Research Questions VS. Hypotheses

Rather than the finding of answers, research is primarily focused on the asking of questions. This may sound rather strange at first, but the easy way to understand this is to remember the old axiom: GIGO (garbage in, garbage out). In other words, if you ask a stupid/meaningless/irrelevant question, then you will get an equally stupid/meaningless/irrelevant answer. **Scientific questions must be testable.**

When writing a research paper, the research question or hypothesis is the spine upon which everything else depends. To continue this metaphor, the literature review and the discussion sections are the brains, the rationale is the arms, and the methods and results sections are the legs. Without the spine, everything falls apart. The research question or hypothesis ties everything together and directs inquiry in both directions (the past → literature review and the future → your research now and in the future). It is important to give some thought to how research questions and hypotheses are constructed and formatted.

**Research Questions**

Research questions are generally used for exploratory research, when researchers have less past knowledge to draw on in making predictions about the possible relationships between variables. **Both research questions and hypotheses** must include three things: 1) a specific population, 2) a specific independent variable, and 3) a specific dependent variable. The more specific the question asked, the better (clearer, more focused, easier to understand) the research project will be.

When the independent variable is *nominal* (divided into categories like gender is divided into male and female) the research question asks whether there is a difference between A (the first category of the nominal independent variable) and B (the second category of the independent variable) with respect to C (the dependent variable). RQ₁ below is an example of this.

**RQ₁:** Do male and female undergraduate athletes differ in their use of genital related profanity?

When the independent variable is ordered (measured in sequenced numbers using for example a Likert Scale) the research question asks whether there is a relationship between X (the independent variable) and Y (the dependent variable). RQ₂ below is an example of this.

The following example of a research question is from a proposed study of civility among undergraduate sports team members. Do you think RQ₁ (above) and/or RQ₂ (below) could be improved?

**RQ₂:** Is there a relationship between frequency of genital related profanity use and self-reported player competitiveness?
Hypotheses

A hypothesis is a formal statement predicting an outcome of the relationship between two or more variables. When a hypothesis simply predicts a relationship between variables without specifying the nature of the relationship it is called a two-tailed hypothesis. For example:

H₁: Men and women self-disclose differently.

If the hypothesis predicts the specific nature of the relationship, it is called a one-tailed hypothesis. For example:

H₂: Men self-disclose less than women.

A hypothesis for a nominal (categorical) independent variable predicts the nature of the difference between the two (or more) categories of the independent variable. It takes the form: A (the first category of the nominal independent variable) will be greater (or less) on C (the dependent variable) than will B (the second category of the nominal independent variable). Some examples:

H₁: Male and female undergraduate athletes differ in their use of genital related profanity.

H₁a: Male undergraduate athletes are more likely to use male genital related profanity when talking about teammates than female undergraduate athletes.

H₁b: Female undergraduate athletes are more likely to use male genital related profanity than female genital related profanity when referring to teammates.

A hypothesis for an ordered independent variable specifies the nature of the relationship between the independent and dependent variables. For example:

H₂: As player competitiveness increases, use of genital related profanity increases among undergraduate male athletes.

Essentially, one uses a Research Question when there is little prior research to draw on and thus the proposed relationship between variables is less supported and more tenuous. Hypotheses are used when an area of research is more established and there is a higher degree of certitude that a proposed relationship between variables approximates truth. The basic structure of RQ's and H's is the same except that RQ's are formulated as questions and H's are written as statements. RQ's and H's are always separated from the main body of text. RQ's and H's link prior research with the current research proposed in this study. A well formulated (specific, exact, well thought out) RQ and/or H is essential for high quality research.
Some Common RQ and H Formats

RESEARCH QUESTIONS

RQ₁: What is the effect of ________________ on ________________?

RQ₂: What is the effect of ________________ versus ________________ on ________________?

RQ₃: What is the relationship between ________________ and ________________?

RQ₄: Does ________________ have a significant effect on ________________?

RQ₅: Is there a significant correlation between ________________ and ________________?

RQ₆: What is the best predictor of ________________?

HYPOTHESES

H₁: ________________ produces a significant increase in ________________.

H₂: ________________ correlates significantly/positively/negatively with ________________.

H₃: As ________________ increases/decreases, ________________ increases/decreases.

H₄: Type of ________________ (________ vs. ________) significantly affects ________________.

H₅: ________________ predicts more of the variance in ________________ than ________________.