INTRODUCTION

Ingredients of Hypnosis: Introduction
The aim of scientific hypnosis is to reveal the true nature of hypnosis and the value of its clinical and other applications. Given the "mere words" of the hypnotist, understanding the sometimes flamboyant and seemingly inexplicable behaviour of hypnotized people seems as demanding as it is captivating. Thankfully, generations of workers in our field have developed research tools and techniques to help us answer fundamental questions about basic and applied hypnosis. These research methods are as relevant in the clinic as in the laboratory. They are relevant to anyone who wishes to understand what hypnosis is and what it does.

3 Reasons to Know About Research Methods
- To evaluate aspects of one’s own practice:
  - To expand our knowledge of whether, how and for whom hypnotic techniques work
  - "Clinical practice as a natural laboratory"
- To communicate new insights to colleagues and to the field
  - "The important issue is that the observation be interesting, novel, and justified by the evidence that is presented"
- To evaluate others’ claims
  - Whether made in workshops, publications or other contexts, especially when appealing to "evidence"
Martin Orne (1981)

- "Since each of us has a finite experience, the literature of a field is intended to represent the accumulated knowledge of the field ... In a true sense, then, the purpose of the literature is highly practical -- it communicates the successes and the failures of those who went before us. It makes it less likely that we will go up blind alleys and makes it possible to utilize a limited amount of time in the most useful fashion" (p. 2).
- Research design can be considered a common language for making our own contributions to the literature and/or for evaluating the contributions of others

Aims of this Session

- Whether you are a clinician involved in or interested in research or a new researcher, we aim to enhance your knowledge of fundamental design issues in hypnosis research
- We aim to assist you in thinking through the balance between good research design and clinical realities
- We aim to suggest ways of making important contributions to the scientific literature

Want to Read More?

- On the USB:
BASIC FEATURES OF HYPNOSIS RESEARCH

Principles of Research Design
- In research design we can identify "questions" and "ingredients"
- In hypnosis research, we select particular design ingredients depending on the particular question
- Note: many questions and thus research designs are driven by a particular theoretical approach
- We aim for coherence across theory, methods and data
- Let’s start with Sutcliffe’s (1958) General Design for hypnosis research

Sutcliffe’s (1958) General Design
- J.P. Sutcliffe (University of Sydney) distinguished between general and specific designs in hypnosis research
- His General Design was a comprehensive one involving 16 experimental conditions
- The design included:
  - Highs and lows given suggestions for the presence of nonexistent stimuli or for the absence of actual stimuli
  - A control waking condition
  - A hypnotic induction condition
  - A hypnotic induction plus hypnotic suggestion condition
  - A simulating while awake condition
Sutcliffe’s (1958) General Design

- Highs given suggestion for presence of nonexistent stimuli
  - Control, waking condition
  - Hypnotic induction condition
  - Hypnosis induction with hypnotic suggestion condition

- Lows given suggestion for presence of nonexistent stimuli
  - Control, waking condition
  - Hypnotic induction condition
  - Hypnosis induction with hypnotic suggestion condition

- Highs given suggestion for absence of actual stimuli
  - Control, waking condition
  - Hypnotic induction condition
  - Hypnosis induction with hypnotic suggestion condition

- Lows given suggestion for absence of actual stimuli
  - Control, waking condition
  - Hypnotic induction condition
  - Hypnosis induction with hypnotic suggestion condition

This design involves 16 conditions and could require up to 240 subjects (not counting hypnotisability screening).

Sutcliffe’s General Design has never been implemented:
- Costly, time and resource intensive
- Instead, researchers use what Sutcliffe called “specific designs”:
  - Involve selected control procedures
  - Although specific designs may limit the inferences that researchers may draw they are more feasible
  - Researchers run a series of “specific design” experiments in a programmatic sequence to yield converging data across the set.

Want to Read More?
- Handout:
  - Sutcliffe’s (1958) General Design for Hypnosis Research
- On the USB:
- See also:
Ingredients of Hypnosis Research

- In specific designs, we commonly select from the following “ingredients”:
  1. Hypnotisability
  2. Hypnotic induction
  3. Suggestion
  4. Simulation
  5. Tests
  6. Measuring Behaviour
  7. Measuring Experience

Hypnotisability

- Individual differences recognised for 200+ years
- When thinking about what goes on in hypnosis “virtually all the action is in the subject” (Kihlstrom, 2008, p. 24)
- The Bower’s Doctrine (Woody & Barnier, 2008)
  - “An effect is not a classic suggestion effect [that is, a genuine hypnotic effect] unless it is correlated with hypnotic ability as standardly assessed (Bowers, 1982, p6).”
  - “Individual differences should be the touchstone for true hypnotic phenomena. . . [effects] that turn out not to be associated with hypnotizability should be regarded as nonspecific effects, not part of the essence of hypnosis.” (Woody & Barnier, 2008, p. 258)
- See Barnier & McConkey (2004) for review of measures

Ingredients: Hypnotisability

<table>
<thead>
<tr>
<th>Factors (Ingredients)</th>
<th>Research Questions</th>
<th>Comparison Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypnotisability</td>
<td>Is high hypnotic ability necessary for people to respond to suggestions?</td>
<td>Highs vs Lows</td>
</tr>
<tr>
<td></td>
<td>How do people of varying hypnotic ability respond to suggestions? (type-dosage effect)</td>
<td>Highs vs Mediums vs Lows</td>
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<td></td>
<td>How does hypnotisability relate to the variable of interest? (dimension-dosage effect)</td>
<td>Unselected Participants</td>
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</table>
BUILDING BLOCKS OF HYPNOTISABILITY
- Specific hypnotic abilities are the best predictors of hypnotic performance
- Importance of screening with appropriate items
  - To predict responses to motor suggestions you should screen with motor items
  - To predict responses to cognitive suggestions you should screen with more difficult cognitive items
- Do not assume that general hypnotisability as measured by some scales will predict responding in the clinic
  - HGSHSA contains many easy items

Hypnotic Induction
- The induction may be viewed as:
  - A ritual that defines the context as hypnotic, or
  - A "switch" that creates an altered state (involving changes in attention, absorption, critical thinking, relaxation etc)
- Is an induction necessary:
  - Highs will respond in the absence of an induction
  - But induction may generate effects that onset more quickly and are more compelling
- Note:
  - Whereas in research settings, the precise nature of the induction is relatively unimportant, in clinical settings, tailoring the induction may be important (and represents a significant design consideration)

Ingredients: Hypnotic Induction

<table>
<thead>
<tr>
<th>Feature (Ingredients)</th>
<th>Research Question/s</th>
<th>Comparison Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypnotic Induction</td>
<td>Is an altered state (or hypnotic ritual) necessary for creating the hypnotic phenomena of interest?</td>
<td>Induction vs No Induction</td>
</tr>
<tr>
<td></td>
<td>Are the effects found due specifically to hypnosis or can we get the same effects with other (nonhypnotic) manipulations?</td>
<td>Induction vs Imagination</td>
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<tr>
<td></td>
<td>Are effects found due specifically to hypnosis or to people’s task motivation?</td>
<td>Induction vs Motivation</td>
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The concept of neutral hypnosis, as a distinct psychological state independent of the subject’s response to suggestions, has had its advocates. Still, the fact remains that what is personally interesting about hypnosis is how the hypnotized individual responds to suggestions (p. 26).

Researchers may compare:
- People given suggestion vs. people not given suggestion
- People given different versions of a suggestion (e.g., PHA for specific autobiographical events or entire lifetime period)
- People given hypnotic suggestion vs. nonhypnotic instruction (e.g., PHA vs. directed forgetting instruction)

Researchers may compare:
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Are hypnotized people merely faking?
- Orne (1971) developed his real-simulating paradigm to index “demand characteristics” in hypnosis:
  - Involves high hypnotizable, real participants and low hypnotizable, simulating participants (asked to fake)
  - The hypnotist is unaware who is a real and who is a simulator

Inferences from this quasi-control procedure:
- If reals and sims respond similarly, then demand characteristics are sufficient to explain reals’ responding
- If reals and sims respond differently, then reals’ performance reflects more than just demands – the essence of hypnosis
Ingredients: Simulation

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<tbody>
<tr>
<td>Simulation</td>
<td>What is the effect of hypnosis over and above demand characteristics?</td>
<td>Hypnotised High vs Faking Lows</td>
</tr>
</tbody>
</table>

Tests

- Hypnotic items typically contain three phases:
  - Suggestion, test, cancellation (McConkey, Wende, & Barnier, 1999)
  - The test phase indexes the impact of the suggestion on people’s behaviour and experience
- Researchers often use multiple and/or different tests:
  - Does responding persist over repeated tests (e.g., uncancelled suggestions)?
  - Does responding persist outside the hypnotic setting (e.g., PHS)?
  - Does the nature of the test influence responding (e.g., formal vs informal)?
  - Does the suggestion influence different measures to the same degree (e.g., explicit vs implicit memory)?

Ingredients: Tests

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<tbody>
<tr>
<td>Tests</td>
<td>Does response persist? Do you see responding on different indices? Does the nature of the test matter?</td>
<td>Multiple Tests</td>
</tr>
</tbody>
</table>
Measuring Behaviour

Kihlstrom (2008):
- "Hypnosis is a process in which one person, designated the hypnotist, offers suggestions to another person, designated the subject, for imaginative experiences entailing alterations in perception, memory and action" (p. 21).

To track alterations due to hypnotic suggestion, we can:
- Measure what people do (behavioural response)
- Measure what people say (verbal response)
- Measure "implicit" aspects of responding (e.g., physiological responses, facial reactions)
- Measure brain correlates of responding (e.g., fMRI, PET)

Ingredients: Measuring Behaviour

<table>
<thead>
<tr>
<th>Factors (Variables)</th>
<th>Research Questions</th>
<th>Comparison Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring Behaviour</td>
<td>In what ways does the suggestion influence behaviour?</td>
<td>Behaviour/Measures</td>
</tr>
</tbody>
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Measuring Experience

Kihlstrom (2008):
- "Subjective experience lies at the heart of hypnosis. It is not interesting that a hypnotized subject will lower his outstretched arm when told that it is becoming heavy. What is interesting is that the arm actually begins to feel heavy. It is the subject’s conviction that the suggested event is really happening that distinguishes a genuine hypnotic experience from overt behavioral compliance" (p. 32).

To find out why people responded as they did, we can:
- Ask them to describe or rate their experience, during or after hypnosis
- Use a more formal procedure, such as the Experiential Analysis Technique (Sheehan & McConkey, 1982) or the Dial Technique (McConkey, Wende, & Barnier, 1999)
- Use a questionnaire
Ingredients: Measuring Experience

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<thead>
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</thead>
<tbody>
<tr>
<td>Measuring Experience</td>
<td>What impact does hypnosis have on private experience? How does the person interpret suggestions, experience and explain hypnotic phenomena?</td>
<td>Experiential Measures</td>
</tr>
</tbody>
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Ingredients: Dependent and Independent Variables

<table>
<thead>
<tr>
<th>Independent Variables in Hypnosis Research</th>
<th>Dependent Variables in Hypnosis Research</th>
</tr>
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<tbody>
<tr>
<td>(What we manipulate)</td>
<td>(What we measure)</td>
</tr>
<tr>
<td>Typically between-subjects (sometimes within)</td>
<td>Behavioral (objective) measures:</td>
</tr>
<tr>
<td>- Hypnotizability</td>
<td>- Participants' reactions to suggestions</td>
</tr>
<tr>
<td>- Presence of hypnotic induction</td>
<td>- What participants say in response to suggestions</td>
</tr>
<tr>
<td>- Presence of suggestion</td>
<td>- Physiological measures</td>
</tr>
<tr>
<td>- Sedation</td>
<td>- Brain imaging</td>
</tr>
<tr>
<td>Typically within-subjects (sometimes between)</td>
<td>Experiential (subjective) measures:</td>
</tr>
<tr>
<td>- Tests</td>
<td>- Salivary measures</td>
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<td></td>
<td>- Comments during or after hypnosis</td>
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<tr>
<td></td>
<td>- Self-ratings</td>
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<td></td>
<td>- EAT comments</td>
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Want to Read More?

Research Design Exercises

- We will tell you about two experiments
- We will give you a brief background to the area and a summary of the experiment and its procedure
- In groups of three, your tasks are to:
  - Identify the ingredients (and research questions) of each experiment
  - Identify the independent and dependent variables
- You will share your views
- Then we will tell you the results of each experiment

Exercise 1: Background

- Functional amnesia (FA):
  - Memory loss not due to organic damage with three major features:
    - Inability to consciously recall past events (impaired explicit memory)
    - Continuing influence of these events (spared implicit memory)
    - Reversibility of the effect (shows impaired retrieval)
- Posthypnotic amnesia (PHA):
  - Suggestion to forget certain events or material after hypnosis
  - Expts involving word lists show same three features as FA
  - Promoted as a laboratory analogue of FA
- Barnier (2002):
  - Aimed to extend PHA to autobiographical events and compare the features of autobiographical PHA and FA

Exercise 1: Summary of Experiment (Abstract)

- Extreme variation in the accessibility of autobiographical memory is a major characteristic of functional amnesia. On the basis of its ability to temporarily disrupt the retrieval of memory material, posthypnotic amnesia (PHA) has been proposed as a laboratory analogue of such amnesia. However, most PHA research has focused on relatively simple, nonpersonal information learned during hypnosis. This experiment extended PHA to autobiographical memory by examining high- and low-hypnotizable subjects’ explicit and implicit memory of two autobiographical episodes, one of which was targeted by a PHA suggestion. The effects of PHA were consistent with the major features of functional amnesia: PHA disrupted retrieval of autobiographical information, produced a dissociation between implicit and explicit memory, and was reversible. The nature of PHA’s effect on autobiographical memory and the potential utility of a PHA paradigm for investigating functional amnesia are discussed.
Exercise 1: Procedure

Before hypnosis, high and low hypnotisable people asked to recall:
- First day of high school (distant event), and
- First day of university (recent event)

Hypnotic induction

During hypnosis, given PHA suggestion for either:
- First day of high school, or
- First day of university

Hypnotic deinduction

After hypnosis, given:
- Two implicit memory tests (Category Generation, Social Judgement)
- Explicit memory test (Recall 1)

After cancellation cue given:
- Explicit memory test (Recall 2)

Exercise 1: What are the Ingredients?

Consult your ingredients list:

- Hypnotisability (between-subjects): Highs vs Lows
- Hypnotic induction (no manipulation): All hypnotized
- Suggestion (between-subjects): PHA for Recent vs. Distant events
- Tests (explicit memory, within-subjects): Elicitation vs. Recall 1 vs. Recall 2
- Tests (explicit vs implicit, within-subjects): Cat Gen & Social Judge vs Recall 1
- Measuring behaviour: Memory performance
Exercise 1: What are the Variables?

- Independent variables:
  - Hypnotisability (Highs vs Lows)
  - Suggestion (PHA for Distant Event vs Recent Event)
  - Tests (Elicitation vs Recall 1 vs Recall 2)
  - Tests (Category Generation, Social Judgement vs Recall 1)

- Dependent variables:
  - Performance on Recall 1 (cf Elicitation, indexes impact of PHA suggestion)
  - Performance on Recall 2 (cf Recall 1, indexes impact of cancellation cue)
  - Performance on implicit tests (cf Recall 1, indexes dissociation between explicit and implicit memory)

Exercise 1: Summary of Findings

- PHA for autobiographical episodes showed same three features as FA:
  - Impaired explicit memory:
    - On Recall 1, highs’ (not lows) has great difficulty remembering targeted events (of Elicitation)
  - Spared implicit memory:
    - On Category Generation and Social Judgement tasks, highs’ performance influenced by the “forgotten” events (of Recall 1)
  - Reversibility of the effect:
    - On Recall 1, highs’ recall returned to the level at Elicitation

- But suggestion also mattered:
  - For highs, PHA had greatest impact on distant event
Exercise 2: Background

- **Reverse metamorphosis (identity delusion):**
  - Delusional belief about one’s identity, seen in schizophrenia and following brain damage
- **Case of RZ (Breen et al., 2000):**
  - Believed she was her father
  - Only responded to her father’s name
  - Provided her father’s personal history
- **Hypnosis shares features with clinical delusions:**
  - Both characterised by distorted beliefs about reality held with conviction and in the face of challenge
- **Cox & Barrier (in press):**
  - Aimed to create an hypnotic analogue of identity delusions

Exercise 2: Summary of Experiment (Abstract)

- In two experiments we created an hypnotic analogue of delusions of misidentification and explored their impact on autobiographical memory. In Experiment 1, to establish the paradigm, we gave high and low hypnotizable participants a suggestion to become someone similar or dissimilar to themselves. In Experiment 2, to further test the paradigm and examine autobiographical remembering, we gave highs a suggestion to become a same-sex sibling, administered two challenges to the temporary delusion, and asked them to generate autobiographical memories. For high hypnotizable participants, the suggested delusions of misidentification were compelling and resistant to challenge. During these temporary delusions, participants generated specific autobiographical memories that reflected previously experienced events viewed from the perspective of the suggested identity. These findings highlight the instrumental value of hypnosis to the investigation and understanding of delusions and autobiographical memory.

Exercise 2: Procedure

- High and low hypnotizable people given either:
  - Hypnotic induction (hypnosis condition), or
  - Filler task (imagination condition)
- Test 1 of current (non-deluded) self (self-discrepancy task)
- Given delusion suggestion to become either:
  - Same sex friend/relative very similar to them
  - Same sex friend/relative very dissimilar to them
- Asked for name and self-description to index impact of suggestion
- Test 2 of current (deluded) self (self-discrepancy task)
- Delusion suggestion cancelled
- Hypnotic deinduction or filler task
- Postexperimental inquiry:
  - Ratings of delusion experience and comments
Exercise 2: What are the Ingredients?

Consult your ingredients list:

- Hypnotisability (between-subjects):
  
  - Highs vs Lows

- Hypnotic induction (between-subjects):
  
  - Hypnosis vs Imagination

- Suggestion (between-subjects):
  
  - Similar vs Dissimilar Identity

- Tests (current self, within-subjects):
  
  - Test 1 vs. Test 2

- Measuring behaviour
  
  - Name, self-description, current self

- Measuring experience
  
  - PEX reality ratings and comments

Exercise 2: What are the Variables?

Independent variables:

- Hypnotisability (between-subjects): Highs vs Lows
- Hypnotic induction (between-subjects): Hypnosis vs Imagination
- Suggestion (between-subjects): Similar vs Dissimilar Identity
- Tests (current self, within-subjects): Test 1 vs. Test 2
- Measuring behaviour
  
  - Name, self-description, current self

- Measuring experience
  
  - PEX reality ratings and comments

Dependent variables:

- Change in name and self-description (indexes impact of delusion suggestion)
- Change in words given to describe current self (Test 1 vs Test 2, indexes impact of delusion suggestion)
- PEX reality ratings and comments (indexes subjective experience of delusion suggestion)
Exercise 2: What are the Variables?

- **Independent variables:**
  - Hypnotisability (Highs vs Lows)
  - Hypnotic induction (Hypnosis vs Imagination)
  - Suggestion (Similar vs Dissimilar Identity)
  - Tests (Current Self Test 1 vs Test 2)

- **Dependent variables:**
  - Change in name and self-description (indexes impact of delusion suggestion)
  - Change in words given to describe current self (Test 1 vs Test 2, indexes impact of delusion suggestion)
  - PEX reality ratings and comments (indexes subjective experience of delusion suggestion)

Exercise 2: Summary of Findings

- For highs, not lows, the suggestion produced a compelling delusional experience:
  - Whereas 78% of highs changed their name and did not deny their suggested identity, only 34% of lows did so.
  - Whereas highs gave 8/10 new words to describe their deluded self (of their non-deluded self), lows gave only 4/10 new words.
  - Highs gave higher PEX reality ratings and reported compelling experiences.

- Highs experienced the delusion in both induction conditions:
  - But highs in hypnosis reported more compelling subjective experiences.

- Both suggestion versions were credible and effective.

Want to Read More?

- On the USB:
Two Examples of Programmatic Research

- We noted above that researchers run a programmatic sequence of “specific design” experiments to yield converging data across the set
- Researchers select specific ingredients for each experiment in a sequence to answer a set of related questions
- Two examples (see Handout):
  - Barnier’s PhD thesis on posthypnotic suggestion
  - Cox’s PhD thesis on autobiographical memory during hypnotic identity delusions

Two Examples of Programmatic Research

- Barnier (1996):
  - Nine experiments -
    - Identified parameters of posthypnotic suggestion and testing
    - Explored experience of posthypnotic responding
    - Tested relevance of setting in which responding occurs (especially responding away from the hypnotic setting and the hypnotist)
- Cox (2007):
  - Six experiments -
    - Established paradigm for hypnotic identity delusions
    - Explored features of autobiographical memory during hypnotic identity delusions (e.g., source, specificity)
    - Indexed memory processes during hypnotic identity delusions (e.g., memory accessibility and selectivity)

Want to Read More (Barnier, 1996)?

- Expt 1:
- Expt 2:
- Expt 3:
- Expt 4:
- Expt 5:
- Expt 6:
- Expt 7:
Want to Read More (Cox, 2007)?

- **Summaries:**

- **Expts 1-2:**

- **Expt 5:**