

Unit 2

Scientific Methods: How Psychologists Do Research

Overview

In Unit 1, close attention was paid to the eight characteristics of the lifespan perspective. Psychological development across the human life span is regarded as (1) lifelong, (2) multidimensional, (3) multidirectional, (4) plastic, (5) multidisciplinary, (6) contextual, (7) involving growth, and (8) as being associated with maintenance and regulation of loss. The discussion in Unit 1 identified the three domains of development: physical, social and cognitive, and this was followed by a critical review of the four major groups of developmental theories: psychoanalytic theories, learning theories, cognitive theories and biological based theories. The contributions of some of the major developmental psychologists (Sigmund Freud, Erik Erikson, John Watson, Ivan Pavlov, Albert Bandura, Jean Piaget and Lev Vygotsky) were detailed. The contributions of these authors can be found in Boyd and Bee (2012) *Lifespan Development*, Chapter 2. Unit 1 provided an insight into how psychologists do research. For example, developmental psychologists who wish to examine the long-term effects of genetics versus environmental factors on individuals sharing the same genetic structure could undertake ‘twin studies’ particularly when combined with a **longitudinal** design. Collectively, these methods shed light on the effects of both environmental and genetic factors on the cognitive, social and physical development of twins during several stages in their life.

Unit 2 builds on the foundational material presented in Year 1 PSYC 1000 and in Unit 1 PSYC 2015. Unit 2 speaks to the competencies that are associated with this course and in particular, research. For instance, competency **YDWCYP0413 ‘Undertake research activities to support programme development’** requires you be supplied with the knowledge, skills-set and tools to be able to implement intervention and to report empirical data. Researchers must ensure that their data collection methods are conducted in line with their stipulated design and code of ethics. At the end of this unit you are expected to know – from your reading of selected scientific articles and from the guidance provided – how to organize, analyze, and present data that you collect as part of a mini-research project. Official reports and scientific publications stipulate the written presentation format which includes providing answers to your research questions or hypotheses and outlining the contributions and limitations of your study. Throughout the research process there should be an awareness that cultural sensitivities influence all interactions. You would realize from the expectations attached to competency YDWCYP4013 that there is a major pragmatic question. How does one know which method is the best choice for data collection? Which method will facilitate the acquisition of relevant and reliable information to either answer the research question or to inform policy making? Answers are provided by analyzing and critically reviewing published peer-reviewed articles as these studies offer guidance regarding best practice when undertaking research.

An important factor to consider when designing a study is the theoretical framework that guides the proposed study. Developmental psychological theories were outlined and critically

evaluated in Unit 1 for your consideration and researchers must anchor their research in an identifiable theoretical perspective. The focus in Unit 2 is to outline how psychologists undertake research primarily through activities that encourage you to read, reflect upon and critically evaluate a selection of peer-reviewed papers. The tenets of learning theories identified in Unit 1 will help you to successfully navigate Unit 2. In order to demonstrate to you what is expected in course assignments and tutorial discussions, a selection of relevant and recently published articles in the *Journal of Developmental Psychology* will be discussed and analysed as models of what constitutes a ‘good research paper’. Further support and guidance will be provided from your e-tutor during your tutorial sessions.

A multi media approach is adopted in which the text material is reinforced through visual material such as YouTube videos. These videos will be labeled ‘viewing activities’ and these activities are designed to provide the context for you to reflect on, interact with, and to complete the revision questions documented in the unit. Unit Two comprises two sessions. In Session 2.1 there will be a brief recap of the salient points covered in PSYC 1000 that relate to research methods, ethical considerations when undertaking research, and how to critique a published study. This is necessary because in Session 2.2 you will be presented with three scientific psychology articles and guided through a critique of these papers. The coverage areas in Unit 2 are designed to develop your competencies for YDWCYP0413, YDWCYP0503 and YDWCYP0744. Session 2.2 concludes with a brief discussion of the format for writing a scientific report as outlined by the American Psychological Association (APA). These tips will be very helpful in the long term for your professional duties. Please remember that the concepts written in bold font are defined in the Glossary of Terms which appears at the end of the unit. Essential unit readings are located in the Unit 2 folder, also in the Learning Exchange.

The skills set and knowledge-based competencies for Unit 2 are listed below.

Competencies/Skills Lined to Youth Development Work

1. YDWCYP0413: Undertake research activities to support programme development
2. YDWCYP0503: Work with youth with behavioural problems
3. YDWCYP0744: Design, develop and support implementation of programmes to enable young people to address their circumstances.

Key Concepts in Unit 2: research design; method; sample; ethics; critique; scientific method; cross-sectional design; longitudinal design; sequential design; life history; periods of development; conceptions of age; ecological theory; twin studies; Intelligence Quotient; biological age.

Structure of the Unit

Unit 2 is divided into two sessions and will cover the following topics:-

Session 2.1: Summary of Research Designs, Methods and Ethics in the Scientific Process

- Research design options.
- Review of psychological research methods from PSYC 1000.
- Additional research options: life history record, Oxford Baby Lab, twin research, descriptive method, standardized tests, physiological measures.
- Important variables to consider in developmental psychological research – conceptions of age, periods of development.

Session 2.2: How psychologists do research: Case studies of three scientific articles listed in the unit and references at the end of the unit.

- How to critique a published article
 - Are the purposes explicitly stated?
 - Are the research questions or hypotheses clearly stated?
 - Are the theoretical frameworks and their underlying assumptions made evident?
 - Is the design of the study clearly stated?
 - Did the researcher interpret the data and did the findings confirm or disconfirm the research questions and/or hypotheses?
- Summary of APA guidelines on how to write a report or scientific article.

Unit Objectives

By the end of this unit you should be able to:

1. Link developmental theories presented in Unit one to compatible research methods in Unit 2.
2. Outline and explain the general research process for deriving scientific facts about human behaviour.
3. Identify and summarize the main points of the scientific readings identified in the unit.
4. Outline the merits and demerits of various designs and research methods used by psychologists.
5. Explain, using suitable examples, why ethical considerations are relevant to critiquing a scientific article based on methodological soundness and rigor.
6. Apply knowledge of principles of developmental psychology explored in Unit 2 to solve/address practical issues involving youth development work.
7. Write a report of a scientific empirical study that includes a summary and critique.

Session 2.1: Summary of Research Designs, Methods, and Ethics in the Scientific Process

Overview

The aim of this session is to help you remember some of the core research designs and research methods that are widely used by developmental psychologists. This is in preparation for the discussion of three case studies of published psychological reports in Session 2.2. A clear understanding of research designs, methods and research ethics is necessary because empirical studies, including those related to youth issues, must follow precise steps in the scientific process. This process facilitates critical evaluation of the study by peers in the scientific community, readers can follow the reasoning and rationale for the study, and, most importantly, other psychologists can replicate the study by following the step-by-step process documented in the various articles.

The core research designs: **cross-sectional design**, **longitudinal design** and **sequential design** were documented in your first year course PSYC 1000 and also mentioned in Unit 1 of PSYC 2015. The most popular research methods that are used to evaluate changes in the lifespan are naturalistic observations, laboratory observations, experiments, simulation or role playing techniques, case studies, surveys, and correlation studies. You should recall that the discussion of the four groups of psychological theories outlined in Unit 1 – namely cognitive theories, learning theories, behavioural theories and biological theories – hinted at the relevant methods that are associated with these theories. Unit 2, Session 2.1 presents additional methods used by developmental psychologists and researchers using a life-span theoretical framework. These research methods include life history record, descriptive research, physiological measures, and experiments. Examples of experiments undertaken during specific periods of development are those undertaken with toddlers and babies in Oxford University's Baby Lab. Longitudinal research design is outlined in more detail below but an example is the one conducted to assess the influence of nature versus nurture on the development of twins. Twins who have been reared apart are evaluated at different stages of their development for progress in physical, social and cognitive domains.

Session 2.1 concludes with an insight into key variables of interest that should be mentioned and measured when undertaking any research using a lifespan perspective. These key variables include age of the subject, domains of development and stages of development. It is crucial that you bear in mind that scientists do not regard a specific method as being either the 'right' or the 'wrong' methodological approach for studying human behaviour. The choice of research method is dependent upon the rationale for undertaking the study, the objectives of the study, the time frame allocated to complete the study, and most importantly the budget allocated for conducting and reporting the study. To illustrate why research, needs to be well designed and to adhere to established scientific principles and practices, you are encouraged to complete the viewing activities before moving on to other sub-sections.

Learning Objectives

By the end of this session you should be able to:

1. Describe and critically evaluate the main designs available for data collection.
2. Identify research methods that are available to psychologists for investigating human behaviour.
3. Define the concept 'sample', explain the role of sampling in the scientific process and identify the pitfalls of sampling
4. Relate research designs and methods to the scientific inquiry of specific social problems and psychological issues.
5. Develop your ideas about how youth policy research can be undertaken.
6. Recognize that the choice of research method is related to the nature of the study and the focus of the inquiry.
7. Elaborate on the places (public, private and quasi public) that represent research sites for psychologists.

Research Designs

The discussion of research designs will be followed by a review of research methods and culminate in an evaluation of the ethical standards that are necessary to ensure best practice when undertaking scientific studies. The viewing activities offer material for reflection and review.

Learning activity 2.1

An overview of research designs is available from the YouTube video 'Lifespan research: Cross sectional and longitudinal' at the hyperlink below.

Headlessprofessor. (2009, Aug 5). Lifespan research: cross sectional & longitudinal. [Video file]. Retrieved from

http://www.youtube.com/watch?v=aKEiWLxQgiI&playnext=1&list=PL5846ADB9D884EDD0&feature=results_main

As you watch the video try to identify the difference between cross sectional and longitudinal designs and answer the questions below.

1. Briefly describe the core features of cross sectional research (100 words).
2. Using UWilinC, the unit notes or notes from the reading folder, state one study that was conducted using a cross sectional design.
3. Critically evaluate (i.e. give the strengths and weaknesses of) longitudinal studies (200 words).
4. Using UWilinC, the unit notes or notes from the reading folder, state one study that was conducted using a longitudinal design.

This assignment is due by the end of Week 3.

The information from PSYC 1000 will be recapped and added to the material presented in Viewing Activity 2.1. There are three primary research designs that developmental scientists rely upon to investigate changes across the lifespan: cross-sectional design, longitudinal design and sequential design. Each of these is examined in turn.

Cross sectional designs study different groups of people of different ages. Thisted (2006) identified the following advantages of cross-sectional designs. First, it is less expensive and easier to conduct than a longitudinal study because no follow-up is required; hence there is a reduction in research costs. Second, this design affords good control over the measurement process. Third, the design can maximize completeness of key data, compared to a retrospective study; that is, asking subjects to reflect on events in the past. Fourth, cross-sectional designs have greater control over precision of estimates of the population in subgroups. For example, a sample that reflects a cross-section of society should take into account the characteristics of different groups in the wider community or the national population (e.g. age groups, sex, ethnic groups, employment status). Fifth, data collection using this design can often be accomplished as secondary data analysis. *Secondary data* represent data collected by someone else and for reasons that may be either the same or different from the rationale for the study being undertaken by the current researcher. For instance, a developmental psychologist may rely on the Population Census data (secondary data) to identify the demographic characteristics of the groups of persons who will be the target of a specific social intervention or program. Thisted acknowledged the following limitations of cross sectional designs.

First, in secondary data analysis, there is no control over purpose, choice, or method of data collection. Second, the design cannot tell us about causal relationships —because of the lack of control— it can only identify correlation relationships. Third, generalizability is limited to the characteristics of the sampled population and the definition of the overall population. Fourth, sample size requirements may be very large particularly when looking at rare outcomes or exposures. Finally, there is the potential for selection bias. For example, in a medical or clinical psychological study “length-biased sampling” may occur. Length-biased sampling refers to the fact that individuals with long courses of a disease are more likely to be the ones identified as prevalent cases than people with courses of short duration. In other words, the most extreme cases tend to be selected for research analysis.

Longitudinal designs differ from cross sectional designs because the same people are studied over a period of time. The advantages and disadvantages of this design were summarized by Sanson, Ungerer, Zubrick, Wilson, Ainley, Berthelsen, Bittman, Broom, Harrison, Rodgers, Sawyer, Silburn, Strazdins, Vimpani, & Wake (2002). According to Sanson et al. longitudinal studies enable factors of interest to be examined for their stability and continuity over time, and allow developmental sequences to be identified. These studies can shed light on questions such as, Do behavioural difficulties exhibit different manifestations at different ages? How far can later events be predicted by earlier events? Can anxiety in early or middle childhood be traced back to a particular style of temperament or parenting in infancy? Is childhood obesity preceded by particular

parental expectations or parenting practices in toddlerhood? By establishing the time ordering of events, longitudinal studies can help establish causal relationships. In addition to exploring the developmental sequences that place children at risk, a longitudinal design can illuminate the factors that protect children against risk and create resilience. Longitudinal designs can also offer answer to the following questions. Why do some children who are exposed to adverse conditions still do well?

What can we learn from observing the developmental sequences of those children? Understanding children's developmental sequences sheds light on when intervention would be most effective (Farrington, 1991). A further advantage of a longitudinal design is that it enables us to differentiate between change over time in aggregate (group) data and changes within either individuals or changes in a population at risk. While cross sectional data only allow investigation of differences *between* individuals, longitudinal study can examine change *within* individuals, as well as variation between them (Farrington, 1991). Despite having many advantages over cross sectional research, longitudinal research also poses several challenges. Some of these are identified in Table 2.1 but you are encouraged to add their notes on this topic from the course text, resources of the Open Campus Library.

The sequential design combines cross-sectional and longitudinal designs. Hanson, Cresswell, Plano Clark, Petska and Cresswell (2005) offer a comprehensive analysis of the sequential design which they refer to as the mixed methods research designs. A few key points from their article are mentioned. There are three types of sequential designs: sequential explanatory, sequential exploratory and sequential transformative. In general sequential designs can be recognized by the following format. Quantitative data are collected and analyzed, followed by qualitative data. These designs are particularly useful for, as the term sequential suggests, the sequencing of an event or a series of events that might be relevant for explaining relationships between the study's variables. It allows better interpretation of the study's findings, especially when these findings are unexpected.

The three types of sequential designs will now be described. In **sequential exploratory designs** qualitative data are collected and analyzed first, followed by quantitative data. Priority is usually unequal and given to the qualitative data. Quantitative data are used primarily to augment qualitative data. Data analysis is usually connected, and integration usually occurs at the data interpretation stage and in the discussion. These designs are useful for exploring relationships when a study's variables are not known, for refining and testing an emerging theory, for developing new psychological test/assessment instruments based on an initial qualitative analysis, and for generalizing qualitative findings to a specific population.

Sequential transformative designs use an explicit approach (e.g. feminist perspectives, critical theory), which is usually reflected in the purpose statement, research questions, and implications for action and change. In these designs, quantitative data may be collected and analyzed, followed by qualitative data, or conversely, qualitative data may

be collected and analyzed, followed by quantitative data. Thus, either form of data may be collected first, depending on the needs and preferences of the researcher.

Learning Activity 2.2

In order to place the unit information in a visual context and to explain the salient issues of experiments and sampling please view the videos that are accessed via the hyperlinks below.

DevPsych. (2009, Aug 17). Research Methods in Psychology, Part 2. [Video file].

Retrieved from

<http://www.youtube.com/watch?v=5KoRfdC1l-o&feature=related>

DevPsych. (2009, Aug 17). Research Methods in Psychology, Part 3. [Video file].

Retrieved from

<http://www.youtube.com/watch?v=zIpDPrbRiBo&feature=relmfu>

After watching the video please answer the following questions.

- 1.What are the key features of experiments? (100 words)
- 2.What do you know about sampling that you did not know before viewing the videos? (100 words)
- 3.How does sample selection relate to the undertaking of rigorous experiments? (100 words)
4. Name a developmental issue that can be undertaken using the experimental method.(100 words)

This assignment is due by the end of Week 3. Remember that you can use the unit notes and information obtained from *UWlinC* to answer the questions.

Research Methods

The scientific method assumes order and predictability and research methods are broadly of two kinds: experimental (experiments) and non-experimental (e.g. simulation or role playing techniques, and case studies). Table 2.1 provides a quick review of the research methods favored by behavioural scientists and psychologists. These methods were previously cited in PSYC 1000 but copied below in order to refresh your memory. In this session mention will also be made of a data collection tool that is an essential part of the research process; namely, standardized tests.

Table 2.1: Summary of Research Methods and Designs

Method	Description	Advantages	Limitations
Naturalistic Observation	Observation of behaviour in natural settings	Participants behave naturally.	Researchers' expectations can influence results; little control conditions.
Case studies	In-depth study of one or a few individuals using observation, interviews or psychological testing.	In-depth information; important in the study of unusual events.	Results may not generalize beyond the case that is studied; time consuming; subject to misinterpretation.
Surveys	Interviews and questionnaires used to gather information quickly.	Gather accurate information about large groups; track changes.	Validity limited by sample representativeness; responses influenced by questions; social desirability.
Correlational Studies	Determination of mathematical relationship between two variables.	Assess strength and direction of relationships.	Cannot demonstrate cause and effect.
Experiments	Random assignment of participants to control and experimental groups; manipulation of independent (causal) variables.	Identification of cause and effect relationship.	Research may not generalize to non-research settings; many variables cannot be studied in experiments.
Cross-sectional designs	Participants of different ages studied at one time.	Quick access to data about age differences.	Ignores individual differences; cohort effects.
Longitudinal designs	Participants in one group studied several times.	Track developmental changes in individuals and groups.	Time consuming; findings may apply only to the group that is studied.
Sequential designs	Study that combines both longitudinal and cross-sectional designs	Cross sectional and longitudinal data relevant to the same hypothesis.	Time consuming; different attrition rates across groups.

(Adapted from Boyd & Bee, 2012, p.18).

There are other creative research methods that are designed to shed light on significant milestones over the human lifespan. These include life history record, physiological methods, descriptive research, experiments with babies undertaken by Oxford University's Baby Lab, and research with twins. Each of these will be briefly considered but you are encouraged to read extensively and to make your own notes on these topics by using accessing relevant articles via *UWlinC*.

Life history record

According to Santrock (2008) a life-history record documents a lifetime chronology of events and activities. It often includes records on education, work, family and residence. In compiling life history records, researchers may use a wide array of materials such as public birth and death records, historical documents, observations, written and oral reports from the subjects, and interviews. During interviews, researchers might compile life calendars, which record the age (year and month) at which transitions occur in a variety of domains. Using multiple types of materials to compile the life history record allows researchers to contrast information from varied sources and sometimes to resolve discrepancies, resulting in a more accurate life history record. An example of the utility of the life history method is found in the work of the University of the West Indies historian, Dr. Jerome Teelucksingh, who used this method to document education as a prescription for socio-political development between the period 1868 to 2008 (Teelucksingh, 2008). His research activities were organized around the sub-discipline of organizational history and his aim was to document the life stories of prominent Trinidadian Presbyterian religious leaders and educators such as Adella Archibald as well as Revs. C.D. Lalla and John Morton. These persons were critical to the development of Presbyterian schools and training institutions between the years 1868 to 2008. The author stated that he relied on biographies, autobiographies, unpublished papers, theses, dissertations, journal articles, diaries, interviews, reports, newspapers, newsletters, brochures, yearbooks and excerpts from novels to build his life history records.

Physiological Records

Researchers are increasingly using physiological measures to shed light on developmental differences across the lifespan. For example, as puberty unfolds, the blood levels of certain hormones increase and in order to determine the nature of these hormonal changes blood samples can be taken from willing volunteers. Another physiological measure that is increasingly being used is neuro-imaging, specifically, functional magnetic resonance imaging (fMRI). fMRI produces electromagnetic waves to construct images of a person's brain tissue and biochemical activity. For example, a review by Li (2012) explained that imaging is very helpful for identifying age related deficits in the functioning of the brain as well as degeneration in brain activities such as memory and cognition due to the onset of dementia. If you would like to read more about how neurotransmitters and genes affect behavioural and cognitive development across the lifespan, Li's review offers a good though technical synopsis.

Descriptive Research

Descriptive research observes and records behaviour. For example, a researcher might observe the extent to which people are altruistic or aggressive toward each other while awaiting public transport. The descriptive method does not tend to be a stand alone option used by scientific investigators because, without controls, it can hint at plausible explanations for behaviour but it cannot confirm cause and effect relationships the way experiments can. In most cases descriptive research is combined with other methods. For example, experiments with toddlers at Oxford University's Baby Lab described in the next sub-section.

Experiments with Babies: Oxford University Baby Lab

Oxford University's Baby Lab was established in 1992 to investigate cognitive development in infants and toddlers, with a particular focus on early word learning, speech sound discrimination, and children's understanding of their visual environment. The Baby Lab is part of the Oxford Centre for Developmental Science. You can follow the activity in the BabyLab by clicking on the hyperlink <http://babylab.psy.ox.ac.uk/> Some discoveries of research undertaken and the findings by the Baby Lab researchers are documented below:

- Halfway through their second year, toddlers detect and react to subtle changes to the vowels they hear in familiar words. They are more sensitive to changes involving tongue position than lip shape. So, they are more likely to notice if we call a ball a bull (to rhyme with cool) than if we call a ball a bahl (to rhyme with cull). Note that for the (ball – bull) the lips are rounded in both words when voicing the vowel, whereas for (ball – bahl) the lips have different shapes.
- How typical does a picture needs to be before kids will accept it as a picture of a word they know? Studies between 1996-1999 by Dr. Kerstin Meints and her research group looked at toddlers of different ages, and investigated whether they could recognise **birdy birds** and **doggy dogs** (like robins and Labradors), or atypical birds and dogs (like ostriches and Chihuahuas). 15-month-old toddlers were able to recognise pictures of robins and Labradors when they heard 'bird and 'dog', but they could not recognise the ostriches and Chihuahuas until they were a little bit older. Interestingly, the so-called 'typicality effect' also translated to grammatical words like 'on' and 'under'. While younger toddlers could only recognise a picture of 'a cat on a table' when the cat was standing right in the centre of a table, slightly older toddlers could recognise 'on' when the cat stood right at the corner of the table. This type of research is often undertaken as part of a longitudinal design.
- When do toddlers learn about relationships between words that they already know? Suzy Styles' research at the Oxford University Baby Lab over the past few years (e.g. Styles & Plunkett, 2009; Styles & Plunkett, 2011) has shown that between 18 and 24 months-of-age toddlers start showing sensitivity to

relationships between words like ‘cat’ and ‘dog’. Using a method called *‘lexical priming’*, toddlers in her studies were better at finding a picture of a dog if they had just heard a short sentence about a cat, compared to when they had just heard about a plate. This suggests that the word ‘cat’ rapidly prepares toddlers for information about related words including ‘dog’. Studies like these give us valuable information about how words are organised in the developing lexicon. Styles concluded that researchers have known for some time that adults show similar effects when they hear related words in close proximity. Although studies like these have not been conducted before with children in the pre-school years, we were interested to find evidence of adult-like organisation at such an early stage in development.

Twin research

Twin research or twin studies are largely informed by behavioural genetics and biological psychological theories. These theories aim to shed light on the environment’s role in producing changes in individuals, even individuals who share an identical genetic background, namely, fraternal and identical twins. To examine how environmental differences may account for differences between twins, various research designs are utilized. One popular option is to examine twins at various points in their life-span using longitudinal designs discussed earlier in this session. Another option is to study twins who were reared apart and to examine them when they had been reunited decades later to ascertain their similarities and differences on a battery of tests. This was a design used by a group of researchers in the Minnesota Study of twins reared apart. Santrock (2008) gave the example of ‘The Jim and Jim twins’.

“Jim Springer and Jim Lewis are identical twins. They were separated at 4 weeks of age and did not see each other again until they were 39 years old. Both worked as part time deputy sheriffs, vacationed in Florida, drive Chevrolets, had dogs named Toy, married and divorced women named Betty. One twin named his son James Allan, the other twin named his son James Alan.... Both had identical drinking and smoking habits ... and had similar sleep patterns. Jim and Jim do have some differences. One expresses himself best orally; the other is more proficient in writing. But for the most part, their profiles are remarkably similar,” (Santrock, 2008:72)

For more information about twin studies please view the YouTube video and complete the activities identified in the box below.

Learning activity 2.3

Look at the YouTube video on twin studies available at hyperlink

oulearn on YouTube. (2011 Mar 3). What are ‘twin studies’? [Video file]. Retrieved from <http://www.youtube.com/watch?v=BTYCv1ObZrI>

After watching the video please answer the following questions.

List three points that interested you when you viewed the video presentation and explain why they aroused your interest.

If you have twin in your immediate or extended family, how did the material in this unit help you to understand the development pathway of these twins?

Maximum words (400-420). This assignment is due by the end of Week 3. Remember that you can use the unit notes and information obtained from *UWlinC* to answer the questions.

Standardized tests

A standardize test has uniform procedures for administering a test and scoring the results of the test. Some standardized tests allow a person's performance to be compared with those of other individuals. Thus the tests provide information about individual differences among research subjects. An example is the intelligence test labeled the Stanford-Binet intelligence test, so called because it was refined and revised at the University of Stanford. The original test was developed by the French psychologist Alfred Binet in 1904. Binet developed the concept of **mental age** (MA), an individual level's of mental development relative to others. In 1912 William Stern created the concept of **intelligence quotient** (IQ), a person's mental age divided by chronological age (CA), multiplied by 100 as shown in the equation below.

$$\text{Hence } IQ = MA/CA \times 100$$

If mental age is the same as chronological age, then the person's IQ is 100. If mental age is above chronological age, then IQ is more than 100. If mental age is below chronological age, then IQ is less than 100. By administering the test to a large number of persons of varying ages who were from different backgrounds, researchers found that the scores on the Stanford-Binet intelligence test approximated a **normal distribution**. A normal distribution represents a graph with most scores falling within the middle of the possible range of scores and a few scores appearing towards the extreme of the range. Thus, all variables being equal the majority of persons tested should fall in the middle with only a few persons being a genius (a high IQ) or showing deficits (very low IQ).

Interpretation of IQ scores

Terman's classification contains seven categories. It is reproduced from the website cited below by Rodrigo de la Jara. <http://www.iqcomparisonsite.com/IQBasics.aspx>

IQ Range	Classification
140	Genius or near genius

and over	
120-140	Very superior intelligence
110-120	Superior intelligence
90-110	Normal or average intelligence
80-90	Dullness
70-80	Borderline deficiency
Below 70	Definite feeble-mindedness (<i>You should bear in mind that this term is merely an interpretation of the scores by the test developers so you may not necessarily agree with the choice of words</i>).

Our previous discussion on research methods available for research on life span development or developmental psychology demonstrates that scientists must take into account the age of the subjects in addition to the theoretical framework that informs the scientific endeavor. Hence, the Baby Lab research projects cannot rely on interviews with toddlers; therefore, observation and descriptive methods are more suitable. The next subsection deals with research ethics.

Research Ethics

The concept **research ethics** can be defined as, “The guidelines researchers follow to protect the rights of animal and human subjects who participate in studies,” (Boyd & Bee, 2012, p. 17). Ethical considerations are not confined to psychological research; social scientists relying on humans for their data must adhere to guidelines that form international codes of best practice. Boyd and Bee, Chapter 1, listed the ethical considerations that need to be adhered to during the research process. Amongst these guidelines are those requiring that animals be protected from unnecessary pain and suffering. Investigators who undertake studies that are based on human or animal data must demonstrate to ethical committees that the potential benefits of a study is in fact greater than any potential harm to the subjects recruited for the study.

Learning activity 2.4

A good summary of research considerations and ethics can be found at the following hyperlinks

Tristram Hooley. (2008, Mar 11). Online Research Ethics. [Video file]. Retrieved from <http://www.youtube.com/watch?v=7T8t11Vqht0&feature=related>.

c merrill taylor. (2011, Jan 31). Research Ethics Part 1. [Video file]. Retrieved from <http://www.youtube.com/watch?v=OG1ymKBLCK8&feature=related>

As you watch the videos ask yourself the following questions:

1. Identify an issue that lends itself well to empirical examination using on-line research.
2. Why should researchers be concerned about ethical issues when undertaking on-line studies, including experiments?
3. Name two considerations when undertaking on-line empirical research.
4. Name three domains identified in the YouTube videos where psychologists collect data.

Maximum words (400-420). This assignment is due by the end of Week 3. Remember that you can use the unit notes and information obtained from *UWlinC* to answer the questions.

Santrock (2008) reminds us that as technology expands issues relating to ethics also expand. For example, the use of the internet to undertake research requires putting into place procedures to safeguard the information collected from subjects in an internet-based study. Additionally, there must be strict adherence to copyright issues and respect for intellectual property rights when reporting the ideas and research findings of authors. We are reminded by Santrock that when recruiting participants for a study there must be (1) *informed consent*; that is, all participants must know what their participation will involve and what risks might develop. (2) *Confidentiality* must be maintained as researchers are responsible for keeping all of the data they gather on individuals completely confidential, and when possible, completely anonymous. To demonstrate this point, an empirical study by Hood and Seemungal (2009) was undertaken to obtain the views from administrators of justice (defence counsel, state attorneys and presiding judges of the Supreme Court of Trinidad and Tobago) on possible problems associated with the implementation of the mandatory death penalty in Trinidad and Tobago. As one would imagine, the interview data with high profile jurists such as the Chief Justice of Trinidad and Tobago and the Director of Public Prosecutions contained highly sensitive issues about the justice system and murder trials. It should be borne in mind that confidentiality does not mean that a study's findings should not be reported as the purpose of a study is to collect data on a topic and to report the findings. However, one must ensure that raw data or quotations from interviewees used in a report or publication do not identify the name or names of interviewees if they are given the guarantee of confidentiality. To illustrate this point when reporting the views of judges on the issue of whether applying mandatory death penalty constituted excessive punishment it was noted that,

“Of the 12 judges who had dealt with murder trials where the jury had brought in a conviction for murder and a mandatory death penalty had therefore been imposed, half said they thought that in at least one instance that penalty had been excessive given the nature and circumstances of the crime and mitigating circumstances associated with the offender. The following examples were cited:

A single stab to the chest killing of a woman by her husband who complains that she is more interested in minding the goats and who attacks her with his hands and she uses excessive force in response – the death penalty here is way excessive.”

...It was a triple murder of wife, mother- in- law and sister- in- law. Defendant gave evidence attributing killing to an out of body experience – alleged provocation. The jury did not accept any direction of provocation. The sentence was upheld by the Court of Appeal. The Privy Council overturned the conviction and submitted manslaughter conviction. This was not a violent man, it did not warrant death, (Hood & Seemungal, 2009, p. 15).

Collectively, these quotations suggest that the speakers’ views are at odds with, and seem to go against, the system of justice in which the speakers enjoy employment. A guarantee of anonymity is necessary in order to allow the interviewees to express their opinion without being identified and so allay any possible fear of reprisal that they may have about being interviewed.

In the introduction to this sub-section it was mentioned that Santrock (2008) identified first, *informed consent*, and second, *confidentiality* as important ethical considerations that must guide empirical research. Other ethical issues identified by Santrock are (3) *debriefing* – after a study has been completed, participants should be informed of its purpose and methods. (4) If *deception* was used, researchers must ensure that this did not endanger the study’s subjects either physically or psychologically. (5) Although it is often overlooked we are reminded that, “Studies of lifespan development are most useful when they are conducted without bias or prejudice toward any particular group of people. Of special concern is bias based on gender, culture and race or ethnicity,” (Santrock, 2008, p. 63). To recap, ethical research must obtain informed consent from research participants; it should guarantee participants that their responses and data would be confidential and anonymised when reported; participants must be de-briefed at the end of the study; deception should be avoided; if deception is necessary for the study it should not be harmful to participants and the reason for the deception should be explained to participants during the de-briefing; and finally, research should be gender neutral and free from any bias such as racial or cultural bias.

We will now discuss two important variables within life span development: the conceptions of age and periods of development. These terms will appear regularly across the 10 units of the course.

Conceptions of Age

Santrock (2008) noted that some life span developmentalists do not believe that chronological age is relevant to the development of an individual's psychological development. **Chronological age** is the number of years that have elapsed since birth. Time is a crude index of experience and it does not cause anything. Moreover, chronological age is not the only way of measuring age as other measurements focus on biological, psychological and social age. Let us now define what is meant by these concepts.

Biological age is a person's age in terms of biological health. Determining biological age involves knowing the functional capacities of a person's vital organs. For example, a cardiologist may tell his 70 year old patient who demonstrates a pro-active approach to health by exercising regularly that he has the heart health of a 40 year old. "The younger the person's biological age, the longer the person is expected to live, regardless of chronological age," (Santrock, 2008, p. 20) **Social age** refers to social roles and expectations related to a person's age such as the role of mother and the behaviour that is expected of a mother of a three year old. Life span experts are now saying that chronological age is becoming irrelevant. Some supporting evidence might be that women are delaying child bearing from their 20's to their 30's; people are marrying for the first, second or third time at any age; and the number of years that men and women are expected to live (i.e. life expectancy) has increased in many countries. For example, in Japan and the USA life expectancy increased over the last 50 years from mid 60's well into the 80's and 90's. In contrast, the life expectancy in the Caribbean is slightly lower. For example, UNICEF (2013) documented life expectancy for Trinidad and Tobago as being 69.8 years, for Barbados as being 75.2 years, for Jamaica as being 73.3 years and Guyana 66.1 years. Age does not seem to hold social restrictions. As people attempt to age gracefully most persons are concerned about their quality of life rather than the quantity of years of their life. All of these issues are reflected in the topics that developmental psychologists choose to examine, discuss and publish.

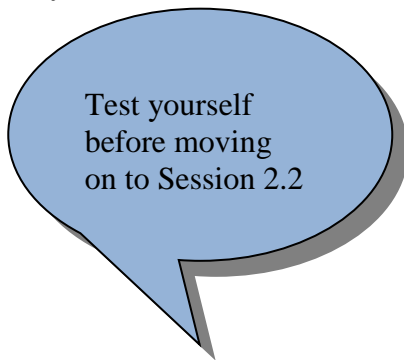
Periods of development

Periods of development are a critical concept in this course and you will notice from the course outline that the units focus on selected periods of development such as adolescence, middle adulthood or late adulthood. Some authors such as Boyd and Bee (2012) refer to periods of development as stages of development. Santrock (2008) provides a good overview of periods of development. The author states that, "The interplay of **biological**, **cognitive**, and **socio-emotional** processes produces the periods of the human life span. A developmental period refers to a time frame in a person's life that is characterized by certain features," (Santrock, 2008, pp. 16-17) Periods of development usually co-ordinate with chronological phases of physical development and you should bear in mind that there is some fluidity in the age ranges described by various academics in their textbooks. Santrock's periods of development are cited below.

1. Prenatal period – from conception to birth.
2. Infancy – from birth to 18-24 months.
3. Early childhood – from 2-5 years.
4. Middle and late childhood – from 6-11 years.
5. Adolescence – from 10-12 to 18-21 years.
6. Early adulthood – from 20's to 30's.
7. Middle adulthood – from 35-45 to 60's
8. Late adulthood – from 60 and 70's to death.

Summary

Reflect and Review:



Summary of session 2.1

The focus in Session 2.1 was on the design and method options that are available to psychologists to assess social, behavioural and cognitive changes across the human lifespan. The session began by recapping the three main research designs that are popularly used by psychologists, namely, cross-sectional design, longitudinal design and sequential design. Although each of these designs can be successfully used to garner information it should be borne in mind that each design has advantages and disadvantages. A critical review of the three designs is provided in Table 2.1. Table 2.1 also served as a reminder of the strengths and limitations of naturalistic observation, case studies, surveys, co-relational studies and experiments. You were presented with additional research methods that are commonly utilized by developmental psychologists. These are life history record, physiological methods, descriptive research such as experiments with babies undertaken by Oxford University's Baby Lab, and research with twins. Mention was also made of standardized tests which are data collection tools that are used for comparing a sample to a set criterion/standard (one sample or independent samples). This was followed by a discussion of the conceptions of age and periods of development and this will provide the scaffolds for the subsequent units of this course. Collectively, the information presented in Session 2.1, the issues discussed and the activities contained in the session will assist you immensely when you are called upon to undertake a research project as part of an assessment exercise for this course. Your reflections on the material presented in Session 2.1 are essential to your understanding of the materials documented in this session and to your learning process throughout this

unit. Remember that you have the option to post your questions on any aspect of the session and unit discussion that you do not understand. You will receive a timely reply from so that you can continue to progress smoothly throughout the lesson without being impeded by troublesome concepts.

Key points from Session 2.1:

1. Life span development and developmental psychology present models of human growth, change and human behaviour across various conceptions of age and domains of development.
2. Conceptions of age relate to chronological, biological and social age.
3. Periods of development pattern chronological age from pre-natal to birth, early childhood, middle childhood, adolescence, young adulthood, middle adulthood and into late adulthood.
4. You were introduced to new research methods, such as the life history record, that you can consider when designing your own empirical study or policy plan.
5. Scientists do not propose a right, wrong or ideal methodological approach. Instead, the central concern for scientists is the appropriateness of the method to the problem being investigated, the knowledge base that is being explored, the resources available (including both financial and person power), the socio-cultural context of the study, the level of analysis that is required such as individual versus group, and most of all, whether issues like employing deception in a study justifies the means.

Before embarking on new research into human behaviour, psychologists are urged to review or critique the existing evidence and findings on the topic of inquiry. This will ensure that the new study is novel, the research questions are relevant, and the methods are reliable so that the results and findings have the potential to make a contribution to the discipline. Therefore, Session 2.2 switches to assessing and critically evaluating three scientific articles. A reminder of the criteria necessary to critique scientific article which were documented in PSYC 1000, will also be provided.

Session 2.2: How Psychologists Do Research: Case Studies of Three Scientific Articles

Overview

The overarching goal of Session 2.2 is to help you to place the knowledge gained from Unit 1 and Session 2.1 of Unit 2 in an applied context. By reviewing and analyzing three peer-reviewed articles you would be exposed to examples of well-designed research that passed the test for scientific scrutiny in order to be published. In keeping with the general theme of explaining how psychologists conduct and report their research, the focus of attention will be placed on training you to critically evaluate a published article. The assessment process includes evaluating if the purpose of the study or the rationale for undertaking the study was explicitly stated; if the research questions or hypotheses were clearly stated; and if the design of the study as well the research methods chosen to answer the questions were appropriate. For course participants who are undertaking studies in youth issues the resource materials identified in the various activities offer a good illustration of the rationale and requirements of scientific inquiry. You are required to keep in mind the theoretical discussion in Unit 1 and the research methods delineated in Unit 2, Session 2.1.

A related goal of this session is to remind you of the steps to be followed when preparing a critique of a scientific article. These were covered in detail in PSYC 1000, but a brief review will assist you in recalling the relevant information. The review will be followed by the presentation of three scientific articles which will be critically evaluated and discussed with respect to the research designs and methods chosen by the authors of these papers, the findings, and the applications of the findings for your own professional work and the activities contained in this course. The session will conclude with a summary of how to prepare a scientific report or paper.

The task of examining three carefully selected peer-reviewed published articles speaks to the knowledge base, attitudes and skills set that you are expected to acquire in accordance with competencies YDWCYP0413, YDWCYP0503 and YDWCYP0744. For example, YDWCYP0413 requires you to be able to organise and analyse data, to ensure that data analysis is consistent with the research design and that research findings are consistent with source data. Moreover, your research activities should include a consideration, where applicable, of piloting, sampling, and the format for documenting and presenting your findings. This could be a report for stakeholder groups or the line-manager in your organization, a Ministry in your country of residence or you might be inspired to present a paper at a conference or scientific meeting. Stakeholder groups can include youth and youth networks, non-governmental organizations, the political directorate, community groups, special interest groups, parents, the media, the private sector, education institutions, funding and development agencies and/or government agencies. Writing a report for stakeholder groups or your employer is the first step towards preparing a report for publication in a scientific journal. Of particular relevance is the fact that the results of a study and the subsequent discussion of the relevance and application of the findings must be subject to a validation process. This process includes peer review, process review and critiquing the

article. You can contribute to the validation process by applying the criteria for critiquing an article set out in this session to any material read. Bear in mind that while undertaking a critique the objective is provide a *critical examination* of the publication. This involves identifying the strengths, limitations and contribution of the article and not merely criticizing aspects of the publication. The criteria for undertaking a critique are outlined below.

By the end of this session you should be able to:

1. Undertake a critique of a scientific article.
2. Identify the merits and demerits of the scientific articles presented in this Unit.
3. Link the psychological theories from Unit 1 and the research methods in Unit 2, Session 2.1 to the scientific articles presented in this session.
4. Assess the potential of developmental psychological research for structuring national policies and programs to empower citizens at risk.
5. Using guidelines outlined in this session, prepare a review of the selected research paper provided.
6. Recognize why research needs to be scientifically valid and well-designed.

How to critique a published article

1. *Read the introduction section of the article.* Is the hypothesis clearly stated? Is necessary background information and previous research described in the introduction? In addition to answering these basic questions, you should take note of information provided in the introduction and any questions that you may have.
2. *Read the methods section of the article.* Is the study procedure clearly outlined? Can you determine which variables the researchers are measuring? Remember to jot down questions and thoughts that come to mind as you are reading.
3. *Read the results section of the article.* Are all tables and graphs clearly labeled? Do researchers provide enough statistical information? Did the researchers collect all of the data needed to measure the variables in question?
4. *Read the discussion section of the article.* How do the researchers interpret the results of the study? Do the results support their hypothesis? Are the conclusions drawn by the researchers reasonable? The discussion section offers students a good opportunity to take a position. If you agree with the researchers' conclusions, explain why. If you feel that the researchers are incorrect or off-base, point out problems with the conclusions and suggest alternative explanations.

The three articles below were chosen as case studies for several reasons. First, they will be used to demonstrate the critiquing process but the content of the papers, that is the choice of questions asked by the researcher and the topics dealt with in the papers allow for further learning that relate to several course competencies. For example, **YDWCYP0503** 'Work with youth with behavioural problems'. This competency gives an indication of how

behavioural problems can be manifested. For instance, as social behaviours, physical behaviours, verbal behaviours, non-compliance and disruptive, destructive behaviour or damaging practices and a lack of respect for authority. You can look out for these in the three case studies. **YDWCYP0744** - 'Design, develop and support implementation of programmes to enable young people to address their circumstances' - is geared towards helping you to gather information for decision-making. For instance, the information gathered should clarify understanding of the circumstances affecting youth. Circumstances that increase the prevalence of at risk youths include teen-age pregnancy, juvenile delinquency, substance abuse, academic under-performance, alienation and disenfranchisement, unemployment and un-employability, re-integration, homelessness, youth prostitution or promiscuity and family instability. More importantly, the policies and programs to be designed should remain flexible enough to accommodate changes in the circumstances of young people. The three case studies below shed light on how psychologists do research and how research findings can make a tangible contribution to society. The articles can be accessed from the Unit 2 Resources folder in the Learning Exchange.

Case Study 1:

Abel, W.D., Bourne, P.A., Hamil, H.K., Thompson, E.M., Martin, J.S., Gibson, R.C., Hickling, F.W. (2009). A public health and suicide risk in Jamaica from 2002-2006, *North American Journal of Medical Science*, Vol 1, Issue 3, 142-147.

In this article the authors, who are attached to the Department of Community Health and Psychiatry at the Faculty of Medical Sciences, the University of the West Indies, Mona, Jamaica, discuss very important and relevant issues that face the Caribbean region; namely, self-harm, suicide and suicide prevention, mental health, and suicide-prevention plan.

The abstract is copied below for your perusal. You are not expected to understand all the statistical technical details in the full article but you can glean a sense of the relevance of the article for youth development work and for developing a policy framework that can be applied to all citizens.

Abstract:

Background: Globally, suicide is the third leading cause of mortality among persons aged 15-44 years. However in Jamaica it is not among the leading cause of mortality; but its importance cannot be ignored because of this fact.

Aims: This study seeks to 1) update the prevalence of suicide in Jamaica, 2) make comparisons with international data, 3) provide an understanding of age-sex composition of those who are committing suicides, and 4) provide public health practitioners with valuable information which will be used to inform policy decisions.

Materials and Methods: Secondary data published by the Jamaica Constabulary Force was used for this study. Data were summarized using percentages and associations were examined by Kruskal-Wallis or Analysis of Variance.

Results: The suicide rate averaged 2.26 per 100,000 over the last six years. In 2006, the suicide rate for males was 9 times higher than that of females. The group of 65-74 age, among the male population, recorded the highest suicide rate (11.3 per 100,000) and the 5-14 age group recorded the lowest (0.3 per 100,000). The highest rate for the female population (3.4 per 100,000) was recorded in the 65-74 age group. The 30-39 age group showed an overall higher rate of suicide over the study period, this was followed by the 40-49 age group.

Conclusions: Jamaica's suicide rate is among the lowest in the world and in spite of this, there is a need to formulate a suicide policy for the nation in particular males and young adults.

Learning activity 2.5

Read the paper by Abel, W.D., Bourne, P.A., Hamil, H.K., Thompson, E.M., Martin, J.S., Gibson, R.C., Hickling, F.W. (2009). A public health and suicide risk in Jamaica from 2002-2006, *North American Journal of Medical Science*, Vol 1, Issue 3, 142-147.

Read the notes on the strengths and limitation of the use of official statistics which can be accessed via the hyperlink below. Sociological Research Skills (undated).

<http://www.sociology.org.uk/methos.pdf>

In critically reviewing this article by Abel et al. (2009) you would need to consider the criteria outlined in 'how to critique a published article'. Please consider the following questions as you read the article. Then discuss the questions in your tutorial meeting before submitting your written responses to your e-tutor by uploading your file in the relevant drop box in the Learning Exchange.

- (1) What is the contribution of this article to the topics under investigation?
- (2) Which developmental theory or theories identified in Unit 1 can explain the issues of self-harm and suicide?
- (3) Was the research method suitable to achieve the objectives of the study?
- (4) What in your view are the limitations of this study?
- (5) What elements would you include in a national policy on suicide?

Maximum words (400-420). This assignment is due by the end of Week 3. Remember that you can use the unit notes and information obtained from *UWlinC* to answer the questions.

Some tips to get you thinking about how to approach activity 2.5

In this paper the authors analysed secondary data or official statistics collected by the Jamaica Constabulary Force. They present findings and a discussion of the findings on a range of topics that pertains to core issues in developmental psychology and youth development work. After reading the paper you would become more familiar with self-injurious behaviour, suicide and the suicide rate, mental health concerns, prevention programs and policies that aim to reduce self-injurious behaviour; and finally, the relationship between public health and suicide risk in Jamaica.

The study was based on data collected for the years 2002 to 2006 and the findings published in 2009. Are the findings likely to be the same in 2012/13 as in 2006 after a six to seven year time gap? The study was conducted in Jamaica, to what extent would the findings be applicable to your country of residence?

Official statistics can be defined as numerical data collected and published by Governments. A short paper on the various strengths and limitations of the use of official statistics as the basis for an empirical study can be found the hyperlink listed below is included in activity 2.6. The aforementioned resource material states that the strengths of official statistics relate to the ease of availability of the data; low cost in research a topic as data collection costs are kept to a minimum; the data might facilitate a longitudinal study because trends over time can be identified; it allows comparisons across groups (e.g. age, sex, ethnic, geographic locations); is useful to assess the impact of interventions because it allows 'before' and 'after' studies. Despite these advantages there are limitations to relying on official statistics to conduct research. Some of these limitations include the differences in the definitions used by the data collected and the researcher which may lead to conceptual differences in the way a psychological problem is perceived and explained. Additionally, there is an agenda in the way data are collected. In the resource material it was noted that it would be naïve to assumed that the collection of official statistics is unaffected by political and economic considerations.

Case Study 2:

Ellis, B.J., Del Giudice, M., Dishion, T.J., Figueredo, A.J., Grey, P., Griskevicius, V., Hawley, P.H., Jacobs, W.J., Jamus, J. Volk, A.A., & Wilson, D.S. (2012). The Evolutionary Basis for Risky Adolescent Behaviour: Implications for Science, Policy and Practice, *Developmental Psychology*, 48(3), 598-623.

The abstract by Ellis et al. (2012) is copied below for your consideration. Do not become confused by the technical details in the full article. Your task is to identify the psychological theory underpinning the article and to identify how the data can inform policy on reducing youths at risk.

This article proposes an evolutionary model of risky behavior in adolescence and contrasts it with the prevailing developmental psychopathology model. The evolutionary model contends that understanding the evolutionary functions of adolescence is critical to explaining why adolescents engage in risky behavior and that successful intervention depends on working with, instead of against, adolescent goals and motivations.

The current article articulates 5 key evolutionary insights into risky adolescent behavior: (a) The adolescent transition is an inflection point in development of social status and reproductive trajectories; (b) interventions need to address the adaptive functions of risky and aggressive behaviors like bullying; (c) risky adolescent behavior adaptively calibrates over development to match both harsh and unpredictable environmental conditions; (d) understanding evolved sex differences is critical for understanding the psychology of risky behavior; and (e) mismatches between current and past environments can dysregulate adolescent behavior, as demonstrated by age-segregated social groupings. The evolutionary model has broad implications for designing interventions for high-risk youth and suggests new directions for research that have not been forthcoming from other perspectives.

Keywords: evolution and development, evolutionary psychology, environmental mismatch, bullying, intervention.

You have the skills to identify the merits and demerits of the article by Ellis et al. (2012) but a few key points are provided below so that you can reflect upon them in preparation for completing activity 2.7.. A good working definition is given of risky behaviour along with examples. Ellis et al, (2012) state,

Behaviors such as aggression, crime, promiscuity, reckless driving, and drug use are often called risky because they are likely to harm the individuals who engage in them, others around them, or society as a whole. Adolescents are more likely to engage in these behaviors than people at any other stage of the life cycle, (Ellis et al., p. 598).

The authors note,

Different developmental outcomes are regarded as ‘adaptive versus maladaptive’ depending on the extent to which they promote versus threaten young people’s health, development, and safety. We refer to this set of guiding assumptions as the *developmental psychopathology model* of risky adolescent behavior. (Ellis et al., p.599).

This notion reflects shades of the discussion in Unit 1 with respect to Erik Erickson’s Psychosocial Stages (cited in Boyd & Bee, 2012, p. 27). According to Erickson, development results from the interaction between internal drives and cultural demands hence his focus on psycho-social development rather than on psychosexual development. To achieve a healthy personality, an individual must successfully resolve a crisis at each of the eight stages of development. The authors are making a contribution to the theoretical literature by proposing an evolutionary model to explain their study of risky adolescent behavior.

Case Study 3:

Simpson, J. A., Griskevicius, V., Kuo, S.I., Sung, S., & Collins, W.A. (2012).

Evolution, stress, and sensitive period: The influence of unpredictability in early versus late childhood on sex and risky behavior, *Developmental Psychology*, 48(3), 674-686.

According to a recent evolutionary life history model of development proposed by Ellis, Figueredo, Brumbach, and Schlomer (2009), growing up in harsh versus unpredictable environments should have unique effects on life history strategies in adulthood. Using data from the Minnesota Longitudinal Study of Risk and Adaptation, we tested how harshness and unpredictability experienced in early childhood (age 0–5) versus in later childhood (age 6–16) uniquely predicted sexual and risky behavior at age 23. Findings showed that the strongest predictor of both sexual and risky behavior was an unpredictable environment between ages 0 and 5. Individuals exposed to more unpredictable, rapidly changing environments during the first 5 years of life displayed a faster life history strategy at age 23 by having more sexual partners, engaging in more aggressive and delinquent behaviors, and being more likely to be associated with criminal activities. In contrast, exposure to either harsh environments or experiencing unpredictability in later childhood (age 6–16) was, for the most part, not significantly related to these outcomes at age 23. Viewed together, these findings show that unpredictable rather than merely harsh childhood environments exert unique effects on risky behavior later in life consistent with a faster life history strategy. The findings also suggest that there is a developmentally sensitive period for assessing environmental unpredictability during the first 5 years of life.

Keywords: life stress, social development, sexual behavior, evolution, life history theory.

This article offers an optimistic view of human development as Simpson et al. note, “An evolutionary perspective views these outcomes as neither bad nor good. Instead, risky behaviors often make adaptive sense based on what a given person has experienced earlier in life and what he or she is likely to encounter in future environments,” (Simpson et al., 2012, p. 674) This is precisely the framework that inspires programs, policies and interventions to mitigate persons deemed to be at risk of being dysfunction or disruptive citizens and those individuals who engage in risky behaviours. In terms of their data collection methods the authors indicate that,

In the current research, we examined how exposure to harsh versus unpredictable environments during early childhood (ages 0–5) and during later childhood (ages 6–16) predicts the age of first sexual intercourse (sexual debut), the number of sexual partners, aggression, delinquency, and ties to criminal activities in early adulthood. We tested these predictions using data from the Minnesota Longitudinal Study of Risk and Adaptation (MLSRA; Sroufe, Egeland, Carlson, & Collins, 2005), a project that has followed approximately 165 participants in the longitudinal study who were born into poverty from before birth (prenatally) into adulthood, (Simpson et al., 2012, p. 675).

The authors also made a strong case for using longitudinal design and the life history method and conclude that,

An evolutionary life history perspective can appreciably increase and broaden our understanding of how exposure to different dimensions of stress shapes important developmental outcomes later in life. The application of life history thinking not only clarifies and contextualizes why certain experiences or events encountered earlier in life prospectively predict certain developmental outcomes later on; it can also steer researchers toward novel hypotheses not anticipated by traditional theories of social development, (Simpson et al., 2012, p. 684).

Collectively, the discussions across the three scientific articles are useful because while empirically driven policies are required in order to ensure that a nation's limited financial resources are allocated to the most needed strategies and programs, a similar evaluation is also needed in order to evaluate the efficacy and effectiveness of targeted programs and interventions. Longitudinal studies have the potential to ensure benefits to developmental psychologists as well as to policy makers and analysts.

Learning activity 2.6

Choose one of the three case studies for your activity task.

Prepare a summary plan of between 400-420 words to develop a national policy in your country of residence. In the plan:

1. Explain the psychological theory or theories that underpinned the study of your choice.
2. Identify a suitable research method that would provide relevant data to inform your national policy.
3. Explain how you would use the data to map out a national policy to reduce youths at risk.

Here is a link to policy considerations in the Caribbean for your reflection and consideration. Youth at risk in the Caribbean

<http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/LACEXT/EXTLACREGTOPPOVANA/0,,contentMDK:22244807~pagePK:34004173~piPK:34003707~theSitePK:841175,00.html>

This assignment is due by the end of Week 3. Remember that you can use the unit notes and information obtained from *UWlinC* to answer the questions

Summary of APA Guidelines: How to Write a Report or Scientific Article

Having read the three case studies presented above you would have a very good idea of how to write a report or scientific paper. This knowledge would be required as part of the assessment criteria for an empirical group project that you will be required to undertake for summative assessment in this course. Sternberg (1993, p. 29) provides a brief checklist of some points that must be included when reporting the results of your

empirical study and when discussing the findings. These guidelines are just as applicable when reviewing the empirical literature of other authors.

- (1) Validity - Are your arguments consistent with the literature you reviewed? Have your explanations inconsistencies? Have you properly substantiated each of your arguments?
- (2) Internal consistency – Are your arguments consistent with each other? Are they consistent with your general point of view?
- (3) Presuppositions – Have you made clear to the reader what you presuppose or assume? Are your presuppositions reasonable ones that your readers are likely to accept? Has the impact of your presuppositions upon your conclusions been discussed?
- (4) Implications – Have you discussed the implications of your arguments? Are these implications realistic? Do these implications strengthen or weaken your arguments?
- (5) Importance – Have you emphasized your important arguments and conclusions, and subordinated the less important ones? Have you explained why you view certain arguments and conclusions as important and others as less so?

Summary: Reflect and Review

Reflect

Session 2.2 was a very detailed one but it is important to provide a solid foundation for understanding how psychologists exercise their research options, what issues are of theoretical and policy relevance for investigators and the stumbling blocks that can be faced when governments aim to design and implement targeted strategies, policies and interventions. You are likely to require several readings of Session 2.2 in order to fully understand the content. Rest assured that these developmental psychological issues will be referred to again as we progress through the course. The two key areas covered in Session 2.2 were the criteria to be considered when preparing a critique of a published paper and how to write a scientific article or report. The general discussion provided examples of the types of research methods that developmental psychologists used to scientifically examine a particular phenomenon and to generate their theory. An important objective of this session was to provide the necessary information about the range of theories and concepts that are available for you to develop your knowledge based and skill set to achieve among other competencies, competency YDWCYP0413, YDWCYP0503 and YDWCYP0744.

Key points to be remembered from Session 2.2:

1. A critique of a published article is a balanced approach to analyzing and commenting on the work of the authors. It is not intended to be a criticism of the research. A good critique should consider, amongst other issues, the framing of the research questions into testable hypotheses, the quality of the data collected (reliable and valid) to either confirm or to disconfirm the hypotheses, and should acknowledge the contributions and limitations of the research endeavour.

2. The scientific process links theory to method to data analysis.
3. Policy design and implementation can be modelled along the scientific process as effective policies are data driven rather than speculative. All policies require evaluation possibly using longitudinal design to assess the cost-effectiveness and success of implementing targeted programs or interventions.

Unit Summary

The issues examined in Unit 2 provided a more detailed look than Unit 1 into the discipline of developmental science or developmental psychology as the scientific study of human behaviour across the lifespan. You were reminded of the three main research designs favored by developmental psychologists; namely, cross-sectional design, longitudinal design and sequential design. Mention was made of the life history method, the descriptive method, the use of standardized tests such as intelligence tests and the use of physiological measures. Each of these methods offers unique ways of examining behavioural, physical, cognitive and social changes across human growth and development. However, these methods are not without their limitations. The conceptions of age (social, biological and chronological) were outlined and the periods of development were listed. The three cases studies presented in Session 2.2 demonstrate very clearly the type of issues that are relevant to youth development workers, how these issues can be scientifically examined, and how policies can be empirically driven. Equally important in Session 2.2 was the identification of the criteria for critiquing a scientific article and the argument structure that should be considered in scientific writing. The unit materials and activities were designed to help you to understand the forthcoming units in this course. In Unit 3, the focus will be on the periods of development that are associated with early childhood.

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Glossary of Terms Used in Unit 2

Source: *A dictionary of psychology*, Andrew M. Coleman, Oxford University Press, 2nd ed. 2006.

On-line version available on subscription from the hyperlink

http://www.oxfordreference.com/pages/Subjects_and_Titles_2E_PS05

Other free access on-line psychology dictionaries are available at the following links

<http://allpsych.com/dictionary/>

<http://www.merriam-webster.com/dictionary/psychology>

Behaviour (n.) – The physical activity of an organism, including overt bodily movement and other physiological processes. The term also denotes the specific physical responses of an organism to particular stimuli or classes of stimuli.

Biological age – A person's age in terms of biological health.

Case study – An in-depth examination of a single individual

Chronological age – The number of years that have elapsed since birth

Cohort effects - The findings that are the result of historical factors to which one age group in a cross-sectional study has been exposed

Concept (n.) - A mental representation, idea, or thought corresponding to a specific entity or class of entities, or the defining or prototypical features of the entity or class, which may be either concrete or abstract.

Cross-sectional design – A research design in which groups of people of different ages are compared

Experiment – a study that tests a causal hypothesis

External validity (n.) – The extent to which the conclusions of an empirical investigation remain true when different research methods and research participants or subjects are used

Hypothesis (n.) – A tentative explanation for a phenomenon, subject to criticism by rational argument and refutation by empirical evidence

Independent variable – The presumed causal element in an experiment

Individual differences – The stable, consistent ways in which people are different from each other

Intelligence – Problem-solving skills and the ability to learn from and adapt to the experiences of everyday life

Intelligence Quotient – A person's mental age divided by chronological age, multiplied by 100

Internal validity (n.) – The extent to which the conclusions of an empirical investigation are true within the limits of the research methods and subjects or participants used

Laboratory observation – Observation of behaviour under controlled conditions

Life history record – A record of information about a lifetime chronology of events and activities that often involve a combination of data records on education, work, family, and residence

Longitudinal design – A research design in which people in a single group are studied at different times in their lives

Mental age – Binet's measure of an individual's level of mental development, compared with that of others

Naturalistic observation – The process of studying people in their natural environment

Qualitative – This type of research is concerned with meaning, rather than with measurement. The emphasis is on subjective understanding, communication, and empathy, rather than on prediction and control. A central tenet is that there is no separate, unique, 'real' world.

Normal distribution – A symmetrical distribution with most scores falling in the middle of the possible range of scores and a few scores appearing towards the extreme of the range

Population – The entire group that is of interest to the researcher.

Psychological age – An individual's adaptive capacities compared with those of other individuals of the same chronological age

Random sampling – A procedure that ensures that each and every element of the population has an equal chance of being selected for the study

Research ethics – The guidelines researchers follow to protect the rights of animal and human subjects who participate in studies

Representative sample – A sample that has the same characteristics as the population to which a study's findings apply

Sample – Subset of a group that is of interest to a researcher and the members of that subset that participates in a study

Sequential design – A research design that combines cross-sectional and longitudinal examinations of development

Social age – Social roles and expectations related to a person's age

Stratified sampling – This technique is used to increase precision in sampling. Before any sampling is undertaken the population is divided into a number of strata; for example, on the basis of age of respondent, sex of respondent, or ethnicity of respondent. A random sample is then taken from each stratum.

Survey – Data collection method in which participants respond to questions

Theory (n.) – A proposition or set of propositions offered as a conjectured explanation for an observed phenomenon, state of affairs or event.

Variable (n.) – Anything that is subject to variation; in psychological research, any stimulus, response, or extraneous factor that is changeable and that may influence the results of the research