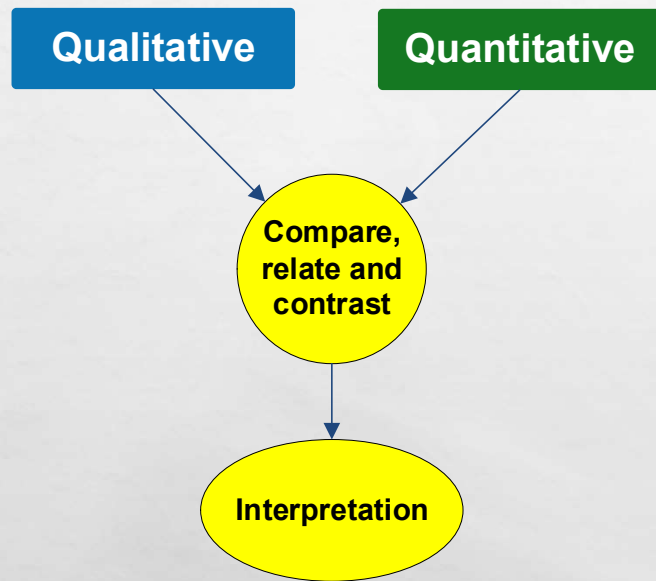
QUANTITATIVE APPROACH



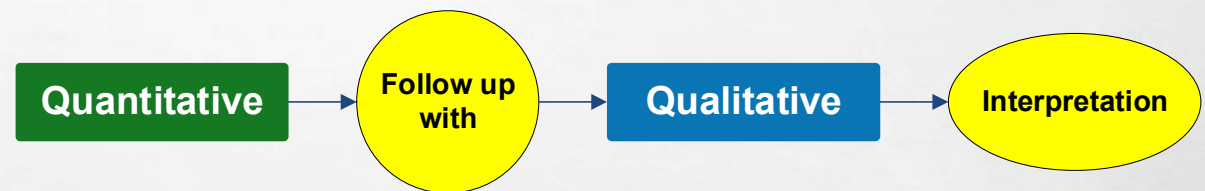
- **INSTRUMENTATION TO MEASURE OUTCOME QUANTITATIVELY**
- **DESCRIPTIVE AND INFERENCE STATISTICS**
- **GENERALIZABILITY OF FINDINGS**

MIXED DESIGN METHODOLOGY

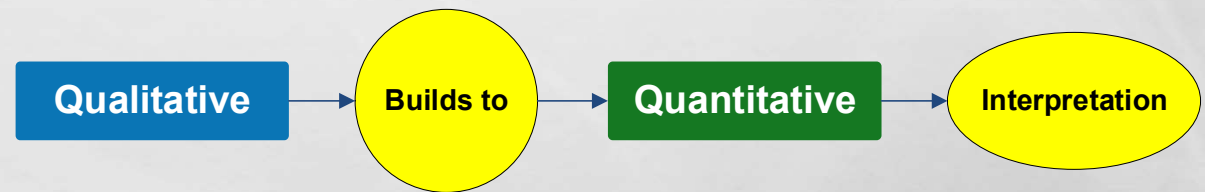
Convergent Parallel Design



Explanatory Sequential Design



Exploratory Sequential Design



MOST COMMONLY USED RESEARCH DESIGNS

- 1. PRE-POST (REPEATED MEASURES)**
- 2. ASSOCIATION (CORRELATION / REGRESSION)**
- 3. RANDOMIZED CONTROL TRIALS**
- 4. CROSSOVER DESIGN**
- 5. META-ANALYSIS**
- 6. RELIABILITY/VALIDATION STUDIES**

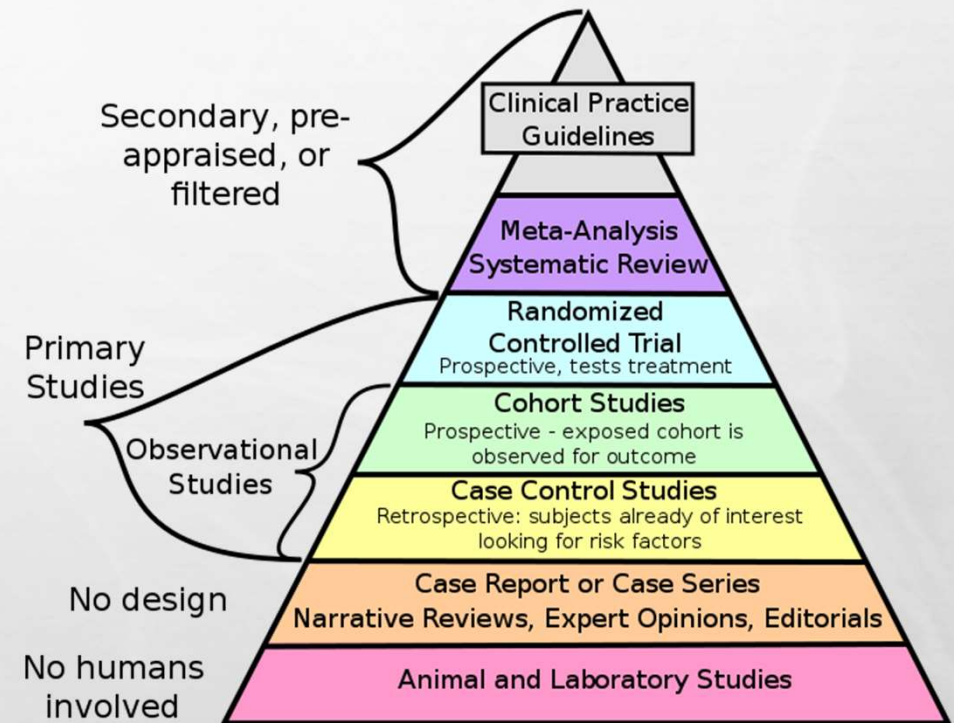


Image source: https://en.m.wikipedia.org/wiki/File:Research_design_and_evidence.svg

PRE-POST (REPEATED MEASURES)

RESEARCH QUESTION:

DOES ART THERAPY INTERVENTION X EFFECTIVELY REDUCE PARTICIPANTS' ANXIETY AFTER 5 SESSIONS?



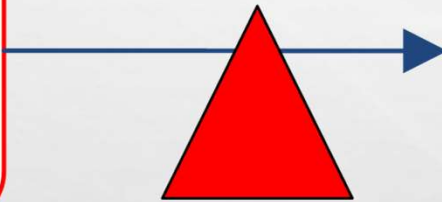
ASSOCIATION (CORRELATION/REGRESSION)

RESEARCH QUESTION:

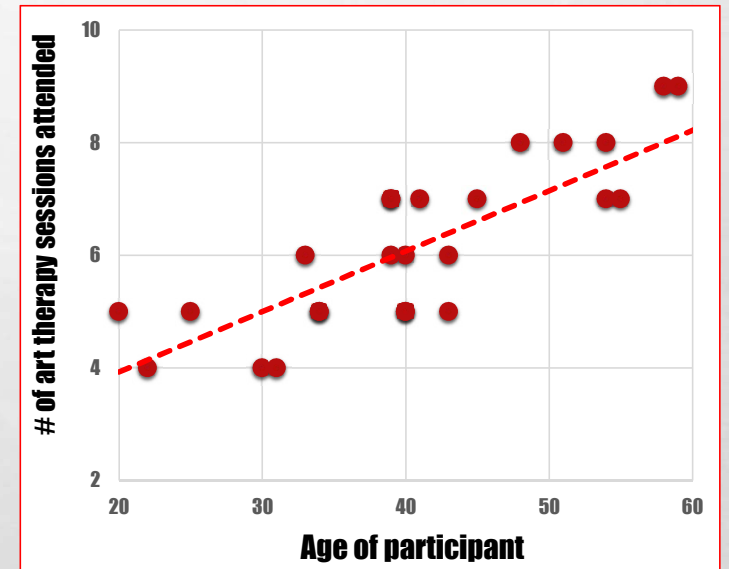
IS THERE AN ASSOCIATION BETWEEN THE AGE OF PARTICIPANTS AND THE NUMBER OF ART THERAPY SESSIONS ATTENDED?



**Art Therapy
Intervention**



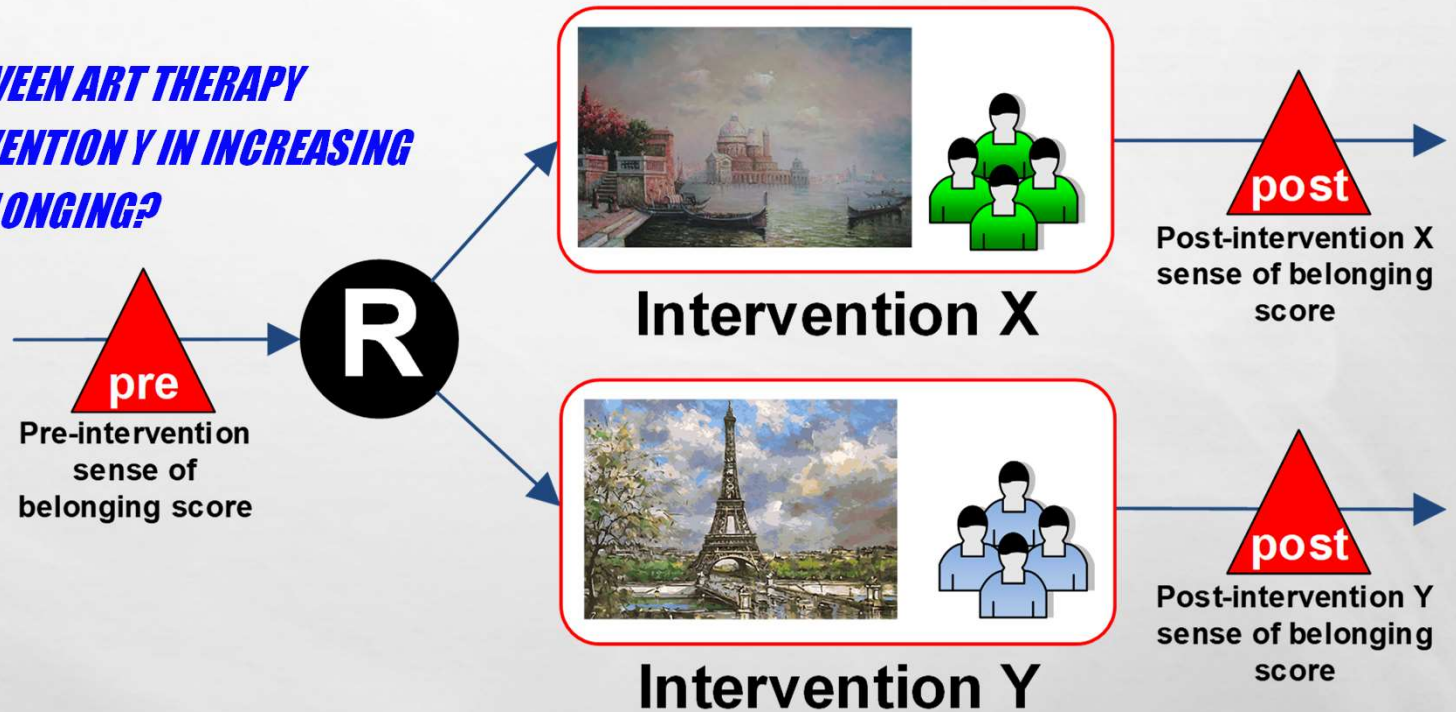
Age of participant
of sessions attended



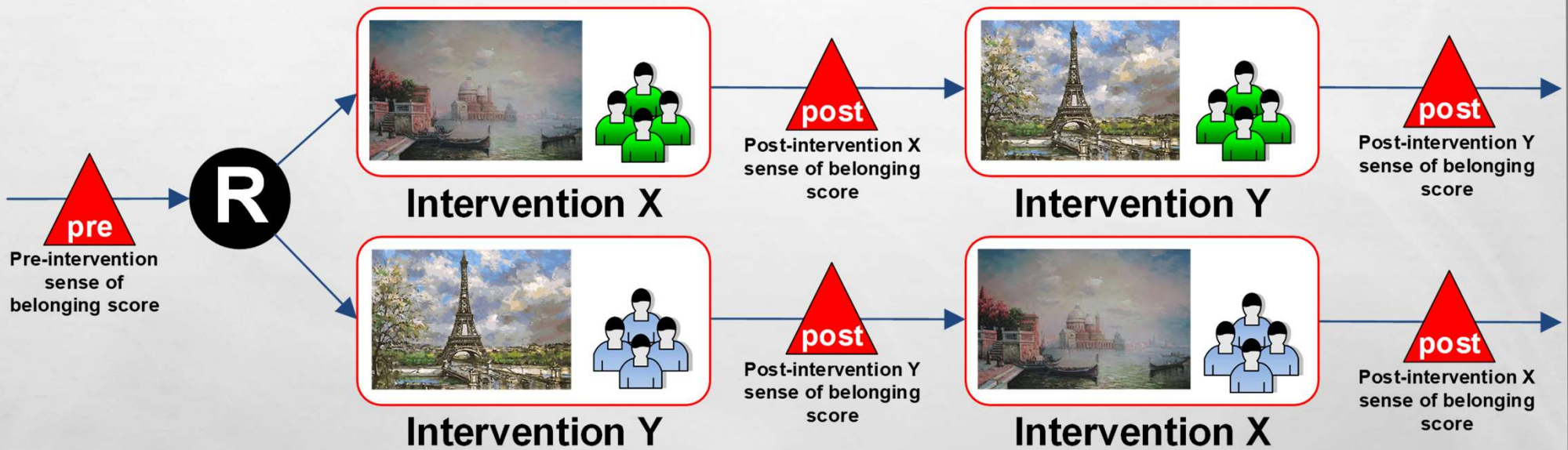
RANDOMIZED CONTROL TRIALS (RCT)

RESEARCH QUESTION:

IS THERE A DIFFERENCE BETWEEN ART THERAPY INTERVENTION X AND INTERVENTION Y IN INCREASING PARTICIPANTS' SENSE OF BELONGING?



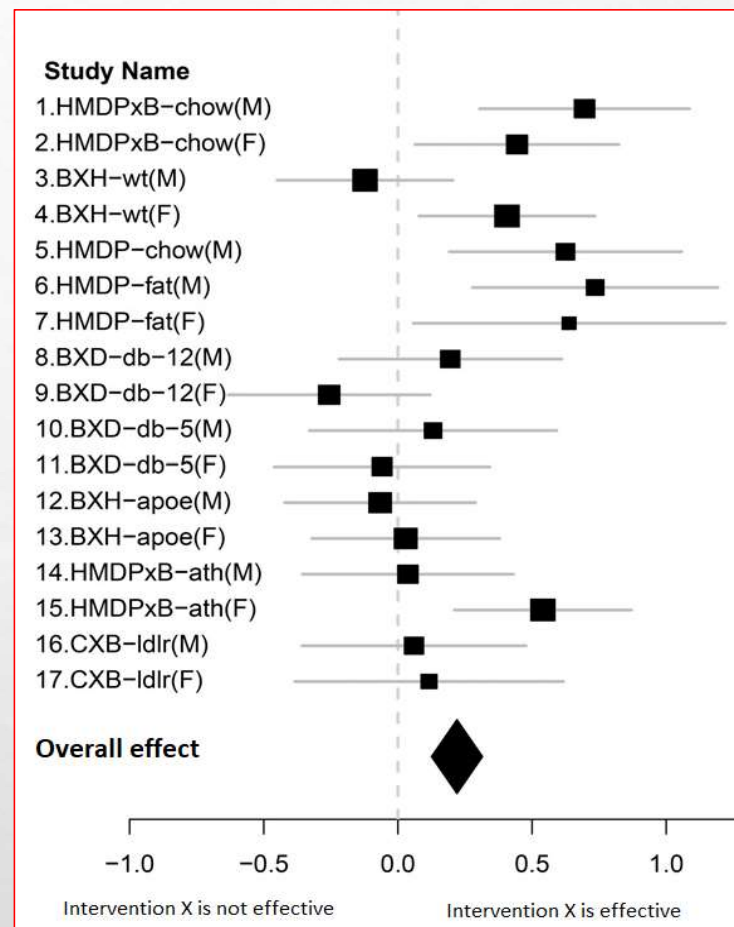
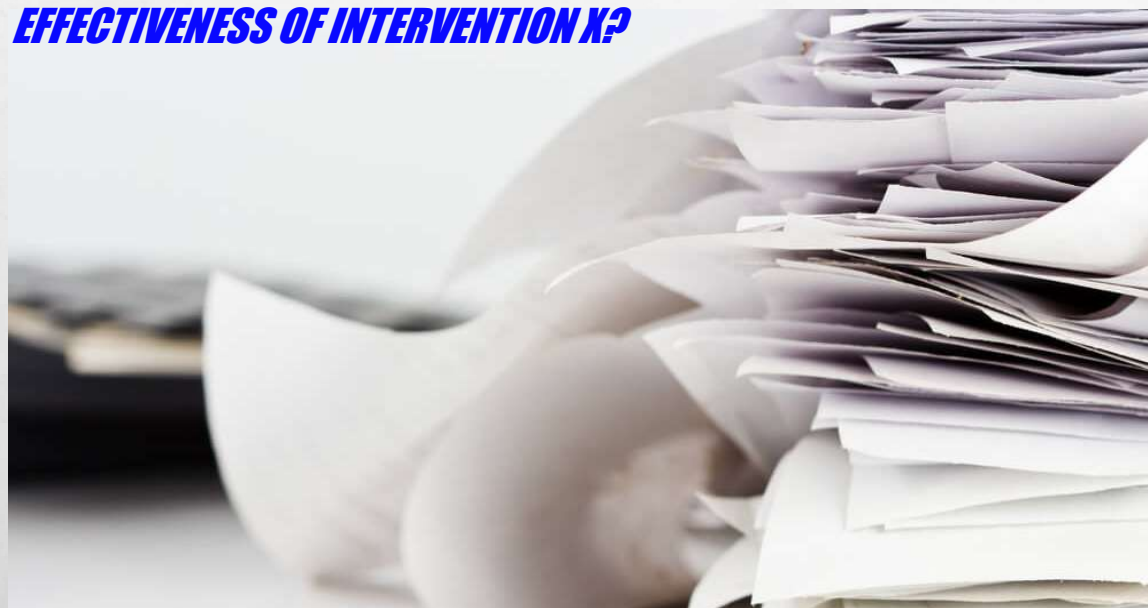
CROSSOVER DESIGN



META-ANALYSIS

RESEARCH QUESTION:

IS THERE A CONSENSUS IN PUBLISHED STUDIES REGARDING THE EFFECTIVENESS OF INTERVENTION X?



RELIABILITY/VALIDATION STUDY

RESEARCH QUESTION:

*HOW RELIABLE IS THE PERSON PICKING AN APPLE FROM A TREE
(PPAT) INSTRUMENT AND FEATS ASSESSMENT.*

- **INTER-RATER RELIABILITY**
- **INTRA-RATER RELIABILITY**
- **VALIDITY OF AN INSTRUMENT**



Image source: <https://dumielauxepices.net/sites/default/files/drawn-apple-line-quality-510035-4935765.jpg>

STEP 3: COMMUNICATING THE KNOWLEDGE

- 1. JOURNAL ARTICLE**
- 2. CONFERENCE**
- 3. CATA JOURNAL OR NEWSLETTER**
- 4. DISCUSS WITH COLLEAGUES**
- 5. PHD PROGRAM**



PUBLISHING A RESEARCH ARTICLE

- **ART THERAPY (JOURNAL OF THE AMERICAN ART THERAPY ASSOCIATION)**

[HTTP://WWW.TANDFONLINE.COM/TOC/UART20/CURRENT](http://www.tandfonline.com/TOC/UART20/CURRENT)

- **INTERNATIONAL JOURNAL OF ART THERAPY**

[HTTP://WWW.TANDFONLINE.COM/TOC/RART20/CURRENT](http://www.tandfonline.com/TOC/RART20/CURRENT)

- **JOURNAL OF CLINICAL ART THERAPY**

[HTTP://DIGITALCOMMONS.LMU.EDU/JCAT/](http://digitalcommons.lmu.edu/jcat/)

- **CANADIAN ART THERAPY ASSOCIATION JOURNAL**

[HTTP://WWW.TANDFONLINE.COM/TOC/UCAT20/CURRENT](http://www.tandfonline.com/TOC/UCAT20/CURRENT)

- **JOURNAL OF CREATIVITY IN MENTAL HEALTH**

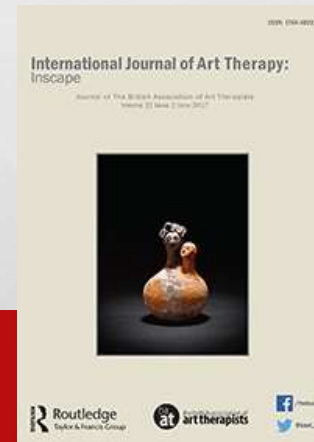
[HTTP://WWW.TANDFONLINE.COM/TOC/WCMH20/CURRENT](http://www.tandfonline.com/TOC/WCMH20/CURRENT)

- **ARTS & HEALTH**

[HTTP://WWW.TANDFONLINE.COM/TOC/RAHE20/CURRENT](http://www.tandfonline.com/TOC/RAHE20/CURRENT)

- **THE ARTS IN PSYCHOTHERAPY**

[HTTPS://WWW.JOURNALS.ELSEVIER.COM/THE-ARTS-IN-PSYCHOTHERAPY/](https://www.journals.elsevier.com/the-arts-in-psychotherapy/)



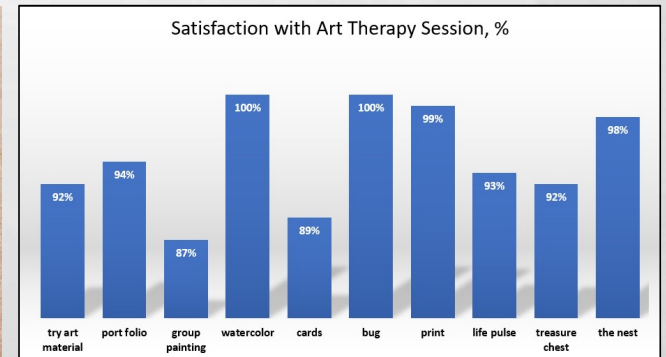
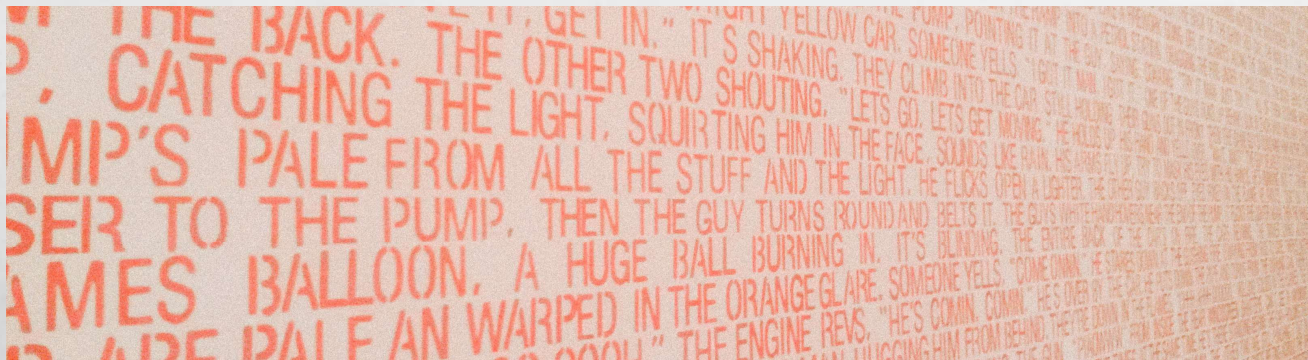
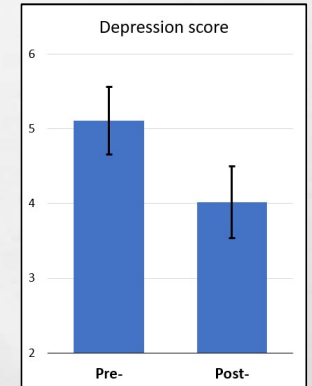
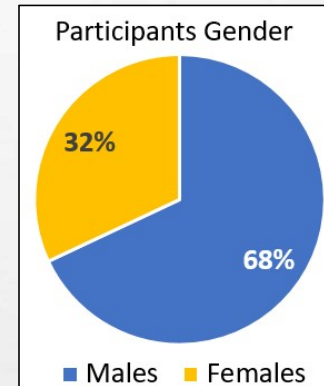
ELEMENTS OF GOOD RESEARCH

- 1. SAMPLE**
- 2. RANDOM ASSIGNMENT**
- 3. MEASURING OUTCOMES**
- 4. DESIGN AND METHODOLOGY**
- 5. STATISTICAL ANALYSIS**



TYPES OF DATA IN RESEARCH

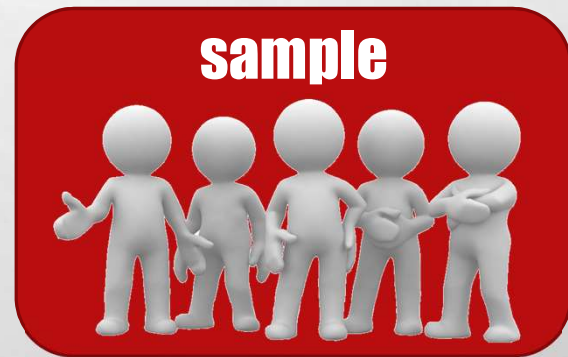
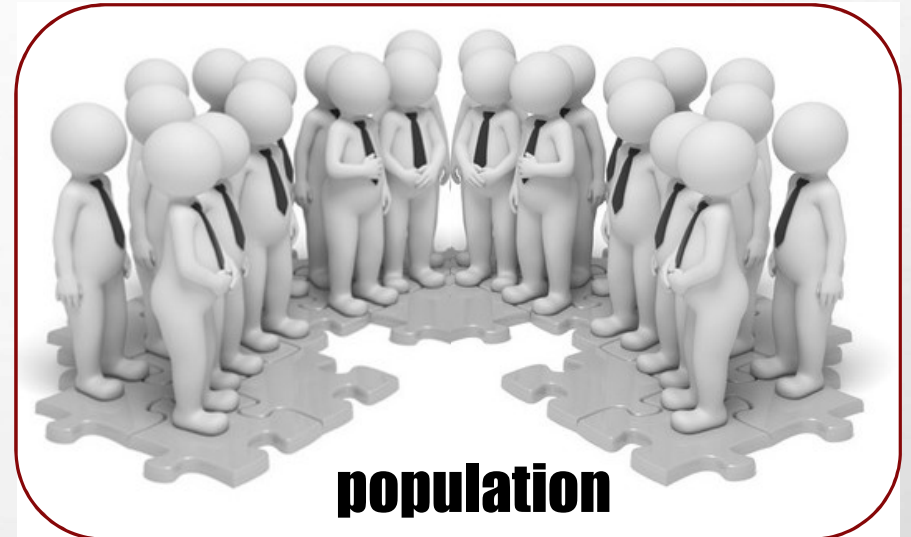
1. CATEGORICAL
2. NUMERICAL
3. SEMI-STRUCTURED AND UNSTRUCTURED



AREAS OF STATISTICS

1. DESCRIPTIVE

2. INFERENTIAL



EXAMPLE OF DESCRIPTIVE STATS

Table 1. Demographic Information of Participants

Variable	Frequency (N)	Percentage (%)
Education Level		
MSW	17	51.5
MFT	11	33.3
Unstated	3	9.1
MA	1	3.0
Ph.D.	1	3.0
Licensure		
Yes	23	69.7
No	10	30.3
Orientation		
Cognitive	14	42.4
Humanistic	5	15.2
Eclectic	8	24.2
Freudian	4	12.1
Unstated	2	6.1

Variable	Frequency (N)	Percentage (%)
Group therapy		
No	25	75.8
Yes	7	21.2
Unstated	1	3.0
Male Clients		
Yes	24	72.7
No	9	27.3
Female Clients		
Yes	28	84.8
No	3	9.1
Unstated	2	6.1
Use Art Therapy in Group		
No	21	63.6
Yes	12	36.4
Willing to Try		
Yes	18	85.7
No	3	14.5

Source: Cherie Ferguson. *Art Therapy for Adult Survivors of Child Sexual Abuse*
<http://scholarworks.lib.csusb.edu/cgi/viewcontent.cgi?article=1047&context=etd>

EXAMPLE OF DESCRIPTIVE STATS

Group	Variable	N	minimum	Maximum	mean	SD
Control	Pretest of SAD	15	6	20	10.73	4.49
	Posttest of SAD	15	6	21	10.86	4.40
Experimental	Pretest of SAD	15	5	18	11.53	3.64
	Posttest of SAD	15	5	15	8.73	2.98

Source: M. Khadar et al

The effect of art therapy based on painting therapy in reducing symptoms of separation anxiety disorder (SAD) in elementary School Boys

CONFIDENCE INTERVALS

- Estimating **proportion of patients** that find Art Therapy helpful
- Estimating **mean Separation Anxiety Disorder** score for patients in control and experimental groups
- Estimating **average number** of Art Therapy sessions
- Estimating **mean decrease in Depression** score for patients after the series of art therapy sessions

EXAMPLE OF CONFIDENCE INTERVALS

Table3. Mean Difference between control and experimental group

Group	Mean	Std. Error	Confidence Interval %95	
			Minimum	Maximum
Control	12.03	0.179	11.533	12.528
Experimental	9.08	0.367	8.216	9.951

Source: M. Khadar et al

The effect of art therapy based on painting therapy in reducing symptoms of separation anxiety disorder (SAD) in elementary School Boys

STATISTICAL TESTS – OVERVIEW

		Dependent variable	
		Categorical	Numerical
Independent variable	Categorical	Chi-square test Fisher's Exact test McNeimar test Binomial test	One sample t-test Paired samples t-test / Wilcoxon Independent samples t-test / Mann-Whitney One-way ANOVA / Kruskal-Wallis
	Numerical	Binary or multinomial logistic regression	Correlation Regression analysis (simple or multiple)

UNDERSTANDING RESEARCH ARTICLES

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	385.153 ^a	2	192.577	113.909	.000	.894
Intercept	.091	1	.091	.054	.818	.002
SAD1	351.020	1	351.020	207.628	.000	.885
Group	59.276	1	59.276	35.062	.000	.565
Error	45.647	27	1.691			
Total	3312.000	30				
Corrected Total	430.800	29				

a. R Squared = .894 (Adjusted R Squared = .886)

Source: M. Khadar et al

The effect of art therapy based on painting therapy in reducing symptoms of separation anxiety disorder (SAD) in elementary School Boys

STATISTICAL VS PRACTICAL SIGNIFICANCE

- **Statistical significance: p-value < 0.05**
- **Practical significance: Effect Size**
- **Statistical significance is a first step to Practical significance**

SUMMARY OF RESEARCH PROCESS STEPS

Define
research
problem

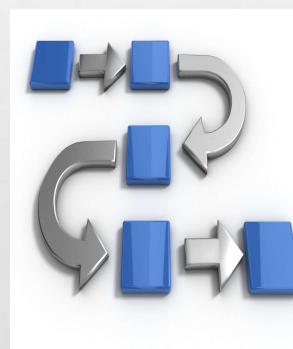
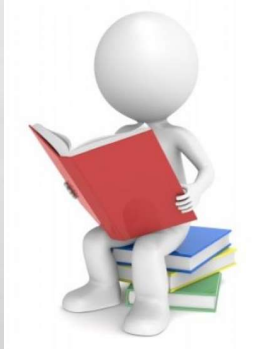
Literature
review

Formulate
research
question and
hypotheses

Determine
methodology
and design

Collect and
analyze the
data

Report,
interpret and
communicate
findings



RESEARCH JOURNEY

1 Identify research problem



Research starts with defining a problem which tackles a real-world issue. If you are working on PhD dissertation or Master's thesis, you already have an idea of what you are interested in exploring. If you are only thinking about a research topic, you get inspiration from a published articles, your own practice or talking to colleagues.



We can help with defining a problem that you would like to address, not too broad and not too narrow. We can also assist with preparing a research statement and research proposal.

3 Formulate research question(s)



Research question is more specific (and detailed) formulation of the research problem narrowing down the scope. It includes clearly defined terms and concepts, population of interest, instruments to measure outcomes.



We can help in transforming research problem into specific research question(s), as well as choosing validated instruments to measure outcomes of interest.

5 Collect & analyze the data



There are different ways of collecting research data: observational, interviews, surveys (both paper-based and online), creative art artifacts (for art-based research). Collected research data has to be analyzed using statistical techniques to scientifically answer research questions. The findings are then summarized and interpreted.



We can assist with designing a survey, organizing data collection, preparing data for analysis. And of course, we can run appropriate statistical data analysis, summarize findings and provide interpretation of results.

1

2

3

4

5

6

2

Literature review



Searching published articles, Google Scholar, books, art therapy journals, conference posters and publications will help you to learn more about the topic of interest. This is critical step in academic research and meta-analysis projects.



We can guide you through formulating literature search query and extracting important details from published research such as study designs, methodology, instruments used, effect size. Effect size is needed for power analysis to determine the sample size required for the study.

4

Determine methodology and study design



Appropriate study design and methodology have to be chosen to answer research question(s). There are different types of methodologies that applicable in different situations: qualitative, quantitative, mixed methods, correlational, experimental, observational, etc. Ethics approval has to be obtained for most studies.



This is our main area of expertise. We can advise on suitable study methodology and design to ensure the results will answer research question(s).

6

Report, interpret and communicate the findings



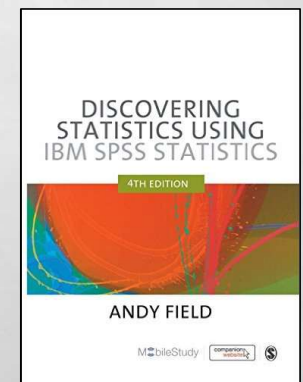
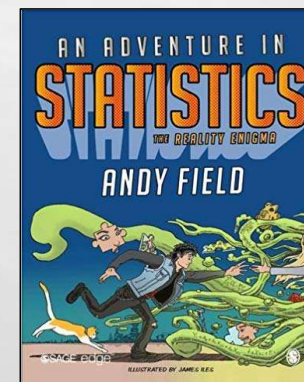
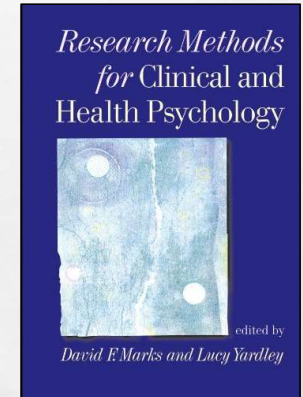
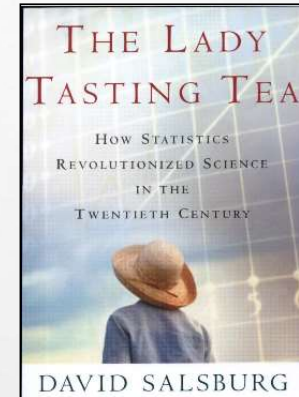
After completing the study, it's important to communicate the knowledge to a larger audience. This is done through publishing an article, making a poster or presenting at the conference, discussing findings with colleagues online or in-person.



As published authors ourselves, we understand the process of having research articles submitted to journals and getting publications. We can help with preparing dissertation or research publication including APA formatting, proofreading, responding to reviewers or preparing for oral defence.

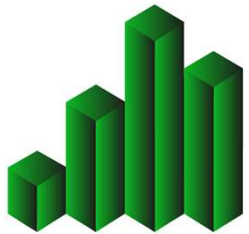
HOW DO I LEARN MORE?

- **BOOKS**
- **INTERNET**
- **COURSES/WORKSHOPS**
- **PROFESSIONAL CONSULTING & COACHING**



Q&A SESSION AND AN OPEN DISCUSSION

- **ANTON SVENDROVSKI**
- **+1-647-833-3359**
- **WWW.STATSHelp.CA/ART/**
- **INFO@STATSHelp.CA**



STATS
HΣLP

