

WHAT IS THIS THING CALLED ABSTRACTION? WHY SHOULD I CARE?

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Topics Covered

- Understanding
 - Abstraction
 - Generalization
 - Learning
- Things that are done “automatically” and unconsciously by the general population
- Common problems with abstraction for individuals on the spectrum



Abstraction and Generalization

- Individuals with autism often have difficulty in
 - Generalizing from one situation to another
 - Understanding and/or accepting “exceptions”
 - Understanding certain non-concrete ideas
 - Understanding non-literal language
 - Deciphering symbolic (graphical) representation



What Does the word “Abstract” Mean?

- “Thought of apart from concrete realities, specific objects, or actual instances”
- “Expressing a quality or characteristic apart from any specific object or instance”
- “Something that concentrates in itself the essential qualities of anything more extensive or more general, or of several things; essence.”
- “An idea or term considered apart from some material basis or object.”



Source: <http://dictionary.reference.com/browse/abstract>

Another Definition

“Something which isn’t there.” Dirch Passer, 1926-1980, Danish comedian



Some Uses of Abstraction

- Expression of values and emotions
- Expression of relationships between individuals
- Expressions of ideas that are more general than specific examples or convey or represent an imperfect example
- Understanding and working with symbolic abstraction such as mathematics.
- Generalizing from one context to another while understanding differences in circumstances that call for a different outcome.
- Relating to non-literal speech.
- Developing theory of mind.
- Getting the "big picture"
- Understanding certain humorous expressions.



Expression of Values and Emotions

- Examples:
 - Love
 - Honesty
 - Peace
 - Democracy
- The general population may disagree on exact meanings
- Most people tend to have a rather *intuitive* understanding of the meaning
- These terms are often used to describe rather imperfect examples—e.g., an “honest person”



Expression of Relationships Between Individuals

- Relatively straight forward (but generalization on generalization skills)
 - Family relations: Mother, daughter, grandfather, aunt (but may be used non-literally)
 - Neighbor
- Hierarchy
 - Employee
 - Coach
- Culturally variant
 - Friend
 - Acquaintance
- Intuitive but ambiguous standards
 - Friend
 - Mentor
 - Rival
- Membership
 - Sorority sister
 - Facebook friend



Expressions of Ideas More General Than Specific Examples

- Colors
- Shapes
- Rules
- Evaluations and characteristics-e.g.,
 - Good
 - Bad
 - Delightful
 - Stressful



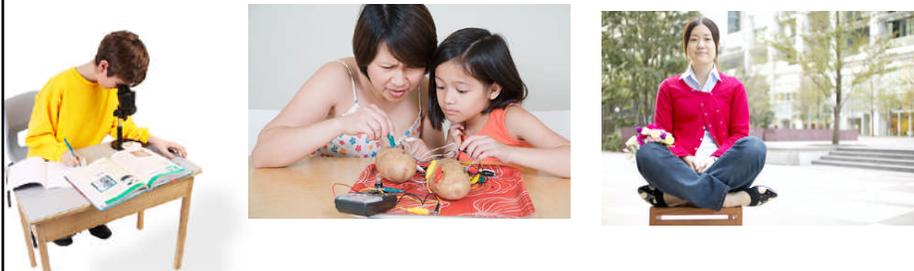
Description of the “Essence” of Imperfect Realities

- Examples
 - The Earth is “round”
 - “Congress shall make no law...”
- May represent exaggerations (e.g., “You are always late!”)
- A literal thinker may rightfully object that these characterizations are **WRONG!**



Generalizing From One Context to Another

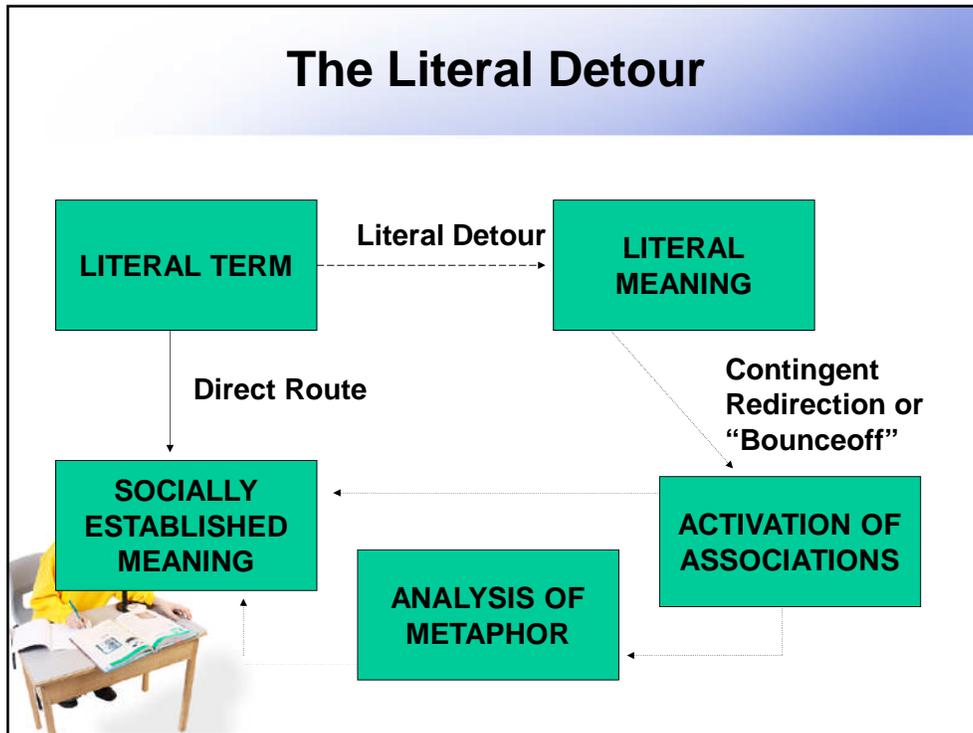
- Must understand what are the relevant (“diagnostic”) similarities between two cases
- Must understand that there may be exceptions—especially to rules



Relating to Non-literal Speech

- Understanding
 - Metaphors, figures of speech, and non-literal references
 - Exaggerations, hyperbole, sarcasm, paradoxes, and irony
 - Implied assumptions and context
 - That rules and standards may involve exceptions implied in or inferred from context.





Symbolic Abstraction

- Understanding the meaning of numbers, variables, coefficients, and equations
- Translating actual realities into symbolic representation (e.g., "word" problems)
- Manipulating equations

Expanded
$a + b$
$a^2 + 2ab + b^2$
$a^3 + 3a^2b + 3ab^2 + b^3$
$a^4 + 4a^3b + 6a^2b^2 + 4ab^3 + b^4$
$a^5 + 5a^4b + 10a^3b^2 + 10a^2b^3 + 5ab^4 + b^5$

$$(a+b)^2 = a^2 + 2ab + b^2$$

$$(a+b)^3 = a^3 + 3a^2b + 3ab^2 + b^3$$

Theory of Mind

- Understanding that other people have thoughts
 - Which may differ from one's own
 - Which may be influenced by information available to the person and perspective
- Understanding what the person is actually thinking
 - Based on
 - Expectations based on experience
 - Non-verbal cues



Humorous Expressions

- What, exactly, is funny?
- Reasons why individuals on the autism spectrum may have difficulty appreciating and sharing common types of humor
- Unique types of humor exhibited by certain individuals on the autism spectrum
- Vulnerabilities of individuals on the autism spectrum



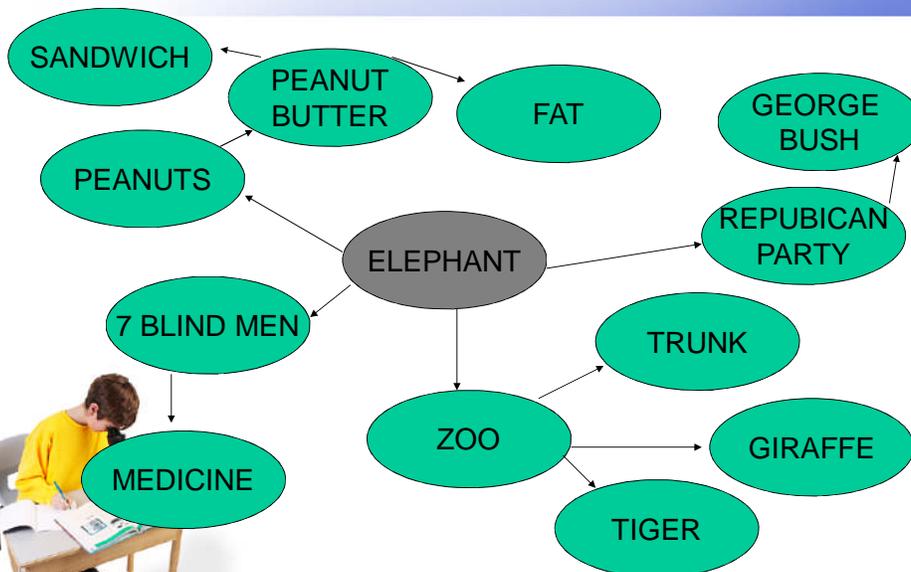
Getting the "Big Picture"

- Integrating
 - Current situation and context
 - Relevant information from experience
 - Factual information
- Executive function—may difficult to
 - Identify what is relevant
 - Keep track of all this at the same time
 - Keep up with other ongoing tasks



Lars Perner does not understand the rationale for boxing. If you are going to be civilized, why not agree not to fight in the first place? If you are not going to be civilized, why have rules?
 June 8 at 6:03am · Comment · Like

Associate Network of Knowledge



Unconscious Use of Abstraction

- Some things that tend to be “automatically” recognized in the general population
 - Figures of speech
 - Exaggerations and imperfections
 - The “essence” of a situation or description
 - Implicit assumptions
 - Affect
 - Relationships between people



Common Problems Experienced Among Individuals on the Spectrum

- Individuals who have very uneven abilities and/or skill sets may do well in one area (e.g., mathematics) but may have greater problems in another (e.g., verbal)
- The need to perform many tasks done “automatically” by the general population “manually” makes performance “in the heat of the moment” more difficult
 - One thing is to master techniques in the classroom; putting them into practice in the field is different



Yet...

- Some individuals on the spectrum have rather abstract interests
 - E.g., biographies, history, 1980s music, animal behavior, animal rights
 - In some cases, these interests may focus on rote memorization
- Some excel in certain abstract skills such as mathematics which may become the foundation for an interest



Recognizing When an Expression *Cannot* Be Understood Literally

- Oxymorons—e.g.,
 - “Thunderous silence”
- Things that are logically impossible—e.g.,
 - “Eat my words”
 - “Does not even begin...”
 - “All the world is a stage”
- Things that are impossible to do in reality—e.g.,
 - “Walking on eggshells”
- Incongruence with situation—e.g.,
 - “Coast is clear”
 - “Handwriting on the wall”



Forthcoming Books

