



# **The Canadian Psychological Association (CPA) 2<sup>nd</sup> Annual High School Science Awards**

2nd Annual

## Canadian Psychological Association High School Science Awards

Additional information for Teachers and Students

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## Evaluation process

- 1) Submit your abstract by April 11, 2012 (after having conducted all or the majority of the study).
- 2) You will be evaluated on the following aspects of the abstract:
  - Well organized and well written,
  - Creativity of the project,
  - Demonstrate a good understanding of a psychological problem or concept,
  - Quality of methodology,
  - Analysis and discussion

Winners will be notified April 25, 2012 by email. If you are chosen as a winner or a runner-up, you will be asked to present your psychology science project at the Canadian Psychological Association's 73<sup>rd</sup> annual convention in Halifax, Nova Scotia.

## What is an abstract?

An abstract is a short summary of your psychology science project.

Word length = 200-250 words

## What do I include in my abstract?

- 2-3 sentences for the *Introduction* (background on topic, purpose of research project)
- 1-2 sentences for the *Method*; briefly describe participants, type of study (survey, interview, observation, etc.)
- 1-2 sentences for the *Results* (highlight the main findings)
- 1-2 sentences for the *Discussion* (highlight the meaning of the findings and importance)

\*Abstracts are structured in the same order as a research paper or presentation.

\*Write a rough draft of your abstract. Try to write a few sentences summarizing each section of your research project. Once you have a rough draft, you can edit for length and clarity.

## How to get started on your psychology science project:

- 1) *Choose a topic* in the field of psychology (e.g., attitudes, behavior change)
- 2) *What do you want to know about the topic that would be of interest?*
- 3) *Choose the type of research study* that matches the question.
  - Simple experiment (cause-effect between variables) or Correlational study (relationship between variables)
    - o Longitudinal research (long-term research, multiple points of data collection across time)
    - o Cross-sectional research (data collection at one point in time)
  - Descriptive: Case study (close account of one person's experiences) or Interviews (ask multiple people, either individually or as a group, in-depth questions about your topic)
- 4) *Choose your method for data collection*: observation, self-report (surveys, interviews)
- 5) *Collect and analyze your data* (options noted here)
  - Report frequencies (totals, percentages)
  - Report averages (mean, median, standard deviation, range)
  - Report differences between groups (t-test, ANOVA, etc.)
  - Report themes or stories (for descriptive studies only)

## What should you include for the presentation?

*Also known as, "what are the components of a basic psychology science project?"*

If you are selected to present at the CPA convention, you will be asked to create a 10-minute presentation (with 5 minutes for Q&A)

### Introduction

Provide *background information* on your topic,

State your *hypothesis*,

Provide a *rationale* (why conduct this study?)

### Methods

*Participants*; who were they? (age, gender, other relevant information)

*Measures*; what did you use to conduct your study? (survey, observation, test case, interview);

*Procedure*; how did you conduct the research project? (general and brief step by step process)

## Results

*Analysis*; what analyses did you use on your data? (e.g., frequency, means, t-test, coded the data and established themes [for qualitative data only], etc.)

*Findings*; clearly present the results

## Discussion

*Interpret* the results; what do your findings mean?

Discuss the *implications*; what impacts might the results have? (on the participants, community, society); why might the findings be important to know?

Discuss *future directions* and make *general conclusion*; what should future studies do to build on what you've found?

## Glossary of terms

**Experiment:** testing a cause-effect relationship between two variables

**Hypothesis:** an educated guess about how your results will turn out

**Correlational study:** measurement of two or more variables to find relationships among them

**Descriptive study:** describe the behavior of individual(s) without specifically investigating the relationships between variables

**Variable:** a measured construct that can vary or change.

*Independent variable:* causes an effect on another variable

*Dependent variable:* changes as a result of another variable

**Observation:** look at and write down the behavior of interest as you see it happening

**Self-report:** people are asked to rate or describe their own behavior

**Qualitative data:** Often seen in the form of words. Examples include participants' verbal responses to interview questions (which can be recorded and transcribed for analysis), or participants' written responses to open-ended survey questions (usually paragraph-style responses)

**Quantitative data:** Often seen in the form of numbers. Examples include scale ratings, scores on a test, etc.

**Statistical significance:** We label results as statistically significant if the probability is less than 5% that the data could have come out as they did if the hypothesis was wrong. Statistical analyses (e.g., t-test, ANOVA, etc.) provide a test statistic that is characterized by a  $p$ -value, which is the indication that your results are statistically significant (typically the desired outcome) or not statistically significant (no differences between groups). Usually, the desired  $p$ -value is less than .05.

## Online Resources

Introduction to research using statistics: <http://www.statcan.gc.ca/edu/power-pouvoir/toc-tdm/5214718-eng.htm>

Introduction to statistics: <http://davidmlane.com/hyperstat/>

Online simulations of statistical analyses (primarily using SPSS, a stats program):  
<http://www.teachpsychscience.org/default.asp>

Calculating basic stats by hand: <http://anothermathgeek.hubpages.com/hub/How-to-calculate-simple-statistics>

Sampling: <http://christoss1959.hubpages.com/hub/Statistics-for-non-statisticians-Sampling-and-randomization>

Using Excel for descriptive statistics: <http://drax.hubpages.com/hub/How-to-Use-the-Excel-Descriptive-Statistics-tool>

Types of data: <http://hassam.hubpages.com/hub/Types-Of-Statistical-Data>

Hypothesis testing (What is a hypothesis?): <http://christoss1959.hubpages.com/hub/Statistics-for-non-statisticians-Hypothesis-testing>

Basic terms in statistics (mean, likelihood): <http://marchris.hubpages.com/hub/Basic-Terms-in-Statistics>

Basic terms in statistics part 2 (median, mode, variance, standard deviation):  
<http://marchris.hubpages.com/hub/Basic-Terms-in-Statistics>

More hand calculations of basic statistical analyses (with examples):  
[https://controls.engin.umich.edu/wiki/index.php/Basic\\_statistics:\\_mean,\\_median,\\_average,\\_standard\\_deviation,\\_z-scores,\\_and\\_p-value#Example\\_by\\_Hand](https://controls.engin.umich.edu/wiki/index.php/Basic_statistics:_mean,_median,_average,_standard_deviation,_z-scores,_and_p-value#Example_by_Hand)

## Ressources en ligne française

Information au sujet des données et statistiques: <http://www.statcan.gc.ca/edu/power-pouvoir/toc-tdm/5214718-fra.htm>

Comprendre les concepts statistiques: <http://www.statcan.gc.ca/pub/12-593-x/2007001/4124941-fra.htm>

La demarche scientifique: [http://st.creteil.iufm.fr/reperes/demarche\\_scientifique.htm](http://st.creteil.iufm.fr/reperes/demarche_scientifique.htm)

Petit traité de statistiques, utilisant Excel: <http://tumor.free.fr/M2RpolyStats.htm>

Exercice pour pratiquer en Excel: <http://www.admexcel.com/>

Instructions pour calculer la moyenne et l'écart-type en Excel (document attaché)

Information au sujet de la demarche scientifique (document attaché, ppt)