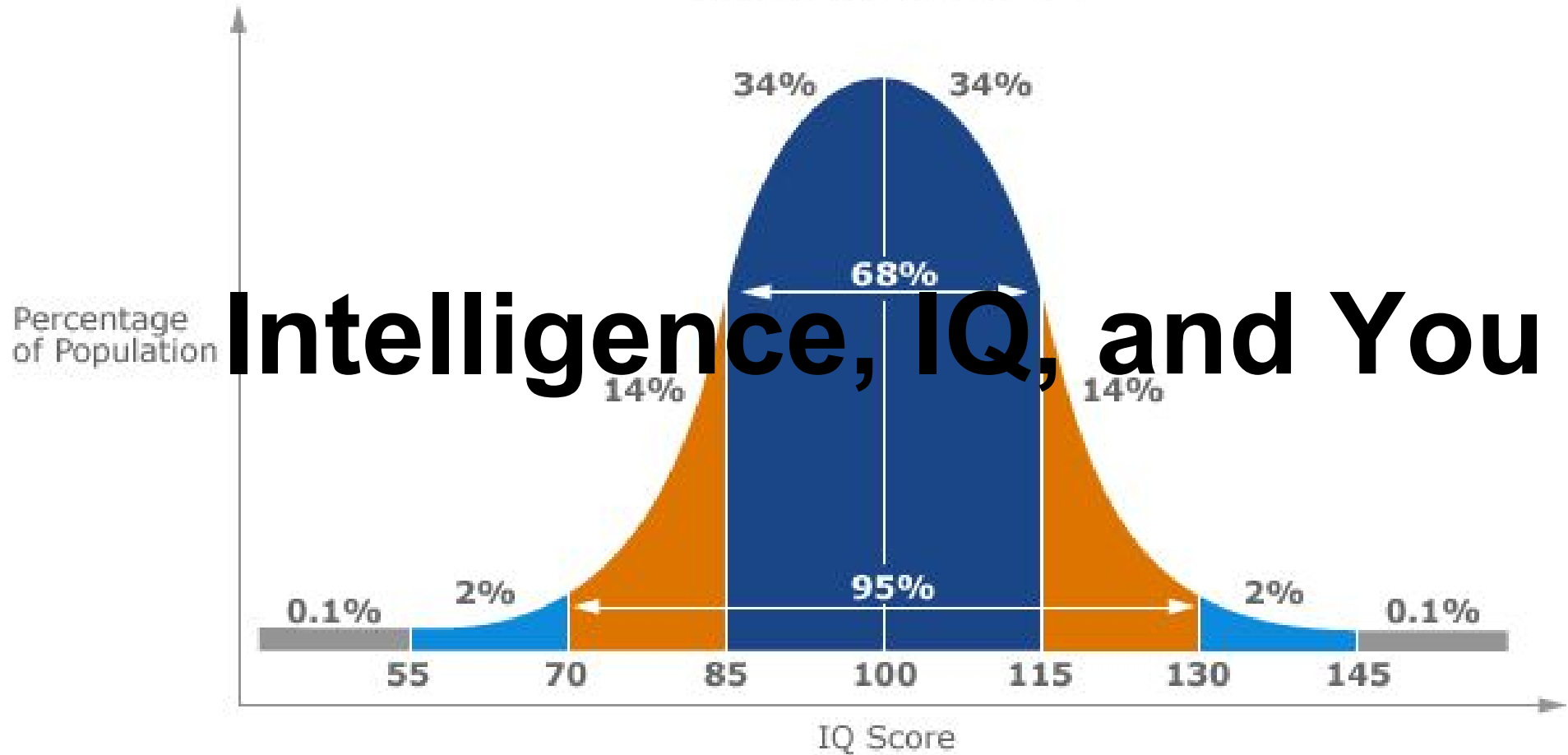


**IQ Score Distribution**



Group Discussion - Find a partner and answer these questions -

What is “intelligence”?

If you had to design an intelligence test, what would you put on it ?

# Theories of Intelligence

Like most of psychology until recent times, intelligence has been a part of the Nature vs. Nurture debate, with most theories and tests stemming from one side or the other.

The Two Views of Intelligence:

**Entity view** – the belief that intelligence is genetically determined and not alterable

**Incremental view** – the belief that intelligence can be improved through effort

What would be a problem with being too far in either camp?

# Cattell (1963)

**Fluid intelligence** – the ability to solve problems, figure out what to do when one is not sure what to do, and acquire new skills

**Crystallized intelligence**–the use of acquired skills and knowledge such as reading and language skills

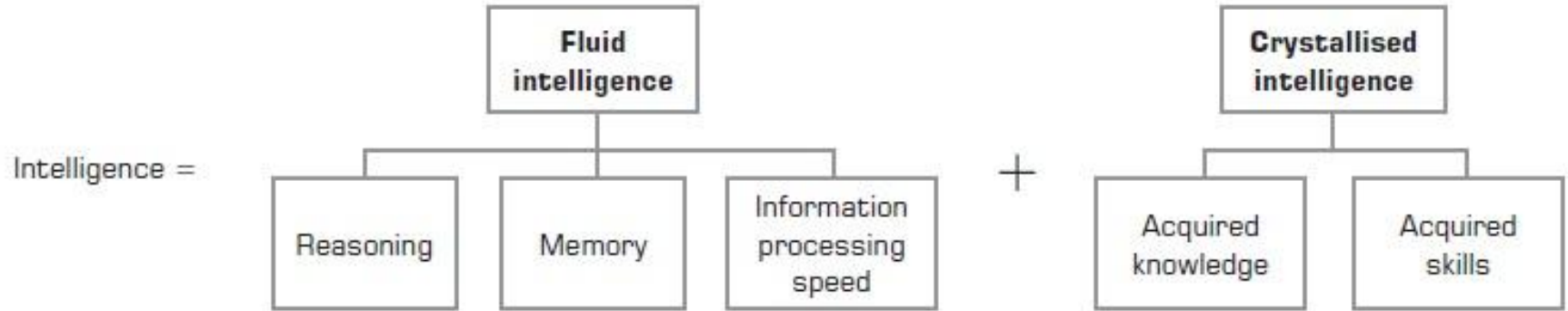


FIG 17.4» Cattell-Horn's psychometric model of intelligence

# Theories Range from the Complex to the Simple

Gardner's Theory of Multiple Intelligences(MI)

Sternberg's (1997) idea: **successful intelligence**

The ability to succeed in life, given one's own goals, within one's environmental contexts.

**The Multiple Intelligences (MI) Chart**

**Verbal/linguistic intelligence**

- using language to present your ideas, to express your feelings or to persuade others

**Musical/rhythmic intelligence**

- creating and feeling a rhythm to express a mood; detecting and analysing musical themes

**Logical/mathematical intelligence**

- reasoning, logical thinking; handling mathematical problems

**Intrapersonal intelligence**  
*(within the self)*

- understanding your own interior thoughts and feelings in a very clear way

**Visual/spatial intelligence**

- creating and interpreting visual images; thinking in three dimensions

**Interpersonal intelligence**  
*(between people)*

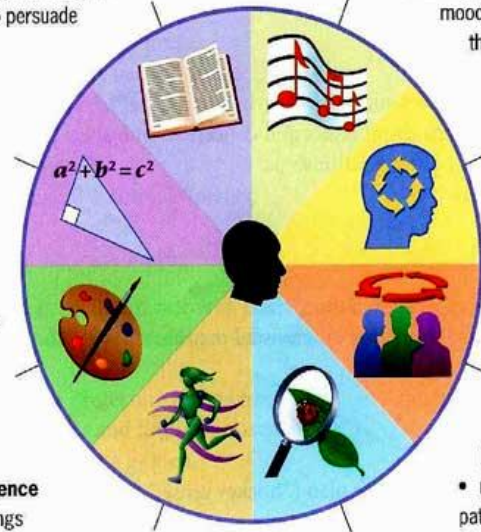
- understanding the feelings, needs and purposes of others

**Bodily/kinesthetic intelligence**

- feeling and expressing things physically; doing hands-on work

**Naturalist intelligence**

- understanding nature, seeing patterns in the way nature works; classifying things



# What does an Intelligence Test Need?

## The Development of IQ Tests

Standardization - the process of giving the test to a large group of people that represents the kind of people for whom the test is designed.

Validity - the degree to which a test actually measures what it's supposed to measure.

Reliability - the tendency of a test to produce the same scores again and again each time it is given to the same people.

# Intelligence Quotient - IQ

Lewis Terman at Stanford University developed an English version known as the Stanford-Binet (Terman, 1916).

Mental age was divided by chronological age, and the result or “quotient” was multiplied by 100 and called the intelligence quotient, or IQ.

Thus, a child 6 whose mental age and chronological age were equal would have an IQ of 100, which is considered “average” intelligence. From this method of scoring came the term IQ test.

<b>Stanford Binet Intelligence Scale</b>	
<b>Genius</b>	Over 140
<b>Very Superior</b>	120 - 139
<b>Superior</b>	110 - 119
<b>Average</b>	90 - 109
<b>Dull</b>	80 - 89
<b>Borderline Deficiency</b>	70 - 79
<b>Moron</b>	50 - 69
<b>Imbecile</b>	20 - 49
<b>Idiot</b>	Below 20

First Version

# A More Modern Approach

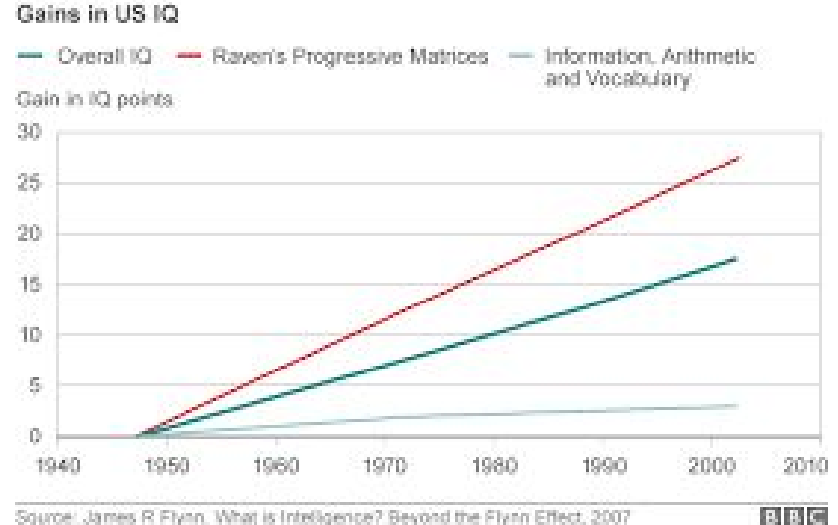
Binet Scale of Human Intelligence		
<b>IQ Score</b>	<b>Original Name</b>	<b>Modern Term</b>
Over 140	Genius or Near-Genius	
120 - 139	Very Superior	
110 - 119	Superior	
90 - 109	Average or Normal	
80 - 89	Dull	Dull Normal
70 - 79	Borderline Deficiency	Mild
50 - 69	Moron	Moderate
20 - 49	Imbecile	Severe
Below 20	Idiot	Profound



# Are We Getting Smarter as a Species ?

There has been a documented rise in both fluid and crystallised intelligence scores across the world, about 2.5 points/decade, called the **Flynn Effect**. Why? Nutrition? Better access to schooling? Or a different value placed on conceptual learning in the “modern world”?

Intensive intervention (early) can lead to gains



## Average IQ by Country

### Average IQ by Country

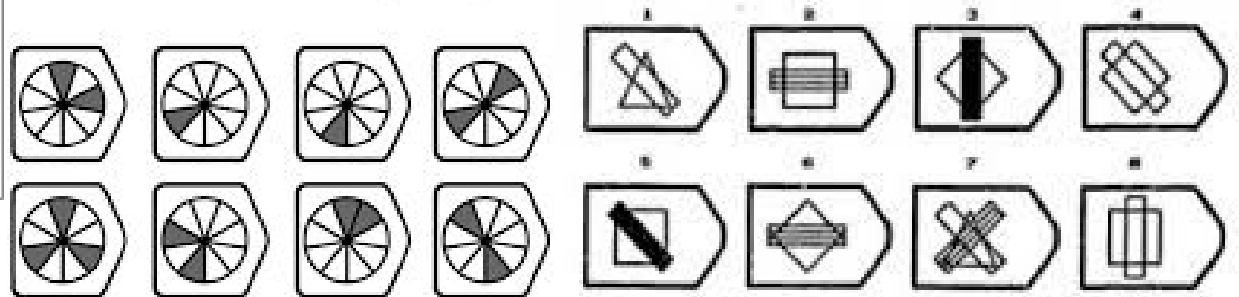
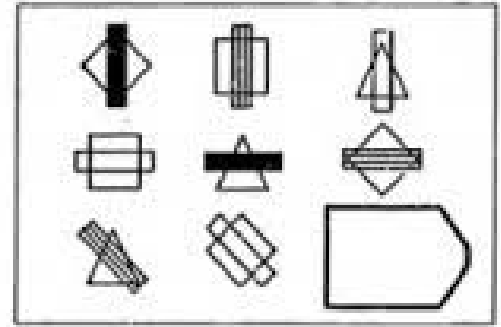
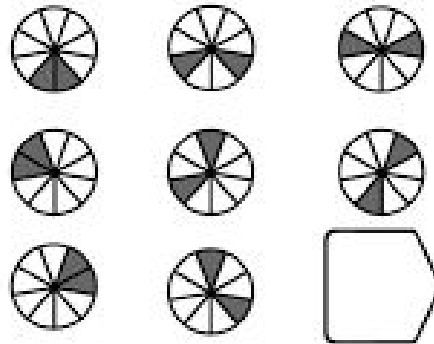
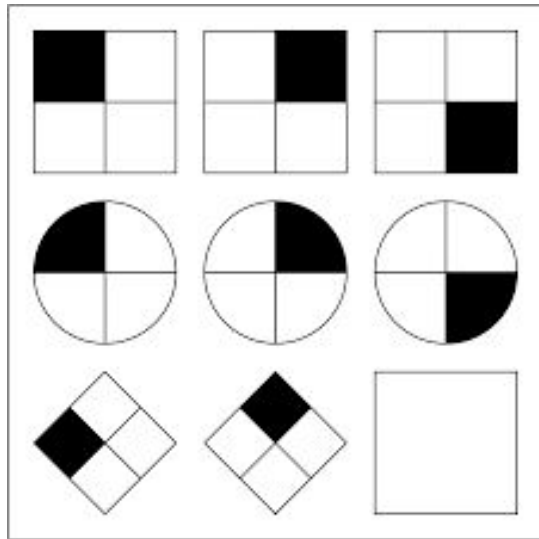
Country/Region	IQ (2002) <sup>[2]</sup>	IQ (2006) <sup>[1]</sup>
 <a href="#">Hong Kong</a>	107	108
 <a href="#">Singapore</a>	103	108
 <a href="#">North Korea</a>	105*	106*
 <a href="#">South Korea</a>	106	106
 <a href="#">Japan</a>	105	105
 <a href="#">People's Republic of China</a>	100	105
 <a href="#">Taiwan</a>	104	105
 <a href="#">Italy</a>	102	102
 <a href="#">Mongolia</a>	98	101
 <a href="#">Iceland</a>	98*	101
 <a href="#">Switzerland</a>	101	101
 <a href="#">Austria</a>	102	100
 <a href="#">Luxembourg</a>	101*	100*
 <a href="#">Netherlands</a>	102	100
 <a href="#">Norway</a>	98	100
 <a href="#">United Kingdom</a>	100	100
 <a href="#">Belgium</a>	100	99
 <a href="#">Canada</a>	97	99
 <a href="#">Estonia</a>	97*	99
 <a href="#">Finland</a>	97	99
 <a href="#">Germany</a>	102	99
 <a href="#">New Zealand</a>	100	99
 <a href="#">Poland</a>	99	99
 <a href="#">Sweden</a>	101	99
 <a href="#">Andorra</a>	N/A	98*

## Raven test

- Average IQ by Country
- Raven test

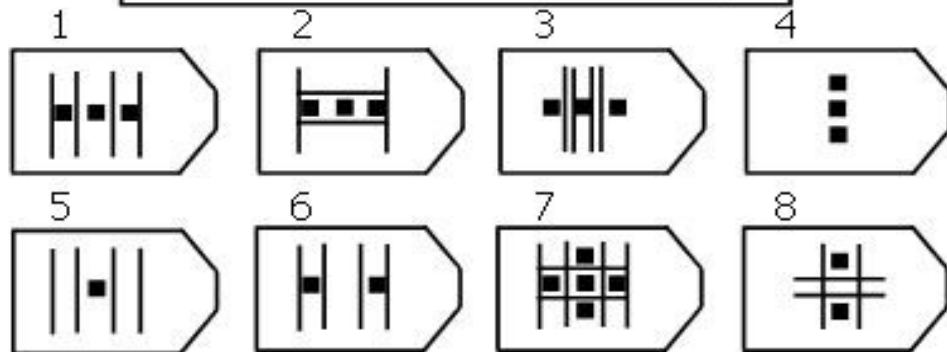
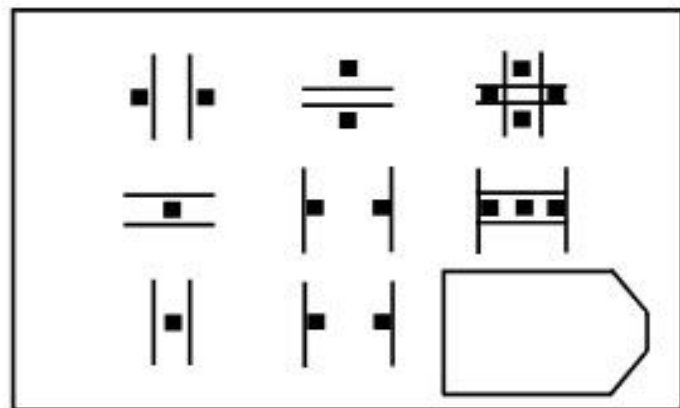
 <a href="#">Poland</a>	99	99
 <a href="#">Sweden</a>	101	99
 <a href="#">Andorra</a>	N/A	98*
 <a href="#">Australia</a>	98	98
 <a href="#">Czech Republic</a>	97	98
 <a href="#">Denmark</a>	98	98
 <a href="#">France</a>	98	98
 <a href="#">Hungary</a>	99	98
 <a href="#">Latvia</a>	97*	98*
 <a href="#">Spain</a>	97	98
 <a href="#">United States</a>	98	98
 <a href="#">Belarus</a>	96*	97*
<sup>+</sup>  <a href="#">Malta</a>	95*	97
 <a href="#">Russia</a>	96	97
 <a href="#">Ukraine</a>	96*	97*
 <a href="#">Moldova</a>	95*	96*
 <a href="#">Slovakia</a>	96	96
 <a href="#">Uruguay</a>	96	96
 <a href="#">Israel</a>	94	95
 <a href="#">Portugal</a>	95	95
 <a href="#">Armenia</a>	93*	94*
 <a href="#">Georgia</a>	93*	94*
 <a href="#">Kazakhstan</a>	93*	94*
 <a href="#">Romania</a>	94	94
 <a href="#">Vietnam</a>	96*	94
 <a href="#">Argentina</a>	96	93
 <a href="#">Bulgaria</a>	93	93
 <a href="#">Greece</a>	92	92
 <a href="#">Malaysia</a>	92	92

# Examples of the Raven IQ test (ages 6 - 16.5)



# nonVerbalReasoning.net Ravens Matrices Q01

Find the missing piece in the pattern. Look across the rows and down the columns.



# Intelligence as a Gene x Environment

## **Genetics:**

About 50% of the variation in IQs among Euro-Americans is attributable to genetic variation according to twin studies

IQ-achievement correlation higher in identical than fraternal twins.

## **Environment and Culture:**

IQ is increased by years of schooling.

Asian-American scores are higher than those of any other group in the United States.

Low SES children score 9 points lower than middle SES children.

# IQ as Predictor of Scholastic Success

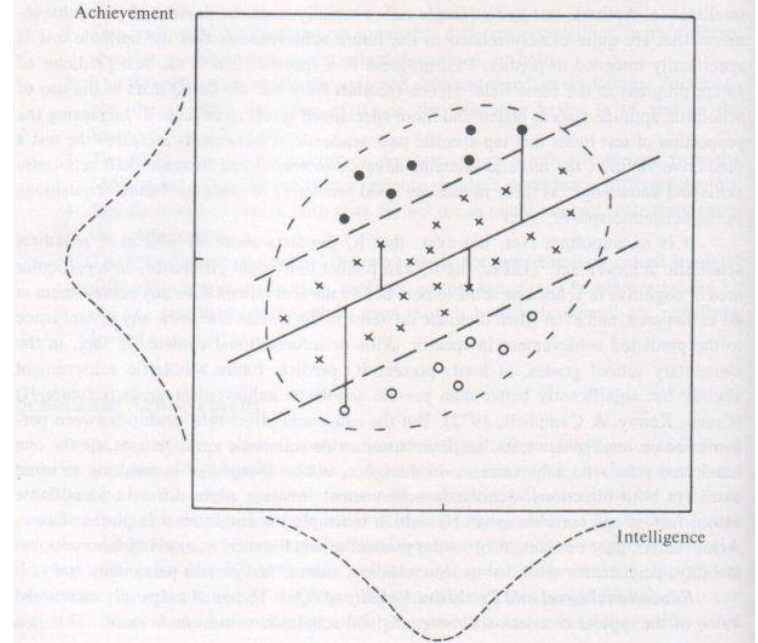
Many studies argue that IQ predicts academic achievement:

Correlations run from .40 to .70, depending on the study. Most are around .50.

Why?

1. IQ and achievement depend on abstract reasoning
2. IQ and achievement tap same culturally specific info.

**Figure 8.1.** A bivariate normal scatter diagram showing a correlation of .50, typical of correlations between scholastic achievement and IQ. "Underachievers" (circles) and "overachievers" (dots) are those persons whose achievement scores deviate more than one standard deviation from the regression line.



# School Affecting IQ

Ceci (1991) claims schooling influences IQ in three ways:

1. Teaches children factual knowledge relevant to questions
2. Promotes IP skills (memory strategies) tapped by test
3. Encourages attitudes and values for successful test taking

if schooling influences IQ, and IQ is a predictor of school performance, there's no clear directionality!

Would the increasing prevalence of standardised testing contribute to the global rise in IQ?





# Temperament

The theory that:

1. Children are born with their own natural style of interacting with or reacting to people, places, and things.
2. The New York Longitudinal Study identified nine temperament characteristics or traits.
3. The researchers found that these nine traits were present at birth and continued to influence development in important ways throughout life.
4. Temperament is stable and differs from personality, which is a combination of temperament and life experiences.

# The Nine Temperament Traits

- **Activity:** Is the child always moving and doing something OR does he or she have a more relaxed style?
- **Rhythmicity:** Is the child regular in his or her eating and sleeping habits OR somewhat haphazard?
- **Approach/withdrawal:** Does he or she "never meet a stranger" OR tend to shy away from new people or things?
- **Adaptability:** Can the child adjust to changes in routines or plans easily or does he or she resist transitions?
- **Intensity:** Does he or she react strongly to situations, either positive or negative, OR does he or she react calmly and quietly?
- **Mood:** Does the child often express a negative outlook OR is he or she generally a positive person? Does his or her mood shift frequently OR is he or she usually even-tempered?
- **Persistence and attention span:** Does the child give up as soon as a problem arises with a task OR does he or she keep on trying? Can he or she stick with an activity a long time OR does his or her mind tend to wander?
- **Distractibility:** Is the child easily distracted from what he or she is doing OR can he or she shut out external distractions and stay with the current activity?
- **Sensory threshold:** Is he or she bothered by external stimuli such as loud noises, bright lights, or food textures OR does he or she tend to ignore them?

## The Multiple Intelligences (MI) Chart

### Verbal/linguistic intelligence

- using language to present your ideas, to express your feelings or to persuade others

### Logical/mathematical intelligence

- reasoning, logical thinking; handling mathematical problems

### Visual/spatial intelligence

- creating and interpreting visual images; thinking in three dimensions

### Bodily/kinesthetic intelligence

- feeling and expressing things physically; doing hands-on work

### Musical/rhythmic intelligence

- creating and feeling a rhythm to express a mood; detecting and analysing musical themes

### Intrapersonal intelligence

*(within the self)*

- understanding your own interior thoughts and feelings in a very clear way

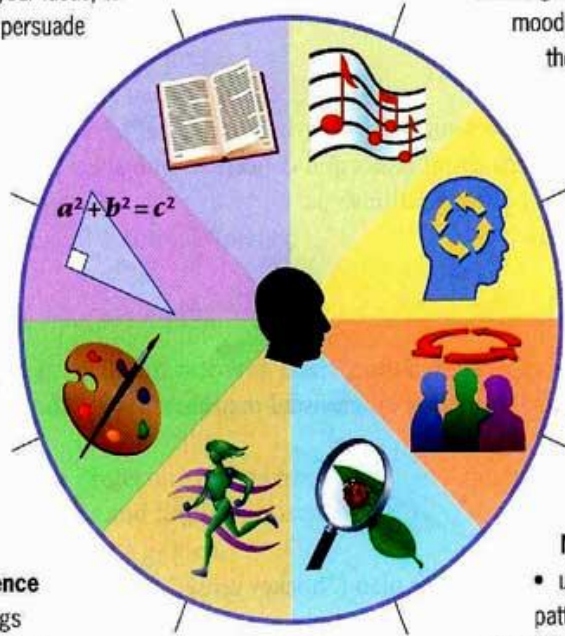
### Interpersonal intelligence

*(between people)*

- understanding the feelings, needs and purposes of others

### Naturalist intelligence

- understanding nature, seeing patterns in the way nature works; classifying things



# The Three Temperament “Types”

Approximately 65 percent of all children fit one of three patterns.

Forty percent of children are generally regarded as "easy or flexible"

10 percent are regarded as "difficult, active, or feisty,"

15 percent are regarded as "slow to warm up or cautious."

The other 35 percent of children are a combination of these patterns.

# Easy / Flexible Children

1. Generally calm & happy
2. Regular Sleeping and Eating Habits
3. Adaptable
4. Not easily upset



# Difficult/Active/Feisty Children

1. Often fussy
2. Irregular feeding/sleeping habits
3. Fearful of new people and situations
4. Easily upset by noise and commotion, high strung, and intense in their reactions.



# Slow to Warm Up/ Cautious

1. Relatively inactive and fussy
2. Tend to withdraw or to react negatively to new situations
3. **HOWEVER:** their reactions gradually become more positive with continuous exposure.

