

# COMPLETE RESEARCH METHODOLOGY TEMPLATE

A comprehensive template for writing research methodology sections across different research types and disciplines. Includes fill-in templates and real examples.

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## ☐ METHODOLOGY SECTION OVERVIEW

**Purpose:** The methodology section explains HOW you conducted your research so others can: - Evaluate the validity and reliability of your findings - Replicate your study - Assess whether your methods were appropriate for your research questions

**Length:** Typically 15-20% of your total paper (1,500-3,000 words for most research papers)

**Key Principle:** Provide enough detail that another researcher could replicate your study exactly.

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## ☐ STANDARD METHODOLOGY STRUCTURE

Every methodology section should include these core components:

### SECTION 1: Research Design

What type of study? (Experimental, survey, qualitative, etc.)

### SECTION 2: Participants/Sample

Who participated? How were they selected?

### SECTION 3: Materials/Instruments

What tools did you use to collect data?

### SECTION 4: Procedures

What did you do, step-by-step?

### SECTION 5: Data Analysis

How did you analyze the data?

### SECTION 6: Ethical Considerations (if applicable)

How did you protect participants?

### SECTION 7: Limitations

What are the constraints of your approach?

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## ☐ UNIVERSAL METHODOLOGY TEMPLATE

Use this template for any research paper. Delete sections that don't apply.

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## METHODOLOGY (or METHODS)

[Use present tense for describing general procedures, past tense for what you specifically did]

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### Research Design

This study employed a [quantitative/qualitative/mixed methods] research design using a [experimental/quasi-experimental/correlational/descriptive/case study/ethnographic/phenomenological] approach.

[If experimental]: The study utilized a [between-subjects/within-subjects/factorial] design with [# of groups] groups: [list groups]. The independent variable(s) were [list IVs] and the dependent variable(s) were [list DVs].

[If non-experimental]: The study examined the relationship between [variable 1] and [variable 2] among [population].

**Rationale:** This design was chosen because [explain why this approach is appropriate for your research question].

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### Participants

#### *Sample Characteristics*

The sample consisted of [N=\_\_\_] participants ([# male, # female, # other/prefer not to say]; M age = [\_\_\_] years, SD = [\_\_\_], range = [-]). Participants were [describe key demographics: education level, geographic location, occupation, etc.].

[If relevant]: Participants identified as follows: - Race/Ethnicity: [% for each category] - Education: [% for each level] - Income: [% for each bracket] - Other relevant characteristics: [\_\_\_]

#### *Sampling Method*

Participants were recruited using [probability sampling: random, stratified, cluster] OR [non-probability sampling: convenience, purposive, snowball, quota] sampling.

**Recruitment:** [Describe where and how participants were recruited, e.g., "Participants were recruited through university email listservs, social media advertisements, and flyers posted in campus buildings"].

**Inclusion Criteria:** To be eligible, participants must have: 1. [Criterion 1, e.g., "Been aged 18 years or older"] 2. [Criterion 2, e.g., "Been enrolled as full-time undergraduate students"] 3. [Criterion 3]

**Exclusion Criteria:** Participants were excluded if they: 1. [Exclusion criterion 1] 2. [Exclusion criterion 2]

**Response/Participation Rate:** Of [# invited/contacted] potential participants, [# completed] participated, yielding a response rate of [\_\_\_]%.

[If applicable]: Participants were compensated with [describe compensation: course credit, payment amount, gift cards, entry into prize drawing].

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### Materials/Instruments

This section describes all tools, measures, and materials used in the study.

***[Instrument/Measure Name 1]***

**Purpose:** This instrument measured [what it measures].

**Description:** The [Instrument Name] ([Citation]) is a [# of items]-item [self-report questionnaire/observational checklist/assessment tool] that assesses [specific construct].

**[If using subscales]:** The instrument includes [# of subscales] subscales: 1. [Subscale 1 name] ([# items])—measures [what it measures] 2. [Subscale 2 name] ([# items])—measures [what it measures]

**Response Format:** Items are rated on a [#-point] [Likert/scale type] scale ranging from [lowest anchor, e.g., 1 = “Strongly Disagree”] to [highest anchor, e.g., 5 = “Strongly Agree”].

**Scoring:** [Describe how scores are calculated]. Higher scores indicate [what higher scores mean]. The possible score range is [minimum] to [maximum].

**Psychometric Properties:** The [Instrument Name] has demonstrated strong reliability and validity. In the original validation study ([Citation]), internal consistency was excellent (Cronbach’s  $\alpha$  = [value]). In the current study, internal consistency was [excellent/good/acceptable/questionable] (Cronbach’s  $\alpha$  = [value]).

**[If applicable]:** Test-retest reliability has been reported as  $r$  = [value] over [time period] ([Citation]).

**[If applicable]:** Construct validity has been established through [method, e.g., confirmatory factor analysis, convergent/discriminant validity] ([Citation]).

**Example Item:** “[Include one sample item]”

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***[Instrument/Measure Name 2]***

**[Repeat structure above for each instrument]**

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***Demographic Questionnaire***

Participants completed a demographic questionnaire assessing: - Age - Gender identity - Race/Ethnicity - Education level - [Other relevant demographics]

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***Equipment/Materials (if applicable)***

**[For experimental studies, describe apparatus]:**

The study utilized the following equipment: - [Equipment 1]: [Brand, model, specifications] used to [purpose] - [Equipment 2]: [Specifications] used to [purpose]

**Stimulus Materials:** [Describe any stimuli presented, e.g., videos, images, texts]

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**Procedure**

This section provides a step-by-step account of what happened during data collection.

***Data Collection Timeline***

Data were collected between [Start Date] and [End Date].

### *Step-by-Step Procedure*

#### **Step 1: [First step, e.g., “Recruitment and Screening”]**

[Describe what happened in detail]. Potential participants [what they did]. Those who met eligibility criteria [next action].

#### **Step 2: [Second step, e.g., “Informed Consent”]**

Upon arrival [or “accessing the online survey”], participants were provided with an informed consent document that explained [key elements: purpose, procedures, risks, benefits, confidentiality, voluntary participation, right to withdraw]. Participants who agreed to participate [signed consent form/clicked “I agree”].

#### **Step 3: [Third step, e.g., “Random Assignment”] (if applicable)**

Participants were randomly assigned to one of [# of conditions] conditions using [method: computer-generated random numbers, drawing from envelope, online randomization tool]: 1. [Condition 1]: [brief description] (n = [ ]) 2. [Condition 2]: [brief description] (n = [ ])

#### **Step 4: [Fourth step, e.g., “Intervention/Manipulation”] (if applicable)**

[Condition 1 participants]: [Describe exactly what they experienced, duration, format, content].

[Condition 2 participants]: [Describe their experience].

#### **Step 5: [Fifth step, e.g., “Completion of Measures”]**

Participants completed the following measures in this order: 1. [Measure 1] (approximately [time] minutes) 2. [Measure 2] (approximately [time] minutes) 3. Demographic questionnaire (approximately [time] minutes)

[If online]: Measures were administered via [platform: Qualtrics, Google Forms, REDCap].

[If in-person]: Measures were completed in a quiet laboratory room with the researcher present to answer questions.

#### **Step 6: [Sixth step, e.g., “Debriefing”]**

After completing all measures, participants were debriefed about the study’s purpose. [If deception was used]: Participants were informed about the true nature of the study and given the opportunity to ask questions.

**Total Duration:** The entire procedure took approximately [time] minutes to complete.

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### **Data Analysis**

#### *Data Preparation*

Prior to analysis, data were [screened for accuracy, checked for missing values, examined for outliers]. [Describe any data cleaning procedures].

**Missing Data:** [Describe how missing data were handled: listwise deletion, pairwise deletion, imputation method]. [#] participants were excluded due to [reason: incomplete data, failed attention checks, outlier values], resulting in a final sample of [N= ].

**Assumptions Testing:** Data were examined for violations of statistical assumptions

including [normality, homogeneity of variance, linearity, independence]. [If violated]: [Describe how violations were addressed].

### *Statistical Analyses*

All analyses were conducted using [Software name and version, e.g., “SPSS Version 28.0,” “R Version 4.3.0,” “Python 3.11”].

**Descriptive Statistics:** Means, standard deviations, frequencies, and percentages were calculated for all variables.

### **Primary Analyses:**

#### **Research Question 1:** *[Restate research question]*

To address this question, [name of statistical test, e.g., independent samples t-test, ANOVA, correlation, regression] was conducted with [IV/predictor] as the [independent variable/predictor] and [DV/outcome] as the [dependent variable/outcome].

#### **Research Question 2:** *[Restate research question]*

[Describe analysis method and variables]

**Effect Size and Power:** Effect sizes were calculated using [Cohen’s d, eta squared, R<sup>2</sup>, odds ratio]. Post-hoc power analysis was conducted using [G\*Power, SPSS] and revealed power of [value] to detect [small/medium/large] effects.

**Statistical Significance:** Alpha was set at .05 for all analyses. [If applicable]: Bonferroni correction was applied to control for multiple comparisons, resulting in an adjusted alpha of [value].

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### **Qualitative Data Analysis (if applicable)**

**Transcription:** Audio recordings were transcribed verbatim by [who did transcription]. Transcripts were verified for accuracy by [verification method].

**Coding Approach:** Data were analyzed using [thematic analysis/grounded theory/content analysis/phenomenological analysis] following the procedures outlined by [Citation].

### **Coding Process:**

#### **Phase 1: Familiarization**

The research team read all transcripts multiple times to become familiar with the data.

#### **Phase 2: Initial Coding**

Two coders independently applied initial codes to [#] transcripts ([%] of the sample) to identify meaningful segments. [Software used: NVivo, MAXQDA, Atlas.ti, or manual coding].

#### **Phase 3: Theme Development**

Codes were organized into potential themes through team discussion. [#] themes emerged from the data.

#### **Phase 4: Theme Refinement**

Themes were reviewed and refined to ensure internal homogeneity and external heterogeneity.

#### **Phase 5: Defining Themes**

Final themes were defined and named, and representative quotes were selected.

**Inter-Rater Reliability:** To establish coding reliability, two independent coders analyzed [% or #] of transcripts. Inter-rater reliability was [excellent/good/moderate] (Cohen’s κ

= [value] OR percent agreement = [%]).

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### Ethical Considerations

This study was reviewed and approved by the [Institution Name] Institutional Review Board (IRB Protocol #[number]) on [date].

**Informed Consent:** All participants provided [written/electronic] informed consent prior to participation. Consent forms explained [study purpose, procedures, potential risks and benefits, confidentiality measures, voluntary nature, right to withdraw].

**Confidentiality:** To protect participant confidentiality, all data were [de-identified, assigned participant ID numbers, stored on password-protected computers, kept in locked filing cabinets]. Only members of the research team had access to identifiable data.

**[If applicable]:** Data were stored separately from identifying information, and a master list linking participant IDs to names was kept in a separate, secure location.

**Risk Mitigation:** [Describe any anticipated risks and how they were minimized]. **[If applicable]:** Participants were provided with a list of mental health resources.

**[If deception]:** The study involved temporary deception about [what was concealed]. This deception was necessary because [justification]. Participants were fully debriefed immediately after completing the study.

**Data Storage and Retention:** Data will be securely stored for [# years] per [institution/IRB/journal] requirements, after which they will be destroyed.

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### Limitations

Several limitations should be acknowledged:

**1. [Limitation Type, e.g., "Sampling Limitations"]**

**[Describe limitation].** For example: "The convenience sample of undergraduate students from a single university limits generalizability to other populations and age groups."

**2. [Limitation Type, e.g., "Measurement Limitations"]**

**[Describe limitation].** For example: "Reliance on self-report measures introduces potential social desirability bias and common method variance."

**3. [Limitation Type, e.g., "Design Limitations"]**

**[Describe limitation].** For example: "The cross-sectional design prevents causal inferences about the direction of relationships between variables."

**4. [Other Limitations]**

**[Additional limitations specific to your study]**

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## ☐ QUANTITATIVE RESEARCH EXAMPLE

**Research Question:** Does mindfulness meditation reduce stress among college students?

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### METHODOLOGY

#### Research Design

This study employed a quantitative experimental design using a randomized controlled trial (RCT) approach. The study utilized a between-subjects design with two groups: an intervention group that received mindfulness meditation training and a waitlist control group. The independent variable was group assignment (intervention vs. control), and the dependent variable was perceived stress as measured by the Perceived Stress Scale.

**Rationale:** This experimental design was chosen to establish causal relationships between mindfulness meditation practice and stress reduction while controlling for potential confounding variables through randomization.

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## **Participants**

### ***Sample Characteristics***

The sample consisted of N=120 participants (72 female, 45 male, 3 non-binary; M age = 20.3 years, SD = 1.8, range = 18-25). Participants were undergraduate students at a large public university in the Midwest United States. All participants were fluent in English and had no prior experience with formal meditation practice.

Participants identified as follows: - Race/Ethnicity: 65% White, 15% Hispanic/Latino, 12% Asian, 5% Black/African American, 3% Other - Year in School: 28% First-year, 35% Sophomore, 22% Junior, 15% Senior - Major: 42% STEM, 31% Social Sciences, 27% Humanities

### ***Sampling Method***

Participants were recruited using convenience sampling through university email listservs, campus flyers, and announcements in introductory psychology courses.

**Inclusion Criteria:** To be eligible, participants must have: 1. Been aged 18-25 years 2. Been enrolled as full-time undergraduate students 3. Reported moderate to high stress levels (PSS-10 score  $\geq 14$ ) 4. Had no prior formal meditation training

**Exclusion Criteria:** Participants were excluded if they: 1. Were currently receiving treatment for diagnosed anxiety or mood disorders 2. Were taking psychotropic medications 3. Had practiced meditation regularly ( $>1x/week$ ) in the past 6 months

**Response Rate:** Of 324 students who expressed interest, 156 met eligibility criteria, and 120 enrolled and completed the study, yielding a 77% participation rate among eligible individuals.

Participants received course credit or a \$25 Amazon gift card as compensation.

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## **Materials/Instruments**

### ***Perceived Stress Scale-10 (PSS-10)***

**Purpose:** This instrument measured perceived stress levels.

**Description:** The PSS-10 (Cohen & Williamson, 1988) is a 10-item self-report questionnaire that assesses the degree to which situations in one's life are appraised as stressful during the past month.

**Response Format:** Items are rated on a 5-point Likert scale ranging from 0 = "Never" to 4 = "Very Often".

**Scoring:** Four items are reverse-scored. Total scores are calculated by summing all items. Higher scores indicate greater perceived stress. The possible score range is 0 to 40, with scores of 0-13 considered low stress, 14-26 moderate stress, and 27-40 high stress.

**Psychometric Properties:** The PSS-10 has demonstrated strong reliability and validity. In the original validation study (Cohen & Williamson, 1988), internal consistency was good

(Cronbach's  $\alpha = .78$ ). In the current study, internal consistency was excellent at baseline ( $\alpha = .89$ ) and post-intervention ( $\alpha = .91$ ).

**Example Item:** "In the last month, how often have you felt nervous and stressed?"

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### ***Five Facet Mindfulness Questionnaire-Short Form (FFMQ-SF)***

**Purpose:** This instrument measured mindfulness as a manipulation check.

**Description:** The FFMQ-SF (Bohlmeijer et al., 2011) is a 24-item self-report questionnaire that assesses five facets of trait mindfulness: observing, describing, acting with awareness, non-judging of inner experience, and non-reactivity to inner experience.

**Response Format:** Items are rated on a 5-point Likert scale from 1 = "Never or very rarely true" to 5 = "Very often or always true".

**Scoring:** Some items are reverse-scored. Subscale scores are calculated by averaging items within each facet. Higher scores indicate greater mindfulness.

**Psychometric Properties:** The FFMQ-SF has shown good internal consistency in previous research ( $\alpha = .72-.92$  across subscales; Bohlmeijer et al., 2011). In the current study, overall internal consistency was good ( $\alpha = .85$ ).

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### ***Demographic Questionnaire***

Participants completed a demographic questionnaire assessing age, gender identity, race/ethnicity, year in school, major, and prior meditation experience.

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### ***Intervention Materials***

The mindfulness intervention utilized guided audio recordings (15-20 minutes each) from the "Mindfulness for Students" program developed specifically for college populations. Recordings covered body scan meditation, breath awareness, and loving-kindness meditation. Participants accessed recordings via a secure online platform that tracked completion.

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### **Procedure**

#### ***Data Collection Timeline***

Data were collected between September 15, 2024, and December 10, 2024.

#### ***Step-by-Step Procedure***

##### **Step 1: Recruitment and Screening**

Potential participants completed a brief online screening survey (5 minutes) assessing eligibility criteria. Those scoring  $\geq 14$  on the PSS-10 and meeting other inclusion criteria were invited to participate.

##### **Step 2: Baseline Assessment**

Eligible participants attended an initial laboratory session where they provided written informed consent. They then completed baseline measures (PSS-10, FFMQ-SF, demographics) via online questionnaire (approximately 15 minutes).

##### **Step 3: Random Assignment**

Following baseline assessment, participants were randomly assigned to either the



intervention group (n=60) or waitlist control group (n=60) using a computer-generated random number sequence. Randomization was stratified by baseline stress level (moderate vs. high) to ensure balanced groups.

#### **Step 4: Intervention Period (4 Weeks)**

**Intervention Group:** Participants received instructions to practice mindfulness meditation for 15-20 minutes daily, 5 days per week, for 4 weeks using the provided guided audio recordings. They received weekly reminder emails and could choose which specific meditation to practice each day. Practice was tracked via the online platform.

**Control Group:** Participants continued their normal routines without any intervention. They were offered the mindfulness program after completing the post-intervention assessment (waitlist).

#### **Step 5: Post-Intervention Assessment**

After 4 weeks, all participants returned to the laboratory and completed the PSS-10 and FFMQ-SF again (approximately 10 minutes). Intervention participants also completed a brief satisfaction survey about the program.

#### **Step 6: Debriefing**

All participants were debriefed about the study's purpose and findings. Control group participants were provided access to the mindfulness meditation program.

**Adherence:** Intervention participants completed an average of 16.3 meditation sessions (SD=4.2) out of 20 expected sessions (82% adherence rate). Participants completing <10 sessions (n=7) were excluded from analysis.

**Total Duration:** Excluding the 4-week intervention period, assessment sessions totaled approximately 25-30 minutes per participant.

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### **Data Analysis**

#### ***Data Preparation***

Prior to analysis, data were screened for accuracy, missing values, and outliers using SPSS 28.0. Seven participants in the intervention group were excluded due to poor adherence (<10 meditation sessions), and 4 control group participants were excluded due to incomplete post-intervention assessments, resulting in a final sample of N=109 (intervention n=53, control n=56).

**Missing Data:** Less than 2% of item-level data were missing. Missing scale items were handled using mean imputation when fewer than 20% of items on a scale were missing; cases with >20% missing items on any scale were excluded.

**Assumptions Testing:** Data were examined for violations of parametric test assumptions. Shapiro-Wilk tests indicated approximately normal distributions for all variables (all  $p > .05$ ). Levene's test confirmed homogeneity of variance across groups (all  $p > .05$ ). Visual inspection of Q-Q plots supported normality assumptions.

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#### ***Statistical Analyses***

All analyses were conducted using SPSS Version 28.0.

**Descriptive Statistics:** Means, standard deviations, and frequencies were calculated for all variables. Independent samples t-tests and chi-square tests confirmed successful randomization (no significant between-group differences at baseline on any demographic or outcome variable; all  $p > .05$ ).

#### **Primary Analyses:**

**Research Question 1:** Does mindfulness meditation reduce perceived stress compared to a waitlist control?

To address this question, a 2 (Group: intervention vs. control)  $\times$  2 (Time: baseline vs. post-intervention) mixed-design ANOVA was conducted with repeated measures on the time factor. The dependent variable was PSS-10 total score. The primary hypothesis predicted a significant Group  $\times$  Time interaction, with the intervention group showing greater stress reduction than controls.

**Effect Size and Power:** Effect sizes were calculated using partial eta-squared ( $\eta^2$ ). Post-hoc power analysis using G\*Power 3.1 indicated achieved power of .92 to detect medium effects ( $f=.25$ ) with the current sample size and alpha of .05.

**Statistical Significance:** Alpha was set at .05 for all analyses.

#### Secondary Analyses:

To examine mechanisms of change, Pearson correlations were calculated between change in mindfulness (FFMQ-SF scores) and change in stress (PSS-10 scores) within the intervention group.

Additionally, independent samples t-tests compared intervention completers ( $\geq 15$  sessions) versus partial completers (10-14 sessions) on stress reduction to examine dose-response relationships.

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#### Ethical Considerations

This study was reviewed and approved by the University Institutional Review Board (IRB Protocol #2024-0847) on August 15, 2024.

**Informed Consent:** All participants provided written informed consent prior to participation. Consent forms explained the study's purpose (examining stress reduction techniques), procedures (completing surveys and practicing meditation or being on a waitlist), potential risks (minimal—possible temporary emotional discomfort during meditation), benefits (learning stress management skills, compensation), confidentiality measures, voluntary nature, and right to withdraw without penalty.

**Confidentiality:** To protect participant confidentiality, all data were de-identified and assigned unique participant ID numbers. Data were stored on password-protected, encrypted computers accessible only to the research team. Consent forms with identifying information were stored separately in a locked filing cabinet in the principal investigator's office.

**Risk Mitigation:** Anticipated risks were minimal. Participants were informed they might experience temporary emotional discomfort during meditation but could discontinue at any time. All participants received a list of campus counseling resources. No adverse events were reported.

**Data Storage and Retention:** Data will be securely stored for 7 years per APA and university requirements, after which electronic files will be permanently deleted and paper documents will be shredded.

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#### Limitations

Several limitations should be acknowledged:

##### 1. Sampling Limitations

The convenience sample of undergraduate students from a single university limits generalizability to non-college populations, different age groups, and other geographic regions. The sample was predominantly White, limiting generalizability to more diverse populations.

##### 2. Self-Report Measures

Reliance on self-report questionnaires introduces potential social desirability bias, particularly for the intervention group who knew they were receiving the meditation training. Objective stress measures (e.g., cortisol levels) would strengthen future research.

### 3. Short Intervention Duration

The 4-week intervention period, while typical for initial efficacy studies, may be insufficient to establish long-term meditation habits. Longer-term follow-up assessments would determine whether effects persist.

### 4. Lack of Active Control

The waitlist control design doesn't control for attention, expectancy effects, or time spent in a structured activity. A stronger design would include an active control condition (e.g., relaxation without meditation, study skills training).

### 5. Adherence Variability

Although average adherence was good (82%), substantial variability existed (ranging from 50-100% of assigned sessions), which may have attenuated effect sizes. Future studies might implement strategies to enhance adherence.

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## □ QUALITATIVE RESEARCH EXAMPLE

**Research Question:** How do first-generation college students experience academic imposter syndrome?

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## METHODOLOGY

### Research Design

This study employed a qualitative phenomenological design to explore the lived experiences of first-generation college students with imposter syndrome. Phenomenology was chosen as it seeks to understand the essence and meaning of lived experiences from participants' perspectives (Moustakas, 1994).

**Rationale:** Given the limited research on imposter syndrome specifically among first-generation students, a qualitative approach was appropriate to generate rich, contextualized understanding of this phenomenon. The phenomenological framework allowed exploration of how students experience, interpret, and make meaning of imposter feelings in their unique context.

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### Participants

#### *Sample Characteristics*

The sample consisted of 15 participants (9 female, 5 male, 1 non-binary; M age = 20.6 years, range = 19-23). All participants were first-generation college students (neither parent held a 4-year college degree) enrolled as sophomores or juniors at a large public research university.

Participants identified as follows: - Race/Ethnicity: 5 Hispanic/Latino, 4 White, 3 Black/African American, 2 Asian, 1 Multiracial - Major: 6 STEM, 5 Social Sciences, 4 Humanities - Family Income: 11 reported "low income" (<\$50,000), 4 "middle income" (\$50,000-\$100,000) - All reported experiencing imposter feelings "frequently" or "very frequently"

#### *Sampling Method*

Participants were recruited using purposive sampling to ensure the sample included

individuals with direct experience of the phenomenon. Recruitment occurred through campus support programs for first-generation students, email announcements, and snowball sampling.

**Inclusion Criteria:** Participants must have: 1. Been first-generation college students 2. Been enrolled as sophomores or juniors (to ensure sufficient college experience) 3. Reported experiencing imposter syndrome or feelings of not belonging 4. Been willing to participate in a 60-90 minute interview

**Sample Size Justification:** A sample of 15 was determined sufficient for phenomenological research based on recommendations by Creswell (2013) who suggests 5-25 participants, and data saturation was achieved by interview 12 (no new themes emerged in final three interviews).

Participants received a \$30 gift card for their time.

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## **Materials/Instruments**

### ***Semi-Structured Interview Protocol***

An interview protocol was developed based on phenomenological interview techniques (Seidman, 2013) and literature on imposter syndrome. The protocol consisted of open-ended questions designed to elicit detailed descriptions of participants' experiences.

#### **Interview Domains:**

1. **Background and Context** (10 minutes)
  - Tell me about your background and path to college
  - What does being a first-generation student mean to you?
2. **Experiencing Imposter Syndrome** (20-30 minutes)
  - Describe a time when you felt like you didn't belong or weren't "good enough" in college
  - What triggers these feelings for you?
  - How do these feelings manifest? (thoughts, emotions, behaviors)
3. **Coping and Navigation** (15-20 minutes)
  - How do you deal with these feelings?
  - Have your experiences changed over time?
  - What helps? What makes it worse?
4. **Meaning and Impact** (15-20 minutes)
  - How have these experiences affected your academic journey?
  - What advice would you give to other first-generation students?
  - Is there anything else you'd like to share?

**Follow-up probes** (e.g., "Can you give me an example?", "What was that like for you?", "Tell me more about that") were used throughout to elicit rich detail.

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### ***Demographic Questionnaire***

Participants completed a brief questionnaire collecting: age, gender, race/ethnicity, year in school, major, parents' education levels, estimated family income, and self-rated frequency of imposter feelings.

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### ***Audio Recording Equipment***

Interviews were audio-recorded using a Sony ICD-UX570 digital voice recorder with an external lapel microphone to ensure high-quality audio for transcription.

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## **Procedure**

### *Data Collection Timeline*

Data were collected between February 2024 and May 2024.

### *Step-by-Step Procedure*

#### **Step 1: Recruitment and Screening**

Potential participants responded to recruitment materials by emailing the research team. The researcher replied with a brief screening survey confirming eligibility criteria and scheduled interviews with eligible participants.

#### **Step 2: Interview Preparation**

Prior to the interview, participants received an email with the informed consent document, overview of the interview process, and confirmation of date, time, and location. Interviews were conducted in a private, comfortable room in the university counseling center.

#### **Step 3: Informed Consent**

At the start of each interview, the researcher reviewed the informed consent document with the participant, emphasizing confidentiality, voluntary participation, right to skip questions or withdraw, and audio recording. After answering any questions, participants provided written consent.

#### **Step 4: Building Rapport**

The researcher spent 5-10 minutes building rapport through casual conversation about the participant's day, major, or campus experiences before beginning formal interview questions. This helped participants feel comfortable sharing personal experiences.

#### **Step 5: Semi-Structured Interview**

The researcher conducted interviews following the protocol while remaining flexible to follow participants' narratives. Interviews were conversational in tone while ensuring all protocol domains were covered. The researcher used active listening, empathic responses, and probing questions to encourage elaboration.

**Interviews lasted 60-90 minutes** (M=75 minutes).

#### **Step 6: Member Checking (Optional)**

After transcription, participants were emailed their interview transcripts and invited to review for accuracy, clarify statements, or add additional thoughts. Eight participants reviewed and confirmed their transcripts; none requested changes.

#### **Step 7: Demographic Questionnaire**

After the interview, participants completed the brief demographic questionnaire (5 minutes).

#### **Step 8: Debriefing and Resources**

Participants were thanked for their time and provided with campus resources for academic support and counseling. Given the potentially emotional nature of discussing imposter feelings, the researcher assessed participants' emotional state and ensured they were comfortable before leaving.

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### **Data Analysis**

#### *Transcription*

Audio recordings were transcribed verbatim by a professional transcription service (Rev.com). The researcher verified all transcripts for accuracy by listening to recordings

while reading transcripts. Non-verbal cues (e.g., [laughs], [long pause]) and verbal fillers were noted. Transcripts totaled 287 pages (double-spaced).

### ***Coding Approach***

Data were analyzed using Moustakas' (1994) modification of the Van Kaam method of phenomenological analysis. This systematic approach includes:

#### **Phase 1: Horizontalization**

The researcher read all transcripts multiple times to achieve immersion in the data, then listed every significant statement (horizon) relevant to experiencing imposter syndrome. This yielded 436 significant statements across the 15 transcripts.

#### **Phase 2: Reduction and Elimination**

Statements were examined to determine whether they: (a) contained a moment of the experience necessary for understanding it, and (b) could be abstracted and labeled. Overlapping, repetitive, or vague statements were eliminated. This reduction resulted in 89 invariant horizons (meaning units).

#### **Phase 3: Clustering Themes**

The 89 invariant horizons were clustered into related themes. The researcher organized meaning units into thematic categories based on their essence and connections. This process yielded 7 core themes.

#### **Phase 4: Validation**

Themes and their constituent horizons were checked against the complete transcripts to ensure they were: (a) expressed explicitly in the transcripts, (b) compatible with the transcripts, or (c) not inconsistent with the transcripts. Themes meeting these criteria were retained.

#### **Phase 5: Textural Description**

For each theme, the researcher constructed textural descriptions of "what" participants experienced, using verbatim quotes to illustrate each theme.

#### **Phase 6: Structural Description**

The researcher wrote structural descriptions of "how" the experience occurred—the contexts and conditions that influenced experiences of imposter syndrome.

#### **Phase 7: Synthesis**

Textural and structural descriptions were integrated into a composite description capturing the essence of the imposter syndrome experience for first-generation college students.

### ***Software***

Qualitative data management and coding were conducted using NVivo 14 (QSR International).

### ***Researcher Reflexivity***

The primary researcher is not a first-generation student but has experience with imposter feelings. Throughout data collection and analysis, the researcher kept a reflexive journal documenting assumptions, reactions, and interpretations to maintain awareness of potential biases and bracketing (setting aside) personal experiences.

### ***Trustworthiness***

Multiple strategies enhanced trustworthiness:

**Credibility:** - Member checking with participants - Peer debriefing with two doctoral students familiar with qualitative methods who reviewed codes and themes - Thick description providing rich context

**Dependability:** - Detailed audit trail documenting all decisions - Systematic coding process following established phenomenological methods

**Confirmability:** - Reflexive journaling to track researcher influence - Quotes used extensively to ground themes in participant voices

**Transferability:** - Rich, detailed descriptions allowing readers to assess applicability to their contexts

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## **Ethical Considerations**

This study was reviewed and approved by the University Institutional Review Board (IRB Protocol #2024-0156) on January 10, 2024.

**Informed Consent:** All participants provided written informed consent. The consent process emphasized the voluntary nature of participation and that participants could skip questions or withdraw at any time without penalty.

**Confidentiality:** To protect confidentiality: - All participants were assigned pseudonyms used in transcripts and reporting - Identifying details (e.g., specific majors, hometowns) were removed or generalized in quotes - Audio files and transcripts were stored on encrypted, password-protected computers - Only the research team had access to identifiable data

**Psychological Risk:** Given the potentially sensitive nature of discussing feelings of inadequacy and not belonging, several safeguards were implemented: - Participants were informed about the emotional nature of interview topics during consent - The researcher, trained in empathic interviewing, monitored participants' emotional states - All participants received a resource list for campus counseling and support services - The researcher followed up by email 2-3 days post-interview to check on participants' wellbeing

No participants reported lasting distress, though three became tearful during interviews. The researcher paused interviews, offered support, and confirmed participants' willingness to continue.

**Compensation:** To minimize coercion, compensation (\$30) was modest and participants were informed they would receive full compensation even if they withdrew early.

**Data Retention:** Data will be securely stored for 7 years, after which audio files will be permanently deleted and paper documents will be shredded.

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## **Limitations**

Several limitations should be acknowledged:

### **1. Sample Characteristics**

Participants were volunteers from a single university who self-identified as experiencing imposter syndrome, potentially representing more severe cases or those more willing to discuss these experiences. Additionally, the sample was relatively small and may not represent the full diversity of first-generation student experiences.

### **2. Researcher Subjectivity**

Despite reflexivity practices, the researcher's interpretations are inherently subjective and influenced by their own experiences and worldview. Other researchers might emphasize different aspects or construct slightly different themes from the same data.

### **3. Retrospective Self-Report**

Participants described past experiences from memory, which may be subject to recall bias or reinterpretation over time. Real-time data collection methods (e.g., daily diaries) would provide different perspectives.

#### 4. Cross-Sectional Design

The single-interview design captured experiences at one point in time. Longitudinal designs following students across multiple years would reveal how imposter experiences evolve.

#### 5. Social Desirability

Although the researcher worked to establish rapport and trust, participants may have shaped their narratives in socially desirable ways or withheld experiences they felt uncomfortable sharing.

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## □ MIXED METHODS EXAMPLE

**Research Question:** What is the relationship between perfectionism and academic burnout, and how do students experience this relationship?

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### METHODOLOGY

This study employed an explanatory sequential mixed methods design (Creswell & Plano Clark, 2018), consisting of two distinct phases: (1) a quantitative phase examining relationships between perfectionism and burnout, followed by (2) a qualitative phase exploring students' experiences to help explain quantitative findings.

**Rationale:** Mixed methods were chosen because quantitative analysis can identify associations between perfectionism and burnout, but qualitative inquiry is needed to understand the mechanisms, contexts, and lived experiences underlying these relationships. The sequential explanatory design allows qualitative findings to elaborate, explain, and provide context for quantitative results.

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#### Phase 1: Quantitative Component

##### *Participants*

N=245 undergraduate students (168 female, 72 male, 5 non-binary; M age=20.1 years, SD=1.6) participated in the quantitative phase. Participants were recruited through campus-wide emails and announcements in courses.

**Inclusion:** Enrolled full-time undergraduate students at least 18 years old.

##### *Measures*

**Frost Multidimensional Perfectionism Scale (FMPS):** 35-item measure assessing six dimensions of perfectionism ( $\alpha=.91$  in current study).

**Maslach Burnout Inventory-Student Survey (MBI-SS):** 16-item measure assessing exhaustion, cynicism, and reduced efficacy ( $\alpha=.87$ ).

**Academic Stress Scale:** 10-item measure of academic stressors ( $\alpha=.83$ ).

**Demographics:** Age, gender, year in school, GPA, major.

##### *Procedure*

Participants completed an anonymous online survey (20 minutes) via Qualtrics. After providing informed consent, they completed all measures in randomized order, followed by



demographics.

### ***Data Analysis***

**Statistical Analyses:** Conducted using SPSS 28.0. - Descriptive statistics for all variables - Pearson correlations between perfectionism dimensions and burnout - Hierarchical multiple regression predicting burnout from perfectionism dimensions, controlling for demographics - Moderation analysis testing whether academic stress moderates perfectionism-burnout relationships

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## **Phase 2: Qualitative Component**

### ***Participant Selection***

Following quantitative analysis, purposive sampling was used to select 20 Phase 1 participants for in-depth interviews. Selection criteria aimed for maximum variation in perfectionism profiles: - High perfectionism, high burnout (n=7) - High perfectionism, low burnout (n=7) - Low perfectionism, varying burnout (n=6)

Selected participants were emailed invitations; 18 agreed to participate (2 declined due to scheduling).

### ***Interview Protocol***

Semi-structured interviews (45-60 minutes) explored: 1. Experiences with academic standards and expectations 2. How they respond to academic challenges and setbacks 3. Experiences of stress, exhaustion, or burnout 4. Coping strategies and supports 5. Reflections on their quantitative survey responses (shown selected results)

### ***Procedure***

Interviews were conducted in-person or via Zoom based on participant preference, audio-recorded, and transcribed verbatim. Participants received \$25 compensation.

### ***Qualitative Analysis***

Thematic analysis (Braun & Clarke, 2006) was conducted using NVivo 14: 1. Familiarization through reading all transcripts 2. Initial coding by two independent coders 3. Theme development through team discussion 4. Theme refinement and definition 5. Selection of representative quotes

Inter-rater reliability: Cohen's  $\kappa=.82$  (substantial agreement).

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## **Integration of Quantitative and Qualitative Findings**

Integration occurred at two points:

**1. Connecting (Participant Selection):** Quantitative results informed purposive sampling for qualitative interviews, ensuring variation in key variables.

**2. Merging (Analysis and Interpretation):** Qualitative themes were compared with quantitative findings to: - Explain unexpected quantitative results - Provide examples and context for statistical relationships - Identify mechanisms not captured in surveys - Generate hypotheses for future testing

A joint display (table) was created showing how qualitative themes related to quantitative variables and results.

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## **Ethical Considerations**

The study was IRB-approved (Protocol #2024-0423). All participants provided informed consent for both phases. Phase 2 participants consented separately for interviews. Confidentiality was maintained through assignment of ID numbers and secure data storage.

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### Limitations

- 1. Single Institution:** All participants were from one university, limiting generalizability.
  - 2. Self-Selection:** Phase 2 participants volunteered, potentially representing those most comfortable discussing perfectionism and burnout.
  - 3. Timing:** The 4-week gap between quantitative and qualitative phases meant participants' experiences may have changed.
  - 4. Social Desirability:** Both self-report surveys and interviews may be affected by social desirability bias.
- 

## ☐ METHODOLOGY WRITING CHECKLIST

Before submitting, ensure your methodology section includes:

**Research Design:** - ☐ Type of research clearly stated (quantitative/qualitative/mixed) - ☐ Specific design named (experimental, correlational, phenomenological, etc.) - ☐ Rationale for design choice explained

**Participants:** - ☐ Sample size (N=) reported - ☐ Demographics described (age, gender, relevant characteristics) - ☐ Sampling method explained - ☐ Inclusion/exclusion criteria listed - ☐ Recruitment method described - ☐ Response/participation rate reported (if applicable) - ☐ Compensation mentioned

**Materials/Measures:** - ☐ All instruments described in detail - ☐ Number of items reported - ☐ Response format explained - ☐ Scoring procedures described - ☐ Psychometric properties reported ( $\alpha$  values) - ☐ Example items provided - ☐ Citations for published measures included

**Procedure:** - ☐ Step-by-step description of what happened - ☐ Timeline/duration provided - ☐ Order of measures/activities specified - ☐ Enough detail for replication

**Data Analysis:** - ☐ Software/tools specified - ☐ Specific statistical tests/analyses named - ☐ Variables in analyses clearly identified - ☐ Alpha level stated - ☐ Effect size measures mentioned

**Ethical Considerations:** - ☐ IRB approval stated with protocol number - ☐ Informed consent described - ☐ Confidentiality measures explained - ☐ Risks and risk mitigation addressed - ☐ Data storage and retention described

**Limitations:** - ☐ At least 3-4 limitations identified - ☐ Limitations are specific to this study - ☐ Impact of limitations on findings discussed

**Writing Quality:** - ☐ Past tense for what you did - ☐ Present tense for general procedures - ☐ Clear, professional writing - ☐ Appropriate technical terminology - ☐ No vague language ("subjects," "various measures") - ☐ Subheadings used for organization

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## ☐ COMMON METHODOLOGY MISTAKES TO AVOID

### ☐ MISTAKE 1: Too Vague

Wrong: "Participants completed some surveys about stress."

Right: "Participants completed the 10-item Perceived Stress Scale (PSS-10; Cohen & Williamson, 1988), which assesses perceived stress over the past month using a 5-point Likert scale (0=Never to 4=Very Often). The PSS-10 demonstrated excellent internal consistency in the current study (Cronbach's  $\alpha=.89$ )."

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#### ☐ **MISTAKE 2: Missing Key Details**

Wrong: "Participants were randomly assigned to groups."

Right: "Participants were randomly assigned to either the intervention group (n=30) or control group (n=30) using a computer-generated random number sequence created in advance by a researcher not involved in data collection, ensuring allocation concealment."

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#### ☐ **MISTAKE 3: No Justification**

Wrong: "This study used a correlational design."

Right: "This study used a correlational design because the goal was to examine naturally occurring relationships between variables rather than manipulate them experimentally, and random assignment was not feasible given the nature of the individual difference variables under investigation."

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#### ☐ **MISTAKE 4: Inconsistent Tense**

Wrong: "Participants completed surveys. Data will be analyzed using SPSS."

Right: "Participants completed surveys. Data were analyzed using SPSS." (all past tense)

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#### ☐ **MISTAKE 5: Insufficient Detail for Replication**

Wrong: "Participants did meditation for several weeks."

Right: "Participants practiced mindfulness meditation for 15-20 minutes daily, 5 days per week, for 4 weeks using provided guided audio recordings (body scan, breath awareness, loving-kindness). Practice was tracked via an online platform."

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#### ☐ **MISTAKE 6: Missing Psychometric Information**

Wrong: "Participants completed the Depression Scale."

Right: "Participants completed the Beck Depression Inventory-II (BDI-II; Beck et al., 1996), a 21-item self-report measure of depression severity ( $\alpha=.91$  in the current sample)."

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#### ☐ **MISTAKE 7: No Limitations Section**

Every methodology should acknowledge limitations! Common limitations include: - Sampling issues (convenience sample, single institution) - Design constraints (cross-sectional, no control group) - Measurement issues (self-report, social desirability) - Generalizability concerns

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## ☐ **QUICK REFERENCE: METHODOLOGY BY DISCIPLINE**

### **Psychology/Social Sciences:**

Focus on: Measures' psychometric properties, detailed procedures, psychological constructs, standardized instruments

### **Natural Sciences:**

Focus on: Equipment specifications, materials, procedures in extreme detail, control variables, environmental conditions

### **Education:**

Focus on: Instructional methods, participant characteristics, classroom context, assessment tools, fidelity of implementation

### **Business/Management:**

Focus on: Organizational context, sampling from companies, industry variables, data access procedures

### **Health Sciences:**

Focus on: Diagnostic criteria, medical measurements, safety protocols, clinical significance, patient populations

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**Use this template to write clear, comprehensive, replicable methodology sections that meet academic standards!** ☐ ☐