EDUCATIONAL AND SPORTS PSYCHOLOGY

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Educational and
Sports Psychology

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Preface

Educational and Sports Psychology is a multifaceted discipline that examines the psychological factors influencing learning, performance, and achievement in educational and athletic settings. In educational contexts, psychologists delve into various aspects of learning, including memory, attention, problem-solving, and academic achievement. They study effective teaching methods, instructional design, classroom management, and student motivation to optimize the learning experience for individuals of all ages and abilities.

Understanding the psychological processes underlying learning enables educators to tailor their approaches to meet the diverse needs of students and foster a conducive learning environment. Educational psychologists also explore socio-cultural factors, individual differences, and developmental stages that influence learning outcomes. By applying psychological principles, educators can create inclusive, engaging, and effective learning environments that support the academic success of all students.

In the realm of sports psychology, researchers focus on the mental aspects of athletic performance, including motivation, goal setting, confidence, concentration, and stress management. Sports psychologists work closely with athletes and coaches to develop strategies that enhance performance, overcome obstacles, and achieve peak mental states during competition. They employ techniques such as visualization, positive self-talk, and relaxation training to optimize athletic performance and mental resilience.

Sports psychologists also address psychological barriers that may hinder athletic performance, such as performance anxiety, fear of failure, and burnout. By providing athletes with psychological support and interventions, sports

psychologists empower them to cultivate mental toughness, cope with pressure, and maintain motivation in the face of challenges. Additionally, sports psychologists collaborate with coaches, trainers, and other members of the sports team to create a supportive and conducive environment for athlete development.

Educational and Sports Psychology intersects with various disciplines, including cognitive psychology, developmental psychology, social psychology, and exercise science. Researchers in this field conduct studies to advance theoretical understanding and practical applications in both educational and athletic contexts. They explore topics such as motivation theory, learning strategies, psychological skills training, and psychosocial development to enhance educational outcomes and athletic performance.

Overall, Educational and Sports Psychology offers valuable insights into the complex interactions between the mind and performance, serving as a bridge between theory and practice to optimize learning and athletic achievement. By integrating psychological principles into educational and athletic settings, psychologists contribute to the holistic development and success of individuals in both academic and sports domains.

Exploring the intricate connections between mind and body, Educational and Sports Psychology delves into the realms of motivation, learning, and performance enhancement.

–Author

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Educational Psychology

Educational psychology is a discipline within the larger field of psychology which is focused on studying how people learn. People have been curious about the processes behind learning for thousands of years, with educational psychology as a distinct scientific discipline arising in the 1800s. Advancements in this field are occurring all the time, including periodic reversals of previously stated conclusions. Some examples of famous psychologists who have performed research in this field include Jean Piaget and B.F. Skinner. This field incorporates several disciplines from within psychology. Educational psychologists are very interested in the study of developmental psychology, which looks at the stages of human development and the processes which can impact development, and they are also interested in social and behavioural psychology, as well as abnormal psychology. As with other types of science concerned with human subjects, educational psychology is subject to a number of ethical restrictions which can make experiments challenging, with many research psychologists in this field using observation as a tool to increase knowledge.

One area of interest in educational psychology is the study of the acquisition of knowledge, with particular interest in populations who acquire knowledge in unusual ways, such as gifted children, children with developmental disabilities, and children with autism. People in this field are also interested in the role of the school environment and how the social world of a school impacts education and learning. Educational psychologists may also work on developing new treatment methods or helping teachers develop customized instruction plans for unique students.

Some educational psychologists work in the school environment, providing support to children and assisting parents and faculty members with the evaluation

of children who appear to be having trouble in school. Educational psychologists can also work as consultants helping people design more effective schools and learning environments, teaching teachers about the latest developments in educational psychology, and evaluating individual troubled children by request from parents or schools.

There are many avenues of exploration within this field. Most practising educational psychologists hold at least a master's degree, although some people can find work with a bachelor's degree. Numerous universities offer graduate programmes in educational psychology with varying areas of focus, and people who are interested in pursuing this field may want to look into the type of work being done at various institutions or seek out faculty members with interests which appeal to them when deciding where they want to go to school.

NATURE AND SCOPE OF EDUCATIONAL PSYCHOLOGY

Educational Psychology by its very nature is treated as a science. Like science it employs different objective methods of data collection, experiments and drawing inferences. It deals with the study of an organised and systematic body of knowledge concerning human behaviour of all kinds.

It seeks to make its subject matter scientific and exact by utilising special means and appliances. It also aims at understanding, explaining, predicating and controlling facts and phenomena relating to human behaviour.

It is a Social Science

Educational psychology is a social science. Like any other social science it studies human beings relating to education. Like the economist, political scientist, sociologist or anthropologist, the educational psychologist conducts investigations and experiments, collects data and statistics, and makes interpretations and inferences. He does not work in an ivory tower nor makes any arm- chair speculations.

It is an Applied Science

Educational psychology is an applied science. It applies the psychological principles and methods in the field of education. The knowledge about the growth and development of the child, learning conditions and theories belonging to the field of psychology is used for methods of teaching and school organisation.

It is a Positive Science

Educational psychology is a positive science which deals with things as they are. It is not a normative science which deals with things as should be. It studies the child's growth and development as they are. It never deals with what the child should do or should not do. This task is taken care of by ethics and philosophy which are normative sciences.

SCOPE OF EDUCATIONAL PSYCHOLOGY

Educational psychology is psychology in relation to education. It deals with the behaviour of the individual in various educational environments. Psychology studies the behaviour of the individual in different conditions and situations. Therefore, scope of general psychology is broader than that of educational psychology, which is comparatively limited.

Educational psychology deals with the child as a whole-his physical, mental, emotional and social development at various stages. Such development is resulted by heredity and environment, different biological, social and cultural factors. Hence all these aspect and factors come under the purview of educational, psychology.

Learning is the key-concept in educational psychology. It is so important and broad-based that educational psychology is also called learning psychology. The learning process, learning and maturation, nature and conditions of learning, factors influencing;, learning, motivation, attention and interest, various kinds of learning and laws of learning come under the scope of educational psychology.

The psychological principles underlying various methods of teaching, educational innovations and experiments, educational objectives, mental health and hygiene, special provisions for slow- learners, gifted, handicapped and deprived children are usefully applied to educational development. These are, therefore, part and parcel of educational psychology. The psychological tools and techniques, methods and approaches are profitably used by the educational psychologists for undertaking research studies and experiments in various fields. New methods and techniques are also developed by them for collection, interpretation and analysis of data. All these constitute the scope of educational psychology.

AIMS OF EDUCATIONAL PSYCHOLOGY

Educational psychology aims at the harmonious growth and rightful conduct of the children in too. It aims at the development of 'wholesome personality' and 'continuous growth'. It aims at helping the teacher in providing facts and generalisation in his task of assisting the child to develop the harmonious personality.

A few of the specific aims and objectives are discussed here with:

(1) Educational psychology aims at developing right attitudes in the teacher about the educational problems. An effective management of learning is a key problem in educational psychology. From educational psychology the teacher knows the proper method of imparting instruction. He also knows the amount of learning which can be acquired by the child.

(2) Educational psychology aims at assisting the teacher to organise the material which to be taught to the child. The teacher studies the whole child and his mental make-up and chooses and organises the subject-matter properly.

(3) Educational psychology aims at studying heredity growth and maturation, environmental influences, language, thinking, the development of language and the process of socialisation in relation to their effect on the child as a learner. It assists the teacher to set up appropriate educational situations in order to bring about desirable change.

(4) It aims at assisting the teacher in treating their pupils with sympathy and understanding. It also aims at creating positive attitude towards learning.

(5) It aims at helping the teacher to understand his own task. The teacher faces many problems in the classroom as teaching situation. Educational psychology develops in the teacher a scientific attitude to solve different problems of education faced by him.

(6) Educational psychology aims at teaching, teachers how best to help their pupils to learn more effectively both in and out of class.

(7) It aims at providing the teacher with the proper method of teaching. The various teaching procedure are put in practice in teaching the child. Those which are psychologically sound are recommended for the teacher's use.

(8) Conducting research is another important objective of educational psychology. Knowledge in this field keeps on developing from this practice of research methods.

(9) Educational psychology aims at the application of research findings in the learning situation itself.

(10) It also aims at developing sound methods of measuring and evaluating the achievements of the pupils objectively with pure objectively.

(11) Another significant aim of educational psychology is to guide the administrators in the organisation and administration of the educational instruction and to provide a scientific basis for the supervision of instruction.

(12) Educational psychology also aims at helping the teacher to provide proper guidance programme in the school having thorough knowledge of individual difference.

RELATIONSHIP BETWEEN PSYCHOLOGY AND EDUCATION

- According to Aristotle, "Education is the creation of a sound round in a sound body."
- According to Pestology, "Education is the natural, harmonious and progressive development of man's innate powers."
- According to Gandhi ji, "By education I mean around drawing out of the best child and man, body, mind and spirit."

The relation between psychology and education is very intimate. Psychology has been defined as the science of behaviour. It seeks to understand and explain behaviour in terms of mental and bodily activities. Its chief problem is how and why we behave, how we Think, know, feel and act and why we think, know, feel and act in the way in which we do.

It tries to understand the conditions from which acts of behaviour arise and to arrive at general principles which govern behaviour so as to interpret, control and predict it. Education, as we have seen above, is an attempt to mould and shape behaviour. It tries to help young people to grow and develop along certain lines, to acquire knowledge and skill and to learn certain ways of thought and feeling so that they may be absorbed in adult social life.

The science of psychology must be basic to such an attempt, for any influence on behaviour, to be effective, must be planned and worked according to the principles of psychology. Education, therefore, must be based on psychology and from the very first step which he takes to educate the child, the educator must depend upon psychological knowledge. Education deals with young people and the conditions that promote or retard growth and development; it selects and strengthens those influences which promote healthy growth and tries to eliminate and weaken those which retard it.

As a result of this study it formulates certain principles on which organisation and administration in schools should be based; it has to study the needs and interests of children and provide for their healthy satisfaction and expression; it has to devise effective methods of teaching so that children may learn more quickly and better.

All this is not possible without a knowledge of psychology which explains how young people grow, what dominant interests mark the several stages of their growth, how they differ from one another and grow at different rates, how they learn new skills or acquire new knowledge, how they react to the influence of teachers and class-mates.

Psychology is expanding rapidly and our growing knowledge of the minds and behaviour of young people promises to be an effective guide in the solution of our educational problems. The Education and Psychology are complementary to each other. Psychology is an essential element to education. Without its help problems of education cannot be solved. Both education and psychology are concerned with behaviour.

Modem education is based and founded on psychology. The child is imparted education only after making a thorough study of his interests, aptitudes, intelligence and personality both is two distinct branches of knowledge but they are closely related.

- According to Jha, "The process of education is entirely at the mercy of psychology."
- According to Davis, "Psychology has made a distinct contribution to education through its analysis of pupils' potentialities and differences."
- According to Skinner, "The entire range of behaviour and personality is related to educational psychology."

Psychology is the science of behaviour and education in its narrower sense is the modification of behaviour. The modification in behaviour cannot be easily brought unless we know the science of behaviour. The teacher must know about the developmental stages, personality development and emotions of the students in order to be successful teacher.

Unless the teacher is fully aware of psychological characteristics of the child, he may not be successful in bringing the desirable changes in the behaviour of students. This leads us to believe that education and psychology are intimately related to each other.

Below are some points which show how far education and psychology are related to each other:

(1) Education is concerned with aims, ideals and standards of life and psychology determines whether these aims are attainable or not.

(2) Education demands the teacher to know the child as well as the subject matter of instruction, where the psychology helps to know about the child.

(3) Psychology also helps the teacher to teach effectively undertaking effective and appropriate teaching techniques.

On the basis of the following points the relationship between Psychology and education can easily be seen:

PSYCHOLOGY AND AIMS OF EDUCATION

Psychology helps the educator in the realisation of educational aims by helping him to bring out improvement in the quality of instruction by providing him ability and insight into the child's attitudes, ideas, aptitudes, interests and emotions, *etc.*

Psychology and Teacher

Psychology helps the teacher to understand the learner, learning process and the learning situations. Psychology states that teacher should have sympathetic and affectionate attitude towards the learner. They should have genuine interest in the teaching profession.

Psychology and Curriculum

Psychology suggests that the curriculum should be integrated, flexible, co-related and child-centred. There should be different co-curricular activities in the school. Co- curricular activities are considered as an important part of education because they are important media for sublimation of instincts and for the development of personality.

Psychology and Methods of Teaching

Various methods of teaching like Project method, Heuristic method, Montessori Method, Play-way method are based on sound psychological principles.

Psychology and Text Books

Psychology tells the teachers and the students that text books should be attractive, well illustrated and according to the mental level of the pupils. These may act as good aids to the learners.

Psychology and Innovations

Psychology has made significant contribution by introducing innovative ideas for improving the process of teaching and learning such as-Activity-centred teaching, Micro- teaching, Programmed instruction, Interaction analysis.

Psychology and Audio-visual Aids

Psychology states that to develop interest among students, teacher should properly use audio-visual aids. Use of audio-visual aids makes the learning easy, interesting and effective.

Psychology and Time Table

Time table is prepared according to the psychological principles. While preparing it, the teacher should keep in mind the relative importance of different subjects and their toughness and the fatigue of students.

Psychology and School Administration

Psychology helps in solving problems of administration by mutual discussion among various agencies of school. It provides a scientific basis for the supervision of instruction.

Psychology and Discipline

Psychology tells us the ways of dealing with problems of delinquent, backward, handicapped and gifted children and helps in maintaining discipline. It states that discipline should be self-discipline, dynamic and constructive through participation in purposeful activity.

Psychology and Evaluation

Psychological tools help the teacher to evaluate the achievement of the pupils *and suggests improvements in examination. Teacher can control, direct and predict the behaviour of students on the basis of research studies in class-room teaching. Thus, education and psychology are closely and intimately related.

IMPORTANCE OF EDUCATIONAL PSYCHOLOGY IN CHILD DEVELOPMENT

Early childhood is considered to be "an ideal period for learning." Watson thinks, 'the scope and intensity of learning during this period exceeds that of any other period of development." The following points should be kept in view by the educator while planning the education of the child at this stage.

Proper Atmosphere

A healthy, peaceful and secure atmosphere should be provided for the child. This is necessary both at home and the school.

Proper Treatment

The child has to depend on others for the satisfaction of his requirements. Hence he should always receive an affectionate, sympathetic, and courteous treatment from others an atmosphere of fear and repression will not allow the child to develop properly.

Developing the Endowments of the Child

A child takes birth with certain natural endowments. The educator should try to locate them and plan for their maximum development.

Satisfaction of Curiosity

Every child is curious to know the details of his social environment. The parents and the teachers should try to pacify this need of the child by answering the questions asked by him.

Developing Self-Sufficiency

The infant depends on others for the satisfaction of his needs. The child has to do everything himself.

The educator should try to develop a spirit of self-sufficiency in the child and should provide him opportunities so that the child is able to do most of the things himself.

Developing a Social Sense

Efforts should be made by the teacher to develop a rational social séances in the child. The Child starts developing a social sense by the end of this stage.

Encouraging the Instinctive Development of the Child

The child at this stage is guided by his instincts. The teacher should not try to suppress the instinctive development of the child. It should be sublimated in the best interests of the personality development of the child.

Formation of Good Habits

This is considered to be the most flexible age of the child. Steps should be taken towards the formation of good habits by the child.

Learning by Doing

The child is active by nature. This ought to be satisfied through the use of activity method which advocates learning by doing.

Use of the Play-Way

Play is natural to the child. Let him play and learn. This will make learning easier and acceptable to the child.

Sensory Training

There are five senses of the child. These should be properly developed at this stage. This sensory training was also emphasized by Madam Montessori.

Use of Stories and Pictures

Children at this stage are interested in stories and multi-coloured pictures. They should be made to learn by using story telling method and with the help of multi-coloured pictures and charts.

LATER CHILDHOOD-(FROM TO YEARS)

Physical Development

The development is slow and uniform. The child at the age of 12 it about 55 inches in height, which means an annual increase of 2 to 3 inches Boys are slightly taller than girls. Body proportions change considerably and the overall appearance of the child also alters. The nose becomes larger and the lower jaw also increases in size. Arms, legs and trunk increase in length and look thinner.

This rather gives 'an ugly look' to the child. He also builds up fine muscular co-ordinations and improves many muscular and mother skills. Boys show superiority to girls and special interest in games and skills requiring physical strength, while girls are superior to body in skills involving the use of finer muscles, such as drawing, painting, sewing, *etc.*

Emotional Development

The child now comes to have a control over his emotions. His emotional behaviour is guided by a rational expression. He is still jealous, may be of his younger brothers or his class-fellows. He may tease and make fun of those children who are the objects of his jealousy. He may be afraid of things but tries to look brave. His expression of joy is expressed by a smile. He satisfies his curiosity by asking questions from the teacher and by studying books.

Social Development

At this stage the child is engaged in social give and take. Sometimes he is teased and bullied by others and he also teases and bullies others. He attaches great value to friendship and takes part in games and excursions. Now he is fairly independent in his behaviour. He moves with his friends and comes to have a 'group' spirit. Sometimes he may assume the leadership of the group as well. Boys and girls make their separate groups. The children also come to have knowledge about their caste, religion bias and prejudices.

Mental Development

Children develop their mental power by studying in the schools, reading books, and by visiting places. They develop their reasoning power, memory,

attention and sensory discrimination during this period. Children also judge their own actions and criticize the actions of others and in this way they come to have their own opinions. In religious and racial matters they take up the opinions of their elders. They also take up the aesthetic standards of their elders. Their vocabulary increases by leaps and bounds. Now they are able to speak and write sentences of more than average length.

Moral Development

To him the moral code is now determined by the group to which she belongs. He considers that stealing is generally bad. He judges the actions of others accordingly. He has a strong sense of fair-play and justice. Sometimes conditions in the family play a very important role in determining these attitudes.

EDUCATIONAL IMPORTANCE OF LATER CHILDHOOD

This period of childhood is the time when the basic outlook, values and ideals of the child are finally shaped. Hence it is duty of the parents, teachers and the society to plan for their proper development. The School, however, has a very important role to play. The following points should be kept in view by the teacher.

Proper Physical Development

Well-organised evening games and sports should be provided for children so that they are able to have a proper physical development. The teacher should see that every child takes part in these games. Morning physical training may also be organised for resident students. In the new educational pattern of 10+2+3, physical development is being highly emphasized by educators.

Provision for Excursions and Scouting

Children start developing surplus energy at this stage. They are interested in adventure and roaming about here and there. It is, therefore, necessary that suitable provision should be made for excursions and outings for them. The scouting should be organised in the school to satisfy this need of the child.

Proper Provision of Extra-Mural Activities

Hidden qualities have to be found out and properly developed. This is possible only if a large number of extra-mural activities are provided in the school this will enable the child to choose those activities in which he is interested. In the organisation of these activities democratic ways should be adopted.

Planning for Proper Social Development

Children develop the 'group spirit' at this stage. In order to direct it in the right channels it is necessary that group games on a group competition basis should be arranged. It is a period of competitive socialisation. It is through these group competitions that the child will develop various qualities like discipline, self-control, sympathy and co-operation.

Developing the Creative Instinct

Children want to create something new. This creative trend should be properly utilised for educational ends. The teacher should provide opportunities where children are in a position to satisfy their creative instinct.

Proper Emotional Outlet

This stage, however, is considered to be a unique stage in the emotional development of the child. It is possible only if proper outlets for the emotional expressions of children are provided. The teacher should not try to suppress these outlets. He should try to redirect them in the right channels. He should place examples of great men of the world before them.

Satisfying the Acquisitive Instinct

Children want to acquire those things which they like. If it is not properly directed they start stealing they should, therefore, be encouraged to collect those things which have an educational value.

Moral Training

The child at the age of eight years starts accepting the moral values of the society in which he lives. Therefore, it is necessary that some moral training should be provided. Instructions may be provided which have a moral value for the child. A democratic approach should be followed as morality is something which springs from the heart of the child.

Learning Though Self-Activity

Children like activity. It comes to occupy a more important place in the educational system when it originates from the children themselves. Self-activity leads to self-expression, thus leading to self-realisation.

Teacher's Role in Academic Development

The teacher has a very important role to play in the mental development of the child.

His role may be in the following directions:

(a) Children are interested in language learning. They may learn two or three languages at this stage.

(b) Children should be encouraged to choose those subjects which have a functional value. Preference should be given to those subjects who are useful in life.

(c) Interests of children differ and change. Hence, it is necessary that their text-books should have different types of lessons. They may include adventurous stories, biographies of great men, drama, dialogue, *etc.*

(d) It is the duty of the teacher to make necessary changes in the curriculum and methods of teaching.

ADOLESCENCE STAGE (PERIOD FROM TO/YEARS)

The term 'Adolescence' is derived from the Latin word 'Adolescence' which means 'to grow to maturity?' This is a period lying between childhood and maturity. Thus, it is a period of change, when the individual is neither a child nor an adult. The changes which take place are physical, sexual, emotional, social, mental and moral. A harmonious development of adolescence means full adult height, weight, stature and strength, and complete sexual maturity; the proper adjustment of the adolescent in the society; he also takes up his duties and responsibilities; the complete development of his mental powers and emotional stability and economic independence and professional competence.

PHYSICAL DEVELOPMENT

Height and Weight

Growth is rapid just before and during the early years of adolescence. Both boys and girls develop their height and weight.

Bodily Proportion

Different parts of the body grow at different rates and reach their final size. Arms and legs grow longer and hands and feet grow much bigger.

Sexual Development

This stage is the development of sex maturity. The pituitary glands secrete 'gonad tropic' hormone which finally stops bodily growth and leads to sex maturity. The sex glands of male produce spermatozoa which lead to the development of sexual growth. In the same way, female sex glands are called the ovaries which produce 'Ova' sex hormones.

Emotional Development

This is the period of increased and charged emotions as the instincts of the child attain maturity. His feeling also undergoes a great change. He is sensitive and easily offended. He feels he is all alone, unloved, and in a world which is hostile.

He is required himself to adjust to the new situations and behave as the new adult. He may face emotional difficulties. He is not able to control his emotions and this leads to temper outbursts. Sometimes he is happy and sometimes he is sad, sometimes he also suffers from emotional moods. He may also indulge in day-dreaming.

Love is also predominant feeling in this period. This is due to the development of sex instinct. This love may be of most selfless kind. Adolescents are prepared to sacrifice everything simply to gain the love of another child. In the later period of adolescence this is directed to the opposite sex. The adolescents also direct love towards great men, which is known as hero worship.

Social Development

At this stage the adolescent is self conscious and lacks confidence and is very modest. He wants seclusion. All these things disappear as he develops. He starts choosing his own friends and chooses them on the qualities they possess. Gradually he forms small group. He takes part in various social groups as a member of these groups. Thus he gains experiences which are valuable to him in adult life.

In this period adolescents also come in conflict with parental demands. They demand independence of action whereas their parents treat them as children and hence they come in conflict with them.

Moral Development

At this stage the child develops his critical ability and judgement. He also comes across various individuals and thus he does not accept religious principles without criticism. He becomes conscious of the idea of right and wrong.

Mental Development

At this stage the span of attention increases. Memory, reasoning and judgement also increase. He understands and appreciates poetry, music, art, literature and mathematics.

ADULTHOOD STAGE (PERIOD AFTER YEARS OF AGE)

Adulthood period is the longest of all the periods or stages of life. It is characterised by an all round maturity physical, intellectual, emotional and social. At this stage the individual develops into a functioning member of the society and acts according to social and moral standards. He is self-reliant and accepts responsibility for this decisions and actions. He develops ability to think rationally and intelligently, ability to understand the world and to make maximum adjustments.

OLD STAGE (PERIOD AFTER YEARS OF AGE)

This stage starts from 58 years till death. At this stage one spends one's most of time in worshipping social service and excursions.

REVOLUTION IN EDUCATION INDUCED BY PSYCHOLOGY

The extent to which psychology has produced into the field of teaching and learning education is so impressive that only the term revolution can be applied to it with any accuracy. In pointing to the changes in education caused by psychology Ryan has written, "In many schools of today one finds an atmosphere of friendliness and happy activity. Much of the traditional formality, the forced silence, the tension, the marching is gone. Children's voices are heard in the halls and class-rooms.

The younger children come gaily down the stairways, naturally and relatively unstrained, the older boys and girls through the corridor or outside walk making

their way to school rooms, shops, studios, libraries, laboratories and playing fields to tasks that mean something to them, that make demands upon their energies and their imagination, that often involve hard, difficult work, but work that they recognise as creative.

Beauty of surroundings is considered a first, requirement in these schools-there are flowers about, brightly coloured murals painted by the children, attractive informal work rooms for the various groups. Art and music has begun to play the role that being to them as fundamental in education and life."

Child-Centred Education

In early times the teachers were mainly engaged in imparting various kinds of information to the children. In those times children were less the centre to attention, the school claimed more of their time. Today, it is the child who is the centre of attention in education.

Every child is individually considered and treated. Efforts are always made to adapt the curriculum of study to the needs of the child with the result that the brilliant and dull witted children do not study the same subjects.

Applied psychology has directed attention to the differing abilities and capacities of people. Such an attitude has made it possible for the teacher to gauge the special abilities of his wards and to make the best arrangements for the guidance of individual children.

The teacher of today not only must be acquainted with teaching but also with his students since his profession is now centred about the child and not about the subject or teacher. The consequence of this kind of reasoning is that what matters isn't the beauty, knowledge or ability of the teacher but the extent to which he succeeds in developing the personality of his students.

Process of Education

Previously, education was believed to be a comprehensive process that trained the individual, provided him with a moral character and made him more cultured. In psychology as it is understood today, the conception of mind has completely changed.

Analysis has led to the discovery that many kinds of forces and mental activities take place within the human being so that for the development of the child it is necessary to provide him with different kinds of programmes and subjects so that he may succeed in properly developing all his mental faculties and abilities.

At present, variety is believed to be essential not only in education itself but it is equally held to be true that the education of one individual subject includes many different activities and functions. The teacher should be aware of all these functions. It is only than that he can understand the difficulties of the children in understanding the subject.

If a child fails to memorise some one lesson, it can hardly be taken to indicate only a lack of effort on his part and no other cause. It is equally probable that he

has a weak memory, or is not intelligent, or has no interest in the subject or that he is suffering from ill health. Learning is a complex activity and it is only through a complete knowledge of its various parts that one can diagnose the difficulty of a particular child in memorising or learning a lesson. The teacher has no alternative but to attend to the activity of learning.

Reform in Curriculum

Psychology has also managed to bring about important variations and reforms in educational curricula. Now it is the mental age and not the chronological age of the child that helps to determine the course of study to which he is to be subjected. Intelligence tests reveal the mental age of the child. Different courses are devised for brilliant and deficient children.

After the eighth or delta class, the curriculum is sub-divided into various parts such as literary, scientific, agricultural or art class. The child then has the opportunity of selecting his subject according to his interest and aptitude.

Various extra-curricular activities are organised for the emotional and sentimental development of the child. These include picnics, dramatic societies, *etc.* Other programmes are organised in order to develop the qualities of leadership, public speaking, *etc.*, in the child. But no course of study or programme is foisted upon the child against his inclination.

Inspiration is awakened in him according to his interests and his tastes. Education has now been made more interesting and appealing with the use of audio-visual aids such as television, film projection, *etc.* Many schools are also equipped with radio sets that provide both entertainment and information to the child.

The use of analogies to penetrate the defences of the child is an important method in education. Children who choose to study history are also taken to visit historical places and even a glance at the curriculum of basic education makes clear the extent to which psychology has revolutionised' education. And special curricula are also devised to meet the needs of adult education. They suit the psychology of adult individuals.

Discipline

Discipline has an important place in education. One of the aims of education is to instill respect for discipline in the child. But the recent discoveries of psychology have changed the ways and means in which discipline is taught. Previously physical punishment was one of the chief methods of teaching and imparting discipline in the children. The main motive behind the discipline was fear of physical violence and injury. But instead of injuring the body of the child it injured his personality by making it distorted.

Psychologists attracted the attention of enlightened people to the injurious effects of physical punishment and also suggested alternative means of making children disciplined. One suggestive example is here described. The inmates of a hostel were given to indiscipline during lunch time. They threw morsels of

food at each other and wasted much more. The warden made every effort to stop this nuisance.used every means of arousing fear in the children but without success.

He never discovered the name of the mischief makers and neither did the boys give up their behaviour. Sometime later he was replaced by a new warden who resorted to psychological methods for solving this menace. He made an announcement to the effect that die best behaved table with the most seemly boys would win a flag that would entitle them to twice the normal ration of the most succulent food. The strategy took immediate effect and the indiscipline promptly ceased.

The children seated at various tables were now busily engaged in trying to look more disciplined and seemly than all the others so that they now even prevented the more hardened and incorrigible boys among them from mischief. In this way, the warden took advantage of the psychology of children to effortlessly perform a task that had completely foiled all the efforts of the earlier warden with his shock and fear tactics.

Nowadays it has become customary in schools to allow the children to adopt discipline rather than foist it upon them. At the college level it is from among the students that the prefects are chosen to create and maintain discipline among their fellow mates and to help the proctor in maintaining order within the college.

Very recently there was a high level debate on the spreading indiscipline among university students in India and almost all speakers put forward psychological solutions because the problem of indiscipline is fundamentally and basically a psychological one.

It need hardly be pointed out that the more a teacher knows of child psychology, the easier will it be for him to create discipline in the motley group with which he is faced in the class.

Education on Personality

The modem methods of education place great emphasis upon the education of personality. Education is now understood to mean something more than mere reading or writing, it is also understood to involve the development of personality. Many schools have resident psychologists who solve problems related to personality of the students and give advice to teachers and parents in this regard. At places there are also child guidance clinics that make special efforts towards the correction and normal rehabilitation of problem children or juvenile delinquents.

A study of psychology is an essential part of the curriculum of teacher's training. In addition to these individual efforts most states and districts have a bureau of psychology whose functions are to solve all problems of students relating to their personality, to give personal guidance and to give advice to their parents and teachers regarding them. The truth of the matter" is that the psychologist has become a link for the child's adjustment between the home and the school since such an adjustment helps to improve his personality. In the role of specialist his contribution to the school has become indispensable.

Teaching Method

In the manner already described psychology has changed teaching methods lock stock and barrel. All new research aims at evolving teaching methods that induce the child to learn for himself and thus himself achieve his development. The means of a changed teaching method are radio, cinema, cultural programmes, debates and other competitions, picnics, visits to historical places, games, election contests, students' unions, *etc.* It is psychology that has contributed the Kinder garden and Montessori methods of teaching. Special learning and teaching methods have been evolved for the use of blind, dumb and deaf children and mentally backward or handicapped children.

Individual Differences

In days gone by, the same curriculum was prescribed for all students in the class. The development of applied psychology led to the fact that different individuals differ from each other in respect of their interests, intelligence, ability, capabilities, *etc.* This knowledge of individual differences proved a variable source of revolution for education. Now-a-days the essential pre-requisite to guidance of an educational nature is knowledge of the subject's ability and interests. Choice of his curriculum and other extra-curricular activities are definitely governed by these individual differences.

Process of Learning

The experiments that psychology has carried on in connection with the process of learning have led to the discovery of many laws that economies of time and yet produce good results in terms of material learned. One example would be Thorndike's laws. It is the psychologist who has stressed the importance of reward and punishment in learning. Research in psychology has aimed at discovering the efficacy and inefficacy of the various methods of learning. The employment of the various methods of learning is improved and made more scientific by knowledge of their qualities and drawbacks.

Mental Testing and Guidance

Mental testing and guidance are important factors in applied psychology. Psychologists have evolved scientific tests to measure intelligence and other abilities. Students can be guided in educational and vocational matters with the help of these tests. Now, education aims both at the complete development of the individual as well as his best possible adjustment to his vocation and of his vocation to his natural abilities Teachers need the help of psychologists in either of these two matters.

Psychologists solve the problems of students through personal guidance and inform them of the job they are best suited to through vocational guidance. In this way, the co-operation and co-ordination between the teacher and the psychologist in the field of education is on the increase.

Reform of Problem Children

One of the most notable contributions of psychology to education is the improvement and reform of juvenile delinquents, absconding children, morons, backward children, unsocial and problem children, and advice to their parents regarding them. To this end the state and district psychological bureau assist the educational institutions.

Extra-Curricular Activities

The aim of education is the complete development of the child so that mere book knowledge is insufficient to gain this end In this connection many other programmes are included in the curriculum on the suggestion of psychologists apart from the normal theoretical knowledge.

In this manner, educational psychology provides the teacher with the means to attaining knowledge of the student's nature, capacity, characteristics, needs and motive. This knowledge is the equipment for him to modify his teaching methods sufficiently to attain die goal for education.

Summary

Educational psychology is the study of how humans learn in educational settings, the effectiveness of educational interventions, the psychology of teaching, and the social psychology of schools as organisations. Educational psychology is concerned with how students learn and develop, often focusing on subgroups such as gifted children and those subject to specific disabilities. Researchers and theorists are likely to be identified in the US and Canada as educational psychologists, whereas practitioners in schools or school-related settings are identified as school psychologists. This distinction is, however, not made in the UK, where the generic term for practitioners is "educational psychologist."

Educational psychology can in part be understood through its relationship with other disciplines. It is informed primarily by psychology, bearing a relationship to that discipline analogous to the relationship between medicine and biology. Educational psychology in turn informs a wide range of specialities within educational studies, including instructional design, educational technology, curriculum development, organisational learning, special education and classroom management. Educational psychology both draws from and contributes to cognitive science and the learning sciences. In universities, departments of educational psychology are usually housed within faculties of education, possibly accounting for the lack of representation of educational psychology content in introductory psychology textbooks.

IMPORTANCE OF EDUCATIONAL PSYCHOLOGY FOR TEACHER

The contribution of educational psychology to the theory and practice of education is rich and varied. The knowledge of educational psychology is important

as it provides teachers with some basic skills and guidelines to solve the problems of teaching- learning process. According to John Adams, "Teacher should know John as well as Latin". It means teacher should know child and subject- matter. A teacher should know the nature, capacities, likings and aptitudes and attitudes of the child. Child is like a book, teacher should know each and every page of it."

- Skinner's View, "The teacher needs psychology to bridge the lives of the young and the aims of education in our democratic society."
- Kuppuswamy's View, "Psychology contributes to the development of the teacher by providing him with a set of concepts and principles."

Teaching is an art. Knowledge of educational psychology is very useful and indispensable for the teacher because it gives knowledge to the teacher.

Knowledge of Innate Nature

The child has got natural urges instincts, potentialities and propensities. These innate qualities are the "Prime movers" of his behaviour. The teacher who knows psychology can make his teaching very successful while keeping in view innate nature of the child.

Knowledge of Behaviour

Educational psychology assists the teacher in knowing the behaviour of the child at different stages of development. It also helps the teacher in understanding the physiological and psychological basis of behaviour, *i.e.*, nervous system, glands, instincts, emotions, sentiments, motives, play, intelligence, heredity and environment, *etc.*

Knowledge of Guidance

It helps the teacher in giving guidance to the pupils by having an understanding of interests, abilities, aptitudes, achievements, problems, educational and vocational plans of the pupils.

Knowledge of Unconscious Mind

It helps the teacher in knowing the unconscious mind of the students and plays very important role in the development of the personality of the individual.

Knowledge about Himself

It helps the teacher to know about himself. He learns the psychology of being a teacher and acquaints himself with the traits of a successful teacher.

Understand Development Characteristics

Children pass through different stages of development as infancy, childhood and adolescence. These developmental stages have their own characteristics. If the prospective teacher knows the characteristics emerging at different stages of development, he can utilise these characteristics in imparting instruction and moulding their behaviour according to the specified goals of education.

Understand The Individual Differences

No two individuals are alike. The teacher with the knowledge of the kind of individual differences may adjust his teaching to the needs and requirements of the class and thus may be helpful in creating conducive environment in the schools where the students can develop their inherent potentialities to the maximum.

Understand the Nature of Classroom Learning. The knowledge of educational psychology provides a teacher the knowledge of learning process in general and problems of classroom learning in particular. The teacher by the knowledge of educational psychology can understand the principles of learning and various approaches to learning process, problems of learning and their remedial measures and also about factors affecting and guidance for effective learning.

Understand Effective Teaching Methods

Educational psychology gives us the knowledge of appropriate teaching methods. It helps in developing new strategies of teaching. It also provides us with the knowledge of different approaches evolved to tackle the problems of teaching at different age levels.

Understand the Problems of Children

By studying educational psychology a teacher may understand the causes of the Problems of the children which occur at different age levels and can successfully solve them.

Knowledge of Mental Health

By studying educational Psychology teacher can know various factors which are responsible for mental ill health and maladjustment and can successfully help in Central hygiene.

Measurement of Learning Outcome

Psychological tools help the teacher to assess the learning outcome of the students and also to evaluate his teaching methods for required modification.

Curriculum Construction

Psychological principles are also used in formulating curriculum for different stages. Needs of the students, their developmental characteristics, learning patterns and needs of the society all are to be included in curriculum construction.

Research

Educational psychology helps in developing tools and devices for the measurement of various variables which influence the behaviour and performance of students.

Helps to Develop Positive Attitude

The teacher training programme aims to develop positive attitude towards teaching profession and provides the prospective teachers with the necessary competencies to meet the classroom challenges. Training colleges provide the knowledge of organising the subject matter in a sequential order to suit the needs of the class. The trainees are also acquainted with the techniques of motivating children for learning.

Understanding of Group Dynamics

Educational psychology helps the teacher to recognise the importance of social behaviour and group dynamics in classroom teaching learning.

PROBLEM OF DISCIPLINE

With the knowledge of educational psychology teacher utilises the importance of indirect discipline rather than corporal punishment. It tells the teacher that discipline should be self-discipline, dynamic, positive and constructive through participation in purposeful activity. Pleasure and pain, reward and punishment, praise, *etc.*, should be judiciously used. If the teacher is unaware of the principles of educational psychology he may be unable to solve the problems of his students and thereby fail to induce order and discipline among them.

SCHOOL AND CLASS ADMINISTRATION

Former autocratic method of administration in school and class has been charged by democratic way of life wherein the teachers and administrators are more democratic, co-operative and sympathetic and problems of administration solved by mutual discussion.

Use of Audio-Visual Aids

Educational psychology has helped the teachers to make use of various types as audio-visual aids in classroom teaching so as to make the concept more clear, definite and learning to last longer.

Time-Table

The knowledge of psychology is helpful to the teacher in preparing time-table. He should keep in main the relative importance and toughness of different subjects and level and index of fatigue of the students.

Use of Innovations

Activity-centred teaching, discussion method, micro-teaching, *etc.*, are some innovative ideas adopted to improve the teaching learning process.

Co-curricular Activities

Activities like debate, drama, games are given due importance along with theoritical subjects for the harmonious development of the personality of children.

Production of Text Books

Educational psychology has helped in planning of text books according to the intellectual development of children, their needs and interests at different age levels. Undoubtedly the study of educational psychology may be very helpful to equip our prospective teachers with necessary skills to deal with classroom teaching learning problems.

2

Psychology Delves into Intricacies of Human Mind

MIND

A mindis the set of cognitive faculties that enables consciousness, perception, thinking, judgement, and memory—a characteristic of humans, but which also may apply to other life forms.

A long tradition of inquiries in philosophy, religion, psychology and cognitive science has sought to develop an understanding of what mind is and what are its distinguishing properties. The main questions regarding the nature of mind is its relation to the physical brain and nervous system – a question which is often framed as the Mind-body problem, which considers whether mind is somehow separate from physical existence (dualism and idealism), deriving from and reducible to physical phenomena such as neurological processes (physicalism), or whether the mind is identical with the brain or some activity of the brain.

Another question concerns which types of beings are capable of having minds, for example whether mind is exclusive to humans, possessed also by some or allanimals, by all living things, or whether mind can also be a property of some types of man-made machines.

Whatever its relation to the physical body it is generally agreed that mind is that which enables a being to have subjective awarenessand intentionality towards their environment, to perceive and respond to stimuli with some kind of agency, and to have consciousness, including thinking and feeling.

Important philosophers of mind include Plato, Descartes, Leibniz, Kant, Martin Heidegger, John Searle, Daniel Dennett and many others. The description and definition is also a part of psychology where psychologists such as Sigmund Freud, William James have developed influential theories about the nature of the human mind. In the late 20th and early 21st century the field of cognitive scienceemerged and developed many varied approaches to the description of mind and its related phenomena. The possibility of non-human minds is also explored in the field of artificial intelligence, which works closely in relation with cybernetics and information theory to understand the ways in which human mental phenomena can be replicated by machines.

The concept of mind is understood in many different ways by many different cultural and religious traditions. Some see mind as a property exclusive to humans whereas others ascribe properties of mind to non-living entities (*e.g.*, panpsychism and animism), to animals and to deities. Some of the earliest recorded speculations linked mind (sometimes described as identical with soul or spirit) to theories concerning both life after death, and cosmological and natural order, for example in the doctrines of Zoroaster, the Buddha,Plato, Aristotle, and other ancient Greek, Indian and, later, Islamic and medieval European philosophers.

ETYMOLOGY

The original meaning of Old English *gemynd* was the faculty of memory, not of thought in general. Hence *call to mind*, *come to mind*, *keep in mind*, *to have mind of*, *etc.* Old English had other words to express "mind", such as *hyge* "mind, spirit".

The meaning of "memory" is shared with Old Norse, which has *munr*. The word is originally from a PIE verbal root **men-*, meaning "to think, remember", whence also Latin*mens* "mind", Sanskrit *manas* "mind" and Greek ì Ýíïò "mind, courage, anger".

The generalization of *mind* to include all mental faculties, thought, volition, feeling and memory, gradually develops over the 14th and 15th centuries.

DEFINITIONS

Which attributes make up the mind is much debated. Some psychologists argue that only the "higher" intellectual functions constitute mind, particularly reason and memory. In this view the emotions—love, hate, fear, joy—are more *primitive* or subjective in nature and should be seen as different from the mind as such. Others argue that various rational and emotional states cannot be so separated, that they are of the same nature and origin, and should therefore be considered all part of what we call the mind.

In popular usage *mind* is frequently synonymous with *thought*: the private conversation with ourselves that we carry on "inside our heads."

Thus we "make up our minds," "change our minds" or are "of two minds" about something. One of the key attributes of the mind in this sense is that it is

a private sphere to which no one but the owner has access. No one else can "know our mind." They can only interpret what we consciously or unconsciously communicate.

MENTAL FACULTIES

Broadly speaking, mental faculties are the various functions of the mind, or things the mind can "do". Thought is a mental act that allows humans to make sense of things in the world, and to represent and interpret them in ways that are significant, or which accord with their needs, attachments, goals, commitments, plans, ends, desires, *etc.* Thinking involves the symbolic or semiotic mediation of ideas or data, as when we form concepts, engage in problem solving, reasoning and making decisions. Words that refer to similar concepts and processes include deliberation, cognition, ideation, discourse and imagination.

Thinking is sometimes described as a "higher" cognitive function and the analysis of thinking processes is a part of cognitive psychology. It is also deeply connected with our capacity to make and use tools; to understand cause and effect; to recognize patterns of significance; to comprehend and disclose unique contexts of experience or activity; and to respond to the world in a meaningful way. Memory is the ability to preserve, retain, and subsequently recall, knowledge, information or experience. Although memory has traditionally been a persistent theme inphilosophy, the late nineteenth and early twentieth centuries also saw the study of memory emerge as a subject of inquiry within the paradigms of cognitive psychology. In recent decades, it has become one of the pillars of a new branch of science called cognitive neuroscience, a marriage between cognitive psychology and neuroscience.

Imagination is the activity of generating or evoking novel situations, images, ideas or other qualia in the mind. It is a characteristically subjective *activity*, rather than a direct or passive experience. The term is technically used in psychology for the process of reviving in the mind percepts of objects formerly given in sense perception. Since this use of the term conflicts with that of ordinary language, some psychologists have preferred to describe this process as "imaging" or "imagery" or to speak of it as "reproductive" as opposed to "productive" or "constructive" imagination. Things that are imagined are said to be seen in the "mind's eye". Among the many practical functions of imagination are the ability to project possible futures (or histories), to "see" things from another's perspective, and to change the way something is perceived, including to make decisions to respond to, or enact, what is imagined.

Consciousness in mammals (this includes humans) is an aspect of the mind generally thought to comprise qualities such as subjectivity, sentience, and the ability to perceivethe relationship between oneself and one's environment. It is a subject of much research in philosophy of mind, psychology, neuroscience, and cognitive science. Some philosophers divide consciousness into phenomenal consciousness, which is subjective experience itself, and access consciousness, which refers to the global availability of information to processing systems in

the brain. Phenomenal consciousness has many different experienced qualities, often referred to as qualia. Phenomenal consciousness is usually consciousness *of* something or *about* something, a property known as intentionality in philosophy of mind.

MENTAL CONTENT

Mental contents are those items that are thought of as being "in" the mind, and capable of being formed and manipulated by mental processes and faculties. Examples include thoughts, concepts, memories, emotions, percepts and intentions. Philosophical theories of mental content include internalism, externalism, representationalism and intentionality.

MEMETICS

Memetics is a theory of mental content based on an analogy with Darwinian evolution, which was originated by Richard Dawkins and Douglas Hofstadter in the 1980s. It is an evolutionary model of cultural information transfer. A meme, analogous to a gene, is an idea, belief, pattern of behaviour (*etc.*) which is "hosted" in one or more individual minds, and which can reproduce itself from mind to mind. Thus what would otherwise be regarded as one individual influencing another to adopt a belief is seen memetically as a meme reproducing itself. As with genetics, particularly under Dawkins's interpretation, a meme's success may be due its contribution to the effectiveness of its host (*i.e.*, the meme is a useful, beneficial idea), or may be "selfish", in which case it could be considered a "virus of the mind".

RELATION TO THE BRAIN

In animals, the brain, or *encephalon* (Greek for "in the head"), is the control centre of the central nervous system, responsible for thought. In most animals, the brain is located in the head, protected by the skull and close to the primary sensory apparatus of vision, hearing, equilibrioception, taste and olfaction. While all vertebrates have a brain, most invertebrates have either a centralized brain or collections of individual ganglia. Primitive animals such as sponges do not have a brain at all. Brains can be extremely complex. For example, the human brain contains more than 100 billion neurons, each linked to as many as 10,000 others.

Understanding the relationship between the brain and the mind – mind-body problem is one of the central issues in the history of philosophy – is a challenging problem both philosophically and scientifically. There are three major philosophical schools of thought concerning the answer: dualism, materialism, and idealism. Dualism holds that the mind exists independently of the brain; materialism holds that mental phenomena are identical to neuronal phenomena; and idealism holds that only mental phenomena exist.

Through most of history many philosophers found it inconceivable that cognition could be implemented by a physical substance such as brain tissue

(that is neurons and synapses). Descartes, who thought extensively about mind-brain relationships, found it possible to explain reflexes and other simple behaviours in mechanistic terms, although he did not believe that complex thought, and language in particular, could be explained by reference to the physical brain alone.

The most straightforward scientific evidence that there is a strong relationship between the physical brain matter and the mind is the impact physical alterations to the brain have on the mind, such as with traumatic brain injury and psychoactive drug use. Philosopher Patricia Churchland notes that this drug-mind interaction indicates an intimate connection between the brain and the mind.

In addition to the philosophical questions, the relationship between mind and brain involves a number of scientific questions, including understanding the relationship between mental activity and brain activity, the exact mechanisms by which drugs influence cognition, and the neural correlates of consciousness.

HUMAN MINDS

Humans are part of the animal kingdom, but their minds differ from those of other animals. They are capable of many things that lie beyond the intellectual powers of the rest of the animal realm. We want to ask what makes human minds distinctive. What accounts for the special powers that set humans aside from other animals?

Unfortunately, we shall not fare particularly well in answering this question. We shall explore some possible answers, but none will prove fully satisfactory. In effect, then, this chapter will tell the story of a failure. Still, it is a story worth telling, for it is an interesting failure, we think, and one with significant morals for the study of human minds.

Before proceeding, let me put to one side one familiar answer to my question. Most people, if asked what distinguishes humans from animals, would probably answer—"language". Now, we certainly do not want to deny that our uniquely human facility with language plays some part in differentiating us intellectually from other animals. But it seems to me that, on its own, "language" does not add up to a satisfying answer to my question. For we still need to know what humans do with language. Does language yield distinctive human cognition because it enhances communication of facts, or because it facilitates social coordination, or because it allows records to be kept, or inferences to be drawn, or what?

Given some such hypothesis about the specific ability supported by language, it may turn out that language was constitutively necessary for that ability, in the sense that humans would not have had any distinctive such ability prior to the emergence of language. (For example, suppose that language was evolutionary significant specifically because it enhanced social coordination. Then one possibility is that no distinctive human powers of social coordination were available prior to the emergence of language.) On the other hand, it is also

possible that the relevant ability preceded language, and that language evolved thereafter because it accentuated this ability. (On this scenario, distinctive human powers of social coordination would have come first, with language then being favoured by natural selection because it enhanced those powers.) Or, again, it may have been that the relevant ability co-evolved with language, with increased levels of one creating the evolutionary conditions for increased levels of the other, and vice versa.

However, we can ignore these alternatives here. For they all presuppose that there is some other ability distinctive to humans, apart from "language" itself, which explains the evolutionary significance of language. That is, language is important because it enables humans to do something else, be that social coordination, or inference-drawing, or whatever. My focus in this chapter will be on this further distinctive ability, rather than the details of its evolutionary relationship with language.

Of course, it is not to be taken for granted that the intellectual contrast between humans and other animals should be explained by reference to the historical evolution of just one distinctive human ability. Maybe the evolution of a number of different abilities has contributed to the contrast (which different abilities could then have been evolutionarily related in various ways). Still, without denying this, the limited task of identifying at least one ability which marks an evolutionary distinction between humans and other animals. We can worry about other similar abilities once we have succeeded in this limited task.

MEANS-END REASONING

However, this metaphor seems to rule out any account of how the overall selection of action is informed by the processing in the various specialized modules. It is noteworthy that humans seem able to reach decisions, form intentions, and make plans in a way that is influenced by a wide range of information about disparate subject matters. But how is this possible? Evolutionary Psychologists often seem blind to this issue. They often speak about people, and indeed animals, as 'deciding' what to do on the basis of the deliverances of their special-purpose modules. But what system enables the deciding? Evolutionary Psychologists are generally suspicious of Jerry Fodor's 'central system', some non-modular part of the brain which in higher animals mediates intelligently between the deliverances of sensory input systems and behaviour. And perhaps they are right to reject this specific model for the intelligent guidance of behaviour. But, still, there must be some story to tell about the way human decision-making and planning can be informed by an open-ended range of judgements from disparate input modules.

This line of thought suggests a possible answer to my original question. Maybe some power of integrated decision-making marks a division between humans and other animals. Perhaps other animals, unlike humans, have no way of integrating information from different sources and using it to make well-informed choices. That is, maybe the difference between human and animal

cognition is that animals do not have the same intellectual wherewithal to select means to ends. However, this thought is not easy to focus. It is not hard to see why. After all, nearly all animals have some ways of selecting suitable actions, some way of generating behaviour appropriate to their current circumstances on the basis of various kinds of sensory information.

So some more precise specification of 'means-end reasoning' is needed, if we are to have any hope of showing that 'means-end reasoning' is peculiar to humans. 'Means-end reasoning' can't include any ways of gearing behaviour to circumstances, for even sea cucumbers have some of those. Rather, we need to specify a cognitive structure which selects actions in some particular sophisticated matter, and then argue that this specific mechanism is present in humans but not other animals.

We shall explore a sequence of hypotheses about such a specifically human cognitive structure. None of these hypotheses stands up. In each case it turns out that there is some well-attested species of animal behaviour that displays 'means-end reasoning' in precisely the specified sense.

So in the end we shall fail to find a satisfactory answer to my original question. Still, this does not necessarily mean that the search will have been fruitless. Much can be learned by exploring hypotheses that eventually turn out to be empirically flawed, and we would say that the path we have taken does much to illuminate the range of cognitive structures available to humans and other animals. But you do not have to take my word for this. Let me fill in the story, and you can judge for yourself whether it is one that is worth telling.

Inferential Limitations. My first attempt to identify a distinctive mode of human means-end reasoning involved this hypothesis: non-human animals can't piece together representations of disparate causal facts to infer that some behaviour B is good for some outcome O, unless they or their ancestors have previously experienced Bs leading to Os.

Note that this is not to claim that non-human animals never use any causal representations of the form B will produce O in selecting behaviour. As we shall explain in a moment, we take there to be a good sense in which even very simple animals do that. Rather the claim is that non-human animals are incapable of combining different items of causal information to select novel behaviour, where this is defined as behaviour B which is done in pursuit of O even though neither the agent not its ancestors have ever experienced B as leading to O.

Let me elaborate. First let me explain why we take even very simple animals to use a kind of causal representation. This will then bring out why there might be a specific problem with novel behaviour.

In my view, animals use representations of causal facts to guide their behaviour as soon as their cognition is complicated enough to involve drive states. By a drive state we mean a state whose purpose is to get the animal to perform behaviours that are good for getting some specific outcome like food, say, or water, or sex, or avoiding danger, or so on. We take it that relatively simple animals, such as fish, have such states, in that they will only engage in

feeding behaviour, say, when they are hungry. Suppose now that some such animal has some behaviour (B) which it is disposed to perform under a given conditions (C) if a drive directed at some outcome (O) is activated. Moreover, suppose that the animal is innately so disposed because its ancestors who did B in C succeeded thereby in getting O.

In such a case, we say, we should regard their drive as representing the outcome O. And correspondingly we should regard the innate disposition to do B in C given D as representing the causal fact that: behaviour B in condition C will produce outcome O. After all, by hypothesis the biological purposes of the drive state is to generate (behaviour which will lead to) the outcome O. In line with this, the behavioural disposition will serve its biological purpose insofar as it is indeed the case that behaviour B in condition C will produce outcome O.

Some readers may object that this latter information, that B in C will produce O, is at best represented procedurally, not declaratively. After all, the vehicle of the representation is only a disposition to behaviour, not any sentence-like object in some language of thought. However, we are uneasy about placing any weight here on the distinction between procedural and declarative representation.

After all, dispositions to behaviour are not ethereal traits, but must have some physical basis: there must be physical differences between animals who have the disposition and those who lack it. Moreover, note that these physical features will enter into a kind of rudimentary practical inference when they interact with active drives to generate behaviour in a way that is appropriate to their putative representational contents: thus, the drive 'for O', plus a perception 'that C', will interact with the disposition embodying the information 'that B in C will lead to O', to generate the behaviour B. The disposition may not seem particularly sentence-like, but this doesn't stop it here operating in just the way a sentence-like representation would in generating a practical inference appropriate to its content.

So we have no qualms about speaking of representations of causal facts as soon as we have animals with drives and associated innate behavioural dispositions. However, while these causal representations will interact with drives and perceptions of current circumstances in rudimentary practical inferences, they won't necessarily enter into another kind of inference. Simple animals whose causal information is embodied only in innate behavioural dispositions won't be able to piece together separate items of such information to figure out any further links between means and ends.

Let me illustrate. Suppose that some primate is disposed to shake apple trees to dislodge the fruit when it is hungry, and also disposed to throw any handy apples at predators when threatened. This by itself won't be enough to enable it to figure out that it should shake the trees when it is threatened and no apples are to hand, because nothing in the cognitive structure specified will make a threatening predator, as opposed to hunger, a stimulus to shaking trees. It will have the information that 'shaking produces apples' and that 'throwing apples will repel predators', but won't be able to 'chain' these two general claims together to draw the relevant inference.

Of course, if some of its ancestors had genes which disposed them to shake the trees when predators appeared, then these genes would presumably have been selected, assuming those ancestors also had the disposition to throw the apples to repulse the predators. And this would then have instilled a further innate disposition in the primate, to shake the trees when threatened by predators. But the point remains that the two originally posited innate dispositions can be present without this further innate disposition, and then the organism won't be able to figure out the further implication. So here we have a precise sense in which organisms who embody general information about means to ends solely in their innate behavioural dispositions won't be able to perform novel behaviours. They won't perform B in pursuit of O in condition C unless their ancestors achieved O as a result of doing B in C and were genetically shaped accordingly. It's no good being innately disposed to shake the trees for apples, and being innately disposed to throw apples to repel predators, if your ancestors weren't also directly genetically selected shake the trees when threatened by predators.

Nor is the situation substantially altered if we switch from innate behavioural dispositions to those instilled by instrumental learning (that is, 'operant' or 'Skinnerian' conditioning). Here an organism may become disposed to do B in C in pursuit of O, not because B in C led to O in its ancestral past, but because B in C led to O in the individual organism's experience, and this reinforced its disposition to do B when C. Here the cause of the disposition is different—individual rather than ancestral experience—but the resulting structure remains just the same.

The information that B in C will yield O will be embodied in the organism's disposition to do B when it has a drive for O and a perception of C.

And, given that the information is embodied in this way, the organism won't be able to combine separate items of such information to figure out that some new behaviour is good for some result in some circumstances, when it hasn't itself experienced that behaviour as leading to that result in those circumstances. So, to adapt the above example, an organism that has been conditioned to shake apples trees for fruit when it is hungry, and has also been conditioned to throw apples at predators when threatened, won't automatically shake the trees when threatened by predators, because shaking trees, as opposed to throwing apples, won't have been conditioned to the predator stimulus.

So, just as before, novel behaviour will be beyond the reach of the organism. True, instrumental conditioning can lead you to perform B in pursuit of some result O that none of your ancestors obtained from B. But this still requires that you yourself have previously obtained O after performing B. We still have no process that will lead you to perform B in pursuit of O when neither you nor your ancestors have experienced O following B.

Before proceeding, let me make one brief comment about conditioned learning. At various points to instrumental and other kinds of associationist learning. We would like to make it clear that these references carry no implication

that associationist learning is more important than genes in constructing cognitive systems in animals or even humans. The cognition may be largely hard-wired, and conditioning may do no more than fine-tune pathways laid down by genes. My interest in associationist conditioning here is largely hypothetical: to the extent that it does play a part, does it lead to new kinds of cognitive architecture? And the point we have just made is that it does not, at least as far as the impact of instrumental conditioning on novel behaviour goes.

THE POWER OF CLASSICAL ASSOCIATION

So there is the initial thesis. Non-human animals are not capable of novel behaviours, that is, not capable of choosing a means to an end in some circumstance when neither they nor their ancestors have previously experienced that means as producing that result in that circumstance.

Unfortunately, the thesis can easily be shown to be false. Animals can embody causal information in what we shall 'classical associations', as well as in dispositions to behaviour, and when these classical associations are combined with behavioural dispositions, then the upshot can well be novel behaviour in the above sense.

By a classical association we mean a disposition to move from a particular judgement S to another particular judgement T. Thus an animal might be disposed to move from a change in light intensity to an edge of an object, or from a moving shadow to a hawk is overhead, or from the sound of a bell to food is arriving. Such associations can be innate, or can derive from learning. In the latter case, the relevant mode of learning will be classical or 'Pavlovian' conditioning, rather than operant or 'Skinnerian' conditioning.

We shall use a familiar example of Pavlovian conditioning to illustrate the way in which classical associations give rise to novel behaviour in the sense specify. Since pretty much all animals are capable of Pavlovian conditioning, this will show that novel behaviour in this sense is effectively universal in the animal realm.

Pavolvian conditioning does not involve the reinforcement of some behaviour by a reward, as in instrumental conditioning, but rather the association of two stimuli: animals who have experienced stimulus S being followed by stimulus T will come to respond behaviourally to stimulus S in ways they previously responded to stimulus T. For example, a dog who has experienced the sound of a bell being followed by the nearby presentation of food will come to respond to the bell in ways it previously responded to the sight of food. For example, the bell alone will now make it approach the expected site of the food when hungry, in the way the sight of food itself previously did. This now immediately gives us an example of a novel behaviour in the relevant sense. Neither the dog nor any of its ancestors need previously have derived any advantage from approaching in response to a bell alone when hungry, yet classical conditioning will bring it about that the dog now does this.

It will be helpful to think about the process in representational terms. Suppose the animal starts out disposed to do B, in circumstances T, given a drive for O.

(It is disposed to approach the food, given a drive to eat it.) We can view the embodiment of this disposition as representing that B in T will lead to O. (Approaching food leads to eating.) Now suppose in addition that classical conditioning leads the dog to associate stimulus S with stimulus T, so that, when it registers S, this activates the state which normally registers T. We can think of the embodiment of this association as representing that all Ss are Ts. (Bells are followed by food.) Then we can view the new behavioural upshot of the classical conditioning, namely, the disposition to do B in the new circumstances S, given a drive for O (the dog now approaches when the bell sounds, given a drive to eat) as representing the fact that B in S will lead to O (approaching when the bell sounds will lead to eating). Moreover, we can regard this last claim as the conclusion of an inference from the two already attributed premises that all Ss are Ts and that B in T will lead to O. The organism puts together these two claims and draws the obvious inference that B in S will lead to O. It is thereby led to perform a novel behaviour—doing B in S in pursuit of O—even though neither it nor its ancestors have ever done B in S before (the dog has never previously approached when hungry in response to the sound of a bell).

So this is certainly one sense in which non-human animals can perform novel actions. However, this line of reasoning suggests that there may be another species of novel action which may be beyond them. The 'inference' we have just described allows animals to move from B in T will lead to O to B in S will lead to O. But such inferences won't ever allow animals to figure out that some behaviour B is good for some result O unless they or their ancestors had previously experienced B as leading to O in some circumstances. Classical associations may allow them to transfer this knowledge from one circumstance to another, so to speak, but perhaps the underlying B-O means-end relation always needs to be grounded in direct individual or ancestral experience of B leading to O.

ACQUIRED DESIRES

But this idea doesn't stand up either. Consider the phenomenon known as secondary reinforcement. Standard learning theory tells us that some circumstance P that is not initially rewarding to an animal can come to acquire a positive value as a result of experiences which lead the animals to associate P with something already rewarding. Put it in more familiar terms, the animal comes to desire things it experiences as precursors or means to things it already desires. For example, suppose that an animal habitually passes some landmark on its way to feeding. Then it will come to desire to pass the landmark in itself. Moreover, passing the landmark will come to function as a reward on its own, as will be shown by its ability to reinforce other behaviours, even when it is not followed by feeding. (Of course, continued experience of the landmark not being followed by food will reverse the process, and render the landmark neutral in affect once more.)

Now, secondary reinforcement can bring it about that animals will perform novel behaviour in the strong sense specify: that is, they will perform some B in pursuit of O even though neither they nor their ancestors have ever experienced O after doing B.

We can usefully illustrate the point by describing an experiment of Anthony Dickinson's. In the first stage, rats are trained while hungry but not thirsty, in an environment where they gain dry food pellets from pressing a lever, and a sucrose solution from pulling a chain. Both the pellets and the sucrose solution satisfy hunger. If the rats were thirsty, however, only the sucrose solution would satisfy their thirst.

This prompts an obvious question: what will the rats do if they are thirsty? Will they pull the chain which delivers the sucrose solution, rather than press the lever? In fact they won't do this straight off. But provided they are given an opportunity to drink the sucrose solution when they are thirsty, even in circumstances quite removed from the experimental apparatus, they will then differentially pull the chain when they are next placed in the apparatus when thirsty.

This is now strongly novel behaviour. The rats are pulling the chain in order to quench their thirst, even though neither they nor their ancestors have ever quenched their thirst by pulling the chain before.

Dickinson himself takes this experiment to show that rats are capable of genuine cognition, involving the manipulation of some kind of sentence-like representations, and thus are more than simple associationist systems. As he sees it, the rats must have acquired the information that chain-pulling leads to sucrose solution from their original training. Later they learned that sucrose solution quenches thirst. And then they put the two items of information together, to draw the inference that chain-pulling is the thing to do if you are thirsty.

The rats can usefully be viewed as performing this inference. However, we see no reason to conclude with Dickinson that this elevates the rats beyond associationist systems and into some separate realm of genuine representation and inference, involving the manipulation of sentence-like representations. It is true that the rats must somehow be able to remember, from their original period of training, that the chain-pulling leads specifically to the sucrose solution.

Moreover, there was nothing differentially rewarding about the sucrose solution, as opposed to the food pellets, in that original period of training—both sucrose solution and food pellets alike satisfied hunger.

This may indeed make it seem that the information that chain-pulling leads to sucrose solution must be stored in some non-dispositional sentence-like representation—after all, since the sucrose solution wasn't differentially rewarding, it is not clear how the information that chain-pulling leads to sucrose solution could have become embodied in some specific disposition to chain-pull in pursuit of sucrose solution.

However, recall the possibility of secondary reinforcement. Since the rats, in their original training, experience the sucrose solution as preceding hunger

satisfaction, the sucrose solution will have become a secondary reinforcer. The rats will 'acquire a desire' for sucrose solution as such. Moreover, when this 'desire' is satisfied it will act as a reinforcer, and so the rats will have become disposed to perform behaviours when the sucrose desire is active which in their experience have led to sucrose solution—thus in the case at hand, they will become disposed by their original training to chain-pull when they are in the experimental apparatus and desire sucrose solution.

Then later, after being given sucrose solution when they are thirsty, they will associate sucrose solution with thirst satisfaction, and consequently be disposed to activate their desire for sucrose solution when they are thirsty. And then they can put this together with the prior disposition, instilled by their original training, to chain-pull when they desire sucrose solution. The overall result, then, is that they will chain-pull when they are thirsty, even though neither they nor their ancestors have ever quenched their thirst by chain-pulling before.

My analysis thus agrees with Dickinson in allowing that the rats are inferring the appropriateness of some behaviour (chain-pulling) to some end (thirst quenching) as a result of embodying the separate items of information that chain pulling will lead to sucrose solution, and sucrose solution quenches thirst. But we disagree with Dickinson's view that these items of information need to be embodied in some explicit sentence-like manner, open to general logical manipulation, as opposed being embodied in dispositions to behaviour which can be combined in the way sketched above. The rats as performing an inference. But they do this by deriving a complex disposition from the combination of two other dispositions, rather than by manipulating explicit sentence-like representations. Once they are disposed to desire sucrose when thirsty, and disposed to chain-pull when they desire sucrose, then they will derivatively chain-pull when thirsty, and therewith derive the conclusion that chain-pulling is a means to quenching thirst.

OBSERVATION VERSUS EXPERIENCE

Dickinson's experiment certainly shows that rats can perform strongly novel actions, that is, that they can do some B in pursuit of some O even though neither they nor their ancestors ever did B in pursuit of O before. The rats embodying the relevant information in dispositions to action, rather than in some sentence-like format, it remains possible that rats are limited in another way. Maybe they are incapable of learning from observation, as opposed to learning from experience. Indeed, perhaps this inability differentiates all other animals, and not just rats, from humans.

Let me explain. In the story we have just told, we credited the rats with various items of information to the effect that some action in some situation will lead to some result. Their potential for strongly novel actions then derived from their ability to piece such items of information together. They 'knew' that chain-pulling leads to sucrose solution, and that sucrose solution quenches thirst, so they were able to 'infer' that chain-pulling is a means to thirst quenching.

But note that, in order to acquire the original items of means-end information, the rats needed to have performed the relevant action themselves, and needed themselves to have experienced the reward of the relevant result. The rats acquired the relevant information because they had experienced their own chain-pulling as leading to their getting sucrose solution, and their own consumption of sucrose solution as quenching their own thirst.

This means that, for all that has been said so far, the rats will have no way of observing some other animal performing some B and getting some result O, and on this basis acquiring the information that B leads to O. Still less will they be able to observe inanimate nature 'performing' some action B which leads to O, and thence inferring that B is a means to O.

The trainers of a troop of monkeys on a research station in Puerto Rico occasionally reward the monkeys by putting coconuts in the camp fire; the coconuts then burst open, making the tasty flesh available to the monkeys. However, the monkeys seem unable to learn from this that they can put the coconuts in the fire themselves. Moreover, even when one particular monkey somehow acquired the trick, the other monkeys seemed not to cotton on that they could do it themselves.

Given the points made in this chapter so far, this needn't seem so surprising. So far we have considered cases where animals acquire the information that B will lead to O because they (or their ancestors) have themselves performed B and themselves later received O. But the mechanisms behind this will be blind to the observation of another animal doing B and getting O. After all, there is nothing rewarding, or otherwise advantageous, to the observer in seeing another animal enjoying outcome O. And even if the observer does get to enjoy the reward—it shares the coconut flesh, say—this still won't do the trick. For this reward won't reinforce the behaviour B—placing coconuts in the fire—since the observer hasn't itself performed this behaviour. The observer didn't place a coconut in the fire prior to the reward—it was just sitting there watching.

It is true that observation of another animal doing B and getting O can give rise to classical conditioning. The sight of the other animal doing B can come to make the observer anticipate O. In the coconut example, the observers may come to respond to the sight of the coconut going onto the fire with their pre-existing responses to food, such as salivating and approaching. But this will do nothing to get the observers doing B themselves. The classical association will make you salivate and approach when you see another animal putting a coconut in the fire—it won't get you putting the coconut in the fire in the first place.

So here is another possible way in which human intellects may outstrip those of other animals. Perhaps animals are unable to learn about means to ends from observation. Seeing another animal doing B as a means to O won't help them to do B in pursuit of O. Yet humans clearly can learn in this observational way. Indeed humans can draw such lessons from inanimate nature, as well as from animate agents.

In a moment we shall consider whether this ability to learn from observation does indeed mark a difference between human and animal cognition. But first it will be helpful to make some related points.

MIMICRY, TRUE IMITATION AND EMPATHY

Some readers may be wondering how the issue of learning from observation relates to the topic of animal imitation. There is no doubt that animals often learn behaviour from other conspecifics. One oft-cited example is the rapid spread in the 1940s among British blue tits of the ability to peck open the tops on milk bottles to get at the cream inside. Potato-washing in the sea by Japanese macaques is another frequently mentioned case. Again, patterns of tool-use among both chimpanzees and crows are known to vary between populations within species, suggesting that these behaviours too are copied from conspecifics.

There is no question of engaging with extensive literature on animal imitation in this chapter. Let me content myself by making what we take to be two uncontentious points.

First, while there is no question that patterns of behaviour can spread from some animals to others, as in the examples just mentioned, it is a further issue whether such 'social learning' requires any specific imitative abilities. Thus, one possible explanation for the standard examples is simply that animals tend to follow each other around. Because of this, when animals who are expert in some behaviour go to the sites (milk bottles, sea shores) where they can practice their craft, novices will follow them, and thus be led to those special places where ordinary trial-and-error instrumental learning can instil the relevant behaviour. Without the experts to lead them, they wouldn't be in the right places for their ordinary behavioural experimentation to yield the relevant rewards. Again, another obvious explanation for some examples of 'social learning' is simply that animals can learn from others where certain things are. If we see an expert roll over a log to find grubs, then we will become aware that grubs lie under logs, and thereafter use my pre-existing abilities to remove obstacles to uncover the grubs myself.

Second, even when there is evidence for specific imitative abilities, these not involve any appreciation of causal links between behaviour and outcome. Let us define mimicry as a tendency for an animal to repeat behaviour that it observes in another conspecific. Clearly an animal might be capable of mimicry, even if it is not able to appreciate what the behaviour in question is good for. It would then do B simply because it had observed another animal doing B, and not because it appreciated that B would lead to some O. It would be 'parroting', so to speak—it would simply be copying the behaviour, without understanding its significance.. There is a large amount of evidence that some animals are capable of mimicry in this sense. But, as just observed, this won't amount to learning from observation in the sense of learning that there is a connection between B and some attractive further result O. Mimicry per se may connect your own behaviour with the observation of others performing the same behaviour, but it won't connect your behaviour with any intended outcomes.

Henceforth let me adopt the phrase 'true imitation' for the more sophisticated ability to learn, from observing other animals, that some behaviour B is connected with outcome O. It is clear that humans have this ability, even if other animals

do not. So let me offer one speculation about the mechanism behind this ability. My speculation is that true imitation arises once an 'empathetic faculty' is added to a capacity for parrot-like mimicry. Suppose that, when you observe someone else getting something that you yourself desire, you undergo some vicarious satisfaction as a result of the observation. For example, when you are hungry and see someone else eating, you simulate their hunger satisfaction with a 'faint' version of your own.

Now put this empathetic faculty together with a capacity for mimicry. Take a case where you desire O, and observe someone else doing B and getting O. Your basic tendency to mimicry inclines you to do B. Your empathetic faculty then gives rise to a faint simulation of the satisfaction you would derive from O. This vicarious reward will then reinforce, via normal instrumental conditioning, your tendency to do B when you desire O. The result is thus that your observation of B leading to O leads to your becoming disposed to do B when you desire O. So this gives us a mechanism whereby the observation of some other animal getting O from B can give rise to your acquiring the information that B leads to O. As before, this information will be embodied in a disposition to do B when you desire O, but now we have an account of how this disposition can be instilled by observation rather than by first-hand experience.

At this point, let me make some brief observations about imagination and means-end reasoning. It is a familiar thought that the ability to connect previously unperformed behaviours with intended outcomes is somehow facilitated by sensory imagination—we figure out that B is a means to O by imagining B being followed by O. This use of imagination might seem to offer a more basic and general mechanism for innovatory means-end reasoning than that provided by imitative learning from observation. However, we think that this puts the cart before the horse. The power of imagination to inform means-end reasoning depends on imitative learning, rather than vice versa.

We take it that sensory imagination activates some of the same parts of the sensory cortex as would be activated by genuine observation of a similar scenario. This activates some of the same parts of my visual cortex as would be activated if we were really looking at a red square. We might here recall Hume's terminology, according to which sensory imagination is a 'faint replica' of the real thing.

However, if this is the right picture of sensory imagination, then it is unclear how imagining a means-end sequence can be a more basic route to action than actually observing it. If really seeing someone doing B and getting O isn't enough to get you doing it yourself, then 'faintly seeing' an imagined person doing the same seems even less likely to do the trick, for just the same reasons.

Of course, once true imitation does emerge, then we can expect sensory imagination to inform means-end understanding, though not as some separate mechanism, but as a corollary of true imitation. The basic mechanism behind true imitation, as we have told the story, is that actual observing a conspecific

doing B and getting O can lead, via mimicry and vicarious reinforcement, to you yourself doing B in pursuit of O. However, if sensory imagination is a 'faint version' of actual observation, then we would expect it to produce the same result for similar reasons. In effect, you will be led to imitate the imagined person's pursuit of O by B. Thus, visually imagining someone doing B will lead, via the tendency to mimicry, to a disposition to do B yourself; and then imagining the visualized person receiving O will lead, via empathy, to your own vicarious satisfaction—and thus you will acquire a disposition to do B in pursuit of O via instrumental conditioning, as before.

Japanese Quails. The overall story we have told so far implies one definite prediction. Non-human animals who learn by observing other animals will be 'insensitive to demonstrator reward'. They will be capable of 'mimicking' the behaviour of conspecifics, but will do so with no appreciation of outcomes, and so will not learn differentially depending on whether or not their demonstrator's behaviour leads to some rewarding outcome. According to my latest hypothesis about the distinctive feature of human cognition, only humans can truly imitate, in the sense of copying an action just in case you have observed it leading to some result that you yourself desire.

A wide range of empirical data are consistent with the prediction of animal insensitivity to demonstrator reward. Thus Sara Shettleworth, in her comprehensive text Cognition, Evolution and Behaviour (1998) says '. . . whether or not the observer must also see the demonstrator obtain a reinforcer . . . is a question that has hardly been tackled', and again '. . . the role of demonstrator reward has been little studied'.

However, a particular series of recent studies by Thomas Zentall and his associates shows clearly that there is at least one animal species that are sensitive to demonstrator reward—Japanese quails. Akins and Zentall (1998) trained demonstrator Japanese quails to either peck at or step on a treadle. They then allowed other Japanese quails to observe this behaviour. Their findings were that the observer quails copied the demonstrator's behaviour only if they also observed the demonstrator receiving a food reward for the behaviour.

Interestingly, a further study (Dorrance and Zentall, 2001) showed that this effect required the observers to be hungry when they observed the demonstrator's behaviour. It wasn't enough that they be hungry when they were later placed in the apparatus and given the opportunity to peck at or step on the treadle. It turned out that even hungry observer quails wouldn't display the relevant behaviour at this later stage, if they hadn't also been hungry at the earlier observational stage.

These experiments clearly indicate that Japanese quail are capable of true imitation of the kind we have hypothesized to be peculiar to humans.

Moreover, the second study by Dorrance and Zentall suggests that quails' imitative powers may hinge on just the kind of empathetic identification with the demonstrator that we speculated may be the basic mechanism behind human imitation. This would explain the striking fact that the quails won't imitate

unless they are hungry at the time of observation. At first sight, this can seem puzzling: why can't the quails just store the observationally-derived information that pecking at the treadle, say, yields food, and then use this later when they are hungry? Why should they need to be hungry at the time of observation in order to acquire the information? However, if the route from observation to behaviour proceeds via reinforcement of mimicking tendencies by empathetic reward, then the Dorrance and Zentall finding becomes unpuzzling. The observer quails won't feel any empathetic reward at the sight of another feeding, unless they themselves are hungry.

Of course, other explanations remain possible. Maybe the function of observer hunger is simply to make the observers interested in matters to do with food. Perhaps they don't pay attention to what the demonstrator is up to, if they aren't hungry. If this is right, then perhaps there is some quite different mechanism behind the quails' sophisticated imitative abilities, nothing to do with the empathetic reinforcement model.

Alternatively, perhaps reinforcement is involved, but not in a way that involves empathy. Consider this possibility. Quails are social creatures, and so in the normal course of events will often have observed others eating while they themselves are feeding. Because of this, the sight of another quail feeding could come to function as a secondary reinforcer—after all, this visual stimulus will characteristically have been experienced as preceding hunger satisfaction. This secondary reinforcer could then combine with basic mimicry to explain the quails' imitative abilities: their observation of the demonstrator will trigger their mimicking tendencies—and then these tendencies will be secondarily reinforced by the sight of the demonstrator eating. Moreover, this story also promises to explain why the learners have to be hungry when observing. If the sight of others feeding derives its status as a secondary reinforcer from experience associating it with hunger satisfaction, then it can be expected to function as a secondary reinforcer only when the observer is hungy.

Let me not continue. The precise mechanism behind the quails' abilities is clearly an empirical matter, to be decided by further experimental investigation, not by speculation.

In any case, Japanese quail provide a counter-example to the hypothesis that only humans are capable of true imitation. True, once we discover the quails' mechanism, it may turn out that their imitative ability is relatively superficial, resting on some idiosyncratic quirk of their psychology, such as secondary reinforcement by observations of others eating, in which case it may be possible to argue that some more powerful species of empathy-involving imitation is peculiar to humans after all. Alternatively, however, it may be that just the same empathy-involving mechanism underlies true imitation in both humans and Japanese quails, and so presumably in many other species too, in which case the distinctive features of human cognition must lie quite elsewhere.

These are empirical matters, and we do not propose to offer any further hostages to empirical fortune. None of my hypotheses about the special power

of human cognition have stood up to the empirical data, and at this stage we have no further replacements to offer. Rather, we would like to conclude by drawing three general morals from my frustrated search for the key to human cognition.

EVOLUTIONARY HISTORY OF THE HUMAN MIND

The evolution of human intelligence refers to a set of theories that attempt to explain how human intelligence has evolved. The question is closely tied to the evolution of the human brain, and to the emergence of human language. The timeline of human evolution spans some 7 million years, from the separation of the *Pan* genus until the emergence of behavioural modernity by 50,000 years ago. Of this timeline, the first 3 million years concern Sahelanthropus, the following 2 million concern Australopithecus, while the final 2 million span the history of actual human species (the Paleolithic).

Many traits of human intelligence, such as empathy, theory of mind, mourning, ritual, and the use of symbols and tools, are already apparent in great apes although in lesser sophistication than in humans.

There is a debate between supporters of the idea of a sudden emergence of intelligence, or "Great leap forward" and those of a gradual or continuum hypothesis.

Theories of the evolution of intelligence include:
- Robin Dunbar's social brain hypothesis
- Geoffrey Miller's sexual selection hypothesis
- The ecological dominance-social competition (EDSC) explained by Mark V. Flinn, David C. Geary and Carol V. Ward based mainly on work by Richard D. Alexander.
- The idea of intelligence as a signal of good health and resistance to disease.
- The Group selection theory contends that organism characteristics that provide benefits to a group (clan, tribe, or larger population) can evolve despite individual disadvantages such as those cited above.
- The idea that intelligence is connected with nutrition, and thereby with status A higher IQ could be a signal that an individual comes from and lives in a physical and social environment where nutrition levels are high, and vice versa.

PHILOSOPHY OF MIND

Philosophy of mind is the branch of philosophy that studies the nature of the mind, mental events, mental functions, mental properties, consciousness and their relationship to the physical body. The *mind-body problem*, *i.e.*, the relationship of the mind to the body, is commonly seen as the central issue in philosophy of mind, although there are other issues concerning the nature of the mind that do not involve its relation to the physical body. José Manuel

Rodriguez Delgado writes, "In present popular usage, soul and mind are not clearly differentiated and some people, more or less consciously, still feel that the soul, and perhaps the mind, may enter or leave the body as independent entities."

Dualism and *monism* are the two major schools of thought that attempt to resolve the mind-body problem. Dualism is the position that mind and body are in some way separate from each other. It can be traced back to Plato, Aristotle and the Samkhya and Yoga schools of Hindu philosophy, but it was most precisely formulated by René Descartes in the 17th century. *Substance dualists* argue that the mind is an independently existing substance, whereas *Property dualists* maintain that the mind is a group of independent properties that emerge from and cannot be reduced to the brain, but that it is not a distinct substance.

The 20th century philosopher Martin Heidegger suggested that subjective experience and activity (*i.e.*, the "mind") cannot be made sense of in terms of Cartesian "substances" that bear "properties" at all (whether the mind itself is thought of as a distinct, separate kind of substance or not). This is because the nature of subjective, qualitative experience is incoherent in terms of – or semantically incommensurable with the concept of – substances that bear properties. This is a fundamentally on to logical argument.

The philosopher of cognitive science Daniel Dennett, for example, argues that there is no such thing as a narrative centre called the "mind", but that instead there is simply a collection of sensory inputs and outputs: different kinds of "software" running in parallel. Psychologist B.F. Skinner argued that the mind is an explanatory fiction that diverts attention from environmental causes of behaviour; he considered the mind a "black box" and thought that mental processes may be better conceived of as forms of covert verbal behaviour.

MIND/BODY PERSPECTIVES

Monism is the position that mind and body are not physiologically and ontologically distinct kinds of entities. This view was first advocated in Western Philosophy by Parmenides in the 5th Century BC and was later espoused by the 17th Century rationalist Baruch Spinoza. According to Spinoza's dual-aspect theory, mind and body are two aspects of an underlying reality which he variously described as "Nature" or "God".

- *Physicalists* argue that only the entities postulated by physical theory exist, and that the mind will eventually be explained in terms of these entities as physical theory continues to evolve.
- *Idealists* maintain that the mind is all that exists and that the external world is either mental itself, or an illusion created by the mind.
- *Neutral monists* adhere to the position that perceived things in the world can be regarded as either physical or mental depending on whether one is interested in their relationship to other things in the world or their relationship to the perceiver. For example, a red spot on a wall is physical in its dependence on the wall and the pigment of which it is

made, but it is mental in so far as its perceived redness depends on the workings of the visual system. Unlike dual-aspect theory, neutral monism does not posit a more fundamental substance of which mind and body are aspects.

The most common monisms in the 20th and 21st centuries have all been variations of physicalism; these positions include behaviourism, the type identity theory, anomalous monism and functionalism.

Many modern philosophers of mind adopt either a *reductive* or *non-reductive physicalist* position, maintaining in their different ways that the mind is not something separate from the body. These approaches have been particularly influential in the sciences, *e.g.*, in the fields of sociobiology, computer science, evolutionary psychology and the various neurosciences. Other philosophers, however, adopt a non-physicalist position which challenges the notion that the mind is a purely physical construct.

- *Reductive physicalists* assert that all mental states and properties will eventually be explained by scientific accounts of physiological processes and states.
- *Non-reductive physicalists* argue that although the brain is all there *is* to the mind, the predicates and vocabulary used in mental descriptions and explanations are indispensable, and cannot be reduced to the language and lower-level explanations of physical science.

Continued progress in neuroscience has helped to clarify many of these issues, and its findings strongly support physicalists' assertions. Nevertheless our knowledge is incomplete, and modern philosophers of mind continue to discuss how subjective qualia and the intentional mental states can be naturally explained.

SCIENTIFIC STUDY

NEUROSCIENCE

Neuroscience studies the nervous system, the physical basis of the mind. At the systems level, neuroscientists investigate how biological neural networks form and physiologically interact to produce mental functions and content such as reflexes, sensory integration, motor coordination, circadian rhythms, emotional responses, learning, and memory. At a larger scale, efforts in computational neuroscience have developed large-scale models that simulate simple, functioning brains. As of 2012, such models include the thalamus, basal ganglia, prefrontal cortex, motor cortex, and occipital cortex, and consequentially simulated brains can learn, respond to visual stimuli, coordinate motor responses, form short-term memories, and learn to respond to patterns. Currently, researchers aim to programme the hippocampus and limbic system, hypothetically imbuing the simulated mind with long-term memory and crude emotions.

By contrast, affective neuroscience studies the neural mechanisms of personality, emotion, and mood primarily through experimental tasks.

COGNITIVE SCIENCE

Cognitive science examines the mental functions that give rise to information processing, termed cognition. These include attention, memory, producing and understanding language, learning, reasoning, problem solving, and decision making. Cognitive science seeks to understand thinking "in terms of representational structures in the mind and computational procedures that operate on those structures".

PSYCHOLOGY

Psychology is the scientific study of human behaviour, mental functioning, and experience. As both an academic and applied discipline, Psychology involves the scientific study of mental processes such as perception, cognition, emotion, personality, as well as environmental influences, such as social and cultural influences, and interpersonal relationships, in order to devise theories of human behaviour. Psychology also refers to the application of such knowledge to various spheres of human activity, including problems of individuals' daily lives and the treatment of mental health problems.

Psychology differs from the other social sciences (*e.g.*, anthropology, economics, political science, and sociology) due to its focus on experimentation at the scale of the individual, or individuals in small groups as opposed to large groups, institutions or societies. Historically, psychology differed from biology and neuroscience in that it was primarily concerned with mind rather than brain. Modern psychological science incorporates physiological and neurological processes into its conceptions of perception, cognition, behaviour, and mental disorders.

MENTAL HEALTH

By analogy with the health of the body, one can speak metaphorically of a state of health of the mind, or mental health. Merriam-Webster defines mental health as "A state of emotional and psychological well-being in which an individual is able to use his or her cognitive and emotional capabilities, function in society, and meet the ordinary demands of everyday life." According to the World Health Organization (WHO), there is no one "official" definition of mental health. Cultural differences, subjective assessments, and competing professional theories all affect how "mental health" is defined. In general, most experts agree that "mental health" and "mental illness" are not opposites. In other words, the absence of a recognized mental disorder is not necessarily an indicator of mental health.

One way to think about mental health is by looking at how effectively and successfully a person functions. Feeling capable and competent; being able to handle normal levels of stress, maintaining satisfying relationships, and leading an independent life; and being able to "bounce back," or recover from difficult situations, are all signs of mental health.

Psychotherapy is an interpersonal, relational intervention used by trained psychotherapists to aid clients in problems of living. This usually includes increasing individual sense of well-being and reducing subjective discomforting experience. Psychotherapists employ a range of techniques based on experiential relationship building, dialogue, communication and behaviour change and that are designed to improve the mental health of a client or patient, or to improve group relationships (such as in a family). Most forms of psychotherapy use only spoken conversation, though some also use various other forms of communication such as the written word, art, drama, narrative story, or therapeutic touch. Psychotherapy occurs within a structured encounter between a trained therapist and client(s). Purposeful, theoretically based psychotherapy began in the 19th century with psychoanalysis; since then, scores of other approaches have been developed and continue to be created.

NON-HUMAN MINDS

ANIMAL INTELLIGENCE

Animal cognition, or cognitive ethology, is the title given to a modern approach to the mental capacities of animals. It has developed out of comparative psychology, but has also been strongly influenced by the approach of ethology, behavioural ecology, and evolutionary psychology. Much of what used to be considered under the title of "animal intelligence" is now thought of under this heading. Animal language acquisition, attempting to discern or understand the degree to which animal cognition can be revealed by linguistics-related study, has been controversial among cognitive linguists.

ARTIFICIAL INTELLIGENCE

In 1950 Alan M. Turing published "Computing machinery and intelligence" in *Mind*, in which he proposed that machines could be tested for intelligence using questions and answers. This process is now named the Turing Test. The term Artificial Intelligence (AI) was first used by John McCarthy who considered it to mean "the science and engineering of making intelligent machines". It can also refer to intelligence as exhibited by an artificial (*man-made*, *non-natural*, *manufactured*) entity. AI is studied in overlapping fields of computer science, psychology, neuroscience and engineering, dealing with intelligent behaviour, learning and adaptation and usually developed using customized machines or computers.

Research in AI is concerned with producing machines to automate tasks requiring intelligent behaviour. Examples include control, planning and scheduling, the ability to answer diagnostic and consumer questions, handwriting, natural language, speech and facial recognition. As such, the study of AI has also become an engineering discipline, focused on providing solutions to real life problems, knowledge mining, software applications, strategy games like computer chess and other video games. One of the biggest difficulties with AI is that of actual machine comprehension. Consequentially natural language understanding and

connectionism are areas of active research and development. The debate about the nature of the mind is relevant to the development of artificial intelligence. If the mind is indeed a thing separate from or higher than the functioning of the brain, then hypothetically it would be much more difficult to recreate within a machine, if it were possible at all. If, on the other hand, the mind is no more than the aggregated functions of the brain, then it will be possible to create a machine with a recognisable mind (though possibly only with computers much different from today's), by simple virtue of the fact that such a machine already exists in the form of the human brain.

IN RELIGION

The Indian philosopher-sage Sri Aurobindo attempted to unite the Eastern and Western psychological traditions with his integral psychology, as have many philosophers and New religious movements. Judaism teaches that "moach shalit al halev", the mind rules the heart. Humans can approach the Divine intellectually, through learning and behaving according to the Divine Will as enclothed in the Torah, and use that deep logical understanding to elicit and guide emotional arousal during prayer. Christianity has tended to see the mind as distinct from the soul (Greek *nous*) and sometimes further distinguished from the spirit. Western esoteric traditions sometimes refer to a mental body that exists on a plane other than the physical. Hinduism's various philosophical schools have debated whether the human soul (Sanskrit *atman*) is distinct from, or identical to, *Brahman*, the divine reality. Taoism sees the human being as contiguous with natural forces, and the mind as not separate from the body. Confucianism sees the mind, like the body, as inherently perfectible.

BUDDHISM

According to Buddhist philosopher Dharmakirti, the mind has two fundamental qualities: "clarity and knowing." If something is not those two qualities, it cannot validly be called mind. 'Clarity' refers to the fact that mind has no colour, shape, size, location, weight, or any other physical characteristic, and that it gives rise to the contents of experience. 'Knowing' refers to the fact that mind is aware of the contents of experience, and that, in order to exist, mind must be cognizing an object. You cannot have a mind-who's function is to cognize an object-existing without cognizing an object. For this reason, mind is often described in Buddhism as "that which has contents."

Mind, in Buddhism, is also described as being "space-like" and "illusion-like." Mind is space-like in the sense that it is not physically obstructive. It has no qualities which would prevent it from existing. Mind is illusion-like in the sense that it is empty of inherent existence. This does not mean it does not exist, it means that it exists in a manner that is counter to our ordinary way of misperceiving how phenomena exist, according to Buddhism. When the mind is itself cognized properly, without misperceiving its mode of existence, it appears to exist like an illusion. There is a big difference however between

being "space and illusion" and being "space-like" and "illusion-like." Mind is not composed of space, it just shares some descriptive similarities to space. Mind is not an illusion, it just shares some descriptive qualities with illusions.

Buddhism posits that there is no inherent, unchanging identity (Inherent I, Inherent Me) or phenomena (Ultimate self, inherent self, Atman, Soul, Self-essence, Jiva, Ishvara, humanness essence, *etc.*) which is the experiencer of our experiences and the agent of our actions. In other words, human beings consist of merely a body and a mind, and nothing extra. Within the body there is no part or set of parts which is-by itself or themselves-the person. Similarly, within the mind there is no part or set of parts which are themselves "the person." A human being merely consists of five aggregates, or *skandhas* and nothing else.

In the same way, "mind" is what can be validly conceptually labelled onto our mere experience of clarity and knowing. There is not something separate and apart from clarity and knowing which is "mind," in Buddhism. "Mind" is that part of experience which can be validly referred to as mind by the concept-term "mind." There is also not "objects out there, mind in here, and experience somewhere in-between." There is not a third thing called "experience" which exists between the contents of mind and what mind cognizes. There is only the clarity (arising of mere experience: shapes, colours, the components of smell, components of taste, components of sound, components of touch) and nothing else; this means, expressly, that there is not a third thing called "experience" and not a third thing called "experiencer who has the experience." This is deeply related to "no-self."

Clearly, the experience arises and is known by mind, but there is not a third thing which sits apart from that which is the "real experiencer of the experience." This is the claim of Buddhism, with regards to mind and the ultimate nature of minds (and persons).

MORTALITY OF THE MIND

Due to the mind-body problem, much interest and debate surround the question of what happens to one's conscious mind as one's body dies. According to neuropsychology, all brain function halts permanently upon brain death, and the mind fails to survive brain death and ceases to exist. This permanent loss of consciousness after death is often called "eternal oblivion". The belief that some spiritual or immaterial component exists and is preserved after death is described by the term "afterlife."

HUMAN MIND IN PSYCHOLOGY

Among students of the social sciences there has always been a certain number who have recognised the fact that some knowledge of the human mind and of its modes of operation is an essential part of their equipment and that the successful development of the social sciences must be dependent upon the fullness and accuracy of such knowledge.

These propositions are so obviously true that any formal attempt to demonstrate them is superfluous. Those who do not accept them as soon as they are made will not be convinced of their truth by any chain of formal reasoning. It is, then, a remarkable fact that psychology, the science which claims to formulate the body of ascertained truths about the constitution and working of the mind, and which endeavours to refine and to add to this knowledge, has not been generally and practically recognised as the essential common foundation on which all the social sciences—ethics, economics, political science, philosophy of history, sociology, and cultural anthropology, and the more special social sciences, such as the sciences of religion, of law, of education, and of art—must be built up. Of the workers in these sciences, some, like Carets, and, at the present time, M. Durkheim, repudiate the claim of psychology to such recognition. Some do lip service to psychology, but in practice ignore it, and will sit down to write a treatise on morals or economics, or any other of the social sciences, cheerfully confessing that they know nothing of psychology.

A certain number, perhaps the majority, of recent writers on social topics recognise the true position of psychology, but in practice are content to take as their psychological foundations the vague and extremely misleading psychology embodied in common speech, with the addition of a few hasty assumptions about the mind made to suit their particular purposes. There are signs, however, that this regrettable state of affairs is about to pass away, that psychology will before long be accorded in universal practice the position at the base of the social sciences which the more clear-sighted have long seen that it ought to occupy.

Since this book is designed to promote this change of practice, it is fitting that it should open with a brief inquiry into the causes of the anomalous state of affairs at present obtaining and with some indication of the way in which it is hoped that the change may be brought about.

For there can be no question that the lack of practical recognition of psychology by the workers in the social sciences has been in the main due to its deficiencies, and that the only way of establishing it in its true place is to make good these deficiencies. What, then, are these deficiencies, and why have they so long persisted? We may attempt very briefly to indicate the answers to these questions without presuming to apportion any blame for the long continuance of these deficiencies between the professed psychologists and the workers in the social sciences. The department of psychology that *is* of primary importance for the social sciences is that which deals with the springs of human action, the impulses and motives that sustain mental and bodily activity and regulate conduct; and this, of all the departments of psychology, is the one that has remained in the most backward state, in which the greatest obscurity, vagueness, and confusion still reign.

The answers to such problems as the proper classification of conscious states, the analysis of them into their elements, the nature of these elements and the laws of the compounding of them, have but little bearing upon the social sciences;

the same may be said of the range of problems connected with the relations of soul and body, of psychical and physical process, of consciousness and brain processes; and also of the discussion of the more purely intellectual processes, of the way we arrive at the perception of relations of time and place or of likeness and difference, of the classification and description of the intellectual processes of ideation, conception, comparison, and abstraction, and of their relations to one another. Not these processes themselves, but only the results or products of these processes—the knowledge or system "of ideas and beliefs achieved by them, and the way in which these ideas and beliefs regulate conduct and determine social institutions and the relations of men to one another in society are of immediate importance for the social sciences. It is the mental forces, the sources of energy, which set the ends and sustain the course of all human activity—of which forces the intellectual processes are but the servants, instruments, or means—that must be clearly defined, and whose history in the race and in the individual must be made clear, before the social sciences can build upon a firm psychological foundation.

Now, it is with the questions of the former classes that psychologists have chiefly concerned themselves and in regard to which they have made the most progress towards a consistent and generally acceptable body of doctrine: and they have unduly neglected these more socially important problems. This has been the result of several conditions, a result which we, looking back upon the history of the sciences, can see to have been inevitable. It was inevitable that, when men began to reflect upon the complex phenomena of social life, they should have concentrated their attention upon the problems immediately presented, and should have sought to explain them deductively from more or less vaguely conceived principles that they entertained they knew not why or how, principles that were the formulations of popular conceptions, slowly grown up in the course of countless generations and rendered more explicit, but hardly less obscure, by the labours of theologians and metaphysicians.

And when, in the eighteenth century and the early part of the nineteenth century, the modern principles of scientific method began to be generally accepted and to be applied to all or most objects of human speculation, and the various social sciences began to be marked off from one another along the modern lines, it was inevitable that the workers in each department of social science should have continued in the same way, attempting to explain social phenomena from proximate principles which they falsely conceived to be fundamental, rather than to obtain a deeper knowledge of the fundamental constitution of the human mind. It was not to be expected that generations of workers, whose primary interest it was to lay down general rules for the guidance of human activity in the great fields of legislation, of government, of private and public conduct, should have deliberately put aside the attempt to construct the sciences of these departments of life, leaving them to the efforts of after-coming generations, while they devoted themselves to the preparatory work of investigating the individual mind, in order to secure the basis of psychological

truth on which the labours of their successors might rear the social sciences. The problems confronting them were too urgent; customs, laws, and institutions demanded theoretical justification, and those who called out for social reform sought to strengthen their case with theoretical demonstrations of its justice and of its conformity with 16/William McDougall the accepted principles of human nature.

And even if these early workers in the social sciences had made this impossible self-denying ordinance, it would not have been possible for them to achieve the psychology that was needed. For a science still more fundamental, one whose connection with the social phenomena they sought to explain or justify was still more remote and obscure, had yet to be created—namely, the science of biology. It is only a comparative and evolutionary psychology that can provide the needed basis; and this could not be created before the work of Darwin had convinced men of the continuity of human with animal evolution as regards all bodily characters, and had prepared the way for the quickly following recognition of the similar continuity of man's mental evolution with that of the animal world.

Hence the workers in each of the social sciences, approaching their social problems in the absence of any established body of psychological truth and being compelled to make certain assumptions about the mind, made them *ad hoc;* and in this way they provided the indispensable minimum of psychological doctrine required by each of them. Many of these assumptions contained sufficient truth to give them a certain plausibility; but they were usually of such a sweeping character as to leave no room for, and to disguise the need for, more accurate and detailed psychological analysis. And not only were these assumptions made by those who had not prepared themselves for the task by long years of study of the mind in all its many aspects and by the many possible avenues of approach, but they were not made with the single- hearted aim of discovering the truth; rather they were commonly made under the bias of an interest in establishing some normative doctrine; the search for what is was clogged and misled at every step by the desire to establish some preconceived view as to what ought to be. When, then, psychology began very slowly and gradually to assert its status as an independent science, it found all that part of its province which has the most immediate and important bearing on the social sciences already occupied by the fragmentary and misleading psychological assumptions of the workers in these sciences; and these workers naturally resented all attempts of psychology to encroach upon the territory they had learned to look upon as their own; for such attempts would have endangered their systems.

The psychologists, endeavouring to define their science and to mark it off from other sciences, were thus led to accept a too narrow view of its scope and methods and applications. They were content for the most part to define it as the science of consciousness, and to regard introspection as its only method; for the introspective analysis and description of conscious states was a part of the

proper work of psychology that had not been undertaken by any other of the sciences. The insistence upon introspection as the one method of the science tended to prolong the predominance of this narrow and paralysing view of the scope of the science; for the life of emotion and the play of motives is the part of our mental life which offers the least advantageous field for introspective observation and description. The cognitive or intellectual processes, on the other hand, present a rich and varied content of consciousness which lends itself well to introspective discrimination, analysis, and description; in comparison with it, the emotional and conative consciousness has but little variety of content, and that little is extremely obscure and elusive of introspection.

Then, shortly after the Darwinian ideas had revolutionised the biological sciences, and when it might have been hoped that psychologists would have been led to take a wider view of their science and to assert its rights to its whole field, the introduction of the experimental methods of introspection absorbed the energies of a large proportion of the workers in the re-survey, by the new and more accurate methods, of the ground already worked by the method of simple introspection.

Let us note some instances of the unfortunate results of this premature annexation of the most important and obscure region of psychology by the sciences which should, in the logical order of things, have found the fundamental psychological truths ready to their hands as a firm basis for their constructions.

Ethics affords perhaps the most striking example; for any writer on this subject necessarily encounters psychological problems on every hand, and treatises on ethics are apt to consist very largely of amateur psychologising. Among the earlier moralists the lack of psychological insight led to such doctrines as that of certain Stoics, to the effect that the wise and good man should seek to eradicate the emotions from his bosom; or that of Kant, to the effect that the wise and good man should be free from desire. Putting aside, however, these quaint notions of the earlier writers, we may note that in modern times three false and hasty assumptions of the kind stigmatised above have played leading roles and have furnished a large part of the matter with which ethical controversy has been busied during the nineteenth century. First in importance perhaps as a topic for controversy was the doctrine known as psychological hedonism, the doctrine that the motives of all human activity are the desire of pleasure and the aversion to pain. Hand in hand with this went the false assumption that happiness and pleasure are synonymous terms. These two false assumptions were adopted as the psychological foundation of utilitarianism; they rendered that doctrine repugnant to many of the best minds and drove them to fall back upon vague and mystical conceptions. Of these the old conception of a special faculty of moral intuition, a conscience, a moral sense or instinct, was the most important; and this was the third of the trio of false psychological assumptions on which ethical systems were based. Many of those who adopted some form of this last assumption were in the habit of supplementing it by similar assumptions hastily made to afford explanations of any tendencies they noted in human conduct

which their master principle was inadequate to meet; they postulated strange instincts of all kinds as lightly and easily as a conjurer produces eggs from a hat or a phrenologist discovers bumps on a head.

It is instructive to note that as recently as the year 1893 the late Professor H. Sidgwick, one of the leaders of the ethical thought of his time, still inverted the problem; like his predecessors he assumed that moral or reasonable action is normal and natural to man in virtue of some vaguely conceived principle, and prove that "unreasonable action" is possible and is actually achieved occasionally, and to explain if possible this strange anomalous fact. He quotes Bentham's dictum that "on the occasion of every act he exercises every human being is led to pursue that line of conduct which, according to his view of the case, taken by him at the moment, will be in the highest degree contributory to his own greatest happiness." He points out that, although J. S. Mill admitted certain exceptions to this principle, his general view was that "to desire anything, except in proportion as the idea of it is pleasant, is a physical impossibility." So that, according to this school, any action of an individual that does not tend to produce for him the maximum of pleasure can only arise from an error of judgment as to the relative quantities of pleasure that will be secured by different lines of action. And, since, according to this school, all actions ought to be directed to securing a maximum of pleasure, action of any other kind is not only unreasonable action, but also immoral action; for it is action in a way other than the way in which the individual knows he ought to act Sidgwick then goes on to show that the doctrine that unreasonable action (or wilful action not in accordance with what the individual knows that he ought to do) is exceptional, paradoxical, or abnormal is not peculiar to the utilitarians, but is common also to theft opponents; he takes as an example T. H. Green, who "still lays down as broadly as Bentham that every person in every moral action, virtuous or vicious, presents to himself some possible state or achievement of his own as for the time his greatest good, and acts for the sake of that good, and that this is how he ought to act." So that Green only differs from Bentham and Mill in putting good in the place of pleasure, and for the rest makes the same grotesquely false assumption as they do. Sidgwick then, instead of attacking and rejecting as radically false the conception of human motives common to both classes of his predecessors, goes on in all seriousness to offer a psychological explanation of the paradox that men do *sometimes* act unreasonably and otherwise than they ought to act. That is to say, Sidgwick, like those whom he criticises, accepts the doctrine that men normally and in the vast majority of cases act reasonably and as they ought to act, in virtue of some unexplained principle of their constitution, and defines as a problem for solution the fact that they sometimes act otherwise. But the truth is that men are moved by a variety of impulses whose nature has been determined through long ages of the evolutionary process without reference to the life of men in civilized societies; and the psychological problem we have to solve, and with which this book is mainly concerned, is—How can we account for the fact that men so moved ever come to act as they ought, or morally and reasonably?

One is driven to suppose that the minds of the moral philosophers who maintain these curious views as to the sources and nature of human conduct are either constitutionally devoid of the powerful impulses that so often move ordinary men to actions which they know to be morally wrong and against their true interests and destructive of their happiness, or so completely moralised by strict self-discipline that these powerful impulses are completely subordinated and hardly make themselves felt But, if either alternative is true, it is unfortunate that their peculiar constitutions should have led these philosophers to base the social sciences on profoundly fallacious psychological doctrines.

3

Environmental Factors Affecting Learning

HEREDITY

Children of bright parents tend to be bright and the children of very inferior parents are often inferior. Though, heredity follows the principle of regression that says that traits when passing form parents to children tend to move towards the average. The genius son of a genius father is as very rare thing. Again, there is a tendency among the off-spring to be higher in the traits in which their parents are low and lower in which their parents are high. They move towards the average that is they regress. The reason for not showing consistency in the attainment is due to the complex nature of heredity, as heredity of a child is not solely determined by his immediate parents but from all his forefathers and ancestors. Apart from this heredity plays an important role in motivating and deciding the future course of learning according to the status of the family and heredity characteristics.

Example: Well known cricketers Yuvraj sing and Mohammad Kaif got full support from their family. Kaif's Father had been a good cricketer and he made tremendous efforts to get his son place in Indian squad. Yuvraj got coaching in the early days from his father itself. His father prepared pitch at his home for this purpose.

Environment

Our environment is our habitation in the fullest sense. Not only our physical surrounding but also the people around us, social customs and traditions, culture,

education and training all constitute our environment. A number of studies conducted show that environment has remarkable influence on the learning of the individuals.

Example: I.Q. of the fathers corresponds to their occupational status and that the intelligence of the children would correspond to the occupation of the fathers.

Freedom and Self-discipline

Until recently, school discipline was regarded narrowly as merely a means of restraining pupils from creating disorder. So that learning activities may be carried effectively. Restrain commonly took the form of stern teacher imposed authority involving the extensive use of punishments. It was based on the assumption that the child is a bundle of evil qualities and that he should be corrected and moulded into shape by the iron rod of authority. Thus no child could escape beating. But now gone are the days of such beliefs and no truly progressive education or school can tolerate this authoritarian method of life. The education in every child centred school is carried on in an atmosphere of freedom. Freedom means that the child is given opportunity to think for him, to feel for himself and to get for himself. Opportunities are provided for using and developing all his powers. The child is given the chance to develop his own personality, to learn to discipline himself, build up his own character.

Recognition of Teachers' Authority

One should not accrue that the teacher has lost its importance in the modern time. Rather, modern school situations demand a more carefully selected and well prepared teacher than was necessary for the traditional schools. Infact education on an atmosphere of freedom demands on teacher than does education guided by the old ideas of authority imposed. It demands a new atmosphere in the school and a new attitude in the teacher. It also demands new methods which advocate free activity of body, mind and soul of the pupils. The teacher instead of being a slave driver forcing the unwilling pupils to learn becomes a guide, makes himself one of the group, brings to the help of the group his larger experiences and thus helps the group in the search for truth, encourages them in every way to think, feel and work for themselves. Hence the teacher should be given a key place in the modern times. His authority of course is not that of an autocrat but of a leader, friend and a guide.

Nature Neglect

A teacher should have a complete knowledge of the biological laws. He should know how the whole organism works. He should realise that the whole child comes to school and not only his mind. The mind and the body are an entity. They cannot exist without each other. Latin proverb says that " Mens Sano in Carpore Sano" means "A sound mind in a sound body". Mind lived in the body as in a clay cottage but it would be more true to say that the mind

grows in the body as a plant grows in its soil. Poorer the soil, the more arrested the growth; richer the soil better the growth. Thus the mind and the body are independent, one influences the other. The body responds to various states of mind. Fear, joy, anger and all other emotions are reflected in the body. On the other hand mental activity uses up nervous energy which has to be replenished by the body. These considerations have natural bearing upon education and the teacher being conversant with these laws aims at the development of both, the body and the mind. In brief one should not neglect the laws of nature and should work accordingly.

Physical Environment of School

In general, the school environments present an educative atmosphere. The modern school site, building and equipments are adequate, safe, sanitary comfortable and attractive. It is only in the best environmental setting that the most effective learning takes place.

The improvement of the environment no doubt, lies in the hands of school authorities rather than teachers. Yet, the requisitions, request and suggestions by the teacher can correct the environment to a considerable extent. The teacher can suggest about lighting arrangements in the class, as due to defective lighting and ventilation arrangements the crowded classrooms lead to overheated conditions which reduce working capacity and encourage the spread of respiratory infections. Further, it will amount to restlessness, inattention and unsatisfactory work. It is a well know fact that individuals work much better in a room with an attractive atmosphere. Although a teacher cannot completely recondition a dull and dilapidated room yet a better planning and efforts can work wonders to improve its condition. Actually it all depends upon the upkeep of the room. Careless disorder in the room, waste papers on the floor, and the untidy state of storage space, book shelves, teacher's table and pupils desks definitely give a shabby look to a room.

Thus, the rooms should be attractively decorated. Neatness, cleanliness, orderliness and suitable decoration in a room will induce pupils to take a pride in their room and should largely eliminate scribbling on the wall and desks. This all will prove to be a boosting environment for learning.

Gap between School and Community

The traditional schools are directed from social life and social activities. It has confined itself to book learning which has no utility for the child in his later life. But, the modern school represents the society in miniature. It has an intimate and organic relationship with the society. It incorporates such experiences which are intimately connected with actual living and enable the individual to lead a successful life is society. Secondary Education Commission points out that there exists a "two way traffic" between the school and the larger community outside and the problems that arise in the home and community life and the realistic experiences gained their should be brought into school so that education may

be based on them and be intimately connected with real life and on the other hand the new knowledge, skills and values acquired in the school should be carried into home life, solve its problems, to raise its students and link up the teachers, parents and children in one compact and naturally helpful group.

Wholesome Experiences

Real education is the acquirement of experiences which will help the pupil to adjust himself to his environments. Modern school, therefore, is an experience giving institution where pupils learn things through purposeful experiences. The old conception of the pupils mind as tabula rasa or clean slate, upon which the teacher is to write are gone. Now the school is an institution where learning takes place through experience. The importance of an experiences will be recognised by the child only when it responds to his needs and once the child feels its importance he will really be interested in it. Also the experience provided must have a clear objective. Actually we forget when we do not see clearly what we are supposed to be learning, because in that case we do not know what we are trying to be. We do not know over goal. Apart from this experience should have its value and meaning for use in daily life. We forget when we do not make use of what we have been asked to learn because we cannot make use of it in our daily living or in any other meaningful way.

Thus, wholesome experiences provide a basis for better learning as most of the things common to our daily life situations need some sort of experience this way or that way significant to find a solution of the problems.

WHAT LEARNING INVOLVES

Learning can be defined as 'a relatively permanent change in behaviour which occurs as a result of practice or experience'. Here, the term 'relatively permanent' is usually taken to mean that the learned behaviour can be demonstrated at least a few hours after the learning process occurs. To put it another way, learning can be thought of as a process whereby a person acquires the ability to carry out a task or procedure of some sort in a natural and relatively effortless way, as if it were an innate part of his or her behaviour pattern.

The way in which such learning comes about will, of course, depend on the exact nature of the task or procedure that is being learned. In the case of a relatively simple cognitive task such as learning the names of the various parts of an object or system, for example, it may simply involve scanning the material sufficiently often for it to pass through the short-term memory (where material is stored on a purely temporary basis) into the long-term memory (where material is stored on a long-term or permanent basis). In the case of a more complicated learning task involving higher-level cognitive activities (such as analysis or synthesis) or a mixture of cognitive and non-cognitive activities, on the other hand, it will probably involve actually carrying out the task sufficiently often for the behaviour patterns needed to perform it without difficulty to become firmly established. This major key to effective learning is called repetition. The

other major key relates to the concept of reinforcement, which refers to the consequences of actions. Behaviour which is rewarded is likely to be repeated. Behaviour which is ignored is likely to fade. Behaviour which is punished tends to be suppressed in the short-term rather than changed in the long-term.

Another feature of the learning process is that both learned material and behaviour tend to disappear with time if the material or behaviour is not revisited periodically. The ability to recall simple factual material, for example, generally falls to something like 25 per cent of its original value roughly a week after the material was learned, and continues to fall thereafter until it eventually disappears completely unless the material is subsequently revisited. If the material is reviewed at suitable intervals, on the other hand (say, after a day, a week, a month, and so on) it will become progressively more firmly lodged in the long-term memory until it eventually becomes permanently fixed. Exactly the same is true of other learned skills, most of which require to be practised or used regularly if they are to become a permanent part of a learner's repertoire.

DIFFERENT PSYCHOLOGICAL APPROACHES TO LEARNING

Psychology is the branch of science that is concerned with the study of behaviour and experience. It is one of the largest and most ubiquitous of all the sciences, and, given its concern with human behaviour and methods of changing same, has had an enormous influence on educational thinking. Although psychology is undoubtedly a well-established and universally-recognised scientific discipline, it is still in many ways an 'immature science', in the sense of the term used by the historian and philosopher of science Thomas S. Kuhn. In a seminal book published in 1962, Kuhn presented the thesis that a branch of science only reaches true maturity when it acquires a paradigm - a generally-accepted underlying model, set of beliefs and methodology. By Kuhn's criterion, psychology has certainly not yet attained such a status, since it is still characterised by several different approaches, or schools, none of which has gained universal acceptance among practitioners. The most important of these are psychoanalysis, behaviourism, humanistic psychology, the neurobiological approach and cognitive psychology. Let us now take a look at each of these approaches, and see how they have influenced our ideas about the nature of the learning process.

PSYCHOANALYSIS

Psychoanalysis was one of the first schools of psychological thought to develop, and is still what many people think of when the work 'psychology' is mentioned, largely due to the influence of its founder, Sigmund Freud. Freud worked in Vienna at the turn of the century, and developed the theory that the individual human being lives in a continuous state of internal conflict due to demands made by different parts of the personality, particularly at a subconscious level. He identified three basic components of personality, the ego, superego and id. Of these, the ego can be thought of as the rational, conscious part of the mind, whereas the superego

and id are conflicting aspects of the subconscious mind. According to Freud, the superego is a primeval, instinctive force which represents a drive towards the individual's ideal self. The id is a similar primeval force which expresses itself either through the love instinct (*eros*) and the internal drive known as the *libido*, or through the destructive or death instinct (*thanatos*). According to Freud, the well-adjusted individual uses the ego to maintain a reasonable balance between the conflicting demands of the superego and id, only encountering problems when the two drives become seriously out of balance. Psychoanalysis involves trying to resolve such internal conflicts by looking for clues as to what is happening within the individual's subconscious mind.

The ideas of Freud were developed by a number of 'post-Freudians' such as Carl Jung, Erik Erikson and Alfred Adler, who modified and extended his ideas and founded their own 'schools' of psychoanalysis. Although many modern psychologists disagree profoundly with several of the ideas put forward by Freud and his successors, the psychoanalytic approach has had an enormous influence both on psychology and on society at large. It has not, however, had very much influence on mainstream educational thinking or the theory of learning, and is not an approach that teachers and tutors are advised to have anything to do with. Without proper training in psychoanalysis, any attempt to 'play the therapist' with one's students could be extremely dangerous, and could cause permanent psychological damage. In other words, psychoanalysis should be left to the experts. If a student does start to become introspective during a tutorial or counselling session, suggest a break or use the appropriate referral system.

BEHAVIOURISM

Origins of behaviourism lie in the Russian psychologist, Pavlov's, work with dogs. At about the same time as Freud was developing his basic ideas of psychoanalysis in Vienna, an American psychologist, John Watson, was laying the foundations for the development of Pavlov's and Freud's work into what was to become a whole new - and highly influential - school of psychology. Watson argued that the Freudian approach based on self-observation (introspection) had yielded poor results, and that if psychology was to be considered to be a true science, its data would have to be both observable and measurable, like Pavlov's. His approach, which was later to become known as 'behaviourism', thus adopted the systematic study of observable behaviour as its focus. Behaviourists argue that nearly all behaviour is learned, and that the main function of psychology should be to seek to discover what the basic laws of learning are. Largely because of the work of the later American behavioural psychologist B.F. Skinner during the 1950's, behaviourism has had a tremendous influence on educational thinking.

Behavioural psychological theory is based on what is commonly referred to as stimulus/response or S-R learning. It assumes that learning has occurred if a specific response is elicited from a learner when he or she is placed in a particular situation and is given a particular stimulus. Learning of relatively complex behaviour can (it is claimed) be achieved through an appropriate series of stimulus-response

situations. At each stage, the learner must actively participate by performing a set task, after which he or she is then supplied with immediate feedback in the form of the correct answer. This is known as successive reinforcement. Skinner also argued that each successive stimulus-response step should be small enough to ensure that the learner is almost always correct in their response. Use of these small steps, plus successive reinforcement, led to what behavioural psychologists believed was an efficient way of 'shaping behaviour'. Skinner's original work was with animals, mostly with pigeons. His later work, which evolved from this, was with humans, and was largely responsible for triggering the bandwagon programmed learning movement that so dominated progressive educational thinking during the 1960's and early 1970's. This, in turn, led to more recent developments such as open learning, distance learning, computer-based learning and multimedia. Although Skinner's original behavioural model of learning has since been rejected or at least greatly modified by many educational psychologists, he has probably had a greater influence on educational thinking than any other psychologist. Indeed, every teacher who makes use of individualised learning methods today owes him a very real debt.

FACTORS AFFECTING LEARNING

Learning is a comprehensive process. The success of this process depends not only upon the effective teaching but also upon so many group factors. The factors related with the learner, the teacher, and the environment are seen responsible as a determinant of quantity, nature and speed of learning.

The main factors that affect learning may be mentioned as below:

(A) Factors belonging to the learner.
(B) Factors belonging to the teacher.
(C) Environmental Factors.

Factors Belonging to the Learner

The factors affecting learning related with the learner may be specified as under:-

The Child Himself

Child is the pivot of any learning activity. All activities rotate around him. As the aim of education is all round development of child's personality, from this point of view, the activities based and carried on account of child's needs, interests, attitudes, aptitudes, potentialities, capabilities, individuality, intelligence, *etc.*, may be effective and of immense importance. Child is the basis of teaching- learning process, hence, ignorance of child at any stage will make all the learning process futile and more imagination, nothing else. Hence, it is suggested that each and every activity related with the learning should be carried out in accordance with child's interests, needs and his physical and mental capacity. This all is possible only when the teacher has a deep insight to understand his pupil thoroughly.

His Intelligence

Intelligence has been found to be one of the main factors that influence learning. The proof for this factor is very commonly found in the class-rooms. The schools which are meant for children of average ability usually are not able to help a retarded child.

The teacher does not have the time to spend on this child who needs more help than an average child. Similarly, these schools are of no help to a child who is more intelligent than the average one. Cases have been found of a child indulging in delinquent acts simply because they are far above average in intelligence but the school that they attend is poor in stimulation. As a result these children satisfy their intellectual curiosity by indulging in delinquent and thrilling tricks. So we may say that holding the conditions of learning constant, the level of intelligence of a child makes a difference to the amount of their learning output on the class-room.

His Age

The test of learning given to subjects of a wide range of ages have shown that learning efficiency increases with age to a certain extent after which it stays stationary for some time and ultimately tends to decrease. This phenomenon can be understood easily if we keep in mind the developmental curves. Maturation of individual, experience also accounts for a difference both of which are linked up with age. So we find that children are speedier and more efficient at learning tasks as they grow older. As we get into adulthood and old age we find the output of the subjects going down because of the fact that though their experience has increased they cannot keep up the speed. So that when the tasks have a time limit on them, the older subjects cannot do so well as the younger subjects can. However, the experiment on learning is a continuous process and it spreads order the whole life with a desire in the individual to learn more and more. The only difference that exists is caused by the type of tasks given for learning.

His Will to Learn

The will to learn is always labelled as a factor determining the amount of learning. It is believed that in order to be able to grasp and retain a certain material the individual must have an inner urge to learn, a drive that can motivate him into learning. This motivation is determined by the interests, desires and the purpose of a particular individual. All these three are more or less developed with the help of a teacher.

An intelligent and effective teacher, teacher helps his pupils in developing wide interests and habits, desire to pursue certain activities and at large a purpose in life. If a teacher is successful in helping his pupils to develop worthwhile interests and habits and a desire to understand things, he has helped them in becoming good learners.

Guidance

Usually trial and error is considered to be the method of learning. When faced with a new task an individual attempts it, in case it is a failure, he tries again, perhaps using a different technique this time. After a few trials and errors he evolves the correct method of tackling the task. In practice we find that it allows the hit and miss method, a pupil wastes a great deal of his time and while facing failure, he goes through a certain amount of tension and frustration. A teacher, through his guidance, can save his pupils a lot of frustration. He can help the child in making the right trials and avoiding the ones which would not yield any fruitful results. In the initial stages of learning, a limited amount of guidance can help the student avoid unnecessary errors. The word "limited" is mentioned here because very often teachers are found to indulge in too much of guidance as far as the learning is concerned. The usual result of excessive guidance is failure of the purpose. Proper guidance should aim at developing initiative in the learner and discourage the tendency to seek ready made solution.

Educational Background

Educational background of the learner is an important factor that affects his learning. Student may be backward from educational point of view as a general case or specific one. Some of the students are week in most of the subjects while some students are week in one or two particular subjects. The first category of the students is termed as general backwardness. While second category of students is known as specifically backward. Educational background of generally backward students is more challenging than the educational background of specifically backward children. It is very common that if a particular student is week in any subject, he will feel difficulty in learning new knowledge of that subject. On the contrary if one possesses superior ability, beyond normally, it will be easier for him o gain new knowledge in a very comfortable and effective manner. Thus, educational background contributes a lot in further learning.

Health Status of Child

The health of the student should be very sound. A mal-nourished, ill or otherwise physically handicapped, cannot realise his potentialities as a learner. A pupil who is unhappy, discouraged or otherwise does not possess the balanced emotional tone is sure to be handicapped in his learning attempts. It is the rightly said that "a sound mind rests in a sound body" from this point of view a student should be physically and mentally fit so that he may learn easily and comfortably. Child's attention, interests, concentration, *etc.*, have direct link with the physical and mental health level of the students. Any sort of mental illness or deficiency or abnormality, physical illness or mental tension and frustration will affect directly students learning. Students who are physically and mentally feel tired very easily. They fail to concentrate upon their studies for a long and get easily disturbed and depressed. They feel boredom and make very few efforts to get

success in any activity. They feel complex and always complain of headache and other poor bodily symptoms. Thus, it is the first and foremost duty of the parents and the teachers to take note of their ward's physical and mental health seriously.

Motivation

Motivation is one of the basic principles for effective teaching, because no purposeful learning can take place apart from it. The human mind cannot absorb knowledge like a sponge. In order to learn, a person must do some activity. The urge to activity shows itself along different instinctive tendencies. Successful motivation depends on the successful use of these natural powers and tendencies to action.

The teacher who identifies and intensifies motives in learners, is able to arouse interest in them. He succeeds in setting up an excellent learning situation. It is said that "as is the motivation, so is the learning", or "learning will proceed best, if motivated". These sentences clearly depict the importance of motivation in the process of learning. Thus, it is the first and foremost duty of the teacher to create interest in the child before starting anything new. Because, in the absence of motivation all the efforts made by the teacher will go waste. Proper motivation helps in making the desire for learning strong.

Attitude of the Learner

Learning has ever been the chief activity of man. Each generation after something new to cultural heritage hands it down to the succeeding generation. For several centuries the heritage has been so large and so important that society has given primarily to the school the task of selecting, organising and presenting to the children the most valuable situation possible. Life pattern of an individual in adulthood, his attitudes, habits, mental, moral and physical well being is largely determined by the forces which were prevalent in childhood.

Pope's couplet says——

Tie education forms the common mind;

Just as the twig is bent the tree's inclined.

Favourable or positive attitude is must to get success in any field of endeavour. Favourable attitude towards the job or work makes one more active and enthusiastic. The same is related with the students' class- room activities. If the student has positive attitude towards any subject he will grasp the knowledge imparted by the teacher interestingly and whole heartedly and on the contrary, if he in not involved in the subject he will hate the subject, as well as the teacher of that subject.

Liking for anything is must in learning. The same view is supported by Thorndike's law of learning namely, ' law of use or dis-use'. If the student has negative attitude towards the subject all efforts made by the teacher will go in vain. Thus, it is the first and foremost duty of the teacher to make positive attitude of the student towards his entire academic activities.

Factors Belonging to the Teacher

Knowledge of subject

Teacher's knowledge related with his subject, his experience and ability has a direct bearing on the learning of the students. If a teacher does not possesses deep knowledge of his subject he can't give much enough to his students. On the contrary if a teacher has full command over his subject and has a mastery over the subject matter, he will be capable in giving new knowledge to his student with full confidence and his teaching will be effective undoubtedly. Generally student like those teachers on the other hand, face very few disciplinary problems. On the other side, teachers who lack competency on their parts deal students in a negative manner and indulge themselves in non-academic activities or cheap politics in the college campus. Good teachers are praised by their students like anything.

Teacher's Behaviour

Teachers behaviour influence the learning of students directly. A teacher should inherit all essential qualities of a good teacher. Sympathy, co-operation, objectivity, sweet tempered, polite, *etc.*, are all such traits that should reflect in teacher's behaviour always. These traits will help in making the environment of the school congenial and praise worthy. Student will feel relaxed in the company of such teachers and face with them difficulty in discussing their personal problems. Apart from it, if a teacher is rough and tuff in his behaviour, the students will not like his subject, his company and will be compelled to leave the class and moreover they may turn to be truants. Also, the teacher should be objective in his dealing with his students. He must be impartial, no subjective attitude. Because, if it all happens, the student will start hating their teaching and may develop a hatred attitude for him permanently in the near future. Thus, the teacher should not be biased while dealing so many activities related with school and class-room teaching.

Knowledge of psychology

Every teacher must have extensive knowledge of psychology without which he can neither know the student nor set the stage for learning. The elementary and secondary school teachers are most concerned with the psychology of childhood, psychology of adolescence and educational psychology. The latter deals with the application of psychological facts in such a way that the educational growth of the individual is efficiently directed and controlled. So it is rightly said that knowledge of educational psychology is must for a teacher. In this context it is quiet apparent that until a teacher does not acquire proper understanding of the principles of psychology, it is very difficult for him to make use of these principles in the field of education. Hence it is quiet justified that he should have a deep knowledge of most common concepts of psychology such as process of child

development, heredity, individual differences, motivation, theories of learning, *etc.* Making use of all these a teacher can make his teaching effective. Further, in the classroom situation he has to deal a variety of students at the same time. To gain mastery over such situations and to handle problems of individuals it is unavoidable for a teacher to have a detailed knowledge of educational psychology otherwise he will be utmost failure with regard to so many classroom complex situations. It is only knowledge of psychology that makes teacher fully competent and enthusiastic in dealing with his students.

Methods of Teaching

The traditional methods of teaching were more formalised, conservative, teacher dominated as opposed to modern, more flexible pupil involved, learner centred methods. In modern era it is now recognised that the subjects should be taught as activities. This activity principle was sponsored by Dewey. Teaching methods have a direct link with learning process. Consequently each teacher has a unique method of teaching. Similarly, all the students cannot be taught by a single method. If the method of teaching is scientific in nature, if will help in making the teaching effective. Also the learning process will be easier and purposeful. Realising this very need of the students educationists have developed modern methods and techniques of teaching. Methods are Playway method, Learning by doing, Learning by observation, Project method, Heuristic method, Discovery method, *etc.* Apart from above methods a teacher has to adopt his unique teaching style. It is commonly seen that a teacher is academically and professionally sound but his teaching is not effective in the classroom. There may be so many reasons behind the same but the most sensed factor is teacher's personal problem orientation technique, in the absence of which a student does not keep pace with the teacher and hesitates in sharing his personal problem with the teacher. Hence, personal rapport which the teacher is also needed for the success of teaching.

knowledge of individual differences

Knowledge of individual difference is must for a teacher. Each students has his own interests, attitudes, aptitudes, needs, potentialities, capabilities, values, *etc.*, and on account of these some students grasp the knowledge imparted by their teachers easily while some grasp with some difficulty and some of the students totally fail to grasp anything given by the teacher. Generally a teacher has to face three types of students in his class- backward, normal, and gifted children. To plan teaching accordingly the needs of these students or to satisfy the needs of all these students at the same time is really a difficult and challenging task for the teacher. To keep pace with this problem the teacher plans his teaching strategies keeping in mind the average children. This helps a bit to backward as well as to the gifted children. Though both of these categories seem to be dis-satsfied with this approach of the teacher. But, apart from it there is no proper channel for the teacher that he may try. To go through such channels only knowledge of individual differences can help him to some extent.

Personality

Good and appealing personality is the basis of successful and effective teaching. From this point of view the personality of the teacher must be very attractive and influencing. He must create an impression or put a stamp on his students keeping appropriate balance between his deeds and actions. Students learn so many things indirectly from the teacher. It is thus that teacher is said to be the best motivator for his students. He forms an idol for his students. Students imitate his each and every part of his behaviour gladly. So it is on the part of the teacher how he creates an example for others. For this he has to be very much cautious in his behaviour and has to exhibit all those traits through his personality that are welcomed most by most of the societal members. Personality should be viewed as the entire qualitativeness of a person or as an integrated pattern of traits. Teacher should keep in his mind that personality is shaped by and inter – woven with the social environment and culture is the ground from which personality emerges. To shape students' personality he should always borne in his mind that personality which is just a bundle of ideas, attitudes and intelligence depends a good deal on the people with whom the individual constantly associates.

No Care to Foster Individuality

The aim of education should be to develop to the full of potentialities of every child in school in accord always with the general good of society. It is also to develop each individual into a happy well co-ordianted personality with socially desirable qualities. It is to produce good citizens who will have sense enough to judge of public affairs, discernment enough to choose the right officers, self control, enough to accept the decision of majority, honesty, enough to seek the general welfare rather than his own at the expense of the community, public spirit, enough to face trouble or even danger for the good of community. It would be no exaggeration if we call traditional school a prison, the pupils prisoners and the teacher superintendent of the prison where every thing was teacher centred and subject centred, where no attention was paid towards the psychology of child. The children, in the schools were just like parrots in the cage who were just like parrots in the cage who were made to cram certain bits of dis-organised, dis-connected facts of knowledge which had no value in their later life.

Lack of Personal Contact between Teacher and Taught

The size of classes in our schools is too large to permit close pupil and teacher contacts. Therefore teacher cannot look towards the individuals habits, attitudes aptitudes personal traits needs potentialities, *etc.* The increase in the size of classes has considerably reduced personal contacts between teacher and students. Thus the training of character, inculcation of proper discipline have been seriously undetermined. Teaching in our schools had an aim of imparting

only factual knowledge through certain exercises in which the teacher was an expounder, drill master and a disciplinarian and the child a passive recipient of verbal and visual impressions. It was assumed that the natural inclination of the child were against such subject matter. The intermediary factor which was used to bridge the gap between the teacher and taught was discipline, an external force that made the child to memories that subject matter. There was nothing that could cater the intellectual, emotional and physical growth of the child. The child could not develop into anything but a suppressed personally in the absence of proper rapport between the teacher and the taught.

No Emphasis on Co-curricular Activities

The purpose of traditional school was to import certain fragments of isolated knowledge through different subjects of the curriculum. All other activities were regarded as something for which the school was not legitimately responsible hence, were called extra curricular activities. But the modern school aims at all round development of the child. The school is responsible for the education of the whole individual, his physical, mental, emotional, moral and social self. To realise this aim the importance of introducing certain activities having relation to different subjects of curriculum become clear and hence named as co-curricular activities. Secondary Education Commission observes that, "The school has to formulate a scheme of hobbies, occupations and projects that will appeal to, and draw out, the powers of children of varying temperaments and aptitudes." The co-curricular activities satisfy the needs of young people, promote meaningful learning and develop them into good citizens.

Narrow Curriculum Approach

Previously education in India was under foreign patronage. So it was divorced from our cultural, social and economic life. Secondary Education Commission writes – "The curriculum as formulated and as presented through the traditional methods of teaching does not give the student insight into everyday world in which they are living. When they pass out of school they feel ill-adjusted and cannot take their place confidently and competently in the community." The education given in our schools is purely of academic nature. It could contribute towards the development of cognitive aspect of personality only whereas the non-cognitive aspect was altogether ignored. The seconday Education commission observes that, "Education given in our schools is narrow and one sided and fails to train the whole personality of the student. For many decades it has provided only academic instructions. The non-cognitive aspects of his personality – his practical aptitudes, his emotions, his tastes were largely ignored."

WHAT IS LEARNING BEHAVIOUR?

Learning Behaviour emphasises the crucial link between the way in which children and young people learn and their social knowledge and behaviour. In

doing this the focus is upon establishing positive relationships across three elements of self, others and curriculum. The principles of learning behaviour have wide ranging implications for pupils, teachers, parents and other professionals. The principles can be applied to all children at any age and not just those perceived as being "difficult to manage". They apply as much to teachers and their relationship with children as much as they apply to the children themselves.

All NCfLB programmes and our partners are based on this relationship framework, a concept that has emerged from a review of theories of effective behaviour management. Tutors and trainees should recognise that a learning behaviour approach is fundamentally linked to a view that 'behaviour' in classrooms and whole schools/settings does not occur in isolation – it is the product of a variety of influences and not simply the product of a pupil's unwillingness to behave or learn as required by the teacher (an approach which has frequently been referred to as an 'ecosystemic approach'

In summary, the three sets of relationships which contribute to a culture/ ethos of 'learning behaviour' are:

- *Relationship with Self:* A pupil who does not feel confident as a learner and who has 'internalised' a view that s/he is unable to succeed as a` learner will be more likely to engage in the challenge of learning and (in consequence) may be more inclined to present 'unwanted behaviours'
- *Relationship with Others:* All 'behaviour' needs to be understood as 'behaviour in context'. Behaviour by pupils is triggered as much by their interactions with others (pupils, teachers or other adults in schools/ settings) as it is by factors internal to the child.
- *Relationship with the Curriculum:* Pupil behaviour and curriculum progress are inextricably linked. Teachers who promote a sense of meaningful curriculum progress in learning for each pupil will be more likely to create a positive behavioural environment.

In order to maximise the potential for learning schools should proactively facilitate Access, Participation and Engagement in learning through enabling teaching and supporting pupils to develop relationships with the curriculum, others and themselves supported by their School, Education Services, Family and Community.

INDIVIDUAL LEARNING VARIATION

Every individual human falls within a variety of capabilities that makeup their learning performance characteristics. The secret to a good education is to expose that individual to as many subjects as possible so they might discover where their talents lie. A great education allows a person to reach their ultimate potential capabilities. Some of these capabilities, such as the acquisition of language, or the establishment of attachments and bonding, emerge during a window of time during the maturational development of the individual while

others are able to be developed at anytime during the life of the individual. Even though there have been many misdirected biases and prejudices established over time, such as the idea that males are better at math than females, each of us, even the most gifted, have limitations. We are limited by our established collection of knowledge, by what we are inherently able to comprehend, by what we believe is our ability to comprehend, and by our fears.

When I was in graduate school, and behaviourism was the answer, I was required to virtually memorise a book of hundreds of animal experiments trying to decipher what learning was all about. One experiment jumped off the page, even though I have not seen it since. This seemingly insignificant experiment explained the difference between positive (reward) and negative (fear based) reinforcement. It is a simple experiment with two white rats in two shoe box sized containers. The idea was to train them to jump through a sliding door from one side of the box to the other. In both cases there was a light turned on just prior to the delivery of the reinforcement. The only difference was the motivation for learning this trick. For rat "A" they placed food on the other side of the door. This encouraged him to make the jump. For rat "B" they electrified a grid under his feet. He jumped around till he realised that he could escape the shock by jumping to the other side. This encouraged him to make the jump. It took both rats about the same number of trials to learn the trick. The rat that learned to jump for the food was experiencing "positive reinforcement" while the rat that jumped to avoid the shock was experiencing "negative reinforcement".

The important lesson in this experiment was shown during what they call the "extinction trials". Why they chose that name, I do not know. During the extinction trials, the light was turned on, but no food or shock was delivered. Soon the rat jumping for food no longer associated food with the light and began sniffing around for another solution. However, the rat jumping to avoid the shock continued to jump and jump for many trials after the shock was turned off. The animal's behaviour was rigid and did not change even though the shock was no longer present.

The rat which learned with positive reinforcement was adaptive and flexible while the rat which learned with negative reinforcement became rigid and fixed. Similarly to Pavlov's dogs, there is an inappropriate response to an associated signal (the bell or light) when the original stimulus is gone. One of the characteristics of neurotic behaviour is that it takes place inappropriately. Neurotic behaviour and neurotic emotional reactions can often be traced back to a negatively reinforced experience.

Another important aspect of learning was introduced by B. F. Skinner who illustrated general learning principles with pigeons. Skinner probably was too enthusiastic about the application of his concepts. The Behaviourist movement overlooked the fixed action patterns of behaviour and attributed everything to reinforcement. As you are introduced to these few experiments of the many he produced, you will easily be able to identify with the experience of the pigeon.

In all his experiments Skinner deprived the pigeons of food for twenty-four hours to insure the need for food would be a good motivation. The animal was then place in a cage with a small target disc attached to a lever in such a way that when the pigeon pecks at the disc, a pellet will drop into a nearby tray. The number of pecks on the disc per minute is recorded. As would be expected, the hungry pigeon discovers the disc pecking behaviour, and the number of pecks per minute increases over time to create an upward inclined graph. This is called the "learning curve".

There are three factors that he found to affect the learning curve.

1. *One to one reinforcement:* In this experiment the pigeon received one pellet per peck. The learning curve was fast, but the animal was soon satiated and the curve crashed.

2. *Fixed interval reinforcement:* In this experiment the pellets were released at regular intervals, such as one every fourth peck. The learning curve is not as steep, but the pigeon had to peck more times before it was satiated. The animal hurried the process along by pecking faster. Do you want faster work? Pay people by commission.

3. *Random-interval reinforcement:* The intervals were selected from a list of random numbers; so, there was no way to predict how many pecks will be necessary to get the next pellet. In this study the learning curve was the least rapid, but the pecking behaviour is eventually the most vigourous by far. This is the principle of the addiction to the unpredictable fruits of gambling. There are other factors involved, of course, but this is one.

All these aspects of learning are motivated by the fulfilment of needs. Each need is initially detected by some neuro-sensitivity that triggers a fixed action pattern. In time, this pattern is shaped by neurologically successful need satisfaction and the resulting repetition. This process can often be a long, subtle evolution of development, beginning in maturation and continuing over a lifetime. Neurobiology tells us that the continued use of a neural pathway strengthens that pathway with each use. This is why we learn and remember things in school: repetition. Meeting needs on a continual basis is the evolution

of establishing pathways. Sometimes need fulfilment is not so immediate. Such as in school. Our frontal cortex has something to do with our ability to keep our eye on a distant goal.

THE ROLE OF NEEDS

The fulfilment of needs is our motivation for learning. The struggle to fulfil our needs is the driving force of our life as we have evolved. The fulfilment of these needs holds the fabric of human society together by motivating human communication and community work. Needs are the essence of what we pursue, what we strive for, what reinforces our efforts. It stands to reason, in a fruitful society, that each one of us should feel the desire and the possibility of successfully fulfilling our needs. Karl Marx postulated that it is the frustration of need fulfilment that leads to aggression and revolt. The association of stress and aggression has been biologically linked. Some examples of our needs are: food, shelter, waste removal, activity, sex, safety, belongingness, power, achievement, knowledge, encouragement, beauty, and creativity. The order is not important. Everyone has these needs, but to different degrees depending on environment, culture, and individual variation. All these roads to need fulfilment are shaped from some original fixed action pattern or heritable inclination that emerges during the maturational development of the individual. The achievement of need fulfilment is the reinforcement necessary for learning.

THE EFFECT OF GENERALISATION

Generalisation is a vague concept describing a combination of neurological events. We are generalising when we see an object in different positions and we can recognise it as the same object. This is known as "gestalt". We generalise when we have an emotional response to a specific subject through experience and then ascribe that emotion to all other similar subjects. As we have shown, this would be more lasting with a negatively reinforced experience than with a positively reinforced experience. An example of generalisation is people who say, "all women are the same!" as a person ascribes a characteristic to every member of a class. On the other hand, generalisation could be the prejudicial application of a characteristic of a class to a specific member.

Here we have examples of two natural neurological events, both propensities are evolved through time by nature because they are beneficial to survival. Once again we see problems of rigidity when negative reinforcement is involved. This generalisation characteristic is the basis for racism and prejudice. It has been a primary ingredient in the dehumanisation of a class of people as a preliminary preparation for their eradication in warfare. On the other hand it is the basic requirement of a positive philosophy, or religion, that includes all people.

READING AND WRITING

This is an interesting subject because of its correlation with general intelligence and education. I say "correlation" because the two do not always

go hand in hand. For instance Charlemagne, an important leader in the eighth century Europe, was credited with many letters but was noted by his biographer as not being able to write his name. On the other hand, I have known a few families with children who learned to read, with little encouragement, a couple of years before they entered school.

Reading and writing are, without a doubt, tied to the maturational development of specific parts of the brain. This is part of the post birth recapitulation of humanity's evolutionary development through the threshold of literacy. Most children begin to learn to read, with instruction, by age six. About five percent of the children learn to read on their own by age four. Twenty-five percent will not learn to read till age ten; but, will have caught up to the others by age twelve. A small percentage of children will never learn to read. The lack of acceptance of this simple principle of the maturing brain has cost untold thousands of academically shattered lives. Since the pressure has been on the schools to show results by second grade, teachers have been trying every method they can think of to cram reading down the throats of students who are slow to mature. As a result, when they finally do mature, they don't want anything to do with reading.

Reading readiness tests are very accurate and well developed. Children who are determined to be unready to read should be deferred from reading instruction. By fourth grade virtually all children are ready for reading instruction and by sixth grade those children are performing as well as the other students. Recognising this phenomenon, a talented teacher, who introduced me to these realisations, started a private learning facility specialising in reading instruction to only fourth, fifth and sixth graders. He was careful to use teaching methods that were different from their previous schools. The teaching methods were actually no more effective, but were able to introduce the student to reading in a way that the student had not been previously negatively conditioned.

With people who cannot draw, cannot spell, cannot sing, cannot learn foreign languages, it is amazing to me that it is difficult for some people to understand there are people who cannot read, or are poor readers. Low reading ability is a perfectly natural and normal occurrence for a percentage of the population just as is advanced reading ability. For the poor readers, the written word makes as much sense as a blackboard full of advanced calculus does to most of us. The percentage of non-readers and poor readers is growing; but, it is not the fault of the schools or the parents. Reading is not a heritably guaranteed ability. There are powerful political forces which are unfairly punishing teachers and schools who happen to be populated by children of low reading ability.

Some would like to think that anyone can be anything they want to be; that every human is capable of becoming a college graduate, a physician, a classical musician, a fighter pilot, or an author. Unfortunately, this quixotic idea comes under the heading of "unrealistic idealism" for it is opposed to all evidence. Every attempt to measure the performance of any human behaviour (when displaying performance measure against numbers of people) always produces

some sort of Gaussian curve (a bell shaped curve) as would be predicted by the requirement of variation in biological evolution. The majority of the performers fall in a range around the average while the high and low performers fall off in number.

TRANSFER OF LEARNING

Transfer of learning is the study of the dependency of human conduct, learning, or performance on prior experience. The notion was originally introduced as *transfer of practice* by Edward Thorndike and Robert S. Woodworth. They explored how individuals would transfer learning in one context to another context that shared similar characteristics – or more formally how "improvement in one mental function" could influence another related one. Their theory implied that transfer of learning depends on the proportion to which the learning task and the transfer task are similar, or where "identical elements are concerned in the influencing and influenced function", now known as *identical element theory*. Transfer research has since attracted much attention in numerous domains, producing a wealth of empirical findings and theoretical interpretations. However, there remains considerable controversy about how transfer of learning should be conceptualised and explained, what its probability occurrence is, what its relation is to learning in general, or whether it may be said to exist at all.

Most discussions of transfer to date can be developed from a common operational definition, describing it as the process and the effective extent to which past experiences (also referred to as the transfer source) affect learning and performance in a current novel situation (the transfer target) (Ellis, 1965; Woodworth, 1938). This, however, is usually where the general consensus between various research approaches ends.

There are a wide variety of viewpoints and theoretical frameworks apparent in the literature. For review purposes, these are categorised as follows:
- A taxonomical approach to transfer research that usually intends to categorise transfer into different types;
- An application domain-driven approach by focusing on developments and contributions of different disciplines that have traditionally been interested in transfer;
- The examination of the psychological scope of transfer models with respect to the psychological functions or faculties that are being regarded; and
- A concept-driven evaluation, which reveals underlying relationships and differences between theoretical and empirical traditions.

TRANSFER TAXONOMIES

Of the various attempts to delineate transfer, typological and taxonomic approaches belong to the more common ones. Taxonomies are concerned with distinguishing different types of transfer, and therefore less involved with

labelling the actual vehicle of transfer, *i.e.*, what is the explanatory mental unit of transfer that is carried over. Hence, a key problem with many transfer taxonomies is that they offer an excessive number of labels for different types of transfer without engaging in a discussion of the underlying concepts that would justify their distinction; *i.e.*, similarity and the nature of transferred information. This makes it very difficult to appreciate the internal validity of the models.

Table. The following table presents different types of transfer, as adapted from Schunk (2004, p. 220).

Type	Characteristics
Near	Overlap between situations, original and transfer contexts are similar.
Far	Little overlap between situations, original and transfer settings are dissimilar.
Positive	What is learned in one context enhances learning in a different setting.
Negative	What is learned in one context hinders or delays learning in a different setting.
Vertical	Knowledge of a previous topic is essential to acquire new knowledge.
Horizontal	Knowledge of a previous topic is not essential but helpful to learn a new topic.
Literal	Intact knowledge transfers to new task.
Figural	Use some aspect of general knowledge to think or learn about a problem.
Low Road	Transfer of well-established skills in almost automatic fashion.
High Road	Transfer involves abstraction so conscious formulations of connections between contexts.
High Road/ Forward Reaching	Abstracting situations from a learning context to a potential transfer context.
High Road/ Backward Reaching	Abstracting in the transfer context features of a previous situation where new skills and knowledge were learned.

Apart from the effect-based distinction between negative and positive transfer, taxonomies have largely been constructed along two, mostly tacit, dimensions. One concerns the predicted relationship between the primary and secondary learning situation in terms of the categorical overlap of features and knowledge specificity constraints. The other concerns general assumptions about how transfer relationships are established, in terms of mental effort and cognitive process.

THE EFFECT-PERSPECTIVE: POSITIVE VS NEGATIVE TRANSFER

Starting by looking at the effect side of transfer – in terms of the common performance criteria, speed and accuracy – transfer theories distinguish between two broad classes that underlie all other classifications: *negative* and *positive*

transfer. Negative transfer refers to the impairment of current learning and performance due to the application of non-adaptive or inappropriate information or behaviour. Therefore, negative transfer is a type of interference effect of prior experience causing a slow-down in learning, completion or solving of a new task when compared to the performance of a hypothetical control group with no respective prior experience. Positive transfer, in contrast, emphasizes the beneficial effects of prior experience on current thinking and action. It is important to understand that the positive and negative effects of transfer are not mutually exclusive, and therefore real-life transfer effects are probably mostly a mixture of both. Positive transfer: transfer of learning or training is said to be positive when the learning or training carried out in one situation proves helpful to learning in another situation.

Examples of such transfer are:

- The knowledge and skills related to school mathematics help in the learning of statistical computation;
- The knowledge and skills acquired in terms of addition and subtraction in mathematics in school may help a child in the acquisition of knowledge and skills regarding multiplication and division;
- Learning to play badminton may help an individual to play ping pong (table tennis) and lawn tennis.

THE SITUATION PERSPECTIVE: SPECIFIC VS GENERAL, NEAR VS FAR TRANSFER

The situation-driven perspective on transfer taxonomies is concerned with describing the relation between transfer source (*i.e.*, the prior experience) and transfer target (*i.e.*, the novel situation). In other words, the notion of novelty of the target situation *per se* is worthless without specifying the degree of novelty in relation to something that existed before. Butterfield and Nelson (1991), for example, distinguish between *within-task*, *across-task*, and *inventive* transfer. A similar classification approach reappears in many situation-driven transfer taxonomies (*e.g.*, *similar* vs. *different* situations, *example-to-principle* and vice versa, *simple-to-complex* and vice versa) and can be noted as distinctions made along the *specific vs. general* dimension. Mayer and Wittrock (1996, pp. 49ff.) discuss transfer under the labels of general "transfer of general skill" (*e.g.*, "Formal Discipline", Binet, 1899), "specific transfer of specific skill" (*e.g.*, Thorndike's, 1924a, b, "identical elements" theory), "specific transfer of general skill", and "meta-cognitive control of general and specific skills" as a sort of combination of the previous three views.

Haskell's (2001) taxonomy proposes a more gradual scheme of similarity between tasks and situations. It distinguishes between non-specific transfer (*i.e.*, the constructivist idea that all learning builds on present knowledge), application transfer (*i.e.*, the retrieval and use of knowledge on a previously learned task), context transfer (actually meaning context-free transfer between similar tasks), near vs. far transfer, and finally displacement or creative transfer (*i.e.*, an

inventive or analytic type of transfer that refers to the creation of a new solution during problem solving as a result of a synthesis of past and current learning experiences). Both near and far transfer are widely used terms in the literature. The former refers to transfer of learning when task and/or context change slightly but remain largely similar, the latter to the application of learning experiences to related but largely dissimilar problems.

THE PROCESS PERSPECTIVE

The *specific vs. general* dimension applies not just to the focus on the relation between source and target, *i.e.*, from where to where is transferred, but also to the question about the transfer process itself, *i.e.*, what is transferred and how. *Reproductive* vs. *productive* transfer are good examples of this type of distinction, whereas reproductive transfer refers to the simple application of knowledge to a novel task, productive transfer implies adaptation; *i.e.*, mutation and enhancement of retained information.

A similar dichotomous distinction is the one between *knowledge* transfer and *problem-solving* transfer (Mayer and Wittrock, 1996). Knowledge transfer takes place when knowing something after learning task *A* facilitates or interferes with the learning process or performance in task *B*. Knowledge used is referred to by many different terms, such as declarative or procedural types (Anderson, 1976), but it means that there are representational elements that suit *A* and *B*. Problem solving transfer, on the other hand, is described as somewhat more "fluid knowledge" transfer, so that experience in solving a problem *A* helps finding a solution to problem *B*. This can mean that the two problems share little in terms of specific declarative knowledge entities or procedures, but call for a similar approach, or solution search strategies (*e.g.*, heuristics and problem solving methods).

The issues discussed in problem-solving transfer literature are also closely related to the concepts of *strategic* and *theoretic* transfer (Haskell, 2001, p. 31), and cognitive research on analogical reasoning, rule-based thinking and meta-cognition. Indeed, far transfer can be considered as the prototypical type of transfer, and it is closely related to the study of analogical reasoning. Within the problem-solving literature the distinction between specific and general methods is made mostly with reference to Newell and Simon's (1972) strong vs. weak problem solving methods.

Another concern that is frequently addressed in transfer taxonomies is the question of conscious effort. *High-road* vs. *low-road* transfer (Mayer and Wittrock, 1996; Salomon and Perkins, 1989) expresses a distinction between such instances of transfer where active retrieval, mapping, and inference processes take place, as opposed to those instances that occur rather spontaneously or automatically. Hence, low-road transfer concerns frequently employed mental representations and automated, proceduralised knowledge, and occurs preferably in near transfer settings. In contrast, high-road transfer is more conception-driven, and requires cognitive and meta-cognitive effort.

TRADITIONAL FIELDS OF TRANSFER RESEARCH

There are a nearly unlimited number of research fields that share some applied interest into the study of transfer, as it pertains to learning in general. Three fields that contributed in most substantial ways to the progress of transfer research, both from a conception and empirical point of view, are the fields of education science, linguistics, and human-computer interaction (HCI). In fact, most transfer research has been conducted in reference to one of these applied settings, rather than in basic cognitive psychological laboratory conditions.

EDUCATION SCIENCE: TEACHING FOR TRANSFER

Due to their core concern with learning, educational science and practice are the classic fields of interest regarding transfer research, and probably the prime target for the application of theories. Transfer of learning represents much of the very basis of the educational purpose itself. What is learned inside one classroom about a certain subject should aid in the attainment of related goals in other classroom settings, and beyond that it should be applicable to the student's developmental tasks outside the school; the need for transfer becomes more accentuated.

This is because the world educators teach in today is different from the world they themselves experienced as students, and differs equally from the one their students will have to cope with in the future. This is why the promotion of instruction designed to educate students on the process of enquiry so that they can apply it readily for themselves is recommended.

By nature of their applied interest, educationalists' main concern has been less with the question of how transfer takes place, and much more with under what conditions, or, that it happens at all. The basic conviction that student's learning and achievement levels depend primarily on learning and achievement prerequisites, has constituted a central part in educational learning theories for quite some time.

The major focus in educational transfer studies has, therefore, been on what kind of initial learning enables subsequent transfer: *teaching for transfer*. Research on learning and transfer has identified key characteristics with implications for educational practice.

IMPLICATIONS FOR SCHOOL PSYCHOLOGY PRACTICE

It is important for teachers to facilitate the transfer of learning to their students and not merely regurgitate the things they learned during their university experience.

However, many instructors have been out of the classroom for a decade or more and the study of transfer was not a part of their curriculum. Therefore, it is important that these instructors understand the process of transfer so that they can design their lesson plans with it as a goal. School psychologists have a general understanding of how pedagogical applications of psychology in the

classroom affect learning. Therefore, it is important when considering systems of support using the Response to Intervention (RTI) model that school psychologists first asses through observation if a teacher's current pedagogical practices promote transfer. If current practices do not, this could prevent the transfer of classroom knowledge which can affect a child's behaviour and their perceived intellectual ability.

4

Sports Psychology

It has long been acknowledged that psychological skills are critical for athletes at the elite level. Athletes with the requisite "mental toughness" are more likely to be successful. In the past, it was assumed that these skills were genetically based, or acquired early in life. Now, it is commonly accepted that athletes and coaches are capable of learning a broad range of psychological skills that can play a critical role in learning and in performance.

The study of psychology in philosophical context dates back to the ancient civilizations of Egypt, Greece, China, India, and Persia. Historians point to the writings of ancient Greek philosophers, such as Thales, Plato, and Aristotle, as the first significant body of work in the West to be rich in psychological thought.

Structuralism

German physician Wilhelm Wundt is credited with introducing psychological discovery into a laboratory setting. Known as the "father of experimental psychology", he founded the first psychological laboratory, at Leipzig University, in 1879. Wundt focused on breaking down mental processes into the most basic components, starting a school of psychology that is called structuralism. Edward Titchener was another major structuralist thinker.

Functionalism

Functionalism formed as a reaction to the theories of the structuralist school of thought and was heavily influenced by the work of the American philosopher and psychologist William James. James felt that psychology should have practical value, and that psychologists should find out how the mind can function to a

person's benefit. Major functionalist thinkers included John Dewey and Harvey Carr. Other 19th-century contributors to the field include the German psychologist Hermann Ebbinghaus, a pioneer in the experimental study of memory, who developed quantitative models of learning and forgetting at the University of Berlin; and the Russian-Soviet physiologist Ivan Pavlov, who discovered in dogs a learning process that was later termed "classical conditioning" and applied to human beings. Starting in the 1950s, the experimental techniques set forth by Wundt, James, Ebbinghaus, and others would be reiterated as experimental psychology became increasingly cognitive—concerned with information and its processing—and, eventually, constituted a part of the wider cognitive science. In its early years, this development had been seen as a "revolution", as it both responded to and reacted against strains of thought—including psychodynamics and behaviourism—that had developed in the meantime.

Psychoanalysis

From the 1890s until his death in 1939, the Austrian physician Sigmund Freud developed psychoanalysis, a method of investigation of the mind and the way one thinks; a systematized set of theories about human behaviour; and a form of psychotherapy to treat psychological or emotional distress, especially unconscious conflict. Freud's psychoanalytic theory was largely based on interpretive methods, introspection and clinical observations. It became very well-known, largely because it tackled subjects such as sexuality, repression, and the unconscious mind as general aspects of psychological development. These were largely considered taboo subjects at the time, and Freud provided a catalyst for them to be openly discussed in polite society. Clinically, Freud helped to pioneer the method of free association and a therapeutic interest in dream interpretation. Freud had a significant influence on Swiss psychiatrist Carl Jung, whose analytical psychology became an alternative form of depth psychology.

Other well-known psychoanalytic scholars of the mid-20th century included psychoanalysts, psychologists, psychiatrists, and philosophers. Among these thinkers were Erik Erickson, Melanie Klein, D. W. Winnicott, Karen Horney, Erich Fromm, John Bowlby and Sigmund Freud's daughter, Anna Freud. Throughout the 20th century, psychoanalysis evolved into diverse schools of thought, most of which may be classed. Psychoanalytic theory and therapy were criticized by psychologists and philosophers such as B. F. Skinner, Hans Eysenck, and Karl Popper. Popper, a philosopher of science, argued that Freud's, as well as Alfred Adler's, psychoanalytic theories included enough ad hoc safeguards against empirical contradiction to keep the theories outside the realm of scientific inquiry. By contrast, Eysenck maintained that although Freudian ideas could be subjected to experimental science, they had not withstood experimental tests. By the 20th century, psychology departments in American universities had become experimentally oriented, marginalizing Freudian theory and regarding it as a "desiccated and dead" historical artifact. Meanwhile, however, researchers

in the emerging field of neuro-psychoanalysis defended some of Freud's ideas on scientific grounds while scholars of the humanities maintained that Freud was not a "scientist at all, but... an interpreter."

Behaviourism

In the United States, behaviourism became the dominant school of thought during the 1950s. Behaviourism was founded in the early 20th century by John B. Watson, and embraced and extended by Edward Thorndike, Clark L. Hull, Edward C. Tolman, and later B. F. Skinner. Theories of learning emphasized the ways in which people might be predisposed, or conditioned, by their environments to behave in certain ways. Classical conditioning was an early behaviourist model. It posited that behavioural tendencies are determined by immediate associations between various environmental stimuli and the degree of pleasure or pain that follows. Behavioural patterns, then, were understood to consist of organisms' conditioned responses to the stimuli in their environment. The stimuli were held to exert influence in proportion to their prior repetition or to the previous intensity of their associated pain or pleasure. Much research consisted of laboratory-based animal experimentation, which was increasing in popularity as physiology grew more sophisticated. Skinner's behaviourism shared with its predecessors a philosophical inclination towards positivism and determinism.

He believed that the contents of the mind were not open to scientific scrutiny and that scientific psychology should emphasize the study of observable behaviour. He focused on behaviour–environment relations and analysed overt and covert behaviour as a function of the organism interacting with its environment. Behaviourists usually rejected or deemphasized dualistic explanations such as "mind" or "consciousness"; and, in lieu of probing an "unconscious mind" that underlies unawareness, they spoke of the "contingency-shaped behaviours" in which unawareness becomes outwardly manifest. Among the behaviourists' most famous creations are John B. Watson's Little Albert experiment, which applied classical conditioning to the developing human child, and Skinner's notion of operant conditioning, which acknowledged that human agency could affect patterns and cycles of environmental stimuli and behavioural responses. Linguist Noam Chomsky's critique of the behaviourist model of language acquisition is widely regarded as a key factor in the decline of behaviourism's prominence. Martin Seligman and colleagues discovered that the conditioning of dogs led to outcomes that opposed the predictions of behaviourism. But Skinner's behaviourism did not die, perhaps in part because it generated successful practical applications. The fall of behaviourism as an overarching model in psychology, however, gave way to a new dominant paradigm: cognitive approaches.

Humanism

Humanistic psychology was developed in the 1950s in reaction to both behaviourism and psychoanalysis. By using phenomenology, intersubjectivity

and first-person categories, the humanistic approach sought to glimpse the whole person—not just the fragmented parts of the personality or cognitive functioning. Humanism focused on fundamentally and uniquely human issues, such as individual free will, personal growth, self-actualization, self-identity, death, aloneness, freedom, and meaning. The humanistic approach was distinguished by its emphasis on subjective meaning, rejection of determinism, and concern for positive growth rather than pathology. Some of the founders of the humanistic school of thought were American psychologists Abraham Maslow, who formulated a hierarchy of human needs, and Carl Rogers, who created and developed client-centred therapy. Later, positive psychology opened up humanistic themes to scientific modes of exploration.

Gestalt

Wolfgang Kohler, Max Wertheimer and Kurt Koffka co-founded the school of Gestalt psychology. This approach is based upon the idea that individuals experience things as unified wholes. This approach to psychology began in Germany and Austria during the late 19th century in response to the molecular approach of structuralism. Rather than breaking down thoughts and behaviour to their smallest element, the Gestalt position maintains that the whole of experience is important, and the whole is different than the sum of its parts. Gestalt psychology should not be confused with the Gestalt therapy of Fritz Perls, which is only peripherally linked to Gestalt psychology.

Existentialism

Influenced largely by the work of German philosopher Martin Heidegger and Danish philosopher Søren Kierkegaard, psychoanalytically trained American psychologist Rollo May pioneered an existential breed of psychology, which included existential therapy, in the 1950s and 1960s. Existential psychologists differed from others often classified as humanistic in their comparatively neutral view of human nature and in their relatively positive assessment of anxiety. Existential psychologists emphasized the humanistic themes of death, free will, and meaning, suggesting that meaning can be shaped by myths, or narrative patterns, and that it can be encouraged by an acceptance of the free will requisite to an authentic, albeit often anxious, regard for death and other future prospects. Austrian existential psychiatrist and Holocaust survivor Viktor Frankl drew evidence of meaning's therapeutic power from reflections garnered from his own internment, and he created a variety of existential psychotherapy called logotherapy. In addition to May and Frankl, Swiss psychoanalyst Ludwig Binswanger and American psychologist George Kelly may be said to belong to the existential school.

Cognitivism

Cognitive psychology is the branch of psychology that studies mental processes including how people think, perceive, remember, and learn. As part

of the larger field of cognitive science, this branch of psychology is related to other disciplines including neuroscience, philosophy, and linguistics. Noam Chomsky helped to ignite a "cognitive revolution" in psychology when he criticized the behaviourists' notions of "stimulus", "response", and "reinforcement", arguing that such ideas—which Skinner had borrowed from animal experiments in the laboratory—could be applied to complex human behaviour, most notably language acquisition, in only a vague and superficial manner. The postulation that humans are born with the instinct or "innate facility" for acquiring language posed a challenge to the behaviourist position that all behaviour is contingent upon learning and reinforcement. Social learning theorists such as Albert Bandura argued that the child's environment could make contributions of its own to the behaviours of an observant subject. Meanwhile, accumulating technology helped to renew interest and belief in the mental states and representations—*i.e.,* the cognition—that had fallen out of favour with behaviourists. English neuroscientist Charles Sherrington and Canadian psychologist Donald O. Hebb used experimental methods to link psychological phenomena with the structure and function of the brain. With the rise of computer science and artificial intelligence, analogies were drawn between the processing of information by humans and information processing by machines. Research in cognition had proven practical since World War II, when it aided in the understanding of weapons operation. By the late 20th century, though, cognitivism had become the dominant paradigm of mainstream psychology, and cognitive psychology emerged as a popular branch. Assuming both that the covert mind should be studied and that the scientific method should be used to study it, cognitive psychologists set such concepts as "subliminal processing" and "implicit memory" in place of the psychoanalytic "unconscious mind" or the behaviouristic "contingency-shaped behaviours". Elements of behaviourism and cognitive psychology were synthesized to form the basis of cognitive behavioural therapy, a form of psychotherapy modified from techniques developed by American psychologist Albert Ellis and American psychiatrist Aaron T. Beck. Cognitive psychology was subsumed along with other disciplines, such as philosophy of mind, computer science, and neuroscience, under the umbrella discipline of cognitive science.

ENHANCING MOTIVATION IN SPORT

With Torino Olympic Games underway, the sports world will be in the spotlight for much of this month. Psychologists have been supporting the U.S., Olympic mission formally since the 1980s and a team of sport psychologists will be on-hand in Italy this month to continue the work they have been doing for the past 4 years with some of the country's finest athletes. As important as performance enhancement can be for elite athletes, it is only a small piece of how psychologists are contributing to the world of sport.

Millions of youth participate in organised sports annually in the United States and another interesting line of enquiry in sport psychology focuses on how

organised sport experiences can be used to foster optimal motivation. Enhancing motivation can lead to the sustained, high-quality engagement in sport that is required for the development of Olympic-level expertise and it may also contribute to healthy youth development which will be the focus of this essay.

THE VALUE OF YOUTH SPORT PARTICIPATION

One of the most powerful rationales for promoting youth sport participation draws from the documented benefits of physical activity. The United States Surgeon General and the American College of Sports Medicine (2000) endorse regular physical activity to reduce long-term risk for disease (*e.g.*, diabetes, cardiovascular disease, some forms of cancer). Strikingly, the prevalence of diseases such as type-II diabetes recently increased dramatically in children and youth. This increase is widely attributed to concurrent increases in childhood obesity. Overweight status among children and adolescents in the United States has more than tripled in the past 25 years.

Given the nature of energy balance (*i.e.*, caloric intake vs. energy expenditure), increasing youth physical activity will surely be one part of the solution to the current childhood obesity crisis. Unfortunately, daily physical activity is being cut out of school curricula across the country. The greatest single source of organised youth sport participation appears to be recreational sport programmes, such as those sponsored by community recreation departments; but it is well-established that youth sport participation rates experience a steady decline starting between ages 10-13 years. Getting and keeping youth involved in organised sport programmes outside of school is a motivation problem of great importance for public health. Of course, physical activity and its benefits for physical health represent only one class of youth sport outcomes.

Sport is also a powerful context for youth psychosocial development. Youths' subjective experience during organised sports and other structured voluntary activities is unique because they report greater concentration than they do when playing with friends in unstructured settings, and greater enjoyment than they do in structured activities such as school. These conditions are ideally-suited for social learning and internalizing environmental characteristics.

Notwithstanding a few undesirable correlates, the available evidence suggests a generally positive profile of correlates associated with youth sport participation. Compared to non-athletes, high school athletes report greater liking of school, are less likely to dropout, have higher grade point averages, are more likely to attend college, are less socially-isolated, attain greater occupational success, and have greater increases in self-esteem through high school.

On balance, youth sport participation seems to be a positive developmental experience; however, it seems apparent that not all youth sport programmes are equal with respect to their developmental yield for youth. Many factors are likely to play a role in determining the quality of a youth sport experience. My colleagues and I are among a group of scientists who focus on the role that coaches play in determining the developmental yield of youth sport participation.

THE IMPORTANCE OF YOUTH SPORT COACHES

Behaviour observation research has provided compelling evidence that coaching behaviours influence the quality of youth sport experiences. In one study, youth reported greater liking for basketball when their coaches exhibited high levels of mistake-contingent technical instruction, and low levels of keeping control and general encouragement.

Similarly, youth evaluated their coaches more positively when the coaches exhibited high levels of instructive (*e.g.*, general and mistake-contingent technical instruction) and supportive (*e.g.*, reinforcement, mistake-contingent encouragement) behaviours, and low levels of punishment. Interestingly, Smith and Smoll (1990) also found that youth self-esteem at the beginning of the season moderated the effects of coach behaviour on youth evaluations – low self-esteem athletes' evaluations of coaches seem to be especially influenced by the coaches use of the desirable coaching behaviours. Clearly, what coaches do impacts how youth evaluate those coaches and the activities that are organised by those coaches.

Beyond a specific behavioural repertoire, coaches are able to create motivational climates by the way they choose to structure the setting. To illustrate the role of coaching climates on young athletes' sport experience, consider a recent study of female and male recreational swim league participants aged 8 – 18 years. We were interested in whether and how the perceived coaching climate predicted changes in youths' reasons for swimming. Youth completed measures of their situational motivation (*i.e.*, their reasons for swimming) at the beginning, middle, and end of the season. At the beginning and end of season, youth also rated their achievement goals. Achievement goals represent the purpose or aim of their achievement behaviour. We employed Elliot's (1999) 2×2 model of achievement goals that distinguishes four goals based on their *definition of competence* (*i.e.*, task- or self-referenced criteria vs. normatively-referenced criteria) and the *valence of the goal* (*i.e.*, approaching competence vs. avoiding incompetence). At the end of the swim season, youth rated their perceptions of the coaching climate – that is, the degree to which youth perceived the coaches as emphasizing each of the four achievement goals when evaluating the youths' competence.

Results indicated that youth perceptions of avoidance coaching climates positively predicted approximately 40 per cent of the change in youths' corresponding avoidance achievement goals during the season. Additionally, to the extent that youth increased their focus on avoiding self-referenced incompetence (*e.g.*, not performing worse than they previously performed), they described their reasons for swimming as being more externally regulated (*i.e.*, done to satisfy external demands, such as parents' directives) and more amotivated (*i.e.*, done without a clear purpose in mind). Thus, avoidance coaching climates in swimming appear to be linked with deterioration in the self-determination of young swimmers' motivation.

The emerging conclusion from this literature – coaches may influence youth motivation both through their observed behaviours and the motivational climate

they create. Similar to the literature on developmental correlates of youth sport participation, evidence for coaching effects on youth sport motivation is based largely on non-experimental research that does not permit strong causal inferences. For this reason, a number of researchers in this area have turned to experimental designs to test their hypotheses about the critical factors for optimizing youth sport experiences.

The seminal coach training efficacy trials involved Coach Effectiveness Training. This programme focused on teaching coaches a behavioural repertoire and philosophy of winning based on some of the behavioural research. This behavioural repertoire is designed to enhance youth perceptions and recall of coaches, and ultimately youth evaluative reactions in the sport setting. To accommodate recent theoretical developments and emerging research findings, my collaborator and I have posited that coach training programmes may influence youth motivation (and ultimately some important indicators of youth development) via a sequence of cascading changes in (a) coaches observed behaviours and activity structures, (b) youth perceptions of coaches behaviours and the coaching climate, and (c) youth self-perceptions. This model provides a framework for evaluating the experimental coach training literature (unless otherwise specified, this brief review includes studies employing various psychosocially-based coach training programmes).

First, it appears that some coach behaviours may be modified by brief training programmes. Specifically, coaches' use of reinforcement following desirable behaviours appears to be the behaviour most amenable to change following training. Other theoretically-important behaviours may be sufficiently well-engrained that they are resistant to modification or infrequent enough to escape detection of modest changes in their base rates. Second, athletes evaluate CET-trained coaches more positively than non-CET-trained coaches. These findings are based on post-training differences in youth perceptions of coach behaviours; it will be important to determine whether randomly-assigned coach training programmes can account for changes in youth perceptions of coaches.

SPORTS: PSYCH-DOWN TECHNIQUES

It's natural to feel some increase in your intensity in a competition. You're putting yourself to the test and want to do your best. But when that increase intensity turns to anxiety that can hurt your performances, that can be a problem. But rather than just resigning yourself to feeling nervous and performing poorly, you can take active steps to reach and maintain your prime intensity so you can performing your best. There are a number of simple "psych-down" techniques you can use to get your intensity back under control. Deep breathing. When you experience overintensity, one of the first things that's disrupted is your breathing. It becomes short and choppy and you don't get the oxygen your body needs to perform its best. The most basic way to lower your intensity then is to take control of your breathing again by taking slow, deep breaths.

Deep breathing has several important benefits. It ensures that you get enough oxygen so your body can function well. By getting more oxygen into your body, you will relax, feel better, and it will give you a greater sense of control. This increased comfort will give you more confidence and enable you to more easily combat negative thoughts (which are often the cause of the overintensity). It will also help you let go of negative emotions such as fear or frustration, and allow you to regain positive emotions such as excitement. Focusing on your breathing also acts to take your mind off of things that may be interfering causing your overintensity.

For athletes who participate in sports that involved a series of short performances, such as baseball, football, tennis, and golf, deep breathing should be a part of your between-performance routine. One place in particular where deep breathing can be especially valuable to reduce intensity is before you begin another performance. If you take two deep breaths at this point, you ensure that your body will be more relaxed, comfortable, and prepared for the upcoming performance.

Muscle relaxation. Muscle tension is the most common symptom of overintensity. This is the most crippling physical symptom because if your muscles are tight and stiff, you simply won't be able to perform at your highest level. There are two muscle-relaxation techniques you can use away from your sport and, in a shortened form, during competitions: passive relaxation and active relaxation. Similar to deep breathing, muscle relaxation is beneficial because it allows you to regain control of your body and to make you feel more comfortable physically. It also offers the same mental and emotional advantages as does deep breathing.

Passive relaxation involves imagining that tension is a liquid that fills your muscles creating discomfort that interferes with your body performing its best. To prepare for passive relaxation, lie down in a comfortable position in a quiet place where you won't be disturbed. As you go through the passive relaxation procedure, focus on your breathing, allow the tension to drain out of your muscles, and, at the end, focus on your overall state of mental calmness and physical relaxation. Active relaxation is used when your body is very tense and you can't relax your muscles with passive relaxation. When your intensity is too high and your muscles are tight, it's difficult to just relax them. So instead of trying to relax your muscles, do just the opposite. Tighten them more, then relax them. For example, before a competition, your muscle tension might be at an 8, where 1 is totally relaxed and 10 is very tense, but you perform best at a 4. By further tightening your muscles up to a 10, the natural reaction is for your muscles to rebound back past 8 towards a more relaxed 4. So, making your muscles more tense at first then results in them becoming more relaxed.

Active relaxation typically involves tightening and relaxing four major muscle groups: face and neck, arms and shoulders, chest and back, and buttocks and legs. It can also be individualized to focus on particular muscles that trouble you the most.

To prepare for passive relaxation, lie down in a comfortable position in a quiet place where you won't be disturbed. For each muscle group, tighten your muscles for five seconds, release, and repeat. As you go through the active relaxation procedure, focus on the differences between tension and relaxation, be aware of how you are able to induce a greater feeling of relaxation, and, at the end, focus on your overall state of mental calmness and physical relaxation.

These two relaxation procedures can also be used during a competition (for those sports comprised of a series of short performances) in an abbreviated form. Between performances, you can stop for five seconds and allow the tension to drain out of tense parts of your body (passive relaxation) or tighten and relax the tense muscles (active relaxation).

Slow the pace of competition. A common side effect of overintensity is that athletes tend to speed up the tempo of competition. Athletes in sports such as tennis, golf, baseball, and football can rush between performances almost as if they want to get the competition over with as soon as possible. So, to lower your intensity, slow your pace between performances. Simply slowing your pace and giving yourself time to slow your breathing and relax your muscles will help you lower your intensity to its prime level. Process focus. One of the primary causes of overintensity is focusing on the outcome of the competition. If you're worried about whether you will win or lose, you're bound to get nervous. The prospect of losing is threatening, so that will make you anxious. The thought of winning, especially if it's against an opponent you have never defeated before, can also be anxiety provoking because it may be unfamiliar or unexpected to you.

To reduce the anxiety caused by an outcome focus, redirect your focus onto the process. Ask yourself, what do I need to do to perform my best? This process focus can include paying attention to your technique or tactics. Or it might involve focusing on mental skills such as positive thinking or the psych-down strategies I am currently describing. You can also shift your focus onto your breathing which will take your mind off of the outcome and will directly relax your body by providing more oxygen to your system.

A process focus takes your mind off things that cause your over-intensity and shifts your focus onto things that will reduce your anxiety, build your confidence, and give you a greater sense of control over your sport.

Keywords. Another focusing technique for lowering your intensity is to use what I call intensity keywords, such as calm, easy, and relax. These words act as reminders of what you need to do with your intensity to perform your best. Keywords are especially important in the heat of a tight competition when you can get so wrapped up in the pressure that you forget to do the things you need to do in order to perform your best. By saying the keyword between performances, you'll be reminded to use the psych-down techniques when your intensity starts to go up. I also recommend that you write one or two keywords on a piece of tape which you then put on a piece of your equipment. Looking at the equipment acts as a further reminder to follow the keyword and lower your intensity.

Music. Music is one of the most common tools athletes in many sports use to control their intensity. We all know that music has a profound physical and emotional impact on us. Music has the ability to make us happy, sad, inspired, and motivated. Music can also excite or relax us. Many world-class and professional athletes listen to music before they compete to help them reach their prime intensity.

Music is beneficial in several ways. It has a direct effect on you physically. Calming music slows your breathing and relaxes your muscles. Simply put, it makes you feel good. Mentally, it makes you feel positive and motivated. It also generates positive emotions such as joy and contentment. Finally, calming music takes your mind off of aspects of the competition that may cause doubt or anxiety. The overall sensation of listening to relaxing music is a generalized sense of peace and well-being.

Smile. The last technique for lowering intensity is one of the strangest and most effective I've ever come across. A few years ago, I was working with a young professional athlete who was having a terrible practice session. She was performing very poorly and her coach was getting frustrated with her. She approached me during a break feeling angry and depressed, and her body was in knots. She asked me what she could do. I didn't have a good answer until an idea just popped into my head. I told her to smile. She said, I don't want to smile. I told her to smile. She said she was not happy and didn't want to smile. I told her again to smile.

This time, just to get me off her back, she smiled. I told her to hold the smile. During the next two minutes there was an amazing transformation. As she stood there with the smile on her face, the tension began to drain out of her body. Her breathing became slow and deep. She said that she was feeling better. In a short time, she was looking more relaxed and happier. She returned to practice, her performance improved, and she made some progress during the remainder of the practice session.

Her response was so dramatic that I wanted to learn how such a change could occur. When I returned to my office, I looked at the research related to smiling and learned two things.

First, as we grow up, we become conditioned to the positive effects of smiling. In other words, we learn that when we smile, it means we're happy and life is good. Second, there's been some fascinating research looking at the effects of smiling on ourbrain chemistry. What this research has found is that when we smile, it releases brain chemicals called endorphins which have an actual physiologically relaxing effect.

For all of these psych-down techniques to be effective, you should rehearse them in practice and less important competitions. The goal is to ingrain them so well that when you get to a major competition where you are likely to feel nervous, you will automatically use them, your intensity will decrease to a more comfortable level, and you will be better prepared to performance your best.

RESEARCH METHODS IN SPORT PSYCHOLOGY

This stage is devoted to understanding the sort of research conducted in sport psychology. There are two purposes of this. First, it should give you a slightly deeper understanding of the research you will come across in this and other books whilst studying sport psychology. For example, you might wish to understand better why a study was done the way it was, or what the strengths and limitations are of the different research methods. Second, it should help you begin to plan your own research. There is no attempt to include everything you might ever want to know about carrying out research; that would be a book in itself, and there are several good books of that sort. However, it should give you a sound background in some basic principles.

QUANTITATIVE AND QUALITATIVE RESEARCH

Hayes defines quantitative methods as those 'which involve the manipulation of numerical data'. In other words, the researchers are dealing with information in the form of numbers. Qualitative approaches, on the other hand, attempt to draw out the *meanings* of data; that is, they interpret that when people say something that they are revealing something important. Some research methods such as experiments generate mostly quantitative data, whilst others such as interviewing are looking mainly for qualitative information. Of course, sometimes we can extract some interesting numbers from interviews (*e.g.*, the percentage of people answering a particular way), and sometimes some of the most interesting findings from experiments are not so much the numbers we obtain but observations of comments participants make about the procedure. Some psychologists have very strong feelings about the usefulness of qualitative and quantitative research.

Some qualitative researchers believe that quantitative methods are clumsy and miss uncovering the most important details available from research. On the other hand, some quantitative researchers see qualitative methods as informal and lacking in scientific rigour. A simple and pragmatic way of thinking about the qualitative–quantitative debate is that we need both approaches because they tell us different things.

When we want to know whether two variables, say, extraversion and success as a track athlete, are related, or whether there is a difference in the numbers of goals scored in home and away games, we are clearly dealing with variables that can be measured numerically. In these cases, there is no doubt that quantitative data should be gathered. However, if we are using a focus group method to find out about people's motives for taking up sport, we will soon find that if all we analyse is the frequency with which people identify a particular reason, we will begin to ignore some of the most important things our participants are telling us. In this case, we would do well to concentrate on collecting qualitative data.

THE EXPERIMENTAL METHOD

The aim of an experiment is to establish a cause-and-effect relationship between two or more variables, that is, whether one (called the independent variable) causes an effect on the other (known as the dependent variable). For example, we might investigate experimentally whether high levels of team cohesion affect the team's scores.

This is achieved by comparing two or more conditions, whilst keeping other factors constant. In the above example, we might compare the performance of teams known to be high and low in team cohesiveness, or see how performance changes after a change in cohesiveness.

There are some variations in the ways we could test this experimentally. Pre-experiments, true experiments and quasi-experiments *Pre-experiments* (also known as pre-post-test comparisons) involve measuring the dependent variable before and after the manipulation of the independent variable in a single group of participants. For example, we might assess team cohesiveness, then follow a programme known to increase team cohesiveness, and finally reassess the team's performance. This allows us to infer (that is, make a logical judgement) that any improvements in team performance are a result of the increase in team cohesiveness.

The limitation of the pre-posttest design is that we can *infer* only that any change is the result of the course. In a real-life sporting setting, many other variables also have effects on athletic performance over time, and it may be that any change in performance is due to other factors.
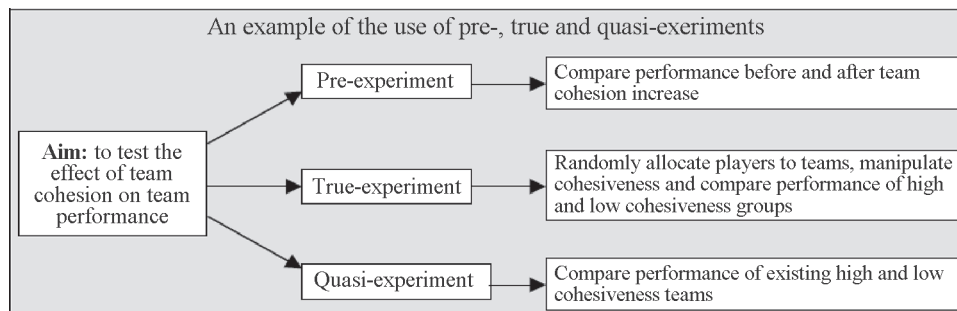
An alternative to the pre-post-test comparison is the *true experiment*. A true experiment involves the random allocation of participants to conditions, including a control condition.

The purpose of this randomisation is approximately to match all the relevant variables between the experimental and control groups, making the experimental and control groups truly equivalent. When this has been achieved, it is possible to attribute differences to the variations in the independent variable. In the team cohesiveness example, to test the hypothesis that high levels of team cohesiveness lead to good team performance, we could randomly allocate athletes to teams, manipulate their cohesiveness to create teams high and low in cohesiveness, and then compare their performance.

In fact, this has been done. Grieve *et al* randomly assigned 222 male, university student, basketball players to three-person basketball teams, and manipulated the interactions of each team in order to create either high or low levels of team cohesiveness. Each team was then assessed for cohesiveness, given a series of games and then assessed again for cohesiveness. No relationship emerged between early cohesiveness and later performance. The third experimental design is the *quasi-experiment*.

We conduct quasi-experiments whenever we compare two groups that already exist as distinct groups, as opposed to having been randomly allocated. We could, for example, compare the performance of existing sports teams who are high and low in team cohesiveness.

This is the quickest and easiest way of investigating the effect of cohesiveness on performance, and it has the advantage of looking at real teams in the real-life situation of their sporting league as opposed to in the artificial settings in which randomly allocated teams perform. There are many cases where we have to adopt a quasi-experimental design because we cannot create two truly equivalent groups. Say we wanted to compare the crowd behaviour of fans of two football clubs. We cannot randomly allocate fans to two clubs because by the time they are football fans their loyalty to one team is already established. All we can do is to compare existing football fans. Similarly, if we want to compare men and women in the ability to perform a sporting technique, we cannot randomly allocate them to conditions because they are already male or female.

An example of the use of pre-, true and quasi-exeriments

Aim: to test the effect of team cohesion on team performance	→ Pre-experiment → Compare performance before and after team cohesion increase
	→ True-experiment → Randomly allocate players to teams, manipulate cohesiveness and compare performance of high and low cohesiveness groups
	→ Quasi-experiment → Compare performance of existing high and low cohesiveness teams

Laboratory and Field Experiments

Another important distinction is that between laboratory experiments, that is, those carried out in artificial and controlled conditions, and field experiments, which are carried out in the natural environment of the participants. There are advantages to both these procedures. Take the issue of social loafing. Heuze & Brunel tested whether the reputation of an opponent affects the likelihood of social loafing. They conducted an experiment in which students threw darts under four conditions. In one condition, they had no opposition. In the other three conditions, fictitious opponents were created who were inferior, equal or superior in standard. This sort of study could be carried out fairly easily in a laboratory or the field.

The advantage of doing it in the laboratory is that we can control the conditions, whereas in the field all sorts of factors can affect performance. The natural environment of the darts player is the pub.

Here, anything from the quality of the beer to the attractiveness of the bar staff can affect concentration and hence performance. In the laboratory, we can make sure that there are no distractions, and so we can be more certain that all that actually varies between the four conditions is the independent variable in which we are interested. On the other hand, what we gain in experimental control in the laboratory we can lose in realism. When athletes are performing in their natural environment, they are more likely to behave naturally. There is thus a trade-off, and it is important to carry out experiments in both the laboratory and the field.

Discussion of the Experimental Method

Experiments are the most direct way of testing cause and effect, and they form a very important part of sport psychology. Despite their usefulness, however, there are a range of problems that limit the validity of experimental findings, and it is important to be aware of these. One particular problem in experimental research is the *Hawthorne effect*. This occurs when participants in an experimental condition realise they are the subjects of study and accordingly perform better than those in the control condition. The Hawthorne effect may lead researchers to attribute more importance to the experimental condition than is justified. This can be made worse by a statistical phenomenon called *regression to the mean*. This means that low pre-test scores have a general tendency to become higher in post-test assessment, further exaggerating the significance of pre-post-test differences.

THE CORRELATIONAL METHOD

The aim of correlational research is to establish relationships between two or more measured variables. Wherever a psychological variable felt to have a bearing on performance is measurable, such as personality traits, motivational style or team cohesion, it becomes possible to assess its relationship to other variables, most obviously measures of performance outcome such as team scores, league positions or individual statistics.

We might also look for relationships between these apparently independent variables, to see, for example, whether a personality trait is associated with a motivational style. Correlations are usually presented as a coefficient, that is, a figure between 0 and 1. The nearer it is to 1, the stronger is the relationship between the variables. This may also be presented in graph form. Some examples are shown in Figure.
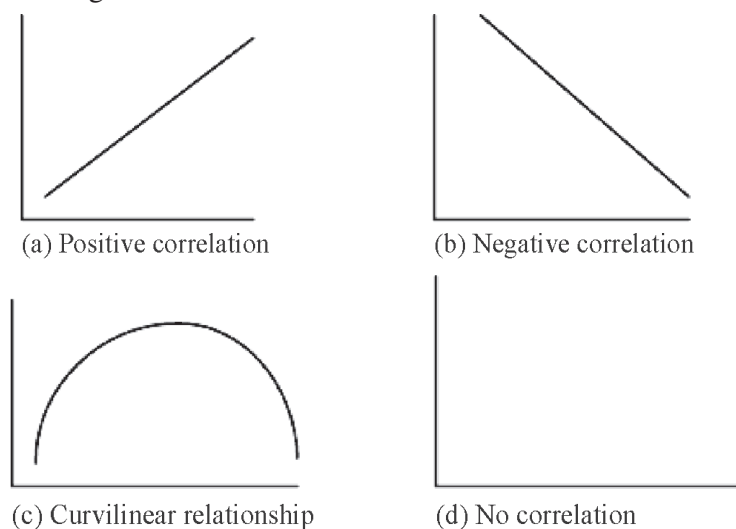

(a) Positive correlation   (b) Negative correlation

(c) Curvilinear relationship   (d) No correlation

Fig. Some correlation patterns.

In Figure (a), there is a positive correlation between two variables. A sporting example of a positive correlation would be that between team cohesiveness and performance. In (b), there is a negative correlation. A sporting example of a negative correlation would be that between number of goals scored and the size of the opposing team's crowd. In (c), there is a curvilinear relationship between two variables. An example of a curvilinear relationship is that between arousal and performance. In (d), there is no correlation between the two variables.

Two unrelated variables in sport psychology are performance and hair length. As well as the obvious use of correlation to look for relationships between individual and team characteristics and outcome measures, it can also be used to look at the relationships between independent variables and *process* variables.

For example, we know that the personality trait of conscientiousness is positively related to athletic performance.

However, this raises the question of why this might be. One likely explanation is that highly conscientious people spend more time training.

We can investigate this by correlational techniques, and it is important to do so because if we find that it is really training time, not personality, that affects performance, we can overcome the problem of athletes low in conscientiousness by supervising their training more closely. There are a range of correlational techniques that we could apply to this situation.

Partial Correlation

Partial correlation can be used to assess the relationship between two variables whilst controlling for a third. For example, we might be interested in the relationships between conscientiousness, training time and individual performance. If we suspect that the relationship between conscientiousness and performance is the result of the influence of a third factor of time spent training, we could carry out a *partial correlation* in which the relationship between conscientiousness and performance is calculated while *controlling for training time*. If there is still a relationship once training time is controlled for, we may infer that there is a direct relationship between the two variables. If there is not, we would conclude that conscientiousness is important only because it affects training time.

Multiple Regression

Multiple regression (or *multiple correlation*) is another variation on the basic correlational procedure. In multiple regression, a set of variables are all intercorrelated. This is useful when we want to know about a range of factors that might be related to a dependent variable. For example, we might be interested in a range of factors underlying the performance of boxers, including their aggression, conscientiousness, achievement orientation, team cohesiveness and the quality of their relationship with their coach. By multiple regression, we can in one calculation compare the strength of the relationship between each of these variables and the boxers' performance. In addition, multiple regression

also allows us to see the relationships between each of these variables – for example, whether achievement orientation is associated with personality traits. To return to our example of the relationship between conscientiousness, training time and performance, we could use multiple regression to calculate the correlation between each of the three variables. Thus, we would know the strength of the relationship between conscientiousness and training time, between conscientiousness and performance, and between training time and performance. Looking at the strength of these three relationships together will give us a sophisticated understanding of the relationship between these three variables.

Cross-lagged Correlation

Sometimes we have the opportunity to measure two or more variables across time and look at the relationships between each at the beginning, middle and end of a period. For example, we might wish to measure the relationship between team cohesion and performance. Measuring the relationship on one occasion (assuming we find a significant correlation) will not give us much of a clue as to whether the cohesion actually *caused* the performance, because, of course, it may be that the converse is true – team cohesiveness increases as a result of good results. We can get around this problem by cross-lagging our correlation. Slater & Sewell did just this when they assessed team cohesiveness in 60 university-level hockey players from six teams, early, midway and at the end of the season.

The relationship between early cohesiveness and later success and between early success and later cohesiveness could thus be calculated. It was found that, whilst early success was related to later cohesion, the stronger relationship was between early cohesiveness and later success. This suggests that there is a two-way causal relationship – team cohesiveness does affect performance, but performance also affects cohesiveness, though to a lesser extent. Cross-lagged correlation can also give us some insights into our example of the relationship between conscientiousness, training time and performance. If we were to measure the three variables at the start, middle and end of a season, we could see whether conscientiousness at the start of the season influenced training time and performance later in the season. If these were strongly related, this would suggest that the conscientiousness *caused* the training time and performance. If, however, performance early in the season correlated more strongly with later conscientiousness, this would suggest that the early success caused the later conscientiousness – this is certainly possible.

Discussion of the Correlational Method

Where we are dealing with measurable variables and are interested in whether one thing is related to another, correlational techniques are invaluable. They are particularly important when we are dealing with multiple variables. Say, for example, we want to know about the relationship between performance and several factors that might affect it, such as achievement motivation, conscientiousness

and the relationship with the coach. We could establish a quasi-experiment with nine conditions (*e.g.*, condition 1: mastery orientation, extravert, conscientious). However, this would be a very complex business to organise, and results would still be in the form of comparisons between extremes – this would not necessarily tell us much about the *relationship* between performance and the three other variables. In this sort of case, multiple regression would be a better way of analysing the data.

The major limitation of the correlational methods is that we need to be a little cautious about using them to infer cause-and-effect relationships. Just because training time is positively correlated with performance does not necessarily mean that it directly causes it. Success may be highly motivating, and this may lead an athlete to spend more time on training. Alternatively, a third factor might underlie both variables. For example, athletes with a good relationship with their coaches may wish to train harder to please them *and* are likely to learn technique from them more efficiently. Nevertheless, we can use correlational techniques such as cross-lagging and partial correlation to give us a better idea of causal relationships. The problems of using correlational methods to make judgements about cause and effect are sometimes exaggerated, but they are still worth bearing in mind.

SURVEY METHODS

Sometimes in sport psychology what we are interested in is not so much 'what is' as what people think, feel or believe. In this case, the most direct way of finding out what we want to know is to ask them. This is done by survey. We can survey people on paper or electronically by questionnaires. Alternatively, we can speak to them individually in an interview or in focus groups. Questionnaires, interviews and focus groups tend to generate different sorts of data and are useful in different situations.

Questionnaires

There are several ways of asking questions in a questionnaire. You might, for example, simply ask open questions and leave a space for answers. This is useful when you don't really know what people are going to say, but it can make analysis of the results harder because answers will not come in the form of neat categories. Alternatively, you might prefer closed questions, which require a choice between a number of options. Sometimes, particularly when we are measuring emotional responses or attitudes, we want to know the strength of participants' responses. For example, if we are using a questionnaire to measure attitudes to boxing, we want to know not just whether they are pro or anti but how strong their views are. We can do this by means of Likert scales and semantic differentials. There are strengths to questionnaires.

They can be distributed to large numbers of people with little effort or expense. They can easily be designed to generate quantitative data, meaning that they can be used in correlational and experimental designs. On the other hand,

response rates to questionnaires are typically quite poor (except for 'captive audiences', less than half of people who receive a questionnaire typically complete and return it). There is also little chance to collect interesting ideas that people would like to tell you but for which there is not an obvious place on the questionnaire.

Interviews

Interviews are verbal interactions that can be conducted face to face or by telephone. Interestingly, some studies have found that people are less truthful in telephone interviews. Interviews can be used to collect quantitative or qualitative data, but they are best suited to the latter – there is little advantage to using an interview rather than the much quicker questionnaire method to collect quantitative data. For this reason, interviews are more likely than questionnaires to have open rather than closed questions. We can think about four major types of interview. In *structured* interviews, the format of questioning has been worked out in advance, and all respondents are asked the same questions in the same order using the same wording.

Unstructured interviews are more open; respondents are asked the same questions, but they are allowed to diverge considerably from these when they respond. In *nondirective* or *clinical* interviews, there are no fixed questions, and the interviewer just identifies the broad area, and then respondents explore the issues according to their own thinking. *Focused* interviews are used to assess responses to a particular experience. As far as possible, they are non-directive; however, the interviewer identifies a hypothesis in advance and aims to test this by looking at respondents' answers.

Focus Groups

Focus groups are group interviews in which the interactions between group members stimulate the generation of ideas and opinions and add to the information gathered. The use of focus groups has advantages over traditional interviews. Participants speak in a group of peers and are thus more inclined to speak freely. They are also prompted by others to think of a view that, alone and put on the spot, they might have thought about too late to be recorded. On the other hand, it is possible that respondents are more influenced by the social desirability of particular answers.

Discussion of Survey Methods

Often, what we are interested in are people's opinions, motives, feelings, attitudes, *etc.* When these are the focus of our research, it is advisable to use a survey method to determine them. It is possible to design experiments to demonstrate that people behave in a particular way and so presumably have a particular attitude. However, this is usually inadvisable, as there can often be a significant difference between people's attitudes and behaviour. They might, for example, like sport but not bother to participate. However, the reverse is

also true – surveying people's attitudes and beliefs will not tell you how they will behave in a particular situation. For that, you require a different approach, perhaps an experiment.

CASE STUDIES

A case study involves the detailed analysis of a single case; this may involve a single athlete or a team in a particular set of circumstances. We may, for example, be concerned with how a particular athlete responded to an anxiety-management technique, or how a football team responded to the sacking of its manager. The sort of data we gather in a case study can vary widely, but it typically involves pre-experimental designs in which the athlete or team is compared before and after an event. It is also likely to involve some sort of surveying.

Some cases trace change in an individual athlete or team after a targeted intervention strategy. These studies can be thought of as pre-experimental, because the effect of an independent variable is being observed. For example, we might track motivational change in an athlete whose coach is using goal setting for the first time. Such case studies are sometimes called $n=1$ experiments, n being the number of participants. Case studies provide rich information with which we can understand a situation; in some cases, they provide the only available data with which to understand the effect of independent variables.

This is particularly so when a situation is highly unusual or cannot be replicated for ethical reasons. For example, a football team traumatised by the unexpected death of the manager will have a complex emotional response requiring in-depth analysis. Such a situation is sufficiently unusual for it to be impractical to gather a large sample size, and it is obviously impossible to replicate experimentally – we can't go around murdering managers just to see what happens! The limitations of case studies are clear, however. They are oneoffs, and it is impossible to know whether the results can be generalised to other individuals or institutions. Take the above hypothetical case of the athlete newly introduced to goal setting. It is very likely that whilst tracking one case might reveal improved motivation and performance, another apparently similar case might not show any change at all.

ARCHIVAL STUDIES

Sometimes in sport psychology research, we are interested in analysing sporting statistics –for example, the percentage of wins under different circumstances such as when playing at home and away. Sometimes we are interested in slightly more subtle statistics such as number of fouls. In such cases, we could sit through a season's worth of games and systematically note the fouls, goals, final scorelines, *etc.* However, in many cases, this would be a waste of time because those statistics are already gathered and archived.

When we want to access this sort of data, it is easier simply to go to a source of archived data and analyse it. Archived data facilitate correlational and quasi-

experimental research. For example, we might be interested in the relationship between the number of fouls a team commit and the number of goals they score – a positive correlation would suggest that aggressive play is beneficial to a team.

Comparison of scores in home and away matches is a quasi-experimental design, because we are looking at the effect of an independent variable (where the game is played) on a dependent variable (the score), comparing two conditions that already exist as opposed to being experimentally set up. Reliable archived data may be extremely useful, as a large body of information can be accessed instantaneously without the time and effort involved in collecting it. However, the key word here is 'reliable'. It is important that you can trust the source of your archived data. Generally, national professional bodies such as the Football Association are highly competent at collecting and recording match statistics. However, local associations or more amateur outfits, such as your university or college magazine, may not be so skilled at data management, and you should be more wary about relying on their archived data.

REVIEW METHODS

Often when you go to the sport psychology literature, you find, as well as papers describing individual studies, review papers that aim to overview a field of research, perhaps attempting to reach conclusions about what the bulk of studies say about an issue. Some research reviews are relatively informal – rather like the way issues are tackled in this book, with a selection of relevant studies and their findings being described. Typically, these papers finish with a tentative conclusion about what the bulk of studies point towards and identify directions for future research. However, two formal review methods are worth looking at in more detail.

Systematic Review

A systematic review is, as the name suggests, rather more systematic than an informal review. Whereas informal reviews may aim to provide a general overview of the state of play in a field, systematic reviews tend to have one or more highly specific aims – for example, to identify the most commonly used or most effective psychological strategies with which to intervene in a sporting situation. They are most useful when there has been a large volume of research in an area, but results are variable and overall conclusions are different to reach. The first stage in conducting a systematic review is to define precisely the area that is being researched and to gather as many studies as possible that seem relevant to that issue.

Typically, this is done by manual searches (going through the journals in a university library), electronically by keyword searches of databases such as PsycINFO, and by consulting experts. In some fields, this stage can generate several hundred studies; however, sport psychology is a relatively small discipline, and usually a more manageable number will be turned up. The next

task is to cut down the number of studies being examined. There are two parts to this. First, studies that appear from their titles to be relevant but in fact have a different focus are discarded. Then more rigourous criteria are applied to eliminate studies that are relevant to the research question but not methodologically up to the highest standards. This is the most tricky part of a systematic review; by deciding that a particular approach to researching a problem is not appropriate, you may find that you are taking a leading researcher or team of researchers out of the reckoning altogether. Finally, a small number of studies are left that focus precisely on the issue being examined and have been carried out to the highest standards. Looking at their findings, it is possible to come to a conclusion about what the research in this field shows.

Meta-analysis

If systematic review is a qualitative method of arriving at overall conclusions from large numbers of studies, meta-analysis is its quantitative equivalent. A large proportion of sport psychology research involves small samples studied in a particular situation, which may or may not generalise more widely. Meta-analysis involves combining the results of a number of smaller studies, weighting each for sample size, and arriving at an overall figure.

For example, we might have 20 small-scale studies concerned with the effectiveness of team building in boosting team performance. Combining their results can have several benefits. First, we end up with a large sample size encompassing a good range of situations. Second, the statistical method of meta-analysis expresses findings as an *effect size*. This allows us to see just how powerful are the benefits of team building. Effect size is expressed in standard deviations, and plotted on a normal distribution curve.
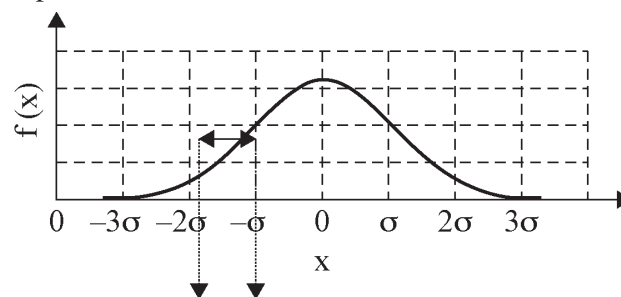
For example, in Figure, meta-analysis shows a shift of one standard deviation. A psychological intervention with an effect size of one standard deviation would move an athlete or team, on average, from the 2nd percentile (that is, the bottom 2 per cent of the population) to the 34th percentile, putting them in the top two-thirds of the population. Thus, this would be highly effective.

Discussion of Review Methods

Systematic review and meta-analysis have been a tremendous step forward in understanding the factors affecting sporting outcome and the success of various

psychological interventions. Small-scale studies, rather that being limited in usefulness by their size and the specific situation in which they were conducted, become part of a greater whole. However, there are important limitations to both techniques. First, the validity of the results depends on the quality of the data analysed. As computer programmers say, 'garbage in, garbage out'. Combining the results of methodologically poor studies may simply compound the problems of each. Although the researcher can try to select the 'best' studies, in practice there is never universal agreement on which studies are in fact the best.

Moreover, there is a serious risk of bias in the selection of studies, meaning that reviewers or metaanalysts can influence their findings (unconsciously or deliberately) by favouring one research tradition over another. The knack of using systematic reviews and meta-analysts effectively is to be able to look at the selection criteria of the studies included and decide for yourself whether they are fair.

5

Aggression and Sport

As a society, we have a certain ambivalence about aggression in sport. On the one hand, as Russell has pointed out, sport is perhaps the only peacetime setting in which we not only tolerate but actively encourage and enjoy aggressive behaviour. In the notoriously violent ice hockey, violence clearly sells, attendance at matches being positively correlated with frequency of violent acts. On the other hand, there is a moral panic regarding football hooliganism, and in recent years there have been a string of high-profile court cases in which athletes have pursued cases against others who deliberately injured them. One reason for this apparent ambivalence is that we tend to see aggression very differently in different situations. Before we proceed any further, it is perhaps useful to look more closely at how we should define aggression.

DEFINING AGGRESSION

It is perhaps easiest to begin by saying what aggression is *not*. Aggression is not competitiveness, nor is it anger. Competitiveness is an attitude; anger is an emotion. Whilst anger and competitiveness may both contribute to aggression, aggression itself is a *behaviour*. Aggression, by definition, involves actively *doing something unpleasant to someone*. Aggressive behaviour may come in many forms, ranging from verbal abuse – designed to cause psychological harm – to physical violence. It is generally agreed that all aggression involves the intent to cause harm in some form; thus, behaviour which accidentally harms someone is not aggression. Putting these factors together, a simple working definition of aggression would be something like this: 'Behaviour of any kind that is carried out with the intention of harming another person.'

Hostile Aggression, Instrumental Aggression and Assertiveness

Whilst this simple definition may suffice when describing aggression in most situations, things are more complex in sport. Clearly, when we perform a rugby tackle or a karate kick, we do so in the knowledge that we are inflicting certain discomfort on the other athlete, and that there is some risk of causing injury. This raises the difficult question, are behaviours which involve hurting another person within the rules of the sport truly aggressive? Baron addressed this issue in his influential distinction between hostile and instrumental aggression.

- *Hostile* aggression takes place when the primary intention of the behaviour is to harm the other player. This type of aggression is accompanied by anger, and the underlying wish is to see the victim suffer.
- *Instrumental* aggression takes place when the behaviour is clearly likely to cause harm, but its *intention* is to achieve a different aim, such as to score a point or prevent the opposition from scoring a goal.

Husman & Silva have made the further distinction between aggression and assertiveness. Assertiveness involves the type of behaviour that might *appear* aggressive, but which does not result in harming an opponent. In many sports, for example, we might choose at certain times to charge directly towards an opponent, perhaps with an accompanying cry, but without any intention of making contact. The classic example of this is rushing the net in tennis. Thirer pointed out that physical contact can be assertive rather than aggressive, provided the intention is to gain dominance over opponents rather than to injure them. Thus, footballers can shoulder-barge one another while tackling, but, provided the intention is to obtain the ball rather than to injure, this is assertive rather than aggressive behaviour. In contact sports, we generally accept a degree of instrumental aggression, although in no sport is it acceptable to inflict serious damage on an opponent for the sake of gaining or saving a point. There is normally an elaborate set of rules in contact sports to make sure that moderate levels of instrumental aggression are permitted, whereas serious instrumental aggression and hostile aggression are not. Thus, although one footballer pushing another off balance would be unlikely to receive a card from the referee, high rugby tackles and low punches in combat sports, which are judged likely to cause serious harm, are banned. Even in ultimate fighting, designed so as to have the minimum interference of rules, certain moves are banned. As Tenenbaum *et al* pointed out, spectators as well as athletes can display both hostile and instrumental aggression. A crowd may hurl objects and abuse at players. If they do so with the aim of distracting the opposing team and so giving their own team an advantage, this constitutes instrumental aggression. If, however, it is done in anger and with the intention of harming opposing players, the same behaviour would be classed as hostile aggression.

Sanctioned and Unsanctioned Aggression

Apter has pointed out that there is often a set of unofficial rules, as well as official rules, governing what aggressive behaviours are acceptable. Thus, a

footballer committing a professional foul to avoid conceding a goal is committing *sanctioned aggression*; that is, instrumental aggression that, whilst not within the official rules, is accepted as normal even though it would be punished. The case of combat sports raises particular problems for making a clear distinction between hostile and instrumental aggression, as the whole aim of the sport is to cause some degree of harm. Here, the distinction between sanctioned and unsanctioned aggression is perhaps a clearer one. We would probably all accept that boxers might lose their temper and try to hurt opponents, as by clashing heads in a clinch, and this would be sanctioned even if the fighter clearly breached the rules. However, striking at neck or groin is acknowledged to be extremely dangerous and would thus be unsanctioned.

THE LINK BETWEEN AGGRESSION AND PERFORMANCE

It is widely believed that the use of aggression wins games. The baseball coach Leo Durocher famously said, 'Nice guys finish last.' In Tutko & Ogilvie's athletic motivation inventory, aggression was one of the 10 personality traits believed to be associated with athletic success. Of course, we should bear in mind the distinction between hostile aggression, instrumental aggression and assertiveness. It may be that the conventional wisdom supporting the value of aggression may in fact be supporting assertive behaviour rather than aggression. Young has noted the increase in unsanctioned violence in contact sports in recent years, and proposed that this is a direct result of increased professionalisation and the resulting financial incentives to win. There have been high-profile incidents in which the introduction of new and aggressive techniques appears to have enhanced performance. However, this is not to say that aggression necessarily enhances performance. Surprisingly, there has been relatively little research on the link between aggression and results, and almost all published research has involved ice hockey. Results regarding the link between aggression and success in ice hockey are equivocal. McCarthy & Kelly found a positive relationship between the time taken for penalties (a measure of a team's aggression) and number of goals scored. However, Wankel compared the penalty times of winning and losing ice hockey teams and found no difference. Since, ice hockey is such an aggressive sport, if no clear results emerge here, it is unlikely that aggression would be associated with success in other sports. Of course, the situation and the reason for the aggression would make a difference to whether it was helpful. Whilst the willingness to perform a professional foul would probably benefit a team, the anger associated with hostile aggression would probably be unproductive, harming concentration and decision making. Of course, much depends on the sport. Some sports, in particular combat sports, are inherently aggressive, and points are awarded in some martial arts contests for aggression. The sort of psyching up used for at least some combat sports can be intensely aggressive. The legendary bare-knuckle boxer Lenny McLean put it eloquently: 'What I have to do is hate – and I mean really HATE. From the top of my head right down to my ankles. The man in front of me has interfered with my wife, he's interfered with my kids. Bastard'.

THEORIES OF AGGRESSION

A number of psychological theories aim to explain the origins and triggers of human aggression. Within sport psychology, three broad approaches have been particularly influential: instinct theories, social learning theory and the frustration–aggression hypothesis.

Instinct Theories

In psychology, the term 'instinct' is used slightly more precisely than in ordinary conversation. An instinct is an *innate* tendency to behave in a certain way. By 'innate', we mean that the behaviour is influenced by our genetic make-up and is therefore present at birth, as opposed to learned. A number of psychological theories see aggression as instinctive and, at least to some extent, inevitable. Sigmund Freud proposed that we are born with two opposing instincts, the life instinct and the death instinct. Our death instinct leads us to be aggressive. Freud proposed that although the instinct for aggression is always with us, we can to some extent exert conscious control over it. Thus, aggressive behaviour is not always inevitable. Some contemporary writers influenced by Freud have viewed sport in general as a healthy way of expressing our death instinct. For example, Richards looked at the importance we attach to kicking in expressing our aggressive tendencies, as in phrases such as 'putting the boot in' and 'a kick in the teeth'. Richards suggested that football is particularly important in sublimating our aggressive instincts (channelling them constructively). For this reason, Richards describes football as a civilizing influence. Another psychological approach that sees aggression as instinctive is that of ethology. From the ethological perspective, Lorenz proposed that humans have evolved a 'fighting instinct'.

Evolution takes place through natural selection; therefore, aggression must, historically at least, have been a survival trait, that is, a characteristic that increases the likelihood of survival. Like Freud, Lorenz saw human aggression as inevitable but manageable. Lorenz saw sport as serving the social function of channelling human destructive instincts constructively.

Discussion

The issue of whether aggression is instinctive or whether we have to learn it remains an ongoing controversy in psychology. There is a lack of direct evidence for or against an aggressive instinct, and we have to look to indirect support. If aggression were *universal*, that would be strong evidence of an instinctive basis. Lore & Schultz have pointed out that all vertebrates display aggression; thus, it must be a survival trait, as suggested by Lorenz. However, cross-cultural studies have found wide variation in human aggression. There appear to be human cultures, such as that of the Arapesh of New Guinea, where there is very little aggression by European and American standards. This suggests that there must be external influences as well as an instinctive component in aggression.

Social Learning Theory

In a radical alternative to instinct theory, Bandura proposed that all human aggression, like other social behaviour, is learnt by imitation and reinforcement. Bandura famously demonstrated that children copy adults behaving aggressively in his 'bobo doll experiment'. Children observed an adult beating a large inflatable doll. They tended to imitate the behaviour and also beat the bobo doll. When children were rewarded or witnessed the adult being rewarded for beating the doll, their level of aggression increased. Clearly, there are instances where children can witness aggression in sport, and there are a number of ways in which aggression can be reinforced. An act of aggression might result directly in scoring or preventing the opposition from doing so. Watchers might cheer; the coach and parents might praise the aggressive child. Children may also witness highly assertive acts and incorrectly imitate them in an aggressive form. To a child with little technical knowledge of football it is difficult to distinguish between an assertive shoulder-barge and an aggressive push. Baron & Byrne suggest the following four aspects of aggression that can be explained by learning: how to be aggressive, who is an appropriate target of aggression, what actions require an aggressive response and in what situations aggression is appropriate. Thus, by observation, we might learn how to commit a foul, whom we can 'legitimately' foul, what they have to do to warrant a foul and under what circumstances a foul is the best response. Because social learning theorists propose that there is nothing inevitable about aggression, but that it results from learning, it follows that we should be able to shape young athletes' aggression by the proper application of reinforcement and punishment. The alert teacher or coach can make sure that, whilst assertive behaviour is properly rewarded, aggression is not.

The Frustration–aggression Hypothesis

This approach, first suggested by Dollard *et al*, sees the most important factors in aggression as the characteristics of the situation. Dollard *et al* proposed that, although we have an innate aggressive drive, aggressive behaviour is elicited by *frustration*; that is, when we are frustrated we respond with aggressive behaviour. In the original version of the frustration–aggression hypothesis, frustration was seen as *always* leading to aggression, and *all* aggression was seen to be due to frustration. Berkowitz, who produced a more sophisticated version of the frustration–aggression hypothesis, proposed that frustration leads to anger rather than directly to aggression. More anger is generated if the frustration is unexpected or seen as unfair.

Anger may lead to aggression, but because we can apply our higher mental processes, such as thinking and reasoning, we do not *necessarily* respond to frustration with aggression. We may do so, however, if our anger is great enough or if, for some reason, we cannot think logically at that moment. Frustration is just one of several causes of aggression. Like instinct theory, and social learning

theory, it is a partial but incomplete explanation of human aggression. Although the frustration– aggression hypothesis is not particularly influential in social psychology, it is useful to sport psychologists because sport can involve so much frustration that, even if frustration is a relatively minor cause of aggression in general, it is probably one of the major contributors to sporting aggression. Bakker *et al* found that aggression increases when a team is losing, particularly when the game is of great importance, presumably in response to the frustration of the situation.

INDIVIDUAL DIFFERENCES IN SPORTING AGGRESSION

A number of factors affect how aggressive individual athletes are. These include gender, motivational factors and the extent of their emotional identification with their team.

Gender

Research conducted in a variety of situations has found that, in general, women are less physically aggressive than men. A number of studies have shown that, in keeping with this principle, female athletes are less supportive of aggressive behaviour than male athletes. In one study, Tucker & Parks assessed the attitudes of 162 toplevel American university athletes to aggression by a standard questionnaire, the Sport Behaviour Inventory. Overall, women were more negative about the role of aggression in sport. This was especially true of those who participated in non-contact sports. This is particularly interesting because it suggests that men and women have different influences on their attitudes, men being more affected by gender role expectations and women by the norms of their sport.

Identification with Team

In team sports, research suggests that athletes who have a particularly strong identification with their team are more willing to behave aggressively towards opposition team members. Most research has looked at instrumental aggression, that is, that aimed at gaining competitive advantage rather than deliberately hurting an opponent. However, a recent study by Wann *et al* suggests that hostile aggression is also affected by team identification. A total of 175 university students were questioned about the extent to which they identified with their team and what aggressive acts they would consider committing. As expected, those who were highly identified with their team were more willing to consider hostile aggression towards opponents.

The effect was greater for males than females, and (fortunately!) it was greater for minor acts of hostile aggression. Thus, highly identified men were very likely to consider tripping an opponent, but few were willing to consider murder. Daniel Wann's research extends to the effects of team identification on the behaviour of spectators. Wann *et al* questioned 88 sports fans on their team identification, general willingness to commit murder and willingness to injure

a member of an opposing team. There was no relationship between team identification and willingness to murder, suggesting that being strongly identified with a team does not simply make one a more aggressive person in general. However, highly identified fans were more willing anonymously to injure a member of an opposing team.

Motivational Style

It seems that our motives for participating in sport have an impact on how aggressive we become during play. Briefly, athletes tend to have either a task orientation or an ego orientation. Task-oriented athletes judge their success relative to their past efforts and deal well with adversity. Ego-oriented athletes judge their performance according to their success against others and are much more likely to cheat in the face of adversity. An ego orientation is associated with aggression, presumably what matters because to an ego-oriented athlete is the result, not how it is achieved. A study of 240 handball players by Rascle *et al* supported the association between ego orientation and the tendency to indulge in instrumental aggression. Similar results were found in a study of elite ice hockey players.

SITUATIONAL FACTORS AFFECTING AGGRESSION

Although individuals do vary in their tendency towards aggression, we are all influenced in aggression – and indeed in all social behaviour – by the situation in which we find ourselves. A number of factors in our physical environment, including temperature, noise and crowding, all affect aggression. The circumstances in which a match takes place can also be important; thus, frequency of play and league position can have an effect.

The Physical Environment

There is little doubt that the probability of aggressive behaviour changes with ambient temperature. Anderson *et al* suggest that there is a simple linear relationship between temperature and aggression; that is, the higher the temperature, the higher the levels of aggression. Evidence for this comes from a study by Reifman *et al*, in which archived data from the 1986–8 US baseball seasons were analysed. A positive correlation emerged between temperature and the number of batters hit by pitchers in each game. In nonsporting contexts, evidence suggests that crowding and noise levels are also associated with increased aggression. However, there is a lack of research within sporting contexts.

Game Circumstances

The circumstances in which a match is played appear to affect the likelihood of aggression. For example, league leaders tend to indulge in aggression less frequently than those trailing them. Englehardt analysed 4000 game summaries from the US ice hockey league and found that the higher the team was in the

league, the lower the number of penalties. Widmeyer & McGuire analysed game statistics for 840 US ice hockey matches. Intradivisional matches, in which teams play each other up to eight times, were compared to interdivisional matches, in which teams meet only three or four times. Significantly more aggressive incidents occurred in intradivisional matches, suggesting that the more frequently teams meet, the more aggressive are the matches.

THE $64,000 QUESTION – DOES SPORT INCREASE OR REDUCE AGGRESSION?

Instinct theories imply that, in general, sport serves to reduce aggression in society, because it gives us a legitimate way to express our aggressive instincts. The frustration–aggression hypothesis also supports the idea that sport is beneficial because it gives us a release for our frustrations. Most of us would agree that, if we are frustrated and in a bad mood, we tend to feel better if we exercise. Sport may also reduce aggression by helping us acquire self-discipline. From a social learning perspective, however, we run the risk of learning new aggressive behaviours if we indulge in 'aggressive sports'. The martial arts give us one way of directly testing these contrasting views. If the social learning approach is correct, we would expect the learning of aggressive repertoires of behaviour in martial arts training to increase levels of aggression. Research has shown quite the reverse, however; martial arts training appears to reduce aggression. Daniels & Thornton assessed karateka for aggression, using a test called the Buss-Durkee Hostility Inventory. They found that there was a negative relationship between assaultive hostility (reported tendency to respond with physical violence) and length of training ($r = $ "0.64). The problem with using martial arts training to investigate the relationship between sport and aggression is that martial arts instructors tend to differ substantially in their philosophy and training methods from other coaches, and so we cannot extrapolate from martial arts to other sports. Evidence that this makes a difference comes from a recent study by Lakes & Hoyt, in which 193 American 5–10- year-olds were allocated either standard PE lessons or tae kwon do sessions at school. After 3 months, the tae kwon do group showed significantly more improvement in their prosocial behaviour as well as better concentration and persistence. An alternative approach to examining the relationship between sport and aggression is to compare aggression in athletes and non-athletes. A recent study by Lemieux *et al* compared aggression in 86 university athletes and 86 matched non-athletes. Although physical size was associated with aggression, there was no difference between participants in sport and non-participants.

Effects on Spectators

Whilst some research cautiously supports the view that at least some sports help reduce aggression in participants, the reverse seems to be true for spectators. Given the problem of football violence, this should perhaps not surprise us. Arms *et al* measured the hostility of spectators after they watched aggressive

sports (wrestling and ice hockey) and a non-aggressive sport (swimming). They found increased hostility in those who had watched the aggressive sports, but not in those watching the non-aggressive sports. Phillips tracked the rates of murder in the USA and found that, in the weeks following heavyweight title fights, rates of murder increased.

The characteristics of murder victims appeared to be related to the losing fighter; when a white boxer lost, more white men were murdered, and when a black boxer lost, more black men were murdered. All the main theories of aggression could explain these effects. Instinct theorists would say that watching the aggressive sport aroused the aggressive instincts of the spectators but did not allow them a means of expressing their aggression.

Frustration–aggression theorists could point to the frustration of having to watch the game and not be able to help one's own team. Social learning theorists might identify the modelling of aggressive behaviours by the athletes as the main factor in the increased hostility of spectators. Interestingly, although there is no evidence to suggest that watching aggressive sport reduces aggression in spectators, it appears that this is in fact a common belief, and that such beliefs may influence spectating habits. Wann *et al* gave questionnaires to 109 students to assess their sporting preferences and beliefs about aggression. Those who believed that watching sport is cathartic, that is, it helps discharge pent-up aggression, were more likely than others to watch aggressive sport.

THE REDUCTION OF AGGRESSION

There are a number of strategies that can be used to help reduce aggression in athletes. These approaches can be variously applied to preventing young athletes from developing aggressive behaviour in the first place and curtailing aggressive behaviour in those prone to it.

Punishment

Punishment can be an effective tool in tackling athletic aggression. The effects of punishment are most easily understood in the context of social learning theory. The aggressive athlete can learn through punishment that the consequences of aggression are negative. This is clearly most effective if punishment is implemented early in life – before the young athlete has received positive reinforcement for aggressive behaviour. Punishment can also serve as a deterrent. In social learning terms, the witnesses to punishment learn vicariously that aggression does not pay. To be effective, punishment needs to be prompt, severe enough to outweigh the benefits of the aggression and consistent. An example of prompt, severe punishment is football's red card. If this is to be seen as inevitable, it is important that referees apply the sanction consistently.

Catharsis

Both instinct theories and the frustration–aggression hypothesis imply that 'getting it out of your system', or catharsis, will reduce the need for aggression.

Sport itself is cathartic; therefore, we would expect that prolonged and hard training will reduce aggression. Baron & Byrne suggest that vigourous exercise can reduce aggression because it reduces both physical tension and feelings of anger. Although catharsis undoubtedly does reduce aggression, there are two serious limitations of its usefulness. Firstly, the effects are very short-term. If we start brooding again about what made us angry a few hours after exercise, we are likely to get angry all over again! Secondly, exercise in general is less satisfying and therefore less cathartic than hitting the person you are angry with!

Role Modeling

If children can learn aggressive behaviour from watching aggressive adults, it follows that if we expose children exclusively to appropriate, non-aggressive role models, we can, to some extent at least, prevent them from developing an aggressive repertoire of behaviour. This approach underlines the importance of the teacher or coach as a role model. Unfortunately, it is almost inevitable that children will observe other athletes acting aggressively. Tenenbaum *et al* suggested that the media are irresponsible in over-covering and sensationalising violent incidents in sport. Certainly, unless we prevent children from spectating altogether – something that would probably kill their love of sport–it is impossible to prevent children from encountering aggressive role models.

Contracting

One way of tackling aggression in persistent offenders is by the use of psychological contracts. Athletes signing a contract are committing themselves to eliminate certain behaviours. The terms of each contract are negotiated between the individual athlete and coach or psychologist, but the contract will always specify what behaviours are to be eliminated under what circumstances. Leith suggests that a simple contract should include specification of the behaviour to be eliminated, punishment for breaching the contract, rewards for sticking to the contract, the names and signatures of both parties, and the date.

Anger-management Groups

We all experience anger, and anger *per se* is not a bad thing, but it can lead to hostile aggression. If athletes often become angry and that anger is consistently manifested in aggressive behaviour, they may benefit from anger-management groups. An anger-management group is a type of therapy group, in which anger is explored and mental strategies for better coping with anger are taught.

Some groups – from the psychoanalytic tradition–emphasise exploration of the individual's anger, whilst more cognitive-behaviourally oriented groups emphasise the learning of strategies to control anger.

6

Motivational Dynamics of Sport Psychology

Motivation is an internal energy force that determines all aspects of our behaviour; it also impacts on how we think, feel and interact with others. In sport, high motivation is widely accepted as an essential prerequisite in getting athletes to fulfil their potential. However, given its inherently abstract nature, it is a force that is often difficult to exploit fully. Some coaches, like Portugal manager Luiz Felipe 'Big Phil' Scolari, appear to have a 'magic touch', being able to get a great deal more out of a team than the sum of its individual parts; others find motivation to be an elusive concept they are forever struggling to master. What is it that makes individuals like the 45-year-old sprinter Merlene Ottey, who competed in her seventh Olympics in Athens 2004, churn out outstanding performances year in, year out? Elite athletes such as Ottey have developed an ability to channel their energies extremely effectively. Indeed, motivation is essentially about the direction of effort over a prolonged period of time.

There are numerous approaches to the study of motivation. Some are based on schedules of positive and negative reinforcement while others focus on an individual's sense of mastery over a set of circumstances. Some of the key findings from recent literature and provide four evidence-based techniques relating to the enhancement of motivation. You will be able to tailor the motivational techniques to enhance your participation in sport or the performance of others. You will learn that motivation is a dynamic and multifaceted phenomenon that can be manipulated, to some degree at least, in the pursuit of superior sporting performance.

Different Types of Motivation

One of the most popular and widely tested approaches to motivation in sport and other achievement domains is self-determination theory. This theory is based on a number of motives or regulations, which vary in terms of the degree of self-determination they reflect. Self-determination has to do with the degree to which your behaviours are chosen and self-initiated. The behavioural regulations can be placed on a self-determination continuum. From the least to the most self-determined they are amotivation, external regulation, introjected regulation, identified regulation, integrated regulation and intrinsic motivation.

Amotivation represents a lack of intention to engage in a behaviour. It is accompanied by feelings of incompetence and a lack of connection between one's behaviour and the expected outcome. For example, an amotivated athlete might be heard saying, 'I can't see the point in training any more – it just tires me out' or 'I just don't get any buzz out of competition whatsoever'.

Such athletes exhibit a sense of helplessness and often require counselling, as they are highly prone to dropping out. External and introjected regulations represent non-self-determined or controlling types of extrinsic motivation because athletes do not sense that their behaviour is choiceful and, as a consequence, they experience psychological pressure. Participating in sport to receive prize money, win a trophy or a gold medal typifies external regulation. Participating to avoid punishment or negative evaluation is also external. Introjection is an internal pressure under which athletes might participate out of feelings of guilt or to achieve recognition. Identified and integrated regulations represent self-determined types of extrinsic motivation because behaviour is initiated out of choice, although it is not necessarily perceived to be enjoyable. These types of regulation account for why some athletes devote hundreds of hours to repeating mundane drills; they realise that such activity will ultimately help them to improve. Identified regulation represents engagement in a behaviour because it is highly valued, whereas when a behaviour becomes integrated it is in harmony with one's sense of self and almost entirely self-determined. Completing daily flexibility exercises because you realise they are part of an overarching goal of enhanced performance might be an example of integrated regulation. Intrinsic motivation comes from within, is fully self-determined and characterised by interest in, and enjoyment derived from, sports participation.

There are three types of intrinsic motivation, namely intrinsic motivation to know, intrinsic motivation to accomplish and intrinsic motivation to experience stimulation. Intrinsic motivation is considered to be the healthiest type of motivation and reflects an athlete's motivation to perform an activity simply for the reward inherent in their participation.

Flow: The Ultimate Motivational State

Mihalyi Csikszentmihalyi, the highest level of intrinsic motivation is flow state. Flow is characterised by complete immersion in an activity, to the degree

that nothing else matters. Central to the attainment of flow is a situation in which there is a perfect match between the perceived demands of an activity and an athlete's perceived ability or skills. During flow, self-consciousness is lost and athletes become one with the activity. For example, a World champion canoeist I work with often describes how the paddle feels like an extension of her arms while she is in flow.

An overbearing or unrealistic challenge can cause excess anxiety, which means that coaches need to ensure that athletes set realistic goals. Conversely, if athletes bring a high level of skill to an activity and the challenge that it provides is relatively low, such as Barcelona and Brazil's Ronaldinho playing in a minor football league, this can result in boredom. To promote flow, it is important to find challenges that are going to stretch athletes just a touch further than they have been stretched before.

Recent Motivation Research based on SDT

A study examining the relationship between athletes' goal orientations and their levels of intrinsic and extrinsic motivation indicated that British collegiate athletes with task-related or personal mastery goals were far more likely to report high self-determination than athletes with ego-orientated or social comparison-type goals. The study provided tentative support for the proposition that focusing on personal mastery and self-referenced goals promotes intrinsic motivation to a greater degree than focusing on winning and demonstrating superiority over others.

This has important implications for practitioners who work with children, given the wealth of evidence that suggests that a focus on personal mastery and intrinsic motivation brings the most positive motivation outcomes. A very recent study showed that during competition deemed to be important, intrinsically motivated athletes developed task-oriented coping strategies. Conversely, extrinsically motivated athletes tended to avoid dealing with key issues and were far less likely to achieve their goals. In another study, researchers adopted a qualitative approach to answer the question 'why does the "fire" of elite athletes burn so brightly?'. They sought to demystify the differences between high achievers and also-rans in the world of sport.

Their interviews with 10 elite Australian track and field athletes revealed three overarching themes:

1. Elite athletes set personal goals that were based on both self-determined and extrinsic motives;
2. They had a high self-belief in their ability to succeed;
3. Track and field was central to their lives – everything rotated around their involvement in the sport.

Using a statistical procedure known as 'cluster analysis', colleagues and I have identified two types of 'motivation profile'. The first was characterised by high levels of both controlling and self-determined types of behavioural regulations and the second by high self-determined and low controlling

motivation. A comparison of the two profiles on the motivation outcomes of enjoyment, effort, positive and negative affect, attitude towards sport, strength and the quality of behavioural intentions, satisfaction, and frequency of attendance showed that participants in the first profile reported higher levels on all eight positive consequences when compared to those in the second profile. This finding suggests that the simultaneous presence of high extrinsic and high intrinsic motivation is likely to yield the most positive benefits for adult athletes.

However, it is critical that extrinsic motives are nurtured on a firm foundation of high intrinsic motivation. Without high intrinsic motivation, athletes are likely to drop out when they encounter problems such as injury, non-selection or demotion. We conducted a follow-up study confirming the profiles identified in 2000 and came up with a similar solution using a new sample of adult athletes. Importantly, we found that participants in cluster 1 also reported better concentration on the task at hand.

MOTIVATION AND SPORT

One of the fundamental questions about human nature that psychologists need to answer is, 'Why do we do things?' We could simply answer, 'because I want to', 'because I need to', or even 'because I just do'. However, although all these statements are useful starting points, psychologists are not satisfied with these answers, and seek to uncover the reasons *underlying* our experiences of wanting to, needing to or 'just doing' things. We can examine some basic types of human motivation, theories about specific motivators and research findings concerning what motivates us to participate and succeed in sport. A useful starting point is to examine intrinsic and extrinsic motivation.

INTRINSIC AND EXTRINSIC MOTIVATION

An important distinction in types of human motives is that between extrinsic and intrinsic motivation. *Extrinsic* motivation results from external rewards. *Intrinsic* motivation comes from within the person. Both extrinsic and intrinsic motives are important in sport, and sport psychologists can work with both extrinsic and intrinsic motives to improve the performance of the individual. Intrinsic motives for taking part in sport include excitement, fun, love of action and the chance to demonstrate and improve our skills – in short, all the reasons that we *enjoy* sport. We will discuss some techniques designed to increase intrinsic motivation. The reason these can be used so effectively to motivate athletes is that they directly affect our intrinsic motivation. Extrinsic motives can come in the form of trophies, prizes and less tangible rewards such as praise and status. Although there has been an enormous amount of research into how motivation can be improved in those already participating in sport, rather fewer studies have examined what motivates people to choose to take up sport. Ashford *et al* interviewed 336 adults at a community sports centre in Leicester about why they participated in sport, and what they enjoyed about it. Four main motivations emerged, physical well-being, psychological well-being,

improvement of performance and *assertive achievement*, the last meaning to accomplish personal challenges and to gain status. Age and gender significantly affected motivation. Older people were more motivated by psychological well-being than younger people. Men were more motivated by assertive achievement than women. These motives are all intrinsic rather than extrinsic, lending support to the idea that most people come to sport for reasons of intrinsic motivation. Of course, children's motives for taking part in sport may be different from those of adults. Daley and O'Gara investigated the motives of 145 children in a British secondary school for taking part in non-compulsory sport, using a questionnaire called the Participation Motivation Inventory (PMI). As in the Ashford *et al* study, the motives for sport participation differed according to gender and age. Between 11 and 15 years, intrinsic factors were more important and extrinsic factors less so. Girls emerged as more motivated by team affiliation and achievement than boys. Given that intrinsic motivation is so important, a key aim of research has been to identify influences on intrinsic motivation. One recent study by Amorose & Horn assessed 72 American athletes on their intrinsic motivation at the beginning and end of their first year of college-level participation. They were asked about how much time they spent on training, the nature of their coaching and whether they had sport scholarships. The behaviour of coaches had the strongest effect on intrinsic motivation. Students whose coaches spent more time on technical instruction tended to display significant increases in their intrinsic motivation during the year. By contrast, those whose coaches threw their weight about experienced a decline in intrinsic motivation.

The Additive Principle

Generally, we tend to come to sport motivated more by intrinsic than extrinsic factors. However, extrinsic motivators have been used in an attempt to boost intrinsic motivation. The *additive principle* states that athletes low in intrinsic motivation can have their motivation boosted by adding some extrinsic motivation. However, this common-sense approach has not been well supported by research. There are numerous case studies of athletes whose performance sharply declined as soon as they received lucrative contracts. Psychologists are always a little wary of case studies as evidence, but there are other ways of investigating the additive principle. One approach is to compare the motivation of athletes competing for pleasure and those competing for other reasons. Fortier *et al* compared the intrinsic motivation levels of Canadian athletes who participated for recreation with those involved in collegiate competition.

The collegiate athletes, who were highly focused on the goal of winning, showed less intrinsic motivation than those participating for pleasure. An alternative approach to researching the additive principle is to follow up athletes after changes in their circumstances. In one such study, Sturman & Thibodeau followed the progress of 33 US baseball professionals for two seasons before and two seasons after they signed new contracts that substantially increased

their income. Although there were substantial individual differences, performance typically dropped off after signing the contract. One way in which extrinsic motivators can be used successfully to boost intrinsic motivation is in the grading systems of the Eastern martial arts, usually symbolised by a coloured belt or sash. Contrary to popular belief, such belts are not an ancient tradition, but a relatively recent innovation in the martial arts. They are designed to provide regular tangible rewards for students' achievements, with the aim of motivating them to continue.

THEORIES OF MOTIVATION

Maslow's Theory of Needs

Maslow developed a theory of human motivation that aimed to explain all the types of human need and rank them in the order people seek to satisfy them. Maslow's hierarchy of needs is shown in Figure. The idea behind the hierarchy of needs is that we ascend the hierarchy, satisfying each motive in turn. Our first priority is to satisfy our *physiological needs*, such as food and warmth, because we cannot live without these. Only when these needs have been satisfied do we seek out *safety*. Once we are safe, the next thing we need to worry about is our *social needs*, that is, to belong to a group and have relationships with others. When our social needs are satisfied, *esteem needs* become paramount. To satisfy them, we need to achieve, to become competent and to be recognised as so. Once this has been achieved, our focus will shift to satisfying our *intellectual needs*, which include understanding and knowledge. Next in Maslow's hierarchy above intellectual needs come *aesthetic needs*, that is, the need for beauty, order and balance. The final human need identified by Maslow is for *self-actualisation*, that is, to find personal fulfilment and achieve one's potential.
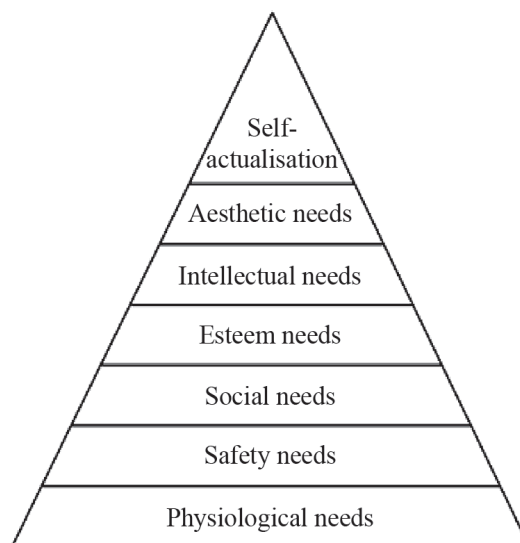

Fig. Maslow's hierarchy of needs.

According to Maslow, we are all striving to ascend the hierarchy of needs, but very few of us achieve self-actualisation. Sport, however, does provide a possible path to self-actualisation. Athletes who rise to the very top of their field, holding world records and championship titles, could be said to be self-actualised in that they have fulfilled their dreams and their potential. On the other hand, we should be careful not to equate self-actualisation with success. There are numerous sporting celebrities who, despite rising to the top of their chosen sport and appearing to fulfil their potential, have clearly not found personal fulfilment and have, by contrast, 'gone off the rails'. Maslow's theory has been enormously influential. Most importantly, he has opened our eyes to the *range* of human needs. If you have carried out the exercise above, you have probably seen that you have multiple reasons for participating in sport, and that your reasons are grouped above the physiological and safety needs. If you are motivated principally by physiological and safety needs (say, for example, if you are homeless and starving), it is unlikely that you would be able to raise much motivation to take part in sport. Sport is an excellent way of providing us with esteem and social needs. For some, it may also provide a path to self-actualisation.

Despite the usefulness of Maslow's work, his prediction that we are all motivated by these needs and that everybody seeks to satisfy them in the same order is suspect, particularly when we look at elite athletes who have put success ahead of other considerations. Saul has pointed out that 65 per cent of ballet dancers have chronic injuries and suggested that they have sacrificed physiological needs in pursuit of aesthetic needs. This is perhaps an extreme example, but it illustrates that sometimes aiming for higher needs means not satisfying the more basic needs – contrary to Maslow's theory.

Achievement Motivation

The link between the wish to achieve and sporting success is an obvious one. A strong wish to succeed in your chosen sport will be a huge asset in determining how hard you train and how hard you try in competition. All participation in sport involves achievement, regardless of whether you regard competition as important. You are in fact probably more likely to boost your performance by setting yourself goals of personal achievement, such as 80 per cent of first serves in, 90 per cent of penalties in the net, rather than goals of victory. Some psychologists see the drive to achieve as innate, whereas others see it as acquired by experience. Some believe that the most important factor is to achieve success, whereas others emphasise the motive of avoiding failure. The most influential theory of achievement motivation comes from McClelland *et al* and Atkinson.

The McClelland–Atkinson Theory of Need Achievement

The aim of the McClelland–Atkinson theory was to explain why some individuals are more motivated to achieve than others. The athlete's intrinsic motivation is seen as the motive to achieve. Acting against this intrinsic

motivation, however, is the motive to avoid failure. When faced with a task such as sport, we face an *approach– avoidance conflict*. We are motivated to approach and take part by our desire to succeed, but we are also motivated to avoid taking part by our desire to avoid failure. Our individual decision to participate in sport is determined by the relative strength of these two factors. This is shown in the following equation:

- Achievement motivation = desire to succeed – fear of failure.

To McClelland and Atkinson, achievement motivation is a personality trait. For some of us, the desire to succeed far outweighs the fear of failure, and we are said to be high in achievement motivation. For others, the fear of failure is the more important factor, and they would be said to be low in achievement motivation. This personality trait is not the only factor that affects motivation. The situation is also important, specifically the *probability of success* and the *incentive for success*. Thus, even if athletes are low in achievement motivation, if the probability of success is high, and the rewards for success are great, they are likely to be motivated. Gill reviewed research on choice of high- and low-difficulty tasks and concluded that there is much support for the prediction by the theory that high achievers seek out difficult tasks and low achievers prefer easier tasks. However, the theory does not reliably predict sporting *performance*. Of course, this does not mean that the theory is worthless. As Cox says, the value of measuring achievement motivation is not to predict performance, but to predict long-term patterns of motivation.

ATTITUDES TO SPORT

The social psychologist Elliott Aronson has defined an attitude as 'an enduring evaluation – positive or negative – of people, objects and ideas'. We can pick out two important features of attitudes from this definition. First, attitudes are longlasting. Once we have established a firm attitude to sport, we are likely to stick with it. Second, attitudes involve making judgements. Our attitudes to sport are likely to emerge as either distinctly positive or distinctly negative. Understanding attitudes is important to sport psychologists for a number of reasons. If parents and teachers, can understand how children acquire attitudes, they can use this understanding to try to ensure that as many young people as possible develop positive attitudes to sport. By understanding the link between attitudes and behaviour, we can try to help more people enjoy the medical and psychological benefits of both participation and spectatorship in sport. An understanding of the ways in which attitudes can be changed is valuable in helping us to increase sporting participation and motivate athletes.

THE NATURE OF ATTITUDES

Pennington *et al* distinguished between two approaches to understanding attitudes. The functional approach looks at *why* we have attitudes, and how adopting particular attitudes can be helpful to us. The structural approach looks at what different factors make up attitudes.

Functions of Attitudes

Smith *et al* suggested that having attitudes serves three main psychological purposes: the adaptive function, the knowledge function and the ego-defensive function.

The adaptive function of attitudes involves the usefulness of certain attitudes in helping us achieve our goals. For example, one way in which we might 'get in' with a desirable crowd is to share their interest in sport in general or in a particular sport.

This is not to say that people regularly and cynically change their attitudes in order to gain favour. It is more likely that, without being aware of it, we are influenced in our attitudes by our awareness of how much good or harm certain attitudes can do us. The knowledge function of attitudes refers to the fact that having attitudes makes the world a simpler and more predictable place. It also means we can save ourselves 'mental energy' that would otherwise have to be spent analysing every person and situation we come across. For example, we might have a universally positive view of sport, regardless of the nature of different sports and the contexts in which sport takes place. Such an attitude then frees us from the complex business of making moral judgements about details such as safety and politics.

The ego-defensive (or *self*-defensive) function of attitudes concerns the fact that we can adopt attitudes to help protect ourselves from difficult or painful feelings. For example, one way children might defend themselves against the feelings of humiliation they have experienced in PE lessons is to adopt a strongly negative attitude to all sport. People whose pride has suffered by a defeat in sport might similarly adopt a defensive attitude: 'I'm not bothered – I'm sick of basketball anyway.' Teachers, coaches and parents must recognise how people use attitudes to make themselves feel better.

We should not take people too seriously if they say they are giving up their sport after one bad game. If, on the other hand, a player adopts an enduring negative attitude after a bad experience, we may wish to intervene to alter this attitude.

Of course, the defensive function of attitudes does not always lead to negative attitudes to sport and sport psychology. In a study amusingly entitled 'Death can be good for your health', Arndt *et al* examined the relationship between encountering reminders of one's own mortality and attitudes to exercise. Regardless of their current fitness or sporting participation, participants reminded of their mortality experienced a shift in attitudes in favour of regular exercise. Presumably, this was defensive, a pro-sport attitude being used to deny the reality of death.

Structure of Attitudes

The structural approach to attitudes looks at the different components that make up our attitudes. It is generally agreed that there are three aspects to our attitudes, the cognitive dimension, the affective dimension and the behavioural dimension.

- The cognitive dimension of attitudes concerns our *beliefs*.
- The affective dimension of attitudes concerns our *feelings* (the term 'affective' means emotional).
- The behavioural dimension of attitudes concerns our *actions*.

Our beliefs are often stereotyped. We might, for example, hold stereotypical views about those who favour particular sports. Stereotypes are beliefs that exaggerate the similarities of all members in a group and minimise the differences between members of the group.

Thus, we might believe that all rugby players drink too much or that all football fans are violent. We also hold beliefs about the benefits of exercise and sport. Such beliefs are likely to have a strong effect on our sport and exercise behaviour. It seems likely that our feelings about sport result at least in part from our beliefs. For example, if we believe that rugby players are always drunk or that football fans are all violent, we are likely to feel repulsed or frightened by them. We are also likely to have strong feelings about exercise and sport in general and about particular sports. Research has shown that the amount and type of information about a sport that are given to students can affect their feelings about that sport. In general, the more we know about a sport, the more positive we feel about it. Theodorakis found that by increasing the level of technical information given to students on a skiing course, it was possible to make them feel more positive about skiing.

MEASURING ATTITUDES

We can measure attitudes directly by asking people questions or asking them to respond to statements that describe beliefs, feeling or behaviours associated with the topic we are interested in.

There are other, indirect ways of measuring attitudes (such as measuring physiological change or responses to ambiguous pictures), but sport psychologists tend to rely more on direct measures. Direct measurement of attitudes is done in three main ways: Likert scales, semantic differential scales and Thurstone scales.

Likert Scales

Likert developed the simplest and what has become the most common way of measuring attitudes. We start by producing an equal number of positive and negative statements concerning whatever we are measuring attitudes to. These statements can concern beliefs, feelings and behaviours. Then people are asked to respond to the statements, usually on a 5-point scale, ranging from (SA) 'strongly agree' to 'strongly disagree' (SD).

Liked scale items measuring attitudes to boxing					
	SA	A	?	D	SD
1. Boxing causes brain damage.	[ ]	[ ]	[ ]	[ ]	[ ]
2. I watch boxing matches on TV.	[ ]	[ ]	[ ]	[ ]	[ ]
3. I find boxing exciting.	[ ]	[ ]	[ ]	[ ]	[ ]

Item 1 refers to a belief, item 2 to a behaviour and item 3 to an emotion. Thus, cognitive, affective and behavioural dimensions are all included. This is worth considering in designing one's own Likert scales. Note also that item 1 is a negative statement whilst the other two are positive statements. This is important because some people have a tendency to agree with most items (the yea-sayer effect) or generally to disagree (the nay-sayer effect). In order to score this type of test, we need to give all the positive statements values of 1–5 or 0–4, 5 being the most positive.

For the negative statements, we must reverse this, giving them values of 5–1 (or 4–0). Each person who fills in the test can then be given a score for each item and finally an overall score, which shows how positive or negative his or her attitude is overall.

Thurstone Scales

Thurstone & Chave developed a complex system of attitude measurement. Thurstone scales resemble Likert scales in that they appear as a series of statements to which respondents choose a response based on how closely they agree with the statement. However, Thurstone believed that it was important that we should know just *how* positive or negative each statement in a scale is, not just whether it is positive or negative. This is achieved by having a panel of at least 50–100 judges rate each statement for positivity or negativity. The advantage of this is that when we add up someone's scores, we can weight very positive and very negative statements more heavily than only mildly positive statements.

Thus, to return to the example of boxing, if someone replied 'strongly agree' to the statement, *There should be an immediate world ban on boxing*, it would represent a more negative view than the same response to the statement, *Boxing can be dangerous*.

Although, in principle, Thurstone scales should be more valid than Likert scales because of the weighting of items, in practice, few researchers are willing to go to the extra effort needed to compile this type of scale. As Oppenheim pointed out, Likert scales generally produce much the same results as Thurstone scales with a fraction of the preparation time.

THE FORMATION OF ATTITUDES TO SPORT

How do we form the attitudes we hold to sport? Think about your own sporting attitudes for a moment. You may remember early positive or negative experiences that shaped your attitudes. You might be able to point to family members or teachers that were a strong influence on you. Did you take up a sport to impress someone attractive or get into the in-crowd, and then find you liked the sport? You may feel that you are just the type of person that is naturally attracted to sport, or you may not. Actually, research has linked all these factors to the development of attitudes.

Personality, Genes and Attitudes

Eysenck proposed that people high in extroversion and psychoticism tend to have pro-sport attitudes. To trait theorists such as Eysenck, personality is primarily determined by genetic factors. It is certainly conceivable that genes may influence sporting attitudes. This is not to say that there is a gene for liking sport, but, if some aspects of personality are inherited, it may be that we can inherit a *predisposition* to developing certain kinds of attitude. There is indeed some evidence that our genetic make-up may predispose us to generally positive or negative attitudes to sport. Waller *et al* found that separated identical twins (who are genetically identical) have more similar views on a variety of topics than separated fraternal twins (who share 50 per cent of their genes). This study implies that genes play some role in affecting our attitudes. However, we should remember that there are serious difficulties in conducting studies with separated twins – we never know for sure whether similarities between separated twins are due to similarities in genetics or environment. Actually, it is probable that our childhood environment is more important than our genes in influencing the development of our attitudes.

Social Learning of Attitudes

Children tend to observe and imitate the behaviour of their role models. Thus, children are likely to adopt the attitudes to sport they see in their parents. Children also receive powerful reinforcers in response to the attitudes they express from a very early age. Social learning can help explain attitudes to both participation and spectating. We can easily imagine a scenario where a boy observes his father intently watching a football match and cheering when one team scores. The boy would be likely to copy the father's behaviour. It is also extremely likely that the father would respond to this by praising the boy and explaining the finer points of the match – thus reinforcing the behaviour. Bandura's four-stage model of this process is shown in Figure. You may be thinking that this is a shamefully politically incorrect example – what about girls' attitudes to sport? Actually, this was a deliberate ruse to make you think about how boys and girls might be exposed to different learning experiences. Imagine that in the above scenario, instead of the son, the young daughter of a football fan cheered at the football.

It is unlikely that she would receive the same positive reinforcers as her male counterpart. She might well be ignored – or, worse, punished. In our culture, there are fewer opportunities for girls than boys to learn the pleasure of sport spectatorship. The problem of gender differences in attitudes to sport spectatorship was highlighted during the 1998 World Cup, when the disparity between some men's and women's attitudes to watching football became so polarised that the term 'World Cup widows' was coined, and Relate Marriage Guidance had to issue advice on how to maintain a relationship between two partners with different attitudes to watching football!
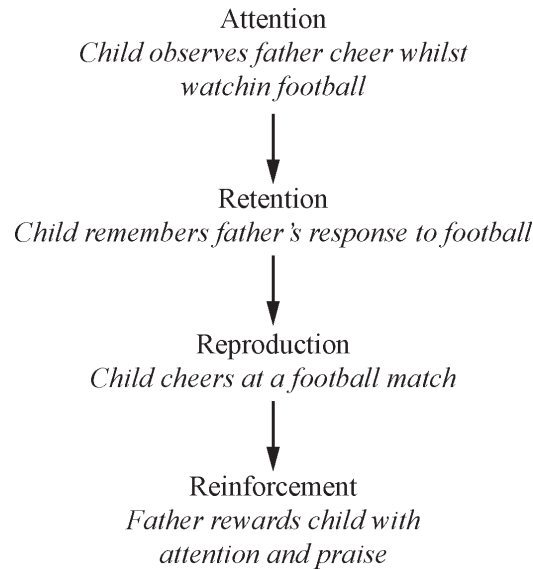
Attention
Child observes father cheer whilst
watchin football

↓

Retention
Child remembers father's response to football

↓

Reproduction
Child cheers at a football match

↓

Reinforcement
Father rewards child with
attention and praise

Fig. Social learning of a child's attitude to football.

Parental Involvement

The extent to which parents actively get involved in children's sporting activities can affect their attitudes to sport. At one extreme, parents who do not acknowledge children's achievements are clearly not giving them appropriate reinforcement. At the other extreme, it may be possible for parents to become overinvolved. This was supported by a study by Stein *et al*, who surveyed 42 13–14-year-olds who played soccer, volleyball or American football. Most respondents said that their parents were moderately involved and that this was appropriate. Both very low and very high levels of involvement were associated with reduced satisfaction with sport and increased stress levels.

Desire For Health and Physique Enhancement

Currently, there is increasing social pressure on people of all ages and both sexes to maintain a particular body type that is characterised by low fat mass and high muscle mass. This is a paradoxical situation for psychologists. On the one hand, there is genuine concern about the rapidly rising rates of child and adult obesity and the accompanying health problems. Thus, we may argue that society is right to pressure people to use sport and exercise to manage their weight and fitness. On the other hand, the evidence of rising rates of eating problems suggests that too much emphasis on the importance of sport in weight management can have serious, negative psychological consequences. This was underlined by a study in which 371 children aged 10–15 were assessed for their exercise and sporting activity, attitudes to their weight and other weight-control strategies. Nearly half believed they were too fat. A significant minority used extreme weight-control strategies, such as fasting, vomiting and taking slimming pills, as well as exercise.

ATTITUDES TO COMPETITION

Social learning theory is useful in understanding how we acquire our attitudes to competition. There has been much discussion in the last few years of British attitudes to competition. On the one hand, it has been pointed out that the British may be less motivated to win than other cultures because of the philosophy, 'it's not the winning that counts, but the taking part'. On the other hand, concern has also been expressed that too much emphasis on competition prevents many children from learning to enjoy sport. One of the most comprehensive surveys of attitudes to sport, the Miller Lite Report, found that 86 per cent of American parents surveyed thought that PE teachers place too much emphasis on competition. Gervis pointed out that problems can arise when early training overemphasises the importance of winning. This can be at least partially understood in terms of social learning theory. If reinforcement is provided only for winners, then, by definition, it is provided for half the participants in team games, and much fewer in individual sports. With most participants failing to receive positive reinforcement, it is unlikely that they will maintain their interest in sport.

There appear to be differences between athletes and non-athletes in attitudes to competition. Finkenberg & Moode surveyed 164 university students on their attitudes to sport, half of these being participants in sport at university level. Athletes placed more emphasis on the importance of competition in sport than did the control group, along with opportunities for social status and career enhancement. Non-participants in sport were positive about sport but saw its purpose more in terms of enhanced self-esteem and character development.

ATTITUDES TO SPORT AND SPORTING BEHAVIOUR

As Gill says, we are interested in attitudes in sport psychology, not so much for their own sake, as for their influence on sporting behaviour. Therefore, a very important issue concerns the extent to which attitudes can be used to predict behaviour. Early psychological research seemed to show that there was little relationship between attitudes and behaviour, but our current thinking is that attitudes *can* effectively predict behaviour, but only if we also have access to certain other information.

The Theory of Reasoned Action

Ajzen & Fishbein have produced a model of the link between attitudes and behaviour that has proved popular in sport psychology. This is called the theory of reasoned action (TRA). A simple version of the TRA is shown in Figure, as used to explain participation in the TRA, two factors determine individuals' *intention* to take part in sport: their general attitude to sport and how socially desirable they consider sport to be. Therefore, before we even intend to participate in sport, we need to have positive feelings and beliefs about sport *and* we need to see sport as a socially desirable activity. Of course, the intention

to participate does not necessarily lead to the behaviour. Other circumstances may still interfere. For example, we might be particularly busy or plagued by a recurring injury.
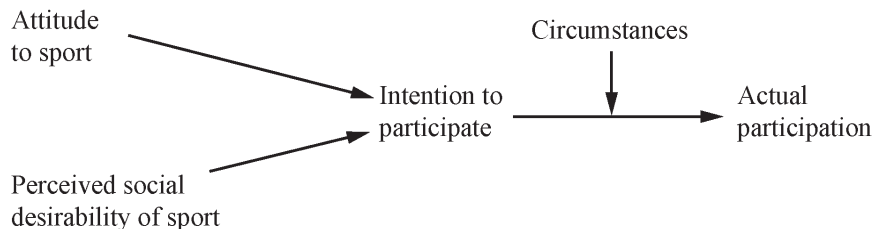

Fig. Applying the theory of reasoned action to explaining participation in sport.

The Theory of Planned Behaviour

Ajzen introduced a modification to the theory of reasoned action, creating an offshoot known as the *theory of planned behaviour* (TPB). The idea was that, although the TRA is effective in predicting how people would behave in situations where they have full control over their actions and can behave entirely voluntarily, it is less useful in situations where behaviour is highly constrained by circumstances. The theory of planned behaviour gets around this by introducing a further variable, *perceived behavioural control*, which influences intentions. As in the TRA, there is a strong link between intention and action; however, we formulate the intention to act in a certain way only when we perceive that we have control over our behaviour.

Discussion

Sport psychologists widely support the TRA and TPB as explanations of the relationship between attitudes to sport and sporting behaviour. Gill had students survey 68 people on their attitudes to jogging. They then asked the participants how many times per week they jogged (as a measure of behaviour). A moderate relationship ($r = 0.44$) was found between attitude to jogging and frequency of jogging. However, as the TRA would predict, a much stronger correlation ($r = 0.81$) emerged between *intention to jog* and frequency of jogging. A study by Wankel *et al* suggested that the TPB predicts participation more accurately than the TRA. Data from over 3000 Canadians taken from a national survey of well-being were analysed, looking at measures of exercise, perceived behavioural control and social norms. Attitudes to sport and perceived behavioural control were more predictive of taking part in sport than social desirability, supporting the TPB as opposed to the TRA. In another study by the same research group, Mummery & Wankel found that both perceived behavioural control and social desirability affected attitudes to participation in adolescent swimmers. Both a recent meta-analysis and a qualitative review of studies on the TRA and TPB have confirmed that research has supported the idea that the TPB is a superior explanation. There are important lessons to be learned from the body of research on the link between attitudes and behaviour in sport. To understand what factors

affect the decision to take part in sport, we need to know subjects' perception of its social desirability and their beliefs about their own opportunity to participate. Both of these perceptions may be inaccurate, and one way to persuade more people to take part in sport may be to tackle these inaccurate beliefs.

The Transtheoretical Model (TTM)

The TTM was originally produced by Prochaska & DiClemente in order to understand better why some smokers succeeded in giving up without professional help. Marcus & Simkin applied it to understanding the process whereby people take up and maintain sport/exercise behaviour. The term 'transtheoretical' refers to the fact that the model comprises elements from several psychological theories. According to the TTM, people go through five stages before they regularly participate in sport. Each stage is defined by a different relationship between intentionality and behaviour. This makes the model dynamic and gives it an advantage over the TRA and TPB, which assume a static relationship between intentions and action. Of course, people do not simply pass through the five stages and end up with maintenance.

They may relapse a number of times at different points for a number of reasons, ranging from injury to the seasonal nature of their chosen sport. A simple example is the person who takes up jogging in the summer but relapses to preparation or even contemplation when the nights draw in and jogging becomes a considerably colder and wetter experience! The model explains why some people undergo such relapses in terms of *self-efficacy*. Briefly, self-efficacy is our perception of our own competence in an activity. The more competent we perceive ourselves to be, the more likely we are to maintain the physical activity. This has an important practical application; we can encourage people who have recently taken up a sport to maintain it in the face of new barriers, such as injury, weather or a change in working or family patterns that makes training less convenient, by building their confidence in their ability. During the progress through the five stages, an individual may use a variety of strategies to encourage the continued shift from inactivity to activity.

These include making use of social support, as in cultivating friendships with athletes who tend to socialise in sporting contexts. Another approach is *stimulus control*. This involves removing oneself from situations that encourage inactivity and instead planning events such as skiing or cycling holidays that will inevitably mean taking part in sport and that will provide incentives to training. Individuals may also deliberately expose themselves to information on the health benefits of sporting participation (this is called *consciousness raising*) or the risks of inactivity (this is called *dramatic relief*). On any occasion, influenced by their self-efficacy beliefs and activity strategies, individuals are faced with a choice of whether to proceed with sporting activity. This involves a cost-benefit analysis in which they weigh the advantages of training this evening against the cons. The influence of the pro arguments should increase as the individual progresses through the five stages.

PSYCHOLOGY OF MOTIVATION FOR ATHLETES

What is motivation? What motivates us, me, and you? And I don't just mean the basic definitions, but the science of how motivation works and the psychology behind motivation. In this article, we will go into what motivates us in life and in sports.

DEFINED: MOTIVATION

Motivation is broadly defined as all factors that cause humans and other animals to behave the way they do. Scientists believe the hypothalamus provides the physical basis for pleasure in humans, which plays a large part in motivation.

The Hypothalamus and Limbic System

Hypothalamus means "below the thalamus." The hypothalamus is involved in controlling certain body states including hunger, thirst, circadian rhythms, fluctuation of hormone release throughout the day, aspects of sexual activity, and body temperature. The hypothalamus is part of the limbic system.

The limbic system has connections to what motivates us based off memories and other stimuli. The system consists of the following structures: amygdala, fornix, hippocampus, thalamus, hypothalamus, and cingulate gyrus. Experience of emotions and the interpretation of emotionally laden events or stimuli appear as a result of these areas being stimulated and their communications with one another. In addition, the limbic system may be important in our overall consciousness.

Achievement-Based Motivation

Achieving goals can become a powerful motivator in a person's life. Some people live for reaching their goals. The need for achievement is their motivation to accomplish a challenging task quickly and effectively.

David McClelland, his students, and colleagues spent forty years studying this type of motivation. They analysed the personalities of those who demonstrated this need for achievement in entire societies. Those with a high need of achievement tend to work harder than those without it, are more future oriented, and will delay gratification longer. An example of achievement-based motivation comes from research done on medical students. A study using focus group discussions with ten male and nine female students who scored higher than an 85 per cent on all their tests was used on this study. The results established that the students were dedicated to going to lectures, prioritization, self-learning, learning in groups, mind-mapping, learning in skill labs, learning from mistakes, time management, and having family support. Non-academic factors such as sleep deprivation and homesickness also played a role in academic success. Achievement-based people tend to make sacrifices and make their goal their "life," so they work around the things that may not be related to their sport, academia, or whatever they are motivated to do. They spend their time learning

how to get better and be effective. Achievement makes some people content and happy. On the other hand, failure can produce pain, sadness, and unhappiness, which can lead to avoidance behaviours. In athletes we typically find two types of successful motivations:

Intrinsic Motivation: Defined as a construct and desire to be competent and self-determining. These athletes are usually self-starters because of their love of the game. Intrinsically motivated athletes are more likely to maintain effort and consistency across practice and competition. Achievement Motivation: These athletes wish to engage in competition or social comparison. All things being equal between two athletes, whoever has the higher achievement motivation will be the better athlete because of the desire for competition.

COACHES: UNDERSTANDING MOTIVATION

The understanding and utilization of different types of reinforcement and punishment will help coaches motivate their athletes. As far as which type of motivation is used, that depends on the coach's ability to understand the athlete, his or her emotions, and his or her personality.

REINFORCEMENT

Positive reinforcement is the act of increasing the probability of occurrence of a given behaviour (a target behaviour such as correct footwork), which is termed the operant, by following it with an action, object, or event such as praise.

Negative Reinforcement also increases the probability of occurrence of a given operant by removing an act, object, or event that is typically aversive. For example, if you have a CrossFit competition team you want to get to regionals and they do well on the clean and jerk, you don't add additions to their WOD on that day (such as a miserable cash out like 100 double unders or 100 pull ups).

Punishment

Punishment is designed to decrease the occurrence of a given operant, that is, negative behaviours such as mistakes or lack of effort. Positive punishment is the presentation of an act, object, or event following a behaviour that could decrease the behaviour occurrence. For example, some gyms reprimand their athletes for dropping barbells with no weight on them from overhead because it prevents thisbehaviour from becoming habitual (not to mention preserves the equipment).

Negative punishment is the removal of something valued, which can take the form of revoking privileges or playing time. Coaches will use both forms of motivation, but the positive approach is arguably better because it focuses on what athletes should do and what they are doing right. Reinforcement increases task-relevant focus rather than worry focus. A task-relevant focus facilitates reaction time and decision time. A successful experience colours the athlete's view as positive, which can lead to approach behaviours. Approach behaviours or approach motivation indicates the propensity to move towards a desired stimulus.

Prior research has already shown that positive affect (or positive motivation/ reinforcement) promotes cognitive flexibility. In a study published in *Psychological Science*, they extended motivational dimensional model to the domain of cognitive control by examining both low-and high-motivated positive affect on the balance between cognitive flexibility (our ability to adjust to behaviour in response to a changing environment) and cognitive stability (our ability to change behaviour in the face of distraction). Low and high approach-motivated positive affect would indicate the intensity of the positive affect on a selected individual in regard to approach motivation. Results concluded low approach-motivated positive affect promoted cognitive flexibility but also caused higher distractibility, whereas high approach-motivated positive affect enhanced perseverance but simultaneously reduced distractibility.

THE THEORIES OF MOTIVATION IN SPORTS

Athletes participate in sports for various reasons, from a hunger for physical activity and competition to the joy of belonging to a team. Coaches can improve the team's performance by finding the right motivation for each situation and player. Specific motivational theories exist that apply psychological concepts to sports for increased drive and performance.

EXTRINSIC MOTIVATION

Extrinsic motivation is motivation that comes from an outside source. Some of it is tangible, such as financial or other material rewards, including trophies or medals. Tangible extrinsic motivation is not necessarily ideal for athletes who become too focused on materialism at the expense of other aspects of sports. Intangible extrinsic motivation includes praise, recognition and achievement, which can often be enough to motivate athletes.

INTRINSIC MOTIVATION

Intrinsic motivation comes from within the athlete or player. It includes a natural desire to overcome challenges and enjoyment in the repetition of a skill. These factors can remind athletes why they participate in a certain sport— especially during grueling practices. Intrinsic motivation is often best supported by a series of goals, whether they're enhanced skill sets or victories in competition.

THEORY OF VITALITY

The theory of vitality dictates that vitality influences the future capacity for performance. An athlete has a baseline vitality with which to work and won't stray far from that point. Actions or effects affect that vitality and either thwart or satisfy the player's needs. For example, if a player is extrinsically motivated and praise isn't forthcoming, the player's vitality sinks and he loses motivation. Similarly, if a player loves a game and keeps winning at it, her intrinsic enjoyment is satisfied, her vitality rises and she is motivated to continue.

SANDWICH THEORY

The sandwich theory motivates athletes to correct or improve without destroying their sense of enjoyment, pride or inclusion as an equal team member. You can use this theory on yourself by noticing your positive contributions to your team, too. When crafting criticism, sandwich the need between positive reinforcement. Doing so motivates athletes to put forth the necessary effort for improvement because their larger extrinsic or intrinsic needs are being met.

A MOTIVATION

A motivation occurs when players lack motivation, which happens for a few reasons. Sometimes, the player has no sense of capacity and truly doesn't believe he is capable of performing the way that's required. Other times, the player doesn't understand the connection between the actions required and the desired outcome.

In these instances, coaches and trainers can build self-esteem by carefully building skill sets. Another solution is conditioning athletes to understand how their improvements in technique can benefit their overall performance or their team.

SPORTS PSYCHOLOGICAL CHARACTERISTICS OF PROFESSIONAL GOLFERS

Golf is an activity that has consistently been studied by sports psychologists. This popularity might come from the specificity of this sport: players spend a very short time at hitting the ball whereas moving across the course and waiting represent the majority of the duration of a game. The golfer must therefore develop emotional management skills (*i.e.*, emotional control) and "adjust" his/her level of physiological and psychological activation. An efficient use of this time, which is mainly based on psychological competencies, is probably critical for golf performance. Therefore, golf clearly represents an ideal activity to be studied by sport psychologists.

In arrange to investigate the determinants of golf performance, a lot of studies have been conducted. Technical aspects interested some. For example, Davidson and Templin demonstrated the critical importance of acquired skills in golf performance.

In a study of 119 professional golfers, they showed that driving and putting abilities as well as hitting green in regulation predicted 86 % of the variance of professional scoring average of the 1983 pro tour. Other researchers mainly focused on psychological factors related to golf performance. The studies can be classified into three categories depending on the variables examined: emotional factors, coping or performance strategies, and integrative studies. In the first part of the investigative rationale, we therefore present the golf-related studies. In the second part, we present studies examining psychological profiles of elite athletes in other activities.

PSYCHOLOGICAL FACTORS RELATED TO GOLF PERFORMANCE

Among the three categories identified, the majority of the studies concerned the emotional aspects related to the performance, the most popular factor seeming to be state anxiety. Results concerning this line of research are rather inconsistent. In a majority of studies, the relationships among the subscales of the Competitive State Anxiety Inventory-2 – namely cognitive anxiety, somatic anxiety and self-confidence – and golf performance were examined.

Cross-sectional and nomothetic research designs often revealed non-significant findings. For example, McAuley used the CSAI-2 to examine the reciprocal effects between pre-competitive state anxiety and self-confidence on the one hand, and golf performance on the other hand, among collegiate golfers. The results showed that pre-competitive measures did not predict golf performance but that golf performance was a significant predictor of post-round cognitive state anxiety and self-confidence. Similar results were found with elite golfers. In a study of eight male golfers of the Swedish National Team, Hassmén et al. did not find a consistent relationship between pre-competitive mood states and performance. McKay et al. examined self-reported state anxiety measured by the CSAI-2 and physiological responses in 15 male professional golfers prior to, during and on completion of a tournament and practice round. If an increase in the anxiety variables and a lower self-confidence during competition compared to practice were observed, there was no significant correlation between psychophysiological variables and golf performance.

The results are a little bit more consistent in studies where experimental and/or idiographic approaches were used. For example, among a sample of eight male golfers of the Swedish National Team, Hassmén et al. showed that variability in somatic anxiety was significantly related to variability in golf performance. Using an experimental design and within-subjects comparisons with a sample of 12 experienced male golfers, Chamberlain and Hale brought partial support for the predictions of the Multidimensional Anxiety Hypotheses. More precisely, a negative linear relationship, a curvilinear relationship and a positive linear relationship were found respectively between cognitive anxiety, somatic anxiety and self-confidence on the one hand, and performance on the other hand. They also confirmed the impact of the directional aspect of competitive state anxiety-facilitative vs. debilitative-on performance.

Finally, testing the "catastrophe model" of anxiety and performance, few works proposed that cognitive anxiety, physiological arousal and self-confidence affect performance in an interactive fashion. In their study, Hardy et al. investigated eight male golfers participating in a golf tournament who reported their cognitive anxiety, somatic anxiety, and self-confidence prior to their tee shot on each hole. The results showed a complex relationship between these three variables. In a low self-confidence condition, cognitive anxiety was positively related to performance when somatic anxiety was low but negatively related to performance when somatic anxiety was high. By contrast, under

condition of high self-confidence, cognitive anxiety was more positively related to performance when somatic anxiety was high than when it was low. The conclusion of such research is that cognitive anxiety is not as detrimental for performance as hypothesized in MAH. It could have a beneficial effect upon performance when competitors have low levels of physiological arousal and interpret their anxiety symptoms as being beneficial to performance.

One more line of research concerned the coping and performance strategies likely to moderate the effect of anxiety on performance and/or to reinforce self-confidence. Certain studies have investigated imagery direction and its subsequent effects on golf putting performance. They generally demonstrated improved performance following positive imagery such as seeing the path of the ball until the hole, and impaired performance following negative imagery such as missing the putt or through suppressive imagery, such as do not image hitting the ball "pass the target" or do not image an obstacle (a bunker) to avoid. In the same vein, one study examined the effect of various imagery modalities (*i.e.*, self-modeling via video intervention, audio intervention, written-script intervention) on golf putting performance. It appeared that the video and audio groups performed significantly better than the written script and control groups.

Others study were carried out especially to examine the role played by coping strategies. Nicholls's studies were qualitative and implicated adolescent elite golfers. The existence of efficient (*e.g.*, positive self-talk, breathing exercise, following a routine) and inefficient (*e.g.*, negative thoughts, trying too hard, speeding up) coping strategies was emphasized. Gaudreau et al. demonstrated that the coping strategies used differ throughout the pre-competitive, competitive and post-competitive phases of a golf competition. However, this piece of research does not concern the possible effect of coping strategies on golf performance.

In conclusion, integrative studies used one or two of the above factors in a context of a golf performance. Two studies can be distinguished because of their use of an experimental design. Beauchamp et al. examined the effect of a 14-week golf-teaching programme on the motivation, preparation, and putting performance of novice golfers. Three groups were compared: participants in the first group followed a cognitive behavioural programme, those in the second group used a physical skill-training programme and the third group was a control group. The results indicated that the cognitive-behavioural group presented higher levels of intrinsic motivation, a more consistent use of pre-putt routines and better putting performance as compared to the 2 other groups. Thill and Cury used a similar design with recreational golfers and found that a motivational context of one-on-one competition leads to anxiety and distraction, whereas a task-involving context excludes intrusive thoughts and is negatively related with self-handicapping. Using a correlational design with a sample of recreational golfers, Catley and Duda studied the psychological antecedents of flow and found that pre-round measure readiness variables (calm, positive focus,

confident readiness and pessimism) as well as golf skill level were significantly related to the frequency and intensity of flow. The rest of this set of studies has focused mainly on the role and the importance of coping strategies in golf performance and emotional reactions. Studies conducted by Gaudreau and his colleagues investigated the mediating role of coping strategies between (1) emotional reactions and performance and (2) pessimism/optimism and emotional reactions. These studies conducted with male amateur golfers confirm the great importance of coping strategies for emotional adjustment and performance in golf.

For example, using a sample of regional male golfers, Gaudreau et al. investigated the mediating role of coping in the relationship between Performance Goal Discrepancy (PGD) and affect. Multivariate path analyses revealed that active coping and behavioural disengagement mediated the relationship between PGD and positive affect during competition, whereas only behavioural disengagement mediated the relation between PGD and negative affect, during the competition.

ELITE ATHLETES' PSYCHOLOGICAL PROFILES

Only a few studies carried out in golf concerned "elite" participants and this statement is also true for other sports. Only a limited amount of articles report empirical data on psychological profiles of elite athletes. Most of them stress the importance of psychological skills (or performance strategies) used by high performers. Early research in this domain aimed at discriminating successful and less successful athletes in gymnastics, racquetball and wrestling. Overall, this set of studies revealed that the best athletes involved in these investigations (a) presented higher levels of self-confidence, (b) were closer to achieving their maximum potential, (c) focused less their attention on negative thoughts before competition and (d) used more self-talk.

More recent qualitative and quantitative researches confirmed and supplemented the elites' athletes profile showing that Olympic/World championship competitors were characterized among others by: imagery skills, pre-competition and competition game plans, strong self-beliefs, high personal drive, with high ego and high task orientation as well as high intrinsic and extrinsic motivation, abilities to focus and to block distracters, to set goals and to cope with and control anxiety. Results regarding anxiety are not congruent in that some studies reported lower levels for the best achievers whereas other found no differences.

THE PRESENT STUDY

The amount of studies concerning recreational or amateur golfers is significant, only few studies included a sample of professional golfers. This is unfortunate because psychological training for peak performance interests high-level competitors. Hence research is needed on that population. Several sets of factors have been distinguished in the literature: motivational factors, emotional factors and coping strategies. However, even the integrative studies fail to

combine these three categories of factors to better understand psychological functioning and to predict golf performance. This study has three purposes: (1) to provide descriptive data on a population poorly explored: professional golfers; (2) to study differences between players who competed for the whole tournament and players who were excluded after two days of competition; and (3) to investigate possible psychological predictors of golf performance. We conducted a study on 41 male professional golfers. Based on previous studies, several motivational variables (achievement goals, perceived competence), emotional reactions (pre-competitive state anxiety) and coping strategies (relaxation, imagery, emotional control, attentional control, negative thoughts and self-talk) were assessed the day before an important competition. The relationships of these variables with two performance indicators (cut success, final ranking) were subsequently examined.

The motivational factors, we expected that the best golfers would present higher mastery-approach and performance-approach goal, higher perceived competence and would present higher use of coping strategies, in particular attentional control, self-talk and imagery. Eventually we anticipated that the best golfers would display lower somatic and cognitive anxiety and higher self-confidence.

METHOD AND PARTICIPANTS OF GOLFERS

Forty-one male professional golfers (M_{age} = 28.8, ± 5.75) volunteered for this study. These players had been professionals for 3.68 years (± 3.42) and practiced 30.9 hours (± 14.1) a week.

SEVERAL PSYCHOLOGICAL FACTORS OF GOLF PERFORMANCE

This study was part of a larger project in collaboration with the French Golf Federation. As the goal of the study was the examination of several psychological factors of golf performance and their consequences for professional golfers, we chose to focus on an important event: the Open of Bordeaux, which is the first stage of the French professional tour. This competition opened the season 2004 and lasted 4 days (*i.e.*, 72 holes stroke play, 18 holes a day, cut after the second round). As it is the case for professional tournaments, the cut after two days of competition, which is a selection procedure, enabled the first 50 placed competitors to stay in the tournament, excluding the rest of them. In the present study we labelled "successful golfers" the players who made the cut and hence competed for the entire competition whereas the adjective "unsuccessful" was used for players eliminated after two days of competition.

All the golfers were informed prior to the competition that they would be presented with a questionnaire on their attitudes during competition. Players were contacted the day prior the competition to fill out the questionnaire. They were informed that the questionnaire was not anonymous so that the data

concerning their subsequent performance could be collected and that this information would only be accessible to the researchers of the study and treated consistently within the ethical guidelines of the university of the second author.

MEASURES

Achievement goals. A French version of the Achievement Goals Questionnaire for Sport, the "Approach and Avoidance Questionnaire in Sport and Physical Education" was used to assess situational achievement goals. Grounded on the 2 ´ 2 achievement goal framework, the scale consists of 12 items divided into 4 sub-scales: 3 items assessed mastery-approach goal (*e.g.*, "It is important to me to perform as well as I possibly can"), mastery-avoidance goal (*e.g.*, "I worry that I may not perform as well as I possibly can"), performance-approach goal (*e.g.*, "It is important to me to do well compared to others"), performance-avoidance goal (*e.g.*, "I just want to avoid performing worse than others"). Responses were indicated on a 7-point Likert-type scale ranging from (1) "not at all like me" to (7) "completely like me". Construct validity and reliability of this scale were supported in previous research using French or English samples.

Perceived competence. To assess perceived golfing ability, a questionnaire similar to the one developed by Nicholls and colleagues was used. Due to the length of the questionnaire, only two items of the scale were used in this study. ("When you are golfing and you compare yourself to most of the other golfers, you consider yourself..."; "I feel that my level in golf is…"). Responses were indicated on an 8-point scale ranging from (1) "very bad" to (8) "very good". This scale has already been used with French samples and has demonstrated good construct validity, internal consistency and predictive validity. The correlation between the two items was high ($r = .68$, $p < .001$), and the answers of the participants to these two items were averaged.

Performance strategies. The French version carried out by Debois, Quillet, Sylvestre, and Calmels of the Test of Performance Strategies was used. This 64-item questionnaire assesses 16 psychological skills and strategies used either in competition or during practice. In this study we retained only 6 dimensions of the competition setting. This selection was made in line with previous studies, which also chose to focus on the most commonly cited psychological strategies. Three items per variable were used to assess relaxation (*e.g.*, "I am able to relax if I get too nervous at competition"), imagery (*e.g.*, "I visualize successful past performances"), emotional control (*e.g.*, "In competition my emotions prevent me from playing my best", inversed form), attentional control (*e.g.*, "In competition, I am able to control my negative thoughts"), negative thoughts (*e.g.*, "In competition, I have negative thoughts") and self-talk (*e.g.*, "I talk positively to myself to get the most out of competition") strategies. Responses were indicated on a 7-point Likert-type scale ranging from (1) "never" to (7) "always".

This scale has been consistently used in the past and has demonstrated good psychometric properties. Thomas et al. reported Cronbach alpha coefficients ranging from .73 (attentional control) to .80 (self-talk) for the six dimensions used in the present study.

Emotional reactions. The French version of the "Competitive State Anxiety Inventory-2" was used. This 27-item scale is a self-report instrument designed to measure cognitive (9 items) and somatic (9 items) states of anxiety, as well as self-confidence (9 items). In this study 10 items were selected to assess the three dimensions: 3 items for cognitive state anxiety (*e.g.*, "I am concerned about performing poorly"), 4 items for somatic state anxiety (*e.g.*, "I feel tense in my stomach") and 3 items for state self-confidence (*e.g.*, "I am confident about performing well"). This scale has been used with French samples and has demonstrated good construct validity, internal consistency and predictive validity.

Performance. The player's success/failure at the cut procedure served as the first performance indicator. His ranking at the end of the tournament was used as a second indication of his performance.

DESCRIPTIVE STATISTICS AND DATA ANALYSIS

Descriptive statistics were first performed. Analysis of variance was then used to investigate the differences between players who made the cut and players who did not.

Since there is no necessary relationship between the results of univariate and multivariate tests of the same hypothesis and since univariate *F* tests alone do not reflect the discriminating power that the variables may share, a discriminant analysis was also used as a means to see which variable(s) could discriminate the same two groups. Eventually, multiple regression analysis was used to predict players' ranking at the end of the tournament.

DESCRIPTIVE STATISTICS

Means, standard deviations and Cronbach alphas of all the variables assessed in this study. Alpha coefficients were in general satisfying, ranging from.59 to.95. Only mastery-approach goal presented a Cronbach coefficient of.32 and was therefore excluded from subsequent analysis. The correlation matrix between the studied variables.

DISCRIMINANT ANALYSIS OF PLAYERS

In order to discriminate between players who made the cut and players who failed to, we used discriminant analysis (DA). Due to the high number of variables with regard to the number of subjects we used a similar procedure to the one used by Highlen and Bennett. First, an overall DA using all 13 variables was conducted to obtain each subject's discriminant score. These scores were then correlated with each subjects' raw scores on each of the 13 variables. The choice of the variables to enter into the subsequent DA was determined by rank-order magnitude of these correlations.

To meet the recommended 5:1 subject to variable ratio, only the top 8 variables were considered. This resulted in the introduction of the following variables: somatic and cognitive anxiety, attentional and emotional control, performance-approach goal, relaxation strategies, performance-avoidance goal and self-talk.

DA showed that the two groups could be distinguished significantly: Wilks ë =.55, $\div^2$ (8) = 21.15, p <.01. The discriminant function had an eigenvalue of.83 and a canonical correlation of.67. Overall, 80.5% of the total sample could be correctly classified, which is superior to a random assignment based on prior group membership probabilities. Since in DA, loadings > |0.30| are considered to be substantial, the discriminant function represents six variables that substantially contribute to differentiating the two groups. Players who made the cut are characterized by higher performance-approach goal, somatic and cognitive anxiety, relaxation strategies and emotional control strategies. They also tended to have lower performance-avoidance goal.

REGRESSION ANALYSIS OF PREDICTING PERFORMANCE

Regression analysis was used to test whether variables that discriminated players who made from players who failed the cut could predict their ranking. The six variables that were significant in the DA were regressed on performance. The regression was significant: F (6, 34) = 8.28, p <.001, R² =.59. Cognitive anxiety (â =-.57, p <.001) and emotional control strategies (â =-.44, p <.05) significantly predicted performance, relaxation strategies (â =-.28, p =.07) had a marginal significant effect. The higher the scores on those variables, the better was the performance.

DISCUSSION OF PERFORMANCE INDICATORS

The goal of this study was to provide information on an under-explored population: professional golfers. Players completed a questionnaire the day before the beginning of an official competition of the French professional tour. Performance indicators (*i.e.*, cut success/failure, ranking) were then collected at the end of the competition. These variables were subsequently used to see which types of psychological characteristics were related to performance. An examination of the cut result on the variables assessed was first conducted. Discriminant function analysis was then used to examine which variables contributed the most to differentiate players who made the cut from those who failed to. Lastly, a regression analysis was used to predict players' ranking.

Investigating the cut effect revealed significant differences between players who competed for the whole tournament and players excluded after two days of competition. Most successful players presented higher scores on performance-approach goal, cognitive and somatic anxiety, emotional control and attentional control. The results of the discriminant function analysis revealed that six variables significantly discriminated successful from unsuccessful players. Successful players were characterized by higher scores on performance-approach goal, cognitive and somatic anxiety, relaxation strategies and emotional control strategies and lower score on performance-avoidance goal. Lastly, regression analysis highlighted three predictors of performance among the six variables identified in the discriminant function analysis. The more athletes presented high levels of cognitive anxiety, frequent use of relaxation strategies and

strategies of emotional control, the better their performance was. This regression accounted for 59% of the variance of players' ranking. With regard to motivational characteristics, the finding that the best performing players have higher performance-approach goal is consistent with our hypothesis, as well as with the achievement goal literature which posits that high level athletes present high scores on the performance-approach goal. Hence, trying to demonstrate his/her competence to others seems to constitute a powerful source of motivation for elite athletes. The results also show that the players excluded after two days of competition tended to have higher performance-avoidance goal. An excessive focus on avoiding the demonstration of normative incompetence seems to be inimical for performance, a result conform to achievement goal literature and a past study.

Conversely, the results concerning perceived competence are rather unexpected. This variable neither varied in relation to the cut success/failure nor discriminated those two groups. This is surprising because perceived competence is likely to affect the type of goal pursued by athletes, with high perceived competence related to performance-approach goal whereas low levels of perceived competence are more associated with avoidance performance goal. It might be that our sample was quite homogenous since all the participants were professionals, and the instrument used was not appropriated to this population. Specific tools for elite athletes such as the one used by Marsh and Perry should be used in future studies. Moreover, Mallet and Hanrahan also stressed the mediator role of perceived competence in the motivational process, in understanding the type of motivation that energizes elite athletes. In our study, performance-approach and performance-avoidance goals significantly appeared although perceived competence did not. Hence it might be that performance goals vary in this study depending on other processes or variables.

Our results regarding anxiety do not support our hypothesis and are inconsistent with the golf literature since those studies generally failed to find a link between pre-competitive anxiety and performance. They are also rather inconsistent with studies on elite athletes' characteristics that either found no specific differences regarding anxiety between successful and less successful athletes or indicated lower levels of anxiety for the best athletes.

In the present study, players who made the cut were cognitively and somatically more anxious before the beginning of the competition. This result contradicts the MAH that propose an increase in cognitive anxiety is always deleterious for performance.

They nevertheless support findings by Jokela and Hanin, by Hardy and by Hanton and Jones, who found that increases in cognitive anxiety did not necessarily lead to impaired performance. They are also in agreement with qualitative studies showing that among elite swimmers higher levels of anxiety could be related to higher performance if they interpreted the intensity of their anxiety symptoms as facilitative. One has to note that the mean scores of cognitive and somatic anxiety were not very high in our study, since the

maximum value approximated 4 with a scale ranging from 1 to 7. The intensity of the most performing players is therefore only "moderate". Perhaps very good golfers do not want to feel too relaxed prior to performance and want to feel moderately worried, and interpret these symptoms as facilitative. Future studies should consider this eventuality by assessing both intensity and direction of anxiety.

The regarding self-confidence do not support our hypothesis and are not consistent with the existing literature. Nevertheless, the correlation ($r = -.27$, $p = .09$) between self-confidence and performance (*i.e.*, players' ranking) is consistent with the literature although it does not reach significance. The size of our somewhat limited sample may explain why the correlation does not reach significance. Moreover, it might be that self-confidence does not discriminate successful and unsuccessful players because it is correlated with more proximal variables of performance, that are more powerful in this function.

CERTAIN PERFORMANCE STRATEGIES

Players who completed the cut selection also reported higher use of certain performance strategies. In particular, the best achievers in this competition used more relaxation strategies, attentional control and emotional control which is consistent with our hypothesis. This result is of great interest and seems to indicate that even elite golfers are discriminated by the use of those strategies that could reflect better competencies to manage emotions and anxiety. Consistent results were found by Hanton and Jones with elite swimmers. Using in-depth interviews these authors demonstrated that elite swimmers used relaxation strategies (either physical or mental) as well as other forms of mental skills (*i.e.*, internal focusing, thought and feeling control) that could be related to emotional control and relaxation strategies. Although the terms are labelled differently, Gould et al. in their study of Olympic champions also reported an ability to cope and control anxiety. The notion of "handling with distractors" proposed by Orlick and Partington also supports the competence of emotional and attentional control. In summary, although the terms are often different, previous studies on elite athletes support the findings of this study in relation to relaxation, attentional control and emotional control strategies.

Imagery, self-talk, and negative thoughts neither were found to discriminate successful and unsuccessful players nor predicted performance. For negative thoughts this may be due to the selection procedure in the discriminant analysis because its correlation with performance is consistent with our prediction and indicates that less presence of negative thoughts is associated with better performance. This is in line with previous studies. For imagery strategies and self-talk, the results do not support previous findings. As proposed above, this might be due to shared variance with other strategies more correlated with performance: once the effects of these strategies are controlled, the influence of imagery and self-talk cannot explain more variance. However, the relatively high score of the players (respectively 5.14 and 5.25 for imagery and self-talk

on a scale ranging from 1 to 7) indicate a rather frequent use of these strategies consistently with other studies on elite athletes. Due to the design of the study, some limitations have to be mentioned. The goal of the study was to focus on a population that is difficult to explore: professional golf players. Although we managed to access this under-explored population, the sample size is somewhat limited, from a statistical point of view, and therefore the results must be interpreted cautiously. Secondly, we used a cross-sectional design that did not enable us to shed light on the consequences of goal performance. A field study using a longitudinal design should be used in the future. Another limitation concerns the absence of a variable in this study: mastery-approach goal. Although it was assessed, the low internal consistency observed resulted in its exclusion from subsequent analysis. This was unfortunate because some studies propose that elite athletes are motivated both by performance-approach and mastery-approach goals, a result we were unable to replicate. Similarly, it was decided not to use all the dimensions assessed by the Test of Performance Strategies, to keep the length of the questionnaire reasonable. Hence, dimensions such as goal setting, automaticity or practice strategies were not assessed. Lastly, some dimensions presented low internal consistencies and therefore some results have to be interpreted cautiously.

The best achievers can be discriminated from lower achievers on the basis of their psychological characteristics. Our results indicate that most successful athletes were more cognitively and somatically anxious, used more frequently relaxation strategies, attentional control and emotional control and pursued more performance-approach goal and less performance-avoidance goal. It was also found that 59% of the variance of players' ranking could be explained by some of these psychological factors. It appears that anxiety could be beneficial for performance to the extent that players possess the competencies to manage the affects related to this anxiety. In terms of application, this result contributes to the identification of the most efficient mental skills.

7

Physical Education, Sport and Academic Achievement

Bailey discussed physiological changes relevant to a prospective relationship between Physical Education and sport and academic performance. He explained that it has been suggested that by increasing blood flow to the brain, Physical Education and sport may enhance mood, mental alertness and self-esteem. 'The evidence base of such claims is varied and more research is still required. However, existing studies do suggest a positive relationship between intellectual functioning and regular physical activity, both for adults and children'. Effects rather than the underlying mechanisms are arguably of greater interest here.

Results of a sustained study undertaken in the United States of the relationship between the time students spent in Physical Education and academic performance were published in 2008. Carlson et al identified that grade-point averages, scores on standardised tests can be regarded as direct indicators of academic achievement and that grades in specific courses; measures of concentration, memory, and classroom behaviour can be deemed indirect indicators. Their study was a longitudinal study of students in kindergarten through to fifth grade, and involved a nationally representative sample group. Measurement of academic achievement was a standardised test administered at 5 time points. Time spent in physical education was ascertained and used as a basis for categorising children as involved in low, medium, or high amounts of physical education.

Academic achievement in terms of performance in mathematics and reading tests was scored on an item response theory scale. Gender differences were

observed in this research. For girls, there was some evidence of a positive association between time engaged in physical education and academic achievement: Girls in all grades who were in the low physical education category had the lowest IRT scale scores for mathematics and reading, although only in kindergarten and first grade were these differences significant for reading and mathematics. In fifth grade differences were significant for reading only. No association between time engaged in physical education and academic achievement was found for boys. Similar results arose when the researchers pursued longitudinal associations. From kindergarten through fifth grade, girls with the highest exposure to physical education scored on average 2,4 points higher on the IRT reading scale and on average 1,5 points higher on the IRT mathematics scale than did those in the low physical education category. Again, no association was found for boys.

Carlson *et al* concluded that their study supported other research in identifying that time spent in physical education does not adversely affect academic achievement and that 'fear of negatively affecting academic achievement does not seem to be a legitimate reason for reducing or eliminating programmes in physical education'. Further, the findings for girls suggest that more time in physical education, may have a positive impact on academic performance. Similarly, Bailey concluded that: Overall, the available research evidence suggests that increased levels of physical activity in school-such as through increasing the amount of time dedicated to PES-does not interfere with pupils' achievement in other subjects and in many instances is associated with improved academic performance. The QCA's report on the PESS project in England has provided further positive indications in relation to these issues. Specifically, the QCA reported that the targeted investments in Physical Education and Sport have positively impacted upon student attainment in Physical Education at the end of primary schooling and in terms of examination course results in Physical Education and dance.

As the QCA have acknowledged, attributing broader academic improvement to participation in PESS is problematic, but the indications of impact arising in the project are nevertheless encouraging. Specifically, all of the schools involved in the PESS investigation from the outset have seen improvements in their national curriculum test and GCSE results. Many school principals feel that PESS has had a significant impact on learning achievements across the curriculum and teachers have reported improvements in students' confidence, concentration and achievement. Improvements in all of these respects are clearly fundamental to advancing student learning and are relevant to students' social well-being.

THE FORMATION OF NATIONAL IDENTITY

In addition to the social practices that contribute actively to a nation's image, national cultures are characterized by competing discourses through which people construct meanings that influence their self-conception and behaviour.

These discourses often take the form of stories that are told about the nation in history books, novels, plays, poems, the mass media, and popular culture. Memories of shared experiences-not only triumphs but also sorrows and disasters-are recounted in compelling ways that connect a nation's present with its past. The construction of a national identity in large part involves reference to an imagined community based on a range of characteristics thought to be shared by and specific to a set of people. Stories and memories held in common contribute to the description of those characteristics and give meaning to the notion of nation and national identity. Presented in this way, nationalism can be used to legitimize, or justify, the existence and activities of modern territorial states.

Sports, which offer influential representations of individuals and communities, are especially well placed to contribute to this process of identity formation and to the invention of traditions. Sports are inherently dramatic. They are physical contests whose meanings can be "read" and understood by everyone. Ordinary citizens who are indifferent to national literary classics can become emotionally engaged in the discourses promoted in and through sports. Sometimes the nationhood of countries is viewed as indivisible from the fortunes of the national teams of specific sports. Uruguay, which hosted and won the first World Cup football championship in 1930, and Wales, where rugby union is closely woven with religion and community to reflect Welsh values, is prime examples. In both cases national identity has been closely tied to the fortunes of male athletes engaged in the "national sport." England's eclipse as a cricket power is often thought, illogically, to be symptomatic of a wider social malaise. These examples highlight the fact that a sport can be used to support, or undermine, a sense of national identity. Clifford Geertz's classic study of Balinese cockfighting, Deep Play: Notes on the Balinese Cockfight, illustrates another case in point. Although Balinese culture is based on the avoidance of conflict, men's identification with their birds allows for the vicarious expression of hostility.

PATRIOT GAMES

By the beginning of the final decades of the 19th century, sports had become a form of "patriot games" in which particular views of national identity were constructed. Both established and outsider groups used and continue to use sports to represent, maintain, and challenge identities. In this way sports can either support or undermine hegemonic social relations. The interweaving of sports and national identity politics can be illustrated with several telling examples. In 1896 a team of Japanese schoolboys soundly defeated a team of Americans from the Yokohama Athletic Club in a series of highly publicized baseball games. Their victories, "beating them at their own game," were seen as a national triumph and as a repudiation of the American stereotype of the Japanese as myopic weaklings. Similarly, the "bodyline" controversy of the 1932-33 crickets Test series between Australia and England exemplifies the convergence of sports and politics.

At issue were the violent tactics employed by the English bowlers, who deliberately threw at the bodies of the Australian batsmen in order to injure or intimidate them. The bowlers' "unsporting" behaviour raised questions about fair play, good sportsmanship, and national honour. It also jeopardized Australia's political relationship with Great Britain. So great was the resulting controversy that the Australian and British governments became involved. Arguably, one consequence was the forging of a more independent attitude in Australians' dealings with the British in the political, economic, and cultural realms. The Soviet Union's military suppression of reformist efforts to create "socialism with a human face" in Hungary and in Czechoslovakia were followed by famous symbolic reenactments of the conflicts in the form of an Olympic water-polo match and an ice hockey encounter. In both cases, sports were invested with tremendous political significance, and the Soviet team's defeat was seen as a vindication of national identity.

NATIONAL CHARACTER

In each of these examples, a historical legacy was invoked, past glories or travesties were emphasized, and the players were faced with maintaining or challenging a set of invented traditions. This link between sports, national culture, and identity can be extended further. Some sports are seen to encompass all the qualities of national character. In the value system of upper-class Englishmen, for example, cricket embodies the qualities of fair play, valour, graceful conduct, and steadfastness in the face of adversity. Seen to represent the essence of England, the game is a focus of national identification in the emotions of upper-class males. Moreover just as Englishness is represented as an indefinable essence too subtle for foreigners to comprehend so too are the mysteries of cricket deemed to be inscrutable to outsider. In a similar manner, bullfighting has been portrayed in the visual and the verbal arts as a material embodiment of the Spanish soul, Gaelic football is thought to be an expression of an authentic Irishness, and sumo wrestling is said to represent the indefinable uniqueness of Japanese culture.

TRADITIONS AND MYTHS

National culture and identity are also represented by an emphasis on origins, continuity, tradition, and timelessness. For most English people, for example, the origins of their culture and national identity seem to be lost in antiquity. Englishness is taken for granted as the result of centuries of uninterrupted tradition. This emphasis on continuity is strikingly evident in sports contests between nations. Accordingly, when teams from England and Scotland compete, they are characterized as "auld enemies." That political institutions are also imbued with a sense of venerable tradition is easily exemplified in the pageantry that surrounds the English monarchy. Yet the traditions associated with both the monarchy and sports are not as old as claimed. Indeed, both appear to be based on foundational myths-that is, on myths that seek to locate the origins of a nation, a people, or a national character much earlier in time and place than the evidence supports.

Baseball, which for a century was considered to be the "national game" of the United States, is a case in point. Instead of tracing the origins of the game to its English roots in children's games such as cat and rounders, Americans accepted the addled recollections of a lone octogenarian and credited Abner Doubleday with having invented a game that he may never have played. Similarly, Italians use the word calcio to describe the sport known to the rest of the world as "association football," as "soccer," or simply as "football". The use of calcio implies that the origins of modern football can be traced to Renaissance Italy. Sumo provides another striking example of invented tradition. The colourful traditional costume worn by sumo officials suggests that the sport has evolved almost unchanged since the 11th century, but the costume was actually devised in 1909 during a period of intense nationalism. The role sports play in the interaction of culture and national identity is sometimes viewed as inherently conservative.

Some believe that the association of sports with nationalism goes mere patriotism and becomes chauvinistic and xenophobic. The behaviour of football hooligans at international matches lends support to the argument. On the other hand, sports also have contributed to liberal nationalist political struggles.

One frequently cited example is the 19th-century Slavic gymnastics movement known as Sokol. Gymnastic clubs in what is now the Czech Republic, Slovakia, and Poland were in the forefront of the struggle for national liberation from Austrian and Russian rule. A similar role was played by Algerian football clubs when they became centres of resistance to French colonialism. Sports-through the use of nostalgia, mythology, invented traditions, flags, anthems, and ceremonies-contribute greatly to the quest for national identity. Sports serve to nurture, refine, and develop the sense that nations have of themselves.

Yet, in the context of global sports, this role has become increasingly contradictory. In introducing people to other societies, global sports strengthen cosmopolitanism even as they feed ethnic defensiveness and exclusiveness. For example, the development of cricket in South Asia reflects that region's imperial past and postcolonial present, but the game has taken on uniquely Indian, Pakistani, and Sri Lankan attributes far removed from the pastoral values associated with the English village green.

AN ESSENTIAL FOUNDATION FOR LIFELONG PHYSICAL ACTIVITY

Physical Education represents a 'window of opportunity' not merely for an immediate involvement in activity, but also for the development of skills, knowledge, understandings, values and attitudes that underpin children's ability to access and enjoy physical activity and sport in childhood and in later life. Bailey's review stressed the need to consider the consequences of children not developing what we might term basic physical and movement literacy and specifically acknowledge that children face the prospect of exclusion from physical activity and sport thus denying them of the physical, social and

emotional benefits that can arise from participation. Physical Education can be invaluable in providing for the structured development of movement skills that are fundamental to participation in physical activity and sport. The widespread development of Fundamental Motor Skills programmes across Australia and internationally has been directed to precisely this outcome.

The work just published by Bailey *et al* reaffirmed that 'there is suggestive evidence of a distinctive role for PESS in the acquisition and development of children's movement skills and physical competence'. Bailey *et al* also stated that 'It can be argued that these are necessary, if not deterministic conditions of engagement in lifelong physical activity'. But as Bailey previously identified, further research is needed to explore the extent to which Physical Education positively influences patterns of participation in physical activity and sport during and beyond the school years.

Bailey reported that while there is some evidence pointing to the likely maintenance of health-related behaviours that are established in childhood, evidence relating to the maintenance of physical activity patterns overtime is mixed. Physical Education and school sport will ultimately be one influence among many that can impact positively or negatively upon current and long-term patterns of behaviour and participation in physical activity and sport. An ongoing challenge for all physical educators is to seek to ensure that all children feel that they are valued in physical education, physical activity and sport contexts.

THE MEANING AND OBJECTIVES OF PHYSICAL EDUCATION

The term *physical education* takes on a new meaning after a consideration of the word *education*. The word *physical* refers to the body. It is often used in reference to various bodily characteristics such as *physical* strength, physical development, physical prowess, physical health and physical appearance. It refers to the body as distinct from the mind. Therefore, when you add the word *education* to the word *physical* and use the words *physical education*, you are referring to an educational process concerned with activities which develop and maintain the human body.

When an individual is playing run sheep run, swimming in the pool, dancing in the gymnasium, skating on the pond, or performing any of the activities which aid in the development and maintenance of his body, education is taking place. This education may be conducive to the enrichment of the individual's life, or it may be detrimental. It may be a satisfying experience, or it may be an unhappy one. It may help to achieve educational objectives, or it may result in antisocial behaviour. Whether or not physical education helps or inhibits the attainment of educational objectives depends to a great extent upon the leadership that is responsible for its direction. Physical education is a very important part of the general educational process. It is not a frill or an appendage to the school programme. It is, instead, a vital part of education. It can be defined as follows:

physical education an integral part of the total education process, is a field of endeavor which has as its aim the development of physically, mentally, emotionally, and socially fit citizens through the medium of physical activities which have been selected with a view to realizing these outcomes.

The aim of all education is to enable one to live an enriched and abundant life. This is the ultimate goal on which all who are concerned with education have trained their sights. The objectives or physical education are more definite and specific than this aim, and through these objectives, the ultimate goal is brought nearer to realization.

A study of the child reveals four general directions or phases in which growth and development takes place: physical development, skill development, mental development, and social development. Each of these phases contributes to the making of a wellrounded individual who will become a worthy member of society. Physical education can play a very important part in contributing to each of these phases of child growth and development. Physical education will prove its vital importance as a part of the educational process if it can accomplish these objectives.

Physical Development Through Directed Play: Play excels as a contributor to the health and physical development of the child. It is essential to optimum physical development—to a healthy heart, lungs, and other organs of the body—and to the development of such characteristics as strength, endurance, agility, speed, and accuracy. All are essential to a healthful, vigourous, and satisfying life.

The physical development objective is concerned with the programme of activities which builds physical power in an individual. It results in the ability to sustain adaptive effort, recover, and resist fatigue. The value of this objective rests on the premise that a person will be more active, have better performance, and be healthier if the organic systems of the body are adequately developed and functioning properly.

Exercise plays an important part in the development of the organic systems of the body. The term *organic* refers to the digestive, circulatory, excretory, heat regulatory, respiratory, and other systems of the human body. These systems are stimulated through activities which involve such basic movements as hanging, climbing, running, throwing, leaping, carrying, and jumping. The activity should be of a vigourous nature so that the various organic systems are sufficiently stimulated.

Through regular, vigourous exercise several beneficial results are achieved. The heart beats slower and provides better nourishment to the entire body. It pumps more blood per stroke, hence more food is delivered to the cells and there is better removal of waste products. There is a longer rest period between beats. After exercise it returns to normal much more rapidly. As a result, a person who exercises regularly over an extended period is able to perform work for a greater length of time, with less expenditure of energy, and much more efficiently. This trained condition is necessary to a vigourous and abundant life because from the time a person rises in the morning until he goes to bed at night

he is continually in need of vitality, strength, endurance, and stamina to perform routine tasks, to be prepared for emergencies, and to lead an active life.

This objective is especially important for the elementary school child. This is his formative period. Play is his work—it helps him to grow and develop, to build the sound organic base which is so essential to a healthy and vigourous existence. According to some recent studies, American children are soft compared to European youngsters. Although the evidence is not conclusive, there is a danger of young people getting soft because all of the laborsaving devices and other gadgets that modern technology is giving this country tend to result in a lack of sufficient physical activity necessary to develop strong, flexible bodies. The possibility of a weak youth has attracted the attention of many doctors, educators, and even the President of the United States. There is a growing urgency to do everything possible to build a strong, physically fit youth. Elementary school teachers, in particular, should realize the importance of this objective and strive to organize and administer physical education programmes which fulfill this important need.

Skill Development Through Directed Play: The skill development objective is concerned with performing various physical movements with as little expenditure of energy as possible in a proficient, graceful, and aesthetic manner. This has implications for one's work, play, and anything else which requires physical movement.

Effective skill is dependent upon a harmonious working of the muscular and nervous systems. It allows for peak performance over fairly long periods of time; it is needed in activities involving running, hanging, jumping, dodging, leaping, kicking, bending, twisting, carrying and throwing; and it enables one to perform his daily work much more efficiently and without tiring too quickly.

In physical education activities, the function of efficient body movement, or neuromuscular skill as it is often called, is to provide the individual with the ability to perform with a degree of proficiency. Among other benefits, it will result in greater enjoyment of participation. Most persons enjoy doing those things in which they have acquired a degree of mastery or skill. For example, if a child has mastered the ability to throw a ball consistently to a designated spot and has developed batting and fielding power, he will like to play baseball or softball. If he can swim 25 or 50 yards without tiring and can perform several advanced dives, he will enjoy being in the water. If he can dance the tango, waltz, or cha cha cha, he will like to get out on the dance floor. A person enjoys doing those things in which he or she excels. On the other hand, people do not enjoy participating in activities in which they have little or no skill. Therefore, it is an objective of physical education to develop in each child as many physical skills as possible so that his interests will be wide and varied. This will not only result in more enjoyment for the participant, but at the same time will allow for better individual adjustment to groups.

Physical skills are not developed in one easy lesson. It takes years to acquire coordinations, and the most important period of their development is during

the formative years of a child's growth. The building of coordinations starts in childhood when an individual attempts to synchronize his muscular and nervous systems for such things as creeping, walking, running, and jumping. A study of kinesiology shows that many muscles of the body are used in even the most simple coordinated movements. Therefore, in order to obtain efficient motor movement or skill in many activities, it is necessary to start training early in life and continue into adulthood. Furthermore, a child does not object to the continual trial and error process of achieving success in the performance of physical acts. He does not object to being observed as an awkward, uncoordinated beginner during the learning period. Most adults, however, are very self-conscious when going through the period of learning a physical skill. They do not like to perform if they cannot perform in a creditable manner. As a result, the skills they do not acquire in their youth are many times never acquired. Therefore, the classroom teacher and the physical education teacher should do everything possible to ensure that much skill-learning takes place when a person is young, willing, and laying the foundation for adult years.

Mental Development Through Directed Play: Children develop mentally when they play. This is sometimes hard for educators and parents to understand. Through play youngsters gain knowledge, learn to reason and make judgements, and develop other intellectual powers. Gesell points out how much children learn and develop through their play. Many observing parents and teachers have noticed it while they watched boys and girls in action. Babies learn that a ball will *bounce* but a block won't. If you *push* some toys a *bell* will *ring*. When you chew on a spoon it is *hard* and *cold*, but a Teddy Bear's foot is *soft* and *fuzzy*. Through trial and error in play children learn many basic facts. Parents often take these things for granted because this knowledge is so fundamental. But these symbols have to be mastered-a child isn't born with them. Many other mental concepts are developed through play. Young children learn simple arithmetic in rope jumping: "Mary, after the rope turns *four* times, you run in and take *ten* jumps." When the boys plan a softball diamond they must *compute angles* and handle *measurements*. The baseball team uses *percentages* in figuring batting *averages*. Children dance and march in *circles, squares, rectangles*, and *parallel lines*. Every activity has a learning situation, if the proper leadership is present to bring it out.

The individual also acquires knowledge about games. Such things as rules, techniques, and strategies are learned. Basketball can be used as an example. In this sport the participant should know the rules, the strategy in offence and defence, the various types of passes, the difference between screening and blocking, and finally the values that are derived from playing the sport. Techniques which are learned through experience result in knowledge. For example, a ball travels faster and more accurately if one steps with a pass, and time is saved when the pass is made from the same position in which it is received. Furthermore, a knowledge of followership, leadership, courage, self-reliance, assistance to others, safety, and adaptation to group patterns is very important.

Knowledge concerning health should play an important part in the programme. All individuals should know about their bodies, the importance of disease prevention, exercise, sanitation, need for a well-balanced diet, and the values of good health habits and attitudes. This knowledge will contribute greatly to physical prowess as well as to general health. Through the accumulation of a knowledge of these facts, activities will take on a new meaning and health practices will be associated with definite purposes. This will help each individual to live a healthier and more purposeful life A store of knowledge will give each individual the proper background for interpreting the new situations which inevitably confront him from day to day. Unless there is knowledge to draw from, he will become helpless when called upon to make important decisions.

Social Development Through Directed Play: The child's social development is greatly advanced through play. Many times he forms his values, ideals, and standards from those utilized and practiced by his teachers and playmates. Directed play should provide suitable social relationships between the child and his playmates and teacher. Constructive behaviour patterns of helpfulness, kindness, truthfulness, justice, and sociability should result. Individual qualities such as aggressiveness, ambition, perseverance, and courage should be directed so they will not become objectionable. They can be disciplined through play. Good manners, courtesy, truth-fulness, consideration for others, and a belief in the golden rule are worthy objectives which can be accomplished. Properly guided play does not give the child an opportunity to develop antisocial qualities. As Adler in his book *Under-standing Human Nature* says, "The manner in which a child approaches a game, his choice and the importance he places upon it, indicates his attitude and relationship to his environment and how he is related to his fellowmen."

The teacher who plays with her children can be a very influential person in shaping their character development. In play she observes them in their most natural state. The personality of the child is displayed in his play reactions. When he misses a ball is he always looking for an excuse? "Tom threw it too hard." "It wasn't anywhere near me." When he is about to be tagged in a running and fleeing game does he "accidentally on purpose" fall down? If he is poor at some particular activity or skill, does he project his defence on others. "Sam can't play as well as I can even if I can't hit the ball." Many individual traits or characteristics may be identified through play. Many can also be corrected by the wise and understanding teacher. The teacher, however, must avoid planning activities for play which are too complex. If the play requires skills beyond the capacity of the child, the challenge may appear too great and he will retreat. The same might be true if attainable results are too elementary and have no challenge. He may retreat from the group and choose something for himself which offers more of a challenge.

All human beings should experience success. This factor can be realized through play. Through successful experience in play activities, a child develops

self-confidence and finds happiness in his achievements. Physical education can provide for this successful experience by offering a variety of activities and developing the necessary skills for success in these activities.

If children are happy, they will make the necessary adjustments. An individual who is happy is much more likely to make the right adjustment than the individual who is morbid, sullen, and in an unhappy state of mind. Happiness reflects friendliness, cheerfulness, and a spirit of cooperation, all of which help a person to be content and to conform to the necessary standards which have been established. Therefore, physical education should instill happiness by guiding children into those activities where this quality will be realized.

In a democratic society all individuals should develop a sense of group consciousness and cooperative living. This should be one of the most important objectives of the physical education programme. Whether or not a child will grow up to be a good citizen and contribute to the welfare of society will depend to a great extent upon the training he receives during his childhood and youth. In various play activities the following factors should be stressed: aid for the less-skilled players, respect for the rights of others, subordination of one's desires to the will of the group, and realization that cooperative living is an essential to the success of society. In other words, the golden rule should be practiced. The individual should be made to feel that he belongs to the group and has the responsibility of directing his actions in its behalf. The rules of sportsmanship should be developed and practiced in all activities that are offered in the programme. Such things as courtesy, sympathy, truthfulness, fairness, honesty, respect for authority, and abiding by the rules will help a great deal in the promotion of social efficiency. The necessity for good leadership and followership should also be stressed as important to the interests of society.

People's actions can be controlled through proper education. This education can result in effective citizenship, which is the basis of sound, democratic living. Effective citizenship, is not something that can be developed by artificial stimuli. It is something that is achieved only through activities in which individuals engage in their normal day-to-day routines. Since play activities have such a great attraction for children and youth, and since it is possible to develop desirable social traits under proper guidance, physical education should realize its responsibility. It should do its part in contributing to good citizenship—the basis of a democratic society.

PHYSICAL EDUCATION AS A PART OF GENERAL EDUCATION

It can be seen that through the fulfillment of its objectives of physical skill and mental and social development, physical education can contribute a great deal to the whole development and growth process. It is important, however, to be able to see more clearly how this phase contributes to each of the objectives set forth for education in general. For purposes of organization, such a discussion may be grouped under the four headings, which represent the objectives of

general education as set forth by the Educational Policies Commission. By realizing how physical education, as an integral part of education, contributes to the fulfillment of each of there objectives, the teacher will have a clearer conception of how physical education fits into a total integrated educational pattern. The objectives of Self-realization. The objectives of self-realization are aimed at developing the individual so that he realizes his potentialities and becomes a well-adjusted member of society. Physical education can contribute to the objectives of self-realization in many ways.

Contributing to an Enquiring Mind: New and interesting phases of living are opened up to the child through activity. His motor mechanism enables him to explore, to cruise, and to see and discover the nature of many phases of his environment. It stimulates his curiosity.

Contributing to Family and Community Health: Physical education can create, within the student, a realization of his responsibilities for his own health and for the health of others. He comes to realize that health is a product that increases as it is shared with other individuals. He has a responsibility for the health of others in school, at home, and in the community of which he is a part.

Contributing to Knowledge of Health and Disease: Physical education contributes to knowledge by giving the child information as to the importance of such things as nutrition, rest, sleep, and exercise; by instructing him in measures that should be taken to guard against disease; by developing an understanding of why the body needs vigourous outdoor activity; by instilling an appreciation of wholesome health attitudes and habits; by giving him knowledge about the correction of physical defects; by stressing safety factors for the preveation of accidents; and by showing the importance of adequate health services.

Contributing to Resources for Utilizing Leisure Hours in Mental Pursuits: Education is concerned with developing mental resources for the utilization of leisure hours. Physical education contributes by providing the material for interesting sports stories and biographies of great athletes, such as Bob Feller, Jackie Robinson, and Ben Hogan.

In addition to motivating reading, sports can contribute to many interesting hobbies such as designing, building, and caring for equipment, research on the many statistics involved in sports, and a study of various aspects of nature which would be aroused by an interest in sports.

Contributing to Skill As a Participant and Spectator in Sports: Physical education develops skill in many activities. The child, as a result, can enjoy and derive the many advantages that come from actually engaging in a game or other similar experiences. At the same time, an interest and knowledge of other activities is presented so that the value of spectator enjoyment is also enhanced.

Contributing to an Appreciation of Beauty: The educated person develops an appreciation of the beautiful which can be fostered in early childhood. In addition to beauty of architecture, painting, and music, the child should also appreciate the beauty of trees, animals, the sky, and other aspects of the

environment which he meets in his play. He should develop an appreciation for the beauty of his body, and physical movement, which can in sports situations produce the ultimate in grace, rhythm, and coordination.

Contributing to the Direction of One's Life Towards Worth-while Goals: The educated person conscientiously attempts to guide his life in the proper direction. Physical education can contribute to the child's direction during the early formative years by giving guidance as to what is right and proper, which goals are worth competing for, the difference between intrinsic and extrinsic values, autocratic and democratic procedures, antisocial and acceptable conduct. The child is a great imitator, and the beliefs, actions, and conduct of the teacher are often reflected in the beliefs, actions, and conduct of the student.

THE OBJECTIVES OF HUMAN RELATIONSHIPS

Human relationships may be defined as the manner in which individuals get along with each other. Good human relations imply that people live together, work together, and play together harmoniously. Physical education can make a worth-while contribution in this area in the following ways.

Enabling Each Child to Enjoy a Rich Social Experience Through Play: Such an experience can help develop a child's personality by teaching him to adapt to the group situation, by developing proper standards of conduct, by creating a feeling of belonging, and by developing a sound code of ethics. There are limitless possibilities for social experiences in "tag" and "it" games. Here the child learns behaviour traits which are characteristic of a democratic society. Because of his drive for play, he will be more willing to abide by the rules, accept responsibility, contribute to the welfare of the group, and respect the rights of others.

Placing Human Relations First: Activities are planned with the needs and interests of children in mind; rules and regulations exist for the benefit of the players' welfare; the less skilled are given due attention; and the programme is child-centered. If human relations come first, a spirit of good will, fellowship, and cooperation exist.

Teaching Courtesy, Fair Play, and Good Sports-manship: The amenities of social behaviour are a part of the repertoire of every educated person. Such characteristics as courtesy, fair play, and good sportsmanship can be developed in the child as he plays with his classmates and others in game situations.

Helping Children To Play Cooperatively: The physical education programme should stress cooperation as the basis for achieving the goals an individual or group desires. It should also stress leadership and followership traits. The success of any venture depends on good leadership and good workers or followers. Everyone cannot be captain of the relay team. Everyone does not have leadership ability. Those who are good leaders should also be good followers. A leader in one activity might possibly make a better follower in another activity. The important thing is that both leaders and followers are needed for the accomplishment of any enterprise. All contribute to the undertaking. All deserve

commendation for work well done. Cooperation be every member of the group in whatever way each one is best equipped to contribute will insure success for the group endeavor.

Contributing to Family and Home Living: The teacher of physical education is often the individual in whom a child puts his trust and confidence and whom he desires to emulate. The nature of physical education work and its appeal to youth are probably the major reasons for this tendency. Consequently, the teacher in charge of the physical education class should utilize his advantageous position to become better acquainted with the youth and his home and family life. Many times a child's home and parent problems can be helped through such knowledge. Proper counseling and guidance, helping children to experience success in play activities, talks with parents, and home visits are often useful.

THE OBJECTIVES OF ECONOMIC EFFICIENCY

A third objective of education deals with the production and consumption of goods and services. Education has the opportunity of informing children in respect to both the vocational aspects of living and the consumer aspects. Both are important and are necessary for a happy and successful life. Physical education can aid in more efficient production of goods and services and also can aid in the establishment of certain standards which will guide the public in the wise consumption of certain goods.

Recognition of the Need for Good Workmanship: Work is an essential for all individuals. Through work one contributes goods and services to the community of which he is a part. Children should have opportunities to work. As part of their educational training children should be assigned tasks in the home and also in school. In physical education, children could help develop playfields, care for equipment, and instruct those with less skill. Through regular duties, they can discover that they are contributing to the welfare of the group and are providing services, which will help others to enjoy their activity experiences more fully.

Recognition of the Need for Professional Growth: The teacher of physical education should be continually interested in developing new skills, understandings, and an appreciation of the contribution that his area of education can make to child growth and development. Physical education is a growing profession. New awareness and knowledge in the fields of biology, psychology, and sociology are continually evolving which have implications for helping the physical education teacher do the best job possible. Only if the teacher is constantly studying such new developments can he make the greatest contribution to children.

Recognition of the Need for Successful Work: The success of any job depends to a great degree upon the health and physical fitness of the worker. Experience in physical education activities contributes to physical health, mental health, human relations, and other social assets which help to contribute to better work. As each child develops a strong organic base for future years, he becomes prepared to do a better job.

Recognition of the Need for Wise Consumption of Goods and Services: The educated person buys his goods and services with wisdom. He is well informed as to the worth and utility of various goods and services. Physical education helps to develop in children the relative values of goods and services that influence their health and physical fitness. Such things as the need to seek qualified advice in health matters, the dangers of self-medication, and the importance of critical evaluation of advertisements and other material on health cures can be discussed.

THE OBJECTIVES OF CIVIC RESPONSIBILITY

Civic responsi-bility falls upon each member of society. Only as each individual assumes his civic responsibility and contributes to group welfare will democratic ties be strengthened.

Recognition of the Need for Tolerance: It is the prerogative of every person to think out solutions to various problems, form his own opinions, and attempt to bring other around to his point of view. The physical education class can be a placed where tolerance is developed in regard to other people's opinions in the various activities they conduct. Children may be educated to participate intelligently in the discussion of common problems that develop in a game situation. All can be encouraged to contribute their thinking. Thoughts and ideas are respected by all and final settlement of the problem can be made by the group.

Recognition of the Need for Humanitarianism: Children should be well informed as to the needs of mankind everywhere. A humanitarian view of the conditions of mankind should become a part of every student. Physical education can, within limits, provide democratic play experiences in which, children see the importance and value of cooperative living a contributing to the welfare of all.

Here is an ideal setting for developing humanitarian values. Children from all walks of life, all creeds, colours, and races are brought together for a social experience. Interest and natural drive for activity provide a laboratory for actual practice in developing these values.

Recognition of the Need for the Conservation of Natural Resources: Physical education should be especially interested in preserving the natural resources of the nation such as forests, soil, scenic beauty, water and wild life. They have implications for active forms of recreation. Children should understand the value of such resources to the health and physical fitness of the country. Through an educational programme which points out that natural resources are directly related to the welfare of each resident of this country, much good can be done in conserving this form of the nation's wealth.

Recognition of the Need for Civic Responsibility: It is the responsibility of every citizen to have a clear under-standing of his civic duties and to see that they are carried out in an intelligent manner. Physical education can show how games and various aspects of the school programme are analogous in many

ways to what the child's responsibilities will be in an adult community. The importance of selecting good leaders, living according to high standards of conduct, abiding by the rules, and contributing to the welfare of the group are a few examples.

Recognition of the Need for Conformance with the Law. In a democracy laws are made by the people and for their benefit. Obedience is essential to a well-ordered society. Physical education can contribute to the development of a law-abiding attitude in youth. The rules of the game and the rules of safety that have been established for the playground, gymnasium, and other places where activities are held should be made clear to each student. Furthermore, the purpose behind such rules and the individual's responsibility in each case should be understood.

Recognition of the Need for Democratic Living: The educated citizen believes in the democratic way of life and his every action is symbolic of his loyalty to its ideals. Physical education can contribute, together with other areas of the school programme, to making experiences on the playground or in the gymnasium ones where democratic principles prevail and where such important concepts as respect for the individual, the rights of others, and freedom of action are honoured.

PHYSICAL EDUCATION, SPORT AND ATTITUDES TOWARDS SCHOOLING

In relation to attitudes towards schooling, Bailey identified that evidence of Physical Education and sport having any positive influence is limited and has arisen from small-scale studies and/or is based on anecdotal evidence. Bailey also reported, however, that in some studies improvements in attendance have been shown to follow the introduction of Physical Education and sport initiatives, and 'there is evidence from studies of pupils at risk of exclusion from school that an increase in the availability of PES programmes would make the school experience more attractive'. The Physical Education and School Sport project in England, developed by the Qualifications and Curriculum Authority in partnership with primary, secondary, special schools and community sport providers has pursued affective outcomes of PESS. The QCA report that case studies of schools and partnerships have shown that as a result of investing in PESS, 'schools are happier, healthier and more successful: pupils have greater confidence and self-esteem'.

The QCA identified that the greatest strengths identified in students experiencing quality physical education and school sport were: 'commitment, skillfulness, willingness to get involved and enjoyment'. The QCA also reported that development of PESS has been successfully linked to efforts to specifically increase attendance at school and to targeting behavioural issues. Further, all of the schools involved in the PESS investigation are reported to have seen improvements in pupils' confidence, self-esteem, desire to learn, concentration and time on task as a result of investing in PESS.

Afternoon lessons are identified as more productive after an active lunchtime, with less disruption and students ready to learn. The significance of the PESS findings is their relevance to whole schools and all teachers–not only those in Physical Education! There remains, however, a need for caution in relation to claims about psycho-social and attitudinal outcomes arising from Physical Education and sport experiences. It is essential to acknowledge the individuality of experiences and thus, their effect. As Bailey has highlighted, it would be misleading to suggest any assured impact of Physical Education in terms of attitudes towards school and/or learning on the part of all children, simply because provision, and particularly inappropriate provision, can have precisely the opposite outcomes to those intended, including disengagement and/or disillusionment.

PHYSICAL EDUCATION, SCHOOL SPORT AND PHYSICAL ACTIVITY

In both the United States and United Kingdom, initiatives have acknowledged that the contribution that Physical Education lessons can make in relation to recommended physical activity for children is important but needs to be acknowledged as one of a number of contributions needed. Recess, lunchtime and activities organised before and/or after school have been positioned with Physical Education in 'whole school' approach to enhancing physical activity time through the school day and week. Coordinated efforts are undoubtedly crucial if the prospective benefits of participation in Physical Education and school sport are to be realised.

In 2007 Evenson, Ballard, Ginny and Ammerman undertook a research project specifically focusing on the North Carolina State Board of Education's 2005 update to the Healthy Active Children Policy, to include a requirement that all kindergarten through to eighth-grade children receive at least 30 minutes of moderate-to-vigourous physical activity each school day through physical education, recess, and other creative approaches.

Their study provided important insights into the ways in which an extent to which the new requirement was being met and the successes and challenges experienced in implementation. All NC school districts were asked to complete an online survey after the first full year of implementation of the policy in 2007. Of the 106 school districts that completed the survey, 83 per cent reported that the Healthy Active Children Policy was incorporated with their wellness policies and 67 per cent reported it as integral to their school improvement plans.

The 30 minutes of daily moderate to vigourous physical activity required by the NC Healthy Active Children Policy was achieved primarily through recess, physical education, and classroom Energisers for elementary schools. For middle schools, these three components were also the main contributors, with more reliance on physical education and less on recess and classroom Energisers. Based on strategies the survey queried, these data indicate that some districts did not meet the 30-minute physical activity recommendation.

The study also generated notable reports of positive effects of the policy in both elementary and middle schools; specifically:
- Ggreater student focus on studies;
- Physical activity participation of students;
- Awareness of healthy habits,
- Student alertness;
- Student enjoyment; and
- Staff involvement.

These findings align with recent work in England that has sought to capitalise on the capacity of integrated Physical Education and school sport initiatives to have multiple benefits for children's education and development. Addressing mental health and attaining enhanced social and emotional well-being amongst young people clearly remains a major contemporary challenge in Australia. This is another area in which further research is certainly needed–particularly to pursue, whether improvements seen to arise from school-based interventions and curriculum initiatives can be sustained beyond them and over time.

The development and implementation of the Mind Matters resources has undoubtedly provided welcome support for curriculum provision directed towards mental health and well being in many schools. A commissioned evaluation of the classroom implementation of the curriculum resource 'Understanding Mental Illness" pointed to improvements in students' knowledge, attitudes and behavioural intentions that could arise from the teaching of the UMI module, particularly immediately post-teaching. In relation to the more sustained benefits, it was noted that: At delayed post-teaching, with cautionary interpretation due to a small number of participant responses, students' knowledge showed a predictable decline whilst attitude and behavioural intentions continued to improve.

Encouragingly, Bailey's review identified that while we may not fully understand the mechanisms that underpin effects, 'there is now fairly consistent evidence that regular activity can have a positive effect upon the psychological well-being of children and young people'. More specifically, he reported that 'the evidence is particularly strong with regards to children's self-esteem' and that research has also associated regular activity with reduced stress, anxiety, and depression. In his view, evidence is thus growing to support claims that 'well-planned and presented PES can contribute to the improvement of psychological health in young people'.

SOCIALIZATION INTO AND THROUGH SPORTS

Several questions are central to understanding the socialization into sports. How exactly are young people socialized to become involved in sports and to stay involved in them? Why do some continue to participate actively in sports throughout their lives while others are content to watch? Different questions arise when one asks how people are changed as a result of their socialization into sports. Why do some people find their primary identity as athletes, and

what happens when injury, age, or loss of motivation brings their athletic careers to an end? More generally, what impact do sports have on an individual's character, relationships, thoughts, and feelings?

THE SOCIALIZATION PROCESS

Socialization is the process by which people become familiar with and adapt themselves to the interpersonal relationships of their social world. Through socialization, people develop ideas about themselves and about those with whom they interact. Inevitably, socialization is a two-way process that affects everyone to a greater or lesser degree. It takes place throughout one's life, but it is during the early years that the most crucial phases occur. In these phases a person's sense of self, social identity, and relationships with others are shaped. Play, games, contests, and sports have crucial and quite specific roles in the general socialization process.

The sense of self is not natural; it develops through childhood socialization as a result of role-playing. Influenced by George Herbert Mead and Jean Piaget among others, sociologists have identified two stages in childhood socialization: a "play stage" and a "game stage." In the play stage, children play the role of a father, mother, teacher, firefighter, or athlete. Children learn the difference between their real selves and the parts they are playing. As they grow older, children shift from noncompetitive games to contests. In the game stage, children encounter stricter rules and regulations. They develop a reflexive conception of the self and its position in relation to others, and they learn to see themselves as others see them.

Through socialization with "significant others" and with the "generalized other," children develop their sense of identity and self. They become self-conscious social actors. In most premodern societies, boys were encouraged by their families to compete in sports, which were presumed to prepare them for their adult roles as warriors and workers, while girls were encouraged to continue to play noncompetitive games that prepared them for motherhood. In modern societies, boys and young men continue to outnumber girls and young women involved in sports competition, but the gender gap has narrowed considerably.

This has been true for the private clubs that organize European sports as well as for the interscholastic and intercollegiate teams that are a prominent feature of the North American sports landscape. The role of socializer into sports has been played by many actors, among them parents, older siblings, peers, teachers, coaches, and elite athletes appearing in the mass media.

In the course of the 20th century, parents and older siblings became relatively less influential while coaches and elite athletes became more influential. In modern as in premodern societies, there is a tendency for sports participation to decline with age because of both the added responsibilities and time demands of paid employment and of parenthood and the physical decline of the body. Early socialization into sports is the best predictor of lifelong involvement in sports. Those who disliked sports as children are unlikely to become involved

as adults, while those who loved sports are likely to participate throughout their lives. Elite athletes may be an exception to this rule. If pushed as children to compete nationally and internationally, they are liable to experience burnout and to abandon their sports careers before reaching adulthood. The value of socialization through sports has long been recognized, which is one reason for state support of physical education in the schools and adult-organized children's sports programmes. The effects of sports socialization, however, are not always what the socializers expect.

They are in fact quite controversial. From the mid-19th to the early 21st century, sports were alleged to train young athletes in self-discipline, teamwork, leadership, and other highly prized traits and behaviours. Empirical research has shown that involvement in sports can also inculcate a socially destructive desire to win at all costs. Depending on the values of the socializing agents, sports can encourage young people to play fairly or to cheat. The evidence suggests that the propensity to cheat increases with age and the level of competition.

EMOTION AND SPORTS

Another important aspect of the experience of sports is emotion, the feelings that reflect athletes' self-evaluation or expectation of their performance and their perception of others' evaluations and expectations. Some of the feelings expressed are anticipatory, prior to performing. Pregame "butterflies in the stomach" are as familiar to an athlete as stage fright is to an actor.

Other feelings occur during and after the performance. All these feelings are "scripted" by the subculture of the sport in question. These scripts, or "feeling rules," guide athletes as they manage their emotions, prompting, for instance, appropriate behaviour during pregame renditions of national anthems or during postgame victory celebrations. Norms for the display of emotions vary widely among sports. Rugby players and boxers are permitted to express their feelings with ostentatious displays that are impermissible for golfers and sumo wrestlers. The importance of the contest is another variable influencing the emotions involved. Exhibition matches evoke less-intense feelings than football's World Cup championship game.

The orchestration of emotions in sports begins with the arousal of expectations, provoking a diffuse emotional state that is then directed into a series of discrete and identifiable emotional displays. In other words, competitors become "psyched up." In elite sports, players have already internalized the scripts that coaches call upon them to rehearse immediately before the contest and to adhere to during the contest. It is not, however, just the players who experience this scripting. Drawing upon fans' previous experiences, media pundits and other "stage setters" also contribute to the management of the fans' emotions. Cues provided by the stage setters prompt fans to express a variety of emotions throughout a game.

These emotions range from passionate identification with one's representative team and with one's fellow fans to hatred for the opposing team and its misguided

supporters. Fans feel despair when an idolized player is injured; they feel ecstasy when a last-minute goal transforms humiliating defeat into triumphant victory. While there may be a scripting or an orchestration of the emotions, individuals vary in the degree to which they internalize and follow scripts. Despite such individual variations, rules do structure the emotional experience of sports subcultures. These emotional processes, which help define roles of players, coaches, and fans, also help forge the link between sports and national identity.

PERSONALITY CHARACTERISTICS AND SPORTING BEHAVIOUR

Personality is fundamental to the study of psychology. The major systems evolved by psychiatrists and psychologists since, Sigmund Freud to explain human mental and behavioural processes can be considered theories of personality. These theories generally provide ways of describing personal characteristics and behaviour, establish an overall framework for organising a wide range of information, and address such issues as individual differences, personality development from birth through adulthood, and the causes, nature, and treatment of psychological disorders.

Type Theory of Personality

Perhaps the earliest known theory of personality is that of the Greek physician Hippocrates (c. 400 B.C.), who characterised human behaviour in terms of four temperaments, each associated with a different bodily fluid, or "humor." The sanguine, or optimistic, type was associated with blood; the phlegmatic type (slow and lethargic) with phlegm; the melancholic type (sad, depressed) with black bile; and the choleric (angry) type with yellow bile. Individual personality was determined by the amount of each of the four humors.

Hippocrates' system remained influential in Western Europe throughout the medieval and Renaissance periods. Abundant references to the four humors can be found in the plays of Shakespeare, and the terms with which Hippocrates labeled the four personality types are still in common use today. The theory of temperaments is among a variety of systems that deal with human personality by dividing it into types. A widely popularized (but scientifically dubious) modern typology of personality was developed in the 1940s by William Sheldon, an American psychologist. Sheldon classified personality into three categories based on body types: the endomorph (heavy and easy-going), mesomorph (muscular and aggressive), and ectomorph (thin and intellectual or artistic).

Trait Theory of Personality

A major weakness of Sheldon's morphological classification system and other type theories in general is the element of oversimplification inherent in placing individuals into a single category, which ignores the fact that every personality represents a unique combination of qualities. Systems that address personality

as a combination of qualities or dimensions are called trait theories. Well-known trait theorist Gordon Allport (1897-1967) extensively investigated the ways in which traits combine to form normal personalities, cataloguing over 18,000 separate traits over a period of 30 years.

He proposed that each person has about seven central traits that dominate his or her behaviour. Allport's attempt to make trait analysis more manageable and useful by simplifying it was expanded by subsequent researchers, who found ways to group traits into clusters through a process known as factor analysis. Raymond B. Cattell reduced Allport's extensive list to 16 fundamental groups of inter-related characteristics, and Hans Eysenck claimed that personality could be described based on three fundamental factors: psychoticism (such antisocial traits as cruelty and rejection of social customs), introversion-extroversion, and emotionality-stability (also called neuroticism). Eysenck also formulated a quadrant based on intersecting emotional-stable and introverted-extroverted axes.

Psychodynamic Theory of Personality

Twentieth-century views on personality have been heavily influenced by the psychodynamic approach of Sigmund Freud. Freud proposed a three-part personality structure consisting of the id (concerned with the gratification of basic instincts), the ego (which mediates between the demands of the id and the constraints of society), and the superego (through which parental and social values are internalized).

In contrast to type or trait theories of personality, the dynamic model proposed by Freud involved an ongoing element of conflict, and it was these conflicts that Freud saw as the primary determinant of personality.

His psychoanalytic method was designed to help patients resolve their conflicts by exploring unconscious thoughts, motivations, and conflicts through the use of free association and other techniques. Another distinctive feature of Freudian psychoanalysis is its emphasis on the importance of childhood experiences in personality formation. Other psychodynamic models were later developed by colleagues and followers of Freud, including Carl Jung, Alfred Adler, and Otto Rank (1884-1939), as well as other neo-Freudians such as Erich Fromm, Karen Horney, Harry Stack Sullivan (1892-1949), and Erik Erikson.

Phenomenological Theory of Personality

Another major view of personality developed during the twentieth century is the phenomenological approach, which emphasizes people's self-perceptions and their drive for self-actualization as determinants of personality. This optimistic orientation holds that people are innately inclined towards goodness, love, and creativity and that the primary natural motivation is the drive to fulfill one's potential. Carl Rogers, the figure whose name is most closely associated with phenomenological theories of personality, viewed authentic experience of one's self as the basic component of growth and wellbeing.

This experience together with one's self-concept can become distorted when other people make the positive regard we need dependent on conditions that require the suppression of our true feelings. The client-centered therapy developed by Rogers relies on the therapist's continuous demonstration of empathy and unconditional positive regard to give clients the self-confidence to express and act on their true feelings and beliefs. Another prominent exponent of the phenomenological approach was Abraham Maslow, who placed self-actualization at the top of his hierarchy of human needs. Maslow focused on the need to replace a deficiency orientation, which consists of focusing on what one does not have, with a growth orientation based on satisfaction with one's identity and capabilities.

Behavioural Theory of Personality

The behaviourist approach views personality as a pattern of learned behaviours acquired through either classical (Pavlovian) or operant (Skinnerian) conditioning and shaped by reinforcement in the form of rewards or punishment. A relatively recent extension of behaviourism, the cognitive-behavioural approach emphasizes the role cognition plays in the learning process. Cognitive and social learning theorists focus not only on the outward behaviours people demonstrate but also on their expectations and their thoughts about others, themselves, and their own behaviour.

For example, one variable in the general theory of personality developed by social learning theorist Julian B. Rotter is internal-external orientation. "Internals" think of themselves as controlling events, while "externals" view events as largely outside their control. Like phenomenological theorists, those who take a social learning approach also emphasize people's perceptions of themselves and their abilities (a concept called "self-efficacy" by Albert Bandura). Another characteristic that sets the cognitive-behavioural approach apart from traditional forms of behaviourism is its focus on learning that takes place in social situations through observation and reinforcement, which contrasts with the dependence of classical and operant conditioning models on laboratory research.

Aside from theories about personality structure and dynamics, a major area of investigation in the study of personality is how it develops in the course of a person's lifetime. The Freudian approach includes an extensive description of psychosexual development from birth up to adulthood. Erik Erikson outlined eight stages of development spanning the entire human lifetime, from birth to death. In contrast, various other approaches, such as those of Jung, Adler, and Rogers, have rejected the notion of separate developmental stages. An area of increasing interest is the study of how personality varies across cultures. In order to know whether observations about personality structure and formation reflect universal truths or merely cultural influences, it is necessary to study and compare personality characteristics in different societies. For example, significant differences have been found between personality development in the individualistic cultures of the West and in collectivist societies such as Japan,

where children are taught from a young age that fitting in with the group takes precedence over the recognition of individual achievement. Cross-cultural differences may also be observed within a given society by studying the contrasts between its dominant culture and its subcultures (usually ethnic, racial, or religious groups).

DEPENDENT PERSONALITY DISORDER

Personality traits are enduring patterns of perceiving, relating to and thinking about one's environment and oneself that are exhibited in a wide range of social and personal contexts. Only when personality traits are inflexible, maladaptive and cause significant functional impairment or subjective distress are they considered personality disorders. The essential feature of a personality disorder is a continuing pattern of inner experience and behaviour that deviates noticeably from the expectations of the individual's culture and is manifested in at least two of the following areas: cognition/thinking, affectivity/emotional expression, interpersonal functioning or impulse control. This persistent pattern is inflexible and pervasive across a broad range of personal and social situations, and leads to clinically significant distress or impairment in social, occupational or other important areas of functioning. The pattern is stable and of long duration, which means its onset can be traced back to at least adolescence or early adulthood. This pattern is not better accounted for as a manifestation or consequence of another mental disorder and is not due to the direct physiological effects of a substance (such as drug abuse, medication, exposure to a toxin) or a general medical condition (such as head trauma).

Dependent personality disorder is described as a pervasive and excessive need to be taken care of that leads to a submissive and clinging behaviour as well as fears of separation. This pattern begins by early adulthood and is present in a variety of contexts. The dependent and submissive behaviours are designed to elicit caregiving and arise from a self-perception of being unable to function adequately without the help of others. Individuals with dependent personality disorder have great difficulty making everyday decisions (such as what shirt to wear or whether to carry an umbrella) without an excessive amount of advice and reassurance from others.

These individuals tend to be passive and allow other people (often a single other person) to take the initiative and assume responsibility for most major areas of their lives. Adults with this disorder typically depend on a parent or spouse to decide where they should live, what kind of job they should have and which neighbours to befriend. Adolescents with this disorder may allow their parent(s) to decide what they should wear, with whom they should associate, how they should spend their free time and what school or college they should attend.

This need for others to assume responsibility goes beyond age-appropriate and situation-appropriate requests for assistance from others (such as the specific needs of children, elderly persons and handicapped persons). Because they fear

losing support or approval, individuals with dependent personality disorder often have difficulty expressing disagreement with other people, especially those on whom they are dependent. These individuals feel so unable to function alone that they will agree with things that they feel are wrong rather than risk losing the help of those to whom they look for guidance. Individuals with this disorder have difficulty initiating projects or doing things independently.

They may go to extreme lengths to obtain nurturance and support from others, even to the point of volunteering for unpleasant tasks if such behaviour will bring the care that they need. Individuals with this disorder feel uncomfortable or helpless when alone, because of their exaggerated fears of being unable to care for themselves. When a close relationship ends (such as a breakup with a lover or the death of a caregiver), individuals with Dependent Personality disorder may urgently seek another relationship to provide the care and support they need. They are often preoccupied with fears of being left to care for themselves.

SOCIAL LEARNING THEORY

This theory suggests that our personality is not a stable characteristic. And it can constantly change due to the people we are around and socialize with. Our personality also changes due to the changes id social situations. It also makes the point that we are highly unlikely to behave in the same way when we are in a sporting situation and in a non-sporting situation.

It also suggests that we learn in sporting situations through two different ways which are modelling and reinforcement. Modelling means that and individual is likely to model themselves on people they feel they can relate to, such as individuals in the same sport or gender. It basically says that we look up to someone and copy there actions.

Reinforcement-this is important because if an individuals behaviour is reinforced or rewarded it is likely that the behaviour will be repeated. You have to have high attention to retain the skill. Motor responses and motivation skills have to be high. The differences between the trait theory and this theory is that the trait theory suggest that your personality is stable and nothing can change were as this theory suggest that your personality is not stable and can change due to many things.

The Interactional Approach and Martens Schematic View

This theory is the only theory which is widely accepted by most sport psychologists. It tells us that if we are going to accurately predict behaviour in a sporting setting its important that you consider the situation the individual is in and the individual's characteristics.

This theory is basically a mix between the social learning theory and marten's schematic view. Marten's schematic view is almost the same the only differences is that it says there are three different distinctive levels that relate to each other which are the physiological core, typical responses and role related behaviour.

The physiological core is often referred to the real you/what you believe in what your interests are and your attitude towards work and play. Typical responses are seen as the usual way you respond to any given situation and are also a good indicator of your psychological core. Role related behaviour determined by circumstances you are in which are ever changing especially within a sporting environment for example in football you wont be the same all the way through the game you may get frustrated at some points. Role related behaviour is seen as the changeable aspect of personality. Martens schematic and the interactional approach are very similar in the way that they both agree that your personality can be changed due to the situations you face in sporting and none sporting environments.

AN ANALYSIS INTO THE RELATIONSHIP BETWEEN PERSONALITY AND BEHAVIOUR IN SPORT

Personality is defined as "The sum of the characteristics that make a person Unique" There are many ways to define a personality; personality research has led to numerous theories that help us to explain how and why certain traits develop. Not all of our behaviour can be put down to conscious control sometimes it is our unconscious that controls our actions. To assess and define the personality of an athlete we can use certain theories to look in to the way athletes behave in a sporting environment and social environments, we can relate to the personality in 3 ways; role related behaviour (social situation), Core (stable aspects of the personality) and the outer layer (typical responses).

Believed that the personality is made up of three phases; the psychological core, typical responses and role related behaviour. This can be illustrated by three concentric circles that represent the structure of the personality. The psychological core (inner core) being the hardest to reach, typical responses represent the usual manner in which a response to social and environmental situations and role related behaviour is the surface of the personality that responds to our environmental perception at any given time. These three layers can be measured with the following theories Trait, Situational and interactional approaches. Weinberg and Gould (1995) Measuring the personality with these three approaches, each having its own attributes can help us to define a personality to a certain extent.

Trait approach: Assumes that fundamental units of our personality are relatively stable, that is that our personality traits are enduring and consistent across a variety of situations, being one of the earliest theories to be used, the trait approach bases its self on a position that a person is predisposed to act a certain way. The traits as relative, the two most significant traits ranging on a continuum from introversion to extroversion and from stability to emotionality. Weinberg and Gould (1995) Behaviour generally resides within the person and that the role of the situation or environmental factors is minimal. Traits are considered to predispose a person to act a certain way, regardless of the situation or circumstances. For example if a football player is competitive, then he will be predisposed to play hard to win. A predisposition does not mean that the football player will always play hard to win; it simply means he might or is likely to.

Situation approach: This approach is largely determined by the situation or environment, it draws itself from social learning theory, Albert Bandura formulated a social learning theory, through which he conceptualized self-regulatory mechanisms explains behaviour in terms of observational learning and social reinforcement, using four categories,

a. Attention
b. Retention
c. Motor production
d. Motivational responses.

But what it does not account for is that some situations can influence some people's behaviour but others it may not. You can influence behaviour in sport and physical education by changing reinforcements in the environment, still the situation approach, like the trait approach cannot truly predict behaviour. Situations can influence some people's behaviour but other people will not be swayed by the same situation.

Interactional approach: Weinberg and Gould (1995) Considers the situation and person as co determinants of behaviour that is as variables that together determine behaviour. Interactional approach looks at the individual's psychological traits and the particular situation to help understand behaviour. found that the interactions between persons and situations could explain twice as many behaviours as traits or situations alone. Interactional approach is the only approach that takes time to study both traits and situations over a period of time. You can only truly assess a person over times as people react individually in sports and other situations. This makes the interactional approach more favoured as you can look at an athlete in various sporting and social environments. If we look at the personality traits of Sir Bobby Robson we could say he was an extrovert–stable using The Eysenck Personality Inventory (EPI), if we look at some of his traits and what was his social position and environment, we can pick certain traits out to back up the extrovert–stable personality. Robson (1990) For instance he was a kind man, well mannered and thought full to others. Yet in his professional life he was demanding, out spoken, successful and a leader. Most of what the public saw of Sir Bobby Robson was his outer layer (role related behaviour) as a manager of England and various other teams including Newcastle United his outer layer was foremost, projecting a Psychological image to those around him of an imposing father figure with authority. The extrovert side of his personality enabled him to rise to the top of his profession as a player and a manger, using such traits as ambitious, animated, charismatic, energetic and hardy.

We have looked at what a personality is and defined it; we have looked at the different ways in which we can assess a personality using three approaches:

a. Trait
b. Situational
c. Interactional.

We know the personality has three specific layers being the Inner Core, Typical Responses and the Outer Layer. These layers can be measured by one of the three

approaches, but to truly assess a personality takes time. Using traits of Sir Bobby Robson we devised that his personality was extrovert–stable, using the Eysenck personality inventory in theory. But does it truly allow us to see his inner core. Using the interactional approach would allow us to look at it over time in various social environments and sporting environments allowing us to look a different responses to different situation that occur. So to truly know a person's personality takes time and endurance. There for the interactional approach would be more advantageous to truly get to know a person or an athlete.

COACH'S CODE OF BEHAVIOUR

The coach's code of behaviour is a positive document for all coaches. It affirms a coach's support for the concepts of responsibility, trust, competence, respect, safety, honesty, professionalism, equity and sportsmanship. The code also provides a reference point for clubs, parents, athletes, schools and employers to expect that a coach will demonstrate appropriate standards of behaviour.

Coach Code of Behaviour

Safety and Health of Participants:
- Place the safety and welfare of the participants above all else.
- Be aware of and support the sport's injury management plans and return to play guidelines.

Coaching excellence:
- Help each person (athlete, official, etc) to reach their potential. Respect the talent, developmental stage and goals of each person and encourage them with positive and constructive feedback.
- Encourage and support opportunities for people to learn appropriate behaviours and skills.
- Support opportunities for participation in all aspects of the sport.
- Treat each participant as an individual.
- Obtain appropriate qualifications and keep up-to-date with the latest coaching practices and the principles of growth and development of participants.

Honour the sport:
- Act within the rules and spirit of your sport.
- Promote fair play over winning at any cost.
- Respect the decisions of officials, coaches and administrators.
- Show respect and courtesy to all involved with the sport.
- Display responsible behaviour in relation to alcohol and other drugs.

Integrity:
- Act with integrity and objectivity, and accept responsibility for your decisions and actions.
- Ensure your decisions and actions contribute to a harassment-free environment.
- Wherever practical, avoid unaccompanied and unobserved one-on-one activity (when in a supervisory capacity or where a power imbalance exists) with people under the age of 18.

- Ensure that any physical contact with another person is appropriate to the situation and necessary for the person's skill development.
- Be honest and do not allow your qualifications or coaching experience to be misrepresented.
- Never advocate or condone the use of illicit drugs or other banned performance enhancing substances or methods.
- Never participate in or advocate practices that involve match fixing.

Respect:
- Respect the rights and worth of every person, regardless of their age, race, gender, ability, cultural background, sexuality or religion.
- Do not tolerate abusive, bullying or threatening behaviour.

Code of Behaviour Agreement form

All coaches wishing to become registered with the NCAS are required to sign an individualised coach's code of behaviour agreement form.

This form requires coaches to:
- Agree to abide by the code of behaviour of the relevant national sporting organisation and/or training provider. The Australian Sports Commission has developed a coach's code of behaviour. National sporting organisations and training providers must use this code unless they develop their own.
- Acknowledge that the national sporting organisation and/or training provider may take disciplinary action against them, if they breach the code of behaviour (national sporting organisation and training providers are required to implement a complaints handling procedure in accordance with the principles of natural justice, in the event of an allegation).
- Acknowledge that disciplinary action against them may include de-accreditation from the NCAS.

EDUCATIONAL AND SPORTS PSYCHOLOGY

Educational and Sports Psychology is a multidisciplinary field that examines the psychological factors influencing learning, performance, and achievement in both academic and athletic settings. This dynamic area of study explores the intricate interplay between cognition, motivation, behavior, and environment to enhance educational outcomes and athletic prowess. In educational contexts, psychologists delve into various aspects of learning, including memory, attention, problem-solving, and academic achievement. They investigate effective teaching methods, instructional design, classroom management, and student motivation to optimize the learning experience for individuals of all ages and abilities. Understanding the psychological processes underlying learning allows educators to tailor their approaches to meet the diverse needs of students and foster a conducive learning environment. Similarly, in the realm of sports psychology, researchers examine the mental aspects of athletic performance, including motivation, goal setting, confidence, concentration, and stress management. By applying psychological principles, athletes and coaches can develop strategies to enhance performance, overcome obstacles, and achieve peak mental states during competition. Sports psychologists also work with athletes to address psychological barriers such as performance anxiety, fear of failure, and burnout, empowering them to reach their full potential on and off the field. Overall, Educational and Sports Psychology offers valuable insights into the complex interactions between the mind and performance, serving as a bridge between theory and practice to optimize learning and athletic achievement. Exploring the intricate connections between mind and body, Educational and Sports Psychology delves into the realms of motivation, learning, and performance enhancement.

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