

Human Development Psychology II

3.1 Nurture and Nature

Developmental psychology is the scientific study of changes that occur in human beings over the course of their life. Originally concerned with infants and children, the field has expanded to include adolescence, adult development, aging, and the entire lifespan. This field examines change across a broad range of topics including motor skills and other psycho-physiological processes; cognitive development involving areas such as problem solving, moral understanding, and conceptual understanding; language acquisition; social, personality, and emotional development; and self-concept and identity formation.

Developmental psychology examines issues such as the extent of development through gradual accumulation of knowledge versus stage-like development—and the extent to which children are born with innate mental structures, versus learning through experience. Many researchers are interested in the interaction between personal characteristics, the individual's behavior, and environmental factors including social context, and their impact on development; others take a more narrowly-focused approach.

Developmental psychology informs several applied fields, including: educational psychology, child psychopathology, and forensic developmental psychology. Developmental psychology complements several other basic research fields in psychology including social psychology, cognitive psychology, ecological psychology, and comparative psychology.

Nature and nurture

A significant issue in developmental psychology is the relationship between innateness and environmental influence in regard to any particular aspect of development. This is often referred to as "nature and nurture" or nativism versus empiricism. A nativist account of development would argue that the processes in question are innate, that is, they are specified by the organism's genes.

An empiricist perspective would argue that those processes are acquired in interaction with the environment. Today developmental psychologists rarely take such polarised positions with regard to most aspects of development; rather they investigate, among many other things, the relationship between innate and environmental influences. One of the ways this relationship has been explored in

recent years is through the emerging field of evolutionary developmental psychology.

One area where this innateness debate has been prominently portrayed is in research on language acquisition. A major question in this area is whether or not certain properties of human language are specified genetically or can be acquired through learning. The empiricist position on the issue of language acquisition suggests that the language input provides the necessary information required for learning the structure of language and that infants acquire language through a process of statistical learning. From this perspective, language can be acquired via general learning methods that also apply to other aspects of development, such as perceptual learning.

The nativist position argues that the input from language is too impoverished for infants and children to acquire the structure of language. Linguist Noam Chomsky asserts that, evidenced by the lack of sufficient information in the language input, there is a universal grammar that applies to all human languages and is pre-specified. This has led to the idea that there is a special cognitive module suited for learning language, often called the language acquisition device. Chomsky's critique of the behaviorist model of language acquisition is regarded by many as a key turning point in the decline in the prominence of the theory of behaviorism generally. But Skinner's conception of "Verbal Behavior" has not died, perhaps in part because it has generated successful practical applications.

Mechanisms of development

Developmental psychology is concerned not only with describing the characteristics of psychological change over time, but also seeks to explain the principles and internal workings underlying these changes. Psychologists have attempted to better understand these factors by using models. Developmental models are sometimes computational, but they do not need to be.

A model must simply account for the means by which a process takes place. This is sometimes done in reference to changes in the brain that may correspond to changes in behavior over the course of the development. Computational accounts of development often use either symbolic, connectionist (neural network), or dynamical systems models to explain the mechanisms of development.

Research areas

Cognitive development

Cognitive development is primarily concerned with the ways that infants and children acquire, develop, and use internal mental capabilities such as problem solving, memory, and language. Major topics in cognitive development are the study of language acquisition and the development of perceptual and motor skills. Piaget was one of the influential early psychologists to study the development of cognitive abilities. His theory suggests that development proceeds through a set of stages from infancy to adulthood and that there is an end point or goal.

Other accounts, such as that of Lev Vygotsky, have suggested that development does not progress through stages, but rather that the developmental process that begins at birth and continues until death is too complex for such structure and finality. Rather, from this viewpoint, developmental processes proceed more continuously. Thus, development should be analyzed, instead of treated as a product to obtain.

K. Warner Schaie has expanded the study of cognitive development into adulthood. Rather than being stable from adolescence, Schaie sees adults as progressing in the application of their cognitive abilities.

Modern cognitive development has integrated the considerations of cognitive psychology and the psychology of individual differences into the interpretation and modeling of development. Specifically, the neo-Piagetian theories of cognitive development showed that the successive levels or stages of cognitive development are associated with increasing processing efficiency and working memory capacity.

These increases explain differences between stages, progression to higher stages, and individual differences of children who are the same-age and of the same grade-level. However, other theories have moved away from Piagetian stage theories, and are influenced by accounts of domain-specific information processing, which posit that development is guided by innate evolutionarily-specified and content-specific information processing mechanisms.

Social and emotional development

Developmental psychologists who are interested in social development examine how individuals develop social and emotional competencies. For example, they study how children form friendships, how they understand and deal with emotions,

and how identity develops. Research in this area may involve study of the relationship between cognition or cognitive development and social behavior.

Emotional regulation or ER refers to an individual's ability to modulate emotional responses across a variety of contexts. In young children, this modulation is in part controlled externally, by parents and other authority figures. As children develop, they take on more and more responsibility for their internal state. Studies have shown that the development of ER is affected by the emotional regulation children observe in parents and caretakers, the emotional climate in the home, and the reaction of parents and caretakers to the child's emotions.

Physical development

Physical development concerns the physical maturation of an individual's body until it reaches the adult stature. Although physical growth is a highly regular process, all children differ tremendously in the timing of their growth spurts. Studies are being done to analyze how the differences in these timings affect and are related to other variables of developmental psychology such as information processing speed. Traditional measures of physical maturity using x-rays are less in practice nowadays, compared to simple measurements of body parts such as height, weight, head circumference, and arm span.

A few other studies and practices with physical developmental psychology are the phonological abilities of mature 5- to 11-year-olds, and the controversial hypotheses of left-handers being maturationally delayed compared to right-handers. A study by Eaton, Chipperfield, Ritchot, and Kostiuk in 1996 found in three different samples that there was no difference between right- and left-handers.

Memory development

Researchers interested in memory development look at the way our memory develops from childhood and onward. According to Fuzzy-trace theory, we have two separate memory processes: verbatim and gist. These two traces begin to develop at different times as well as at a different pace. Children as young as 4 years-old have verbatim memory, memory for surface information, which increases up to early adulthood, at which point it begins to decline. On the other hand, our capacity for gist memory, memory for semantic information, increases up to early adulthood, at which point it is consistent through old age. Furthermore, our reliance on gist memory traces in reasoning increases as we age.

3.2 Research methods and designs

Main research methods

Developmental psychology employs many of the research methods used in other areas of psychology. However, infants and children cannot be tested in the same ways as adults, so different methods are often used to study their development. Developmental psychologists have a number of methods to study changes in individuals over time. Common research methods include systematic observation, including naturalistic observations or structured observations; self-reports, which could be clinical interviews or structured interviews; clinical or case study method; and ethnography or participant observation. These methods differ in the extent of control researchers impose on study conditions, and how they construct ideas about which variables to study.

Every developmental investigation can be characterized in terms of whether its underlying strategy involves the *experimental*, *correlational*, or *case study* approach. The experimental method involves "actual manipulation of various treatments, circumstances, or events to which the participant or subject is exposed; the *experimental design* points to cause-and-effect relationships. This method allows for strong inferences to be made of causal relationships between the manipulation of one or more independent variables and subsequent behavior, as measured by the dependent variable. The advantage of using this research method is that it permits determination of cause-and-effect relationships among variables. On the other hand, the limitation is that data obtained in an artificial environment may lack generalizability.

The correlational method explores the relationship between two or more events by gathering information about these variables without researcher intervention. The advantage of using a correlational design is that it estimates the strength and direction of relationships among variables in the natural environment; however, the limitation is that it does not permit determination of cause-and-effect relationships among variables.

The case study approach allows investigations to obtain an in-depth understanding of an individual participant by collecting data based on interviews, structured questionnaires, observations, and test scores. Each of these methods have its strengths and weaknesses but the experimental method when appropriate is the preferred method of developmental scientists because it provides a controlled situation and conclusions to be drawn about cause-and-effect relationships.

Research designs

Most developmental studies, regardless of whether they employ the experimental, correlational, or case study method, can also be constructed using research designs. Research designs are logical frameworks used to make key comparisons within research studies such as:

- cross-sectional design
- longitudinal design
- sequential design
- microgenetic design

In a longitudinal study, a researcher observes many individuals born at or around the same time (a cohort) and carries out new observations as members of the cohort age. This method can be used to draw conclusions about which types of development are universal (or normative) and occur in most members of a cohort. As an example a longitudinal study of early literacy development examined in detail the early literacy experiences of one child in each of 30 families.

Researchers may also observe ways that development varies between individuals, and hypothesize about the causes of variation in their data. Longitudinal studies often require large amounts of time and funding, making them unfeasible in some situations. Also, because members of a cohort all experience historical events unique to their generation, apparently normative developmental trends may in fact be universal only to their cohort.

In a cross-sectional study, a researcher observes differences between individuals of different ages at the same time. This generally requires less resources than the longitudinal method, and because the individuals come from different cohorts, shared historical events are not so much of a confounding factor. By the same token, however, cross-sectional research may not be the most effective way to study differences between participants, as these differences may result not from their different ages but from their exposure to *different* historical events.

A third study design, the sequential design, combines both methodologies. Here, a researcher observes members of different birth cohorts at the same time, and then tracks all participants over time, charting changes in the groups. While much more resource-intensive, the format aids in a clearer distinction between what changes can be attributed to individual or historical environment from those that are truly universal.

Because every method has some weaknesses, developmental psychologists rarely rely on one study or even one method to reach conclusions by finding consistent evidence from as many converging sources as possible.