Autism and Applied Behaviour Analysis (ABA) – Perspectives from the UK

Introduction

- Nicola Stanley
- Experiences in Autism and disability
- Experiences in ABA

Autism

Characteristics

- Spectrum disorder
- Excesses & deficits

(Profile is different for each child)

Deficits

- Speech and Language Skills

Poor articulation, delayed or disordered development of receptive and expressive language skills.

- Communication Skills

Such as requests/commenting/question asking/non verbal communication

- Attention Skills

E.g. eye contact/staying on task

- Self Help Skills

E.g. dressing/toileting/eating

- Fine Motor Skills
- Gross Motor Skills

- Social Skills

E.g. emotional understanding/inference/prediction/ Theory of Mind

- Play Skills

E.g. Independent/ Turn taking/ Symbolic/ Imaginative/Interactive

Excesses

- Self Stimulatory Behaviour

E.g. Visual/auditory/tactile/smell/taste, linked to sensory system, behaviours may provide necessary stimulation

- Tantrums/Non compliance

E.g. Linked to frustration due to lack of communication skills and/or need to control environment

- Aggression to self or others

Often linked to frustration of not being understood and/or frustration of not being able to control environment

- Rigidity/Routines

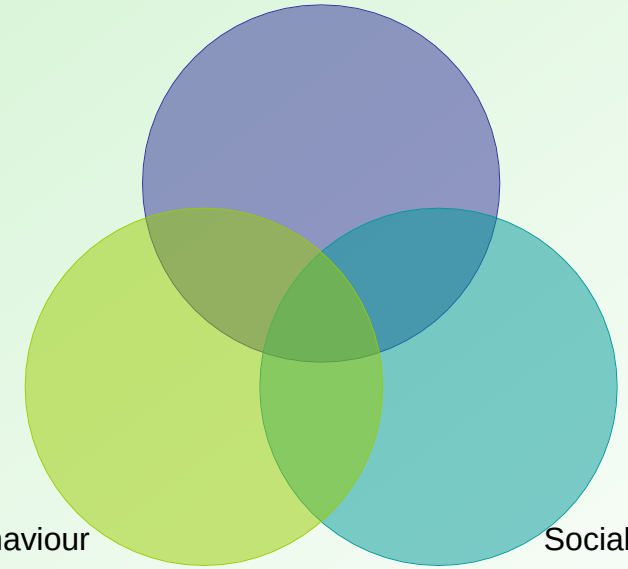
The need to control and predict own environment/lack of imagination skills

Triad of Impairments

- Social development
  - Solitary and withdrawn.
- Language and communication
  - Verbal and nonverbal communication
  - Difficulties in understanding facial expression, gestures
  - Lack of social understanding of language and use of language
- Thought and behaviour
  - Rigidity of thought and behaviour
  - Lack of imagination skills
  - Play does not develop spontaneously
  - Lack of transfer from the environment to play

Autism

Language & Communication



Restrictive and repetitive behaviour

Social understanding and interaction

Autism and ABA

- In the context of Autism…
- Applications of ABA in the UK

Definition of ABA

- *"Applied behaviour analysis (ABA) is the science in which tactics derived from the principles of behaviour are applied to improve socially significant behaviour and experimentation is used to identify the variables responsible for the improvement of behaviour."*

Cooper, Heron & Heward (2007)

ABA is…

- The use of behaviour analytic methods and research findings to change socially important behaviours in meaningful ways

- An applied science!

Defining Characteristics of ABA

- Applied
- Behavioural
- Analytical
- Technological
- Conceptually systematic
- Effective
- [Involves] Generality

(Baer, Wolf & Risley, 1968)

Additional characteristics of ABA

- Accountable
  - direct and frequent measurement enables Behaviour Analysts to detect their successes and, equally importantly, their failures so they can immediately make changes to interventions in an effort to change failure to success.

Additional characteristics of ABA

- Public
  - “everything about ABA is visible, public and explicit…. ABA entails no mystical or metaphysical explanations; there are no hidden treatments, there is no magic”

    (Heward, 2005)

Additional characteristics of ABA

- ‘Doable’
  - Although application of behaviour analytic principles and procedures requires far more than learning to a few simple methods, classroom teachers, parents, coaches, workplace supervisors, and sometimes the participants themselves are able to implement the interventions found effective in many ABA studies with the guidance and supervision of an experienced Behaviour Analyst.

Additional characteristics of ABA

- Optimistic
  - ABA's peer reviewed literature provides a large evidence base across a wide range of social issues including successes in teaching students who had previously been deemed 'unteachable'.

Historical background of Behaviour analysis

- Behaviour analysis consists of three major branches:

1. The philosophy (Radical Behaviourism)
2. The science (Experimental Analysis of Behaviour)
3. The application (Applied Behaviour Analysis)

- ABA can be fully understood only in the context of the philosophy and basic research traditions/findings from which it evolved and remains connected today.

Early Behaviourism

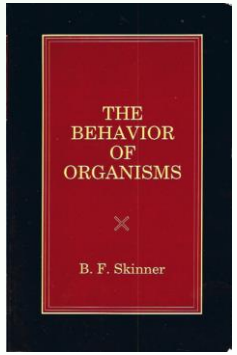
- John B. Watson – the first to advocate that focus should shift towards observable behaviour

- The objective study of behaviour as a natural science should consist of direct observation of the relationships between environmental stimuli (S) and the responses (R) they evoke

Skinner and Behaviourism

- The experimental branch of behaviourism started in 1938 with the publication of B.F. Skinner's ***The Behavior of Organisms.***

- It was within this book that Skinner defined two types of behaviour: ***respondent*** and ***operant***



Respondent Behaviour

- Reflexive behaviour that is elicited by stimuli that immediately precede them, it is involuntary (temperature change and goose bumps, shining light and pupil dilation, knee jerk reflex test etc.)

- Unlearnt and unconditioned

Operant Behaviour

- Behaviour that is selected and maintained as a function of its consequences; each person's repertoire of operant behaviour is a product of his history of interactions with the environment

- Consequences (environmental changes) that follow a behaviour alter its future probability

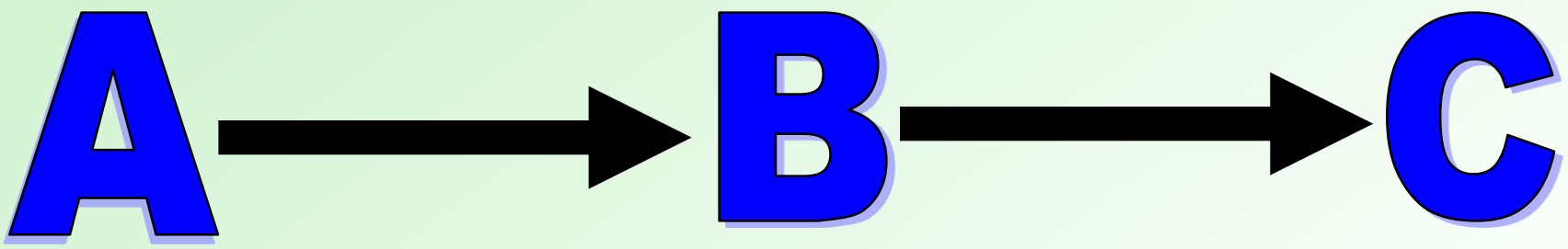
- Operant behaviour can take a virtually unlimited range of forms

Three Term Contingency

- Learned behaviour is changed less by the stimuli that precede it (although context is important) and more by the consequences that immediately follow

- The essential formulation for this notion is S-R-S, otherwise known as the 'Three Term Contingency'

Three-Term Contingency



- **A**ntecedent – what happens before a behaviour
- **B**ehaviour – the actual response
- **C**onsequence – the result of a behaviour

Pre-ABA

- During the 1950s and early 1960s researchers used the methods of the experimental analysis of behaviour to determine whether the principles of behaviour demonstrated in the laboratory with nonhuman subjects could be replicated with humans.

- These early researchers clearly established that the principles of behaviour are applicable to human behaviour, and they set the stage for the later development of Applied Behaviour Analysis.

Development of ABA

- 1960s – researchers began to apply principles of behaviour to improve socially significant behaviours.
- Many major new developments including pioneering applications of behaviour principles to education occurred during this time.
- Late 1960s & early 1970s – university programmes in Applied Behaviour Analysis were begun.
- 1968 – Journal of Applied Behavior Analysis first published.

Applications of ABA

- Is ABA only used for teaching children with autism?

Organisational Behaviour Management (OBM)
Sports Training
Animal Training
Treating Addiction (gambling, drugs, etc)
Increasing driver safety
Treating dementia
Marriage counselling
Evaluating train signalling systems
The list is endless!!!

ABA & Autism

- *Autism* is only one of many areas where ABA is used
- ABA principles and methods have been used (since the 1960s) to build a wide range of important skills and reduce problem behaviours

ABA & Autism

- Large evidence base
- Examples:
  - Lovaas (1987)
  - McEachin, Smith & Lovaas (1993)
  - Sallows & Graupner (2005)
  - Howard et al. (2005)
  - Remington et al. (2007)

ABA & Autism Research

Research strongly suggests:

- The efficacy and utility of Applied Behaviour Analysis in general.
- The efficacy of using the principles of ABA in the context of autism education.
- That there is more evidence to support the efficacy of ABA than for any other approach.

ABA & Autism Research

- The quality of provision is determined by the skills and competencies of those responsible for the provision – now clearly articulated through the Behavior Analyst Certification Board – www.bacb.com)

- Skills and competencies are developed through:
  - Advanced academic training in ABA
  - Extensive hands-on experience (including supervisory experience) of teaching pupils with autism using the principles and methods of the science of behaviour analysis

ABA & Autism Education

- Focused on skills development that will enable him/her to live as independently as possible (learner specific)
- Skills to be increased (deficits) and problem behaviours to be decreased (excesses) are determined through initial detailed assessment
- The skills are clearly defined (in observable terms) and carefully measured

ABA & Autism Education

- Skills are listed in all main domain areas, for example:
  - Communication
  - Social
  - Self-care
  - Physical
  - Play and leisure
  - Academic…

  and broken down into smaller component skills and sequenced developmentally (from simple to complex)

ABA & Autism Education

- Many research-validated methods are combined into a comprehensive but highly individualised package for each child to teach skills or address problem behaviours
- Research validated methods include:
  - Discrete Trial Training (DTT)
  - Incidental teaching
  - Direct instruction
  - Task analysis and chaining
  - Embedding instructional trials within other activities
  - Etc…

ABA & Autism Education

- There is a heavy emphasis on:
  - Making learning enjoyable
  - Engaging the learner in positive social interactions
- Behaviour change procedures are clearly specified and individualised. For example:
  - Instructions needed
  - Types of prompts (and how to fade them)
  - Reinforcers (rewards)

ABA & Autism Education

- Predominantly (and historically) delivered via home programmes
  - Many independent (and unregulated) service providers
- Increasingly delivered via ‘ABA’ schools
- TreeHouse was the first school in the UK to use the principles of ABA

Principles of ABA

- A set of principles…
- A programme that employs the principles of ABA…

What does this actually mean?

Things that need to be in place for it to be an ABA programme!

- Intensity
- 1:1
- Teaching across environments
- A focus on generalisation
- Use of consistent and contingent reinforcement
- Prompt and prompt fading strategies

- Breaking down skills
- Teaching using a mastery criteria
- Reinforcer and preference assessments
- Data collection and analysis
- Behaviour assessments and intervention
- Training
- Supervised programmes

Development in the UK

- Home programmes
- Home and school programmes
- Specialist schools
- ABA schools

- Research

Family Services

- Parent partnership
- Charities
- NHS
- Social services

Diagnosis and Assessment

For Autism

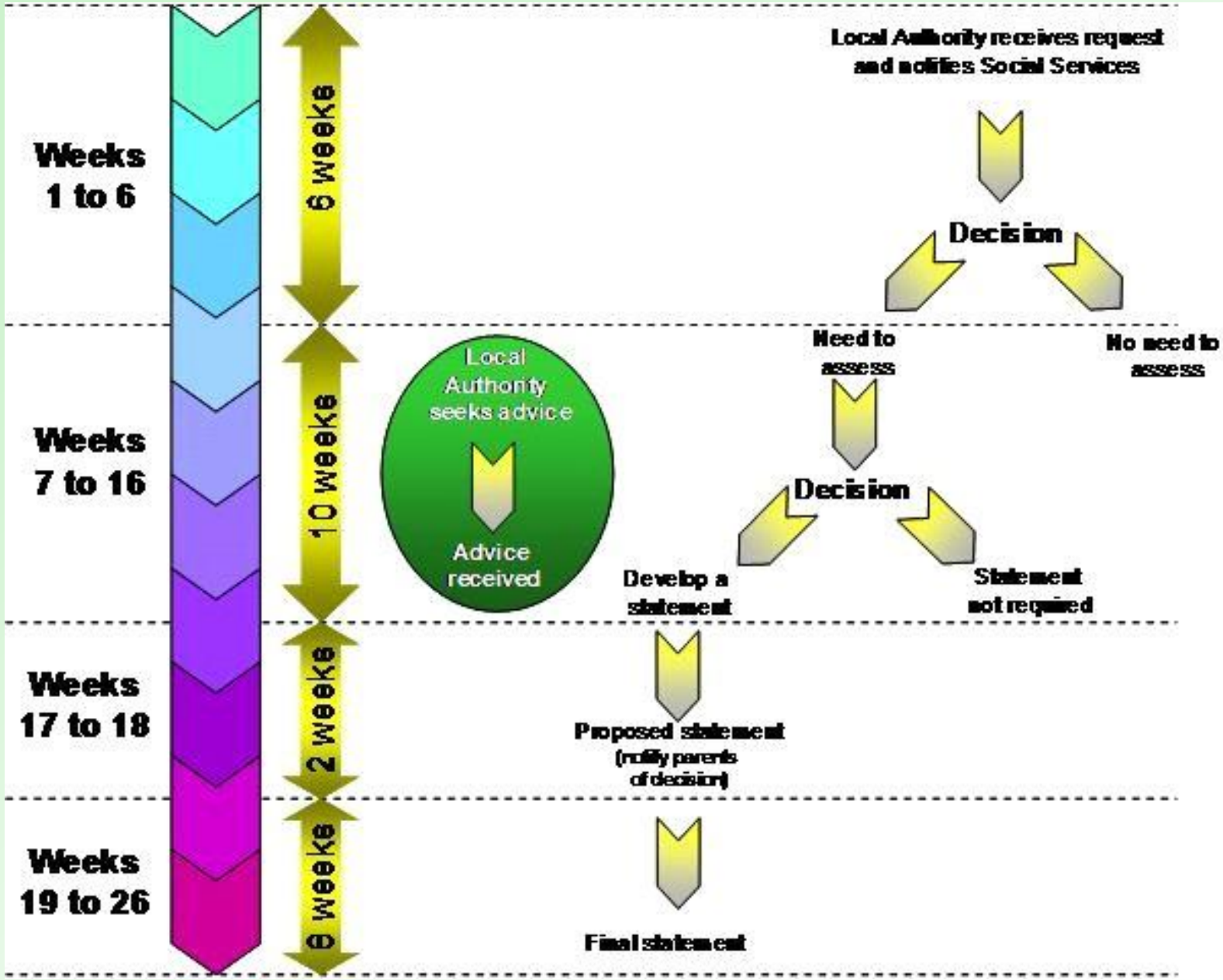
- GP
- Referrals
- Medical professional has to make the diagnosis
- Other professionals maybe involved (EP, SLT, OT etc.)

For ABA and provision

- ABA professionals
- EP
- Other professionals

Systems in the UK

- Statements of Special Educational Needs
- Process involved:
- LEA (Local Education Authority)
- Assessments and recommendations for provision
- Evidence for ABA for the individual
- Parental submissions
- Once a statement has been agreed…


Weeks 1 to 6
6 weeks
Local Authority receives request and notifies Social Services
Decision
Weeks 7 to 16
10 weeks
Local Authority seeks advice
Advice received
Need to assess
No need to assess
Decision
Develop a statement
Statement not required
Weeks 17 to 18
2 weeks
Proposed statement (notify parents of decision)
Weeks 19 to 26
6 weeks
Final statement

Funding

- Direct link to statements
- Funding varies…
- Home based programmes
- School based programmes

Often parents fund first…

What happens if…

- The LEA want to give something else?

- Negotiations
- Tribunals
- High court action

- What parents do if they still don’t get ABA…

Break time

Models of provision in the UK

- There are several different models of ABA provision in the UK.

- Service providers
- Schools

- Home based ABA programmes
- School based ABA programmes

Other professionals

- SLT
- OT
- Physical Therapists
- EP
- Specialist Advisory Teachers

How they input into an ABA programme

- Multi-disciplinary approach
- Good practice guidelines
- Independent V LEA/NHS

Assessments

- Initial

Observation

Non standardised assessments

Standardised assessments by EP

Standardised assessments by OT, SLT

- Ongoing

Non standardised assessments

Observations

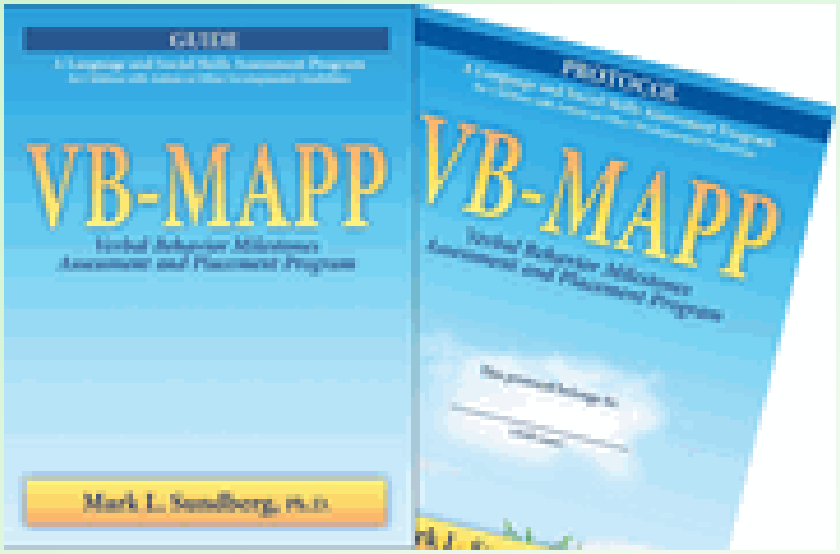
Data for learning targets

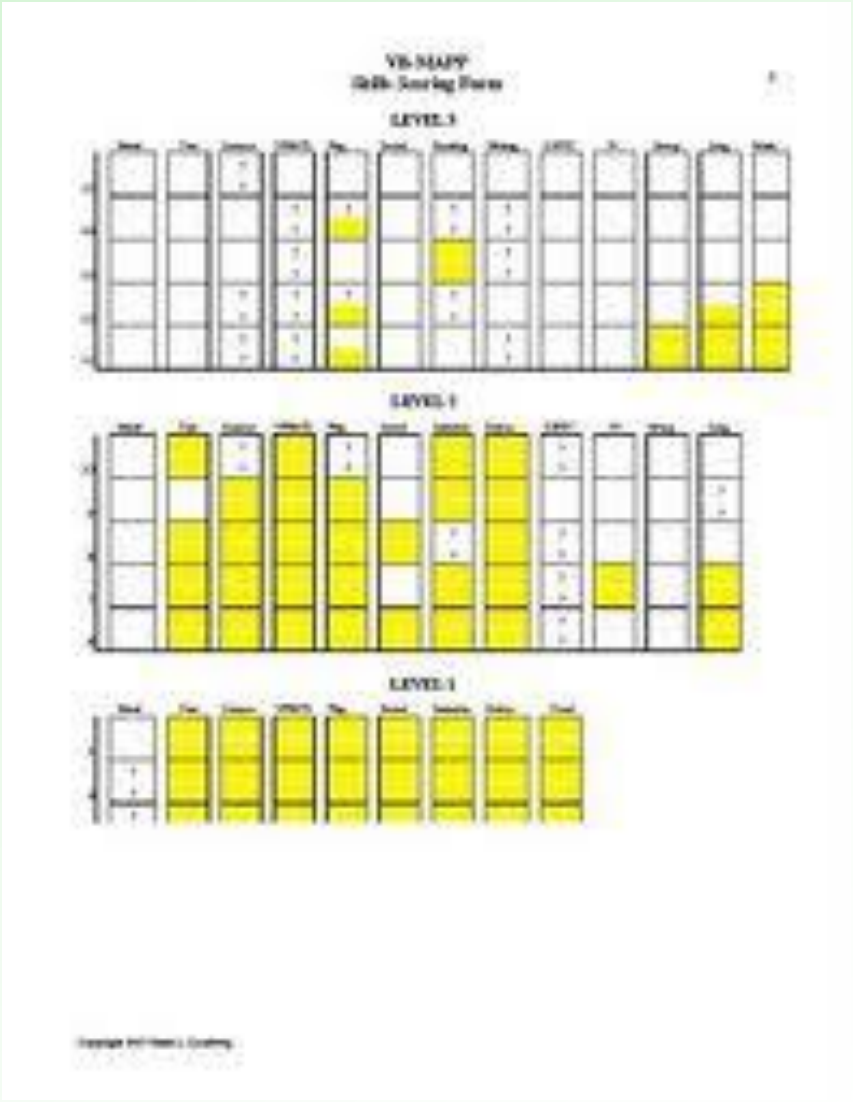
Annual standardised assessments

- ABA Specific

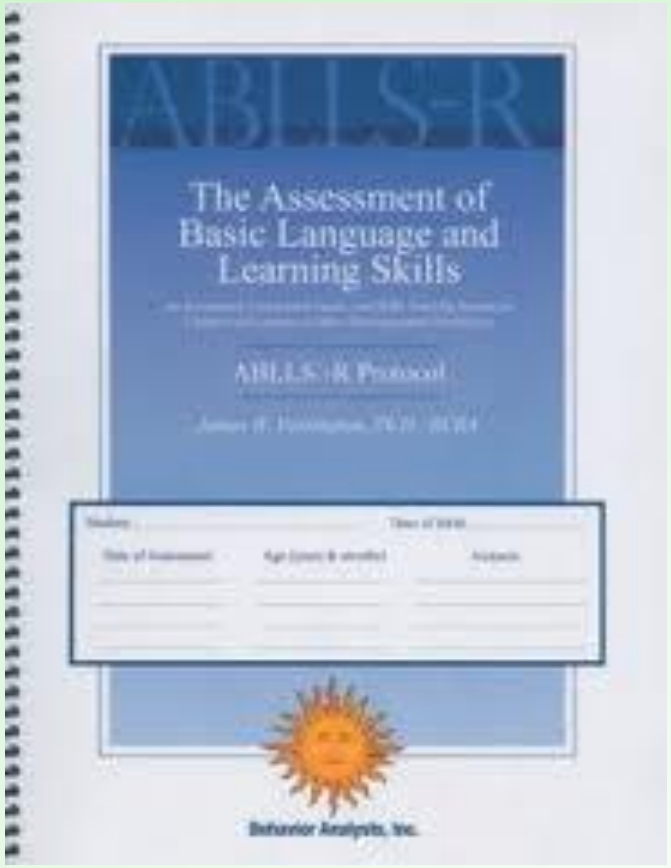
Common assessments that ABA professionals use…

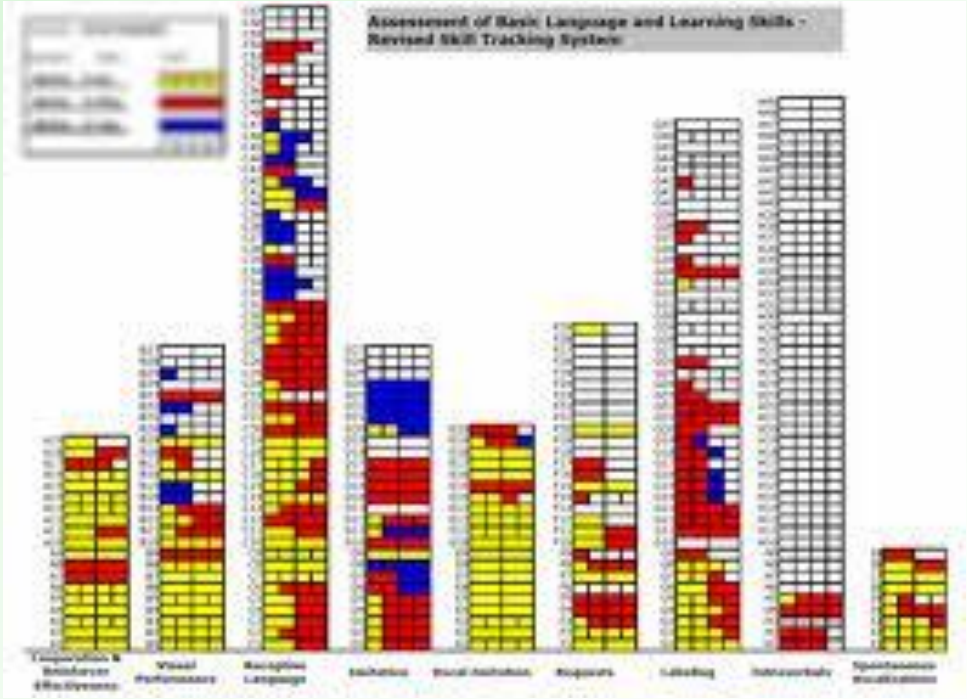
- VB MAPP


GUIDE
VB-MAPP
Verbal Behavior Milestones
Assessment and Placement Program
Mark L. Sundberg, Ph.D.
PROTOCOL
VB-MAPP
Verbal Behavior Milestones
Assessment and Placement Program


VB-MAPP
Skills Scoring Form
LEVEL 3
LEVEL 2
LEVEL 1

- ABLLS


ABLLS-R
The Assessment of Basic Language and Learning Skills
ABLLS-R Protocol
Behavior Analysts, Inc.


Assessment of Basic Language and Learning Skills - Revised Skill Tracking System

Applying Theory

- This section will look at:
- Behaviours
- ABC
- Four term contingency
- Reinforcement
- Motivation

How are behaviours learned?

- Learning implies that a behaviour is added to an individuals repertoire in a relatively permanent way (Catania, 1990)
- One can learn skills such as addition and subtraction, or behaviours such as brushing teeth or washing hands.
- One can also learn challenging behaviours such as biting self or endlessly talking about !

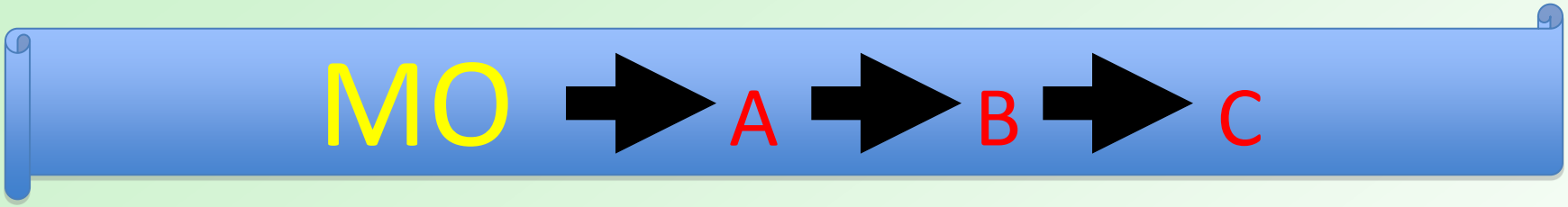
How are behaviours learnt? cont

- If learning were a mathematical equation it would look like this:

Motivation + Antecedent + Behaviour + Consequence = LEARNING

- In other words – learning is the sum of four variables. We will now explore these…

Four-Term Contingency



- Added aspect – MO
- Motivating Operation

What does this actually mean?

Motivation

MO + A + B + C = LEARNING

- What a person wants or desires and how hard he is willing to work to get it.
- Motivation drives behaviour, therefore, we need to control and measure it to change behaviour.

Motivation cont

So…

– The more you are deprived of something desired, the more you want it. You will try behaviours that have worked in the past to get it, and getting what you want will strengthen the behaviour that worked.

– The more you have of something, the less you want it. You will not engage in behaviours to get it.

Antecedents and Behaviour

MO + A + B + C = LEARNING

- An antecedent is an environmental condition or a change to the environment that occurs directly before the behaviour of interest.
- Behaviour - Anything and everything that a person does.

Consequences

MO + A + B + C = LEARNING

- A consequence is what happens as a result of the behaviour of interest
- A consequence can be:
  - Reinforcement
  - Punishment

Reinforcement

- What is reinforcement?
- Reinforcement involves consequences that ‘strengthen a behaviour’
- To ‘strengthen a behaviour’ means to increase the likelihood that it will occur in the future.

Reinforcement cont

- Examples
  - A lady being told that a dress looks nice on her, resulting in her wearing the dress more often.
  - A Child being given £1 for cleaning his room, resulting in him cleaning it every day!
  - An infant discovering that his mobile toy will shake around if he kicks, resulting in him kicking his legs constantly.

Punishment

- What is punishment?
- Punishment involves consequences that ‘weaken’ a behaviour
- To ‘weaken a behaviour’ means to decrease the likelihood that it will occur in the future.

Punishment cont

- Examples
  - Spouse telling you in a lukewarm tone that you look “fine’ in a carefully selected outfit, decreasing the future probability of wearing the outfit again.
  - Giving public praise to a shy pupil in class, decreasing the future probability of them raising their hand.

Reinforcement

- Definition

  - Any stimulus which when delivered contingently on a response, increases the future probability of that response occurring again.

(Cooper, Heron & Heward, 2007)

Positive Reinforcement

- Definition:
  - Any stimulus that, when presented contingently on a response, increases the future probability of that response.

- Real life example: Vending machine

Negative Reinforcement

- Definition:
  - Any stimulus that, when removed contingently on a response, serves to increase that response.

- Real life example: music playing

Positive Vs Negative

Positive means:	Negative means:
Adding something that was not present to the situation	Taking something away that was already present to the situation

Types of reinforcers…

- Primary
- Secondary

Primary Reinforcer

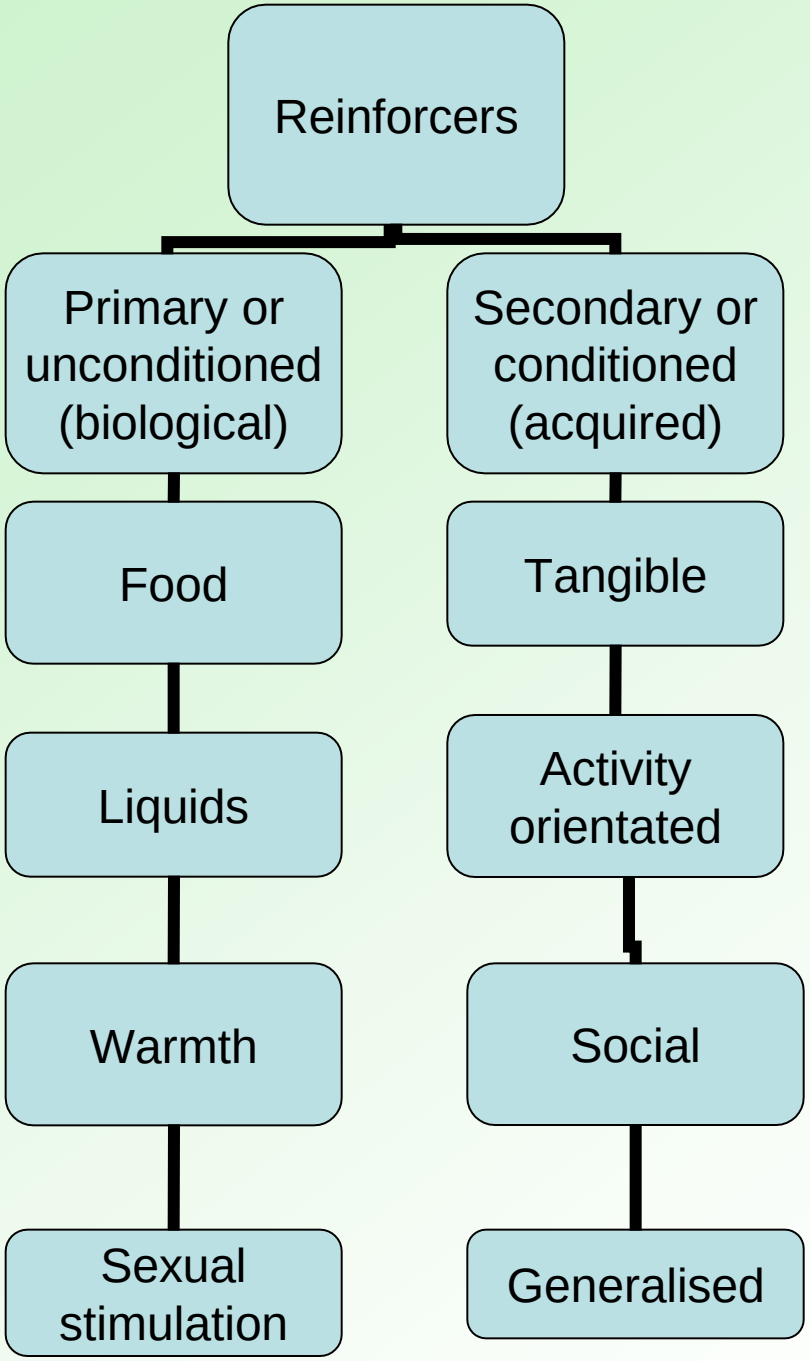
- Definition:

  Primary reinforcers are unconditioned (unlearned) reinforcers because they reinforce behaviour as a result of their biological importance to the survival of the individual.

Secondary Reinforcers

- Definition:

  Secondary reinforcers are conditioned (learned) reinforcers. They are initially neutral and acquire reinforcing capability by being paired with primary reinforcers or other strong reinforcers.


Reinforcers
Primary or unconditioned (biological)
Secondary or conditioned (acquired)
Food
Tangible
Liquids
Activity orientated
Warmth
Social
Sexual stimulation
Generalised

How to identify reinforcers?

Rules of reinforcement?

- Contingent
- Immediate
- Varied

- Preference assessment
- Hierarchy

How else can we find out?

- Asking
- Observing
- Sampling
- Forced choice methods
- Try and See
- The Premack Principle

Preference V Reinforcer

Question - Define preference?

- What do you prefer? Chocolate or Vanilla?
- What would you do for your chosen preference?

Question - Is it a reinforcer?

What’s the difference?

Break time

Applying Theory and Principles…

- Intensity
- 1:1
- Teaching across environments
- A focus on generalisation
- Use of consistent and contingent reinforcement
- Prompt and prompt fading strategies
- Breaking down skills
- Teaching using a mastery criteria
- Reinforcer and preference assessments
- Data collection and analysis
- Behaviour assessments and intervention
- Training
- Supervised programmes

Next…

- Challenging behaviour
- Behaviour management
- Communication
- Verbal Behaviour
- Ways to teach
- Programming for children with Autism

Challenging Behaviour

- A child may challenge you in a number of different ways:
  - Non-compliance
  - Inattention
  - Repetitive Behaviours
  - Aggression/tantrum/self-injury

CB cont

- Some behaviours may be dangerous whilst others are just plain annoying.
- Some behaviours may lead to destruction of property whilst others lead to destruction of relationships with family and friends.
- For some these behaviours are a constant painful reminder of a child's autism. For others, they may be a constant barrier to community inclusion and participation in the world.

Definition of CB

- *Behaviour of such intensity, frequency or duration that the physical safety of the person or others is likely to be placed in severe jeopardy*

or

- *Behaviour that is likely to seriously limit use of, or result in the person being denied access to ordinary community facilities*

(Emerson, 1998)

‘Challenging’?

- The term ‘challenging’ was used to emphasize the role of services and professionals and move away from blaming the individual

(Blunden & Allen, 1987)

What makes a behaviour ‘challenging’?

- ⇨ How often it occurs (frequency)
- ⇨ How severe it is (intensity)
- ⇨ How long it continues (duration)
- ⇨ Where it occurs (location)

➔ Location, frequency, intensity and duration combine as factors for each CB

Emotive Language

- When experiencing challenging behaviour it is important to keep language objective!
- Blaming the child or person displaying the challenging behaviour does not reduce the behaviour and makes the situation more difficult to accept.
- Sometimes the language we use ‘creates’ a challenge

Which statement?

I tidied the toys away and Chris got really angry and hit me	Chris displayed hitting behaviour towards me when I tidied the toys away
Sarah became totally over stimulated and ran around the room like a Tasmanian devil	Sarah began to run around the classroom at a fast pace.
Andy pinched Adam when I asked him to share the toys – he is so naughty	Andy displayed pinching behaviour towards a peer when asked to share the toys

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How common is CB? (Prevalence)

- Estimates suggest that 12-17% of people with learning disabilities will exhibit Challenging Behaviour

- Some common forms (topographies) are aggression, self-injury and property destruction

Some Topographies of SIB

- Skin picking
- Self-biting
- Head punching/slapping
- Head-to-object banging
- Body-to-object banging
- Hair removal
- Body punching/slapping

(Oliver et al., 1987)

CB as a social construction

- Norms and expectations concerning 'appropriate' social behaviour vary according to settings
- Behaviour may be challenging by virtue of the capacity of the setting to manage such behaviour
- Behaviour may be viewed as challenging in the absence of a plausible account for the behaviour

How do we think about challenging behaviour? A quick history

- Historically intervention did not take into account the possible causes for a behaviour. Instead focusing on the question "***What*** is he doing?"

- Based on what behaviour looked like an intervention was chosen…
  - Boy swears, Mum washes his mouth out with soap and water.
  - Girl with autism hits a peer, teacher puts her in 'time out' for 5 minutes.

How do we think about challenging behaviour? A quick history cont

- Problems with this approach:
  - Never find out ***why*** the behaviour was happening.
  - If take action without knowing why the behaviour was happening, we may end up rewarding it!
  - Individuals may ‘get used to’ these consequences/reactions over time.

Current thinking about Challenging Behaviour

- To change behaviours, we now focus on the question *"What message is that behaviour communicating?"* rather than on what the behaviour looks like.

- We now know that even the most seemingly senseless behaviours make sense to the person exhibiting them.

Why are CBs so common amongst individuals with ASD?

- Some suggestions
  - Difficulties with communication skills
  - Difficulties with social skills e.g. understanding social norms and expectations
  - Restricted interests, lack of play and leisure time skills
  - Self-stimulatory behaviours associated with ASD
  - Obsessive and ritualistic behaviour traits
  - Regulation difficulties

Functions of challenging behaviour

The Four Learning Variables & CB

Motivation + Antecedent + Behaviour + Consequence = LEARNING

- Behaviour occurs for a reason
- Identifying the function of behaviour is the key to providing appropriate interventions.
- Function based behavioural interventions.

Why is function important?

"Placing greater emphasis on function rather than on form may allow us to determine when different problems can be treated similarly and, more important, when the same problem must be treated differently." Iwata (1982/92)

Very important implications for children – individual approach needed!

Different Functions

You see a child engage in stereotypic flapping.

Possible interpretations include?

- Child enjoys self-stimulation?
- Child is bored
- Child is avoiding an instruction/task
- Child wants attention
- Child is stressed

Functions of behaviour

In behavioural terms the function of challenging behaviour falls into four categories:

1. Escape or avoidance of aversive stimuli (demand avoidance)
2. Increased social contact (social attention)
3. Increased access to preferred objects or activities (tangible reinforcement)
4. Self-stimulatory

Our chosen intervention will be based on the function of the CB.

Identify function(s)

- Increased social contact
  - Positive reinforcement (social attention)
- Increased access to preferred objects/activities
  - Positive reinforcement (tangible reinforcement)
- Escape or avoidance of aversive stimuli
  - Negative reinforcement (demand/task avoidance)
- Self-stimulatory
  - Automatic reinforcement

Social Attention

CB occurs when the individual has received some form of attention following that behaviour in the past.

Important questions to consider are:

- What type of attention is given?
- What opportunities already exist to gain attention?
- Is the attention 1:1 or shared with others?
- Do they have alternative means to gain attention

Tangible Reinforcement

CB occurs when the individual has been presented with a tangible item following the behaviour in the past

Important questions to consider are:

- What opportunities does the individual have to gain access to preferred items or activities?
- Are they able to request for preferred items appropriately?

Demand Avoidance

CB occurs when the individual is engaged in an activity or task that either they do not enjoy, do not understand or is too difficult
If the activity/task stops then the CB stops
Important questions to consider are:

- Do they HAVE to do the task?
- Is it too boring, hard etc.?
- Could the task be broken down into smaller steps?
- Can additional reinforcement be added to completion of task

Automatic Reinforcement

Occurs repeatedly when not engaged in any activity or continuously, whilst engaged in activities across the day (would engage in this behaviour if alone)
Important questions to consider are:

- What do they like about the activity (visual, tactile, auditory, olfactory)?
- Are they able to engage in a variety of leisure/play skills?
- Can the pupil access these activities easily?

So…

We know that understanding the function of behaviour is important if we are to design effective interventions, but…

How do we find out the function of a behaviour?

Behavioural assessment

Types of Behaviour assessment:

- Functional Behaviour Assessments
- Functional Behaviour Analysis

Functional Behaviour Assessment

- Descriptive Functional Behaviour Assessment
  - ABC recording
  - Scatter plots
- Indirect Functional Behaviour Assessment
  - Interview
  - Rating scales (Motivation Assessment Scale (MAS), QaBF)

First…define the behaviour

- You will need:
  - clear, precise and unambiguous definitions of the categories and units of behaviour that you are going to observe. What is meant by ‘he hits people’ or ‘he has a temper tantrum?’
  - to say what your definition does and does not include.
  - to be clear about when behaviour starts and when it ends.

Characteristics of an ideal definition

- Observable
- Objective
- Complete
- Clear
- Accurate
- Include examples and non-examples

Example Definition – “Mouthing”

- *Any instance of Johnny putting object or body parts into mouth, past plane of lips for at least 1sec.*
  - Examples: When block building Johnny puts small blocks into mouth.
  - Non-examples: Eating, sucking on a lolly, blowing whistle.

Observable ✓
Objective ✓
Complete ✓
Clear ✓
Accurate ✓
Include examples and non-examples ✓

Then use the tool…

- QaBF
- MAS
- ABC

Functional Analysis

- Functional (experimental) Analysis

  - Analogue assessment

- Attempts to discover which factors in environment maintain the difficult behavior
- Attempts to determine the function of the behavior
- Strategies to complete include: interview, observation, and manipulation/experimentation

Analysing results…

- All behaviour assessments and analysis should be directed and managed by an experienced Behaviour Analyst.

Considerations

- Ethics
- Reducing behaviours
- Increasing behaviours
- Teaching replacement behaviours

Functional Communication Training

- Carr & Durrand 1985
- They showed that CB could be reduced (and extinguished) by increasing functional communication ability!
- Very important when choosing interventions
- We must start with what we can INCREASE before looking at what we can decrease

Strategies for decreasing behaviour

- Several principles and procedures can be used to decrease or eliminate behaviours of concern

1. Differential Reinforcement
2. Extinction
3. Punishment

Ethics and CB

- Always use the least intrusive method for reduction of behaviour
- Based on function so that potential harm to the pupil is reduced
- If you can reduce CB by providing reinforcement – this should be first action
- Only if this fails should punishment/ reduction procedures must be used

Communication

- Perhaps the most important aspect of any intervention.

Identify what is important for individual first…

Then look at what systems to use.

- Vocal language
- Supported – PECS, signs
- Other

Verbal Behaviour

- Verbal behaviour is a behavioural approach to language where the focus is on the function of language rather than form.

- The Verbal Behaviour programme is based on the work of B F Skinner (1957).
- Skinner describes how language needs to be taught to children with autism in a specific way. Here the function of language is never left to chance, for example, once a child can label it is not assumed that he/she will naturally link it to the *meaning* of the label.

- Skinner also emphasises the need for mand (request) training as an essential first step that has far reaching implications for all other aspects of language training.

- The teaching method advocated by behaviourists such Vincent Carbone and Patrick McGreevy combine Skinner's Verbal Behaviour with fluency, errorless teaching and high reinforcement in order to implement a curriculum laid out in the ABLLS (Assessment of Basic Language and Learning Skills).

Introduction to the Main Terms

- The Verbal Behaviour approach teaches all the ‘meanings’ (or verbal operants) of a word via the following skills:

Mands

- As in de*mand*, com*mand*.
- It is language used to ask for something you want such as ‘I want juice’, ‘Leave me alone’, ‘How do you do that?’
- This is the first type of language that a child usually learns because it is intrinsically associated with reinforcement.

Mands cont

- Within the programme the child is taught to mand for reinforcers using sign language, vocals or PECs (Picture Exchange Communication).

Mands are important because:

- The child is highly motivated (they get something, compared with RFFC, which only benefits the speaker)
- They encourage spontaneous speech, because with a mand the child initiates the communication, rather than responding to an SD
- Mands, together with intraverbals, form the basis of conversation. For example, “How are you? Where did you go last night?” are mands for information. Response: “I went to the cinema” (Intraverbal). This is how conversation works.

- A child who is not proficient with manding and intraverbal repertoires will not be able to have a conversation.
- Most mand training is done in the natural environment and not at the table.
- Mands replace inappropriate behaviours.

Tacts

- Labelling/commenting

e.g.

It is a car,

It’s cold.

Intraverbals

- Responding to something someone else has said without a visual stimulus

e.g. ‘What animal says moo?’,

‘How are you?’,

‘Old MacDonald had a …?’

Echoic/motor imitation

- Repeating a word or phrase through speech or signing

Receptive

- Non-verbally identifying/selecting the correct item in response to a request such as ‘Touch the car’, ‘Find the clock’, ‘Point to the cat’, ‘Show me a red car’.

RFFC

- (Receptive by Feature, Function and Class)
- E.g. ‘Find the one that’s red’ (feature),
- ‘Touch the one you eat’ (function),
- ‘Point to the one that’s food’ (class).

Teaching Methods and Principles

Reinforcement

- In the early stages it is vital that the tutors are ‘paired with’ reinforcement before demands are placed on the child.
- Pairing should be an ongoing process throughout the programme.

- The child learns that the tutor will provide reinforcement and they can communicate with the tutor in order to obtain it.
- The teaching environment should be attractive to the child in order to evoke responses.
- Avoid the use of escape as reinforcement (e.g. Go and play).

- Be very careful not to ‘kill the reinforcer’. This could be done by placing too many demands on the child. E.g. by asking too many questions, or by not prompting enough or quickly enough.

Motivating Operation (MO)

- A Motivating Operation is achieved when there is deprivation of a reinforcer. This increases the child's motivation to respond or request in order to gain the reinforcement.
- Once you have established manding for the reinforcer you can then build up demands slowly in-between the mands.

- If the demands are increased too quickly it is likely the child will engage in self-stimulatory behaviours or become non-responsive etc.
- If this happens, prompt the child through the task so that he learns that instructions need to be followed through and then allow the child to mand again to bring back the motivating operation and then build up demands slowly again. This way you should have the optimum teaching environment.

- Placing demands in between mands is a good way of introducing a child to increased demands. The child additionally needs to learn to respond at other times and when the schedule of reinforcement is reduced.

Errorless teaching and prompt fading

- The child is fully prompted for all acquisition items, with the prompt almost glued onto the SD. For example, “what's this? cat”.
- It is essential to the learning process that the child is given the opportunity to respond with diminishing degrees of prompt.

- Fading the prompt quickly is important to prevent the child becoming prompt dependent. This is done in two ways, for example, “What’s this? Ca..”. Next time the SD is presented, a slight pause can be inserted before a prompt.
- Only allow 2-3 seconds for a response before prompting.

- Correction procedure: If the child responds incorrectly, then the SD is repeated and he is prompted straight away. The SD is then given again to ensure a correct response, then tested again later after other tasks have been worked on.
- Prompt-dependency won’t happen if you keep things fast paced, always fade prompts quickly and never allow more than 2-3 second delay before prompting.

Fluency

- Teaching a child to respond quickly as well as correctly is an important skill. It ensures a greater retention of skills and allows for more efficient generalisation and functionality.

- Every response must be strong, fast and at an appropriate volume. A child asking another's name in the playground won't hang around for 5 seconds before they respond! Allow a max 2 seconds wait time on mastered items.
- In practice the presentation of the next SD is a reinforcer for the previous response and the child thrives on the fast pace of teaching.

Mixing tasks

- Mixing tasks often reduces problem behaviour, enhances generalisation and increases the rate of acquisition.
- Remember to mix in lots of easy tasks with items on acquisition. The balance often recommended is 80% mastered and 20% on acquisition.

Natural Environment Teaching (NET)

- It is essential to work with the child whenever and wherever the motivation is highest.
- Verbal modules can be created around the motivation.
- The main effect is to begin to shape conversations and develop spontaneous language more naturally.

Ways to Teach

- Errorfull
- Errorless

DTT

- Used within ABA programmes

Discrete Trial

- What is a “discrete trial”?
  - Discrete: has a clearly observable beginning and end
  - Trial (synonyms): test; assessment; tryout; check
- Discrete Trial: a well-defined unit of teaching which allows us assess skill acquisition.

Discrete Trial Teaching

- DTT is a specific method of teaching used to maximize learning. It is a teaching technique or process used to develop many skills, including cognitive, communication, play, academic, social and self help skills. It is simply good teaching!
- Is DTT autism specific?

Discrete Trial Teaching

The teaching strategy involves:

1. Breaking skills into component steps
2. Teaching each step of the skill intensively until mastered.
3. Providing lots of opportunities for repetition.
4. Prompting the correct response and fading the prompts as soon as possible.
5. Using reinforcement procedures.

Characteristics of DTT

- It is a teaching unit.
- It has a clear beginning, middle and end (i.e. discrete).
- It is predictable for the learner.
- Allows instructors to be consistent in terms of language and expectation.
- Gives clear consequences, so the learner knows the outcome – and knows when to change their response/behaviour.
- Allows for the pace to be adapted to the needs of the learner.
- Can be provided consecutively, in close succession, to allow the learner to learn from the previous trial's consequence – this increases skill acquisition.

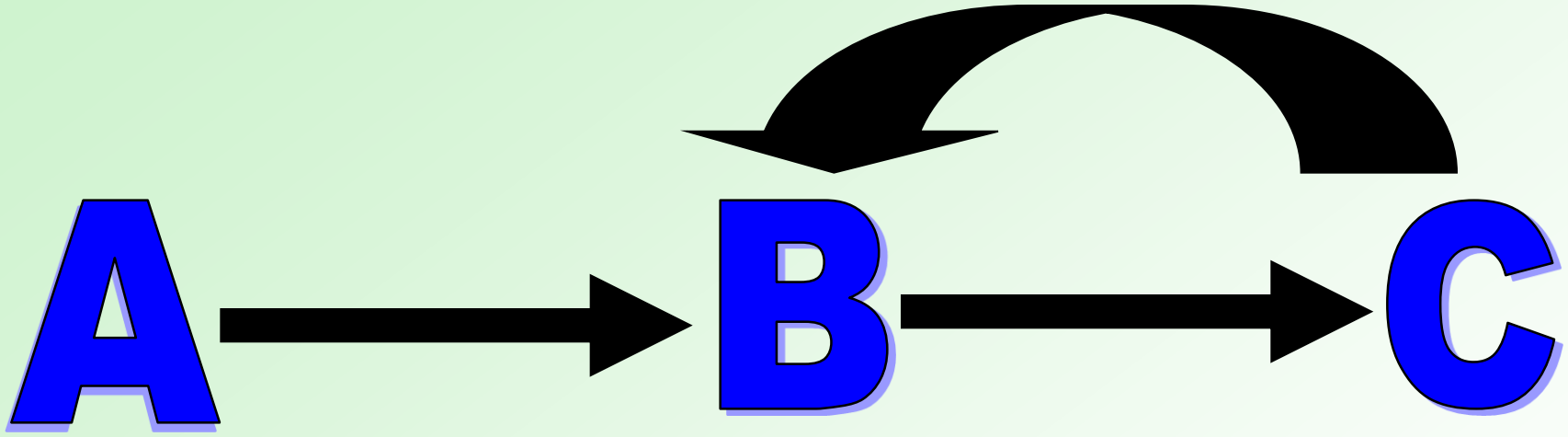
Characteristics of DTT cont.

- Rapid
  - As much as learner's ability allows
- Repeated
  - Practice makes perfect
- Reinforced
  - Ensures learner is motivated to give independent responses

Why use DTT?

- Individuals with autism (typically) have difficulty learning from the typical environment
  - DT breaks complex skills into small component parts; the next component is not taught until previous skills (prerequisites) are learned
- Individuals with autism (typically) have difficulty learning solely from observation
  - DT requires active engagement of the individual; target responses are clearly defined

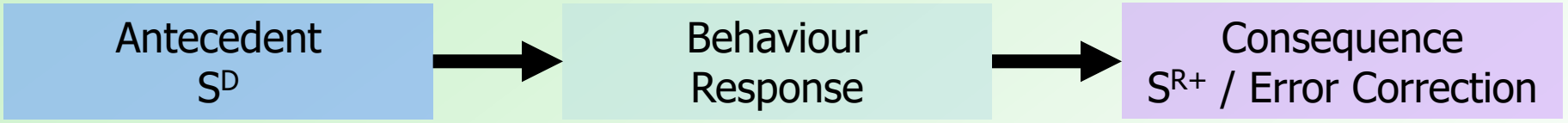
Three-Term Contingency



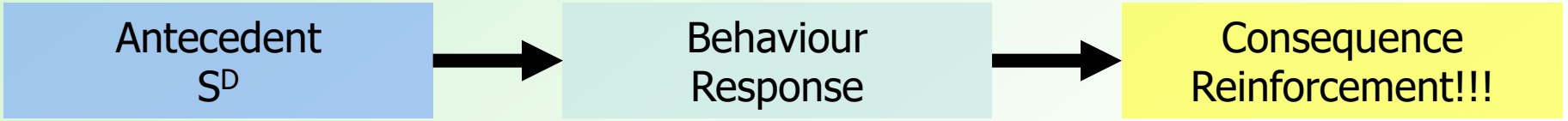
- **A**ntecedent – what happens (immediately) before a behaviour
- **B**ehaviour – the actual response
- **C**onsequence – what happens (immediately) after a behaviour

DTT and ABC

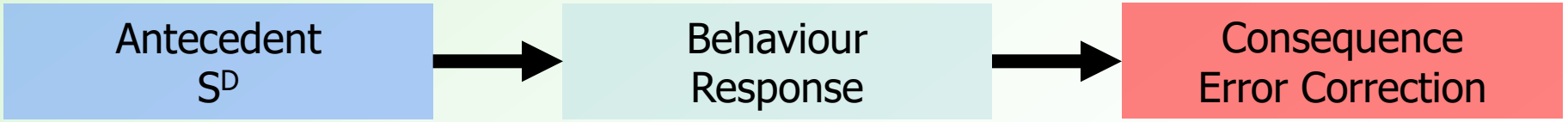
A DT is a single cycle of a behaviorally based learning unit.



Example 1: Learner successful



Example 2: Learner unsuccessful



DTT Example

$S^D \rightarrow R \rightarrow S^{R+}$

"Jump" → Learner jumps → "Well done!"

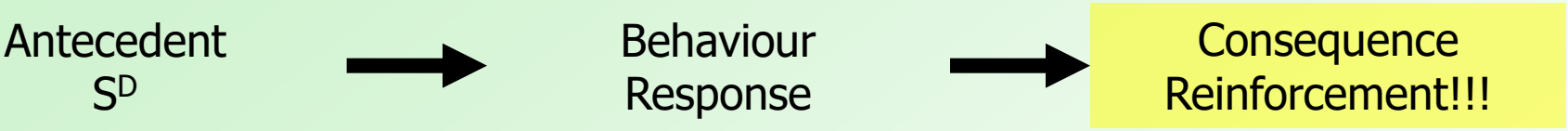
Antecedent / S^D

- Provide antecedent (e.g., vocal instruction, removal of desired item, visual cue).
- Use a clear (not necessarily loud) voice.
- Use a neutral tone.
- The instruction should only be given once at the start of the Discrete Trial. If the instruction needs to be repeated then the behaviour should be consequated (finishing the first trial) and the instruction repeated indicating the start of a second trial.
- Vary inflection, prosody, language

Behaviour (Response)

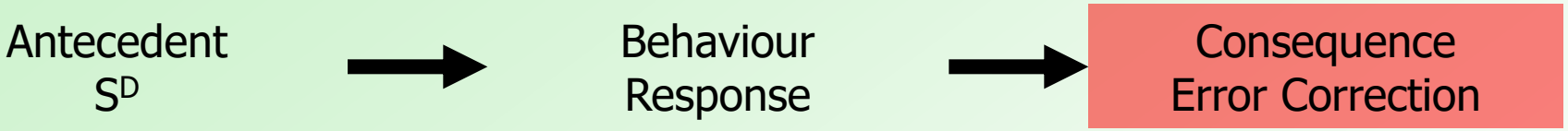
- Behaviour should be displayed with 3-5 seconds of the antecedent.
- Behaviour should be ‘clean’ without additional inappropriate behaviours being displayed .
- Behaviour should not co-occur with other responses (inadvertent chained response).
- If the response exceeds expectation (i.e. different to but ‘better’ than target response) do not say ‘No’!

Consequence / S^{R+}



- Immediate (on following a correct response/appropriate behaviour).
- Contingent (provided for a specific response).
- Varied (so individual does not satiate on one reinforcer – and to extend the repertoire of activities enjoyed).
- Differentiated (hierarchy of reinforcers, save the top items for difficult, new and independent responses).
- Always paired with specific (good clapping) or general (brilliant) social praise.
- Relatively quick in terms of duration of access.

Error Correction



- Mild verbal feedback (e.g. “That’s not right.” OR “Too slow”) and/or non-verbal feedback (e.g. no eye contact)
- Give instruction again
- Immediately prompt or model correct response
- Neutral feedback (e.g. “Better…”)
- Give instruction 3rd time allowing learner to respond
- If correct, more enthusiastic verbal praise
- If incorrect, prompt response and go on to new instruction

Prompt

- What is a prompt?
- When does it happen?
- When does it not happen?
- Types of prompts
- Intensity of prompts
- Prompt levels-fading

Prompt

- Definition: supplementary stimuli used to increase the likelihood that the learner will emit a correct response in the presence of the S^D which will eventually control the response.
- Could be anything added to facilitate a correct response.
- Prompts must be faded over time to avoid prompt dependency.
- Prompts used are specific to the type of learner and the skill being taught.
- Before using prompts, identify how prompts can be faded – the aim is independence for the learner.

Types of Prompts

- Physical
- Vocal
- Gesture
- Model
- Proximity
- Point

Using and Fading Prompts

Step 1: Immediate hand over hand Step 2: Immediate light physical guidance Step 3: 2 s delay light physical guidance Step 4: Independent	Step 1: Immediate full verbal model Step 2: 2 s delay full verbal model Step 3: Independent
Step 1: Hand-over-hand Step 2: Light physical guidance Step 3: Gesture prompt Step 4: Independent	Step 1: Immediate point Step 2: 1 s delay point Step 3: 2 s delay point Step 4: Independent

Preparing for and using DTT

1. Review the teaching procedures
2. Check the prompt level (and find out what it means!!)
3. Obtain any stimuli required (e.g. cards, objects)
4. Obtain reinforcers
5. Establish attending

Teaching Acquisition

- Within each programme there will be a specific target (e.g. the **“item on acquisition”**)
- There is usually only one item on acquisition within any one programme at any one time.
- Items should be targeted by using a systematic approach based on collected data.
- The approach may change from programme to programme and learner to learner.

Why do we collect Data?

- To clarify what is going on
- To help with future planning
- To provide baselines
- To evaluate the effectiveness of an intervention
- To indicate when an intervention needs to be discontinued
- To indicate when an intervention needs to be altered.

How do you make DTT more natural?

- Generalization: the ability of a learner to perform a skill under a variety of conditions
- The key to more natural teaching is to facilitate generalization of the skill

Generalization

- Contexts:
  - 1st: very structured, distraction free environment
  - Then: more ordinary environment
- People:
  - 1st: limited number of instructors/tutors
  - Then: a wider variety of staff/parents/other learners

Generalization cont.

- Instructions
  - 1st: very clear, consistent instruction
  - Then: varied instructions more like those observed in natural environment
- Responses
  - 1st: well-defined response requirement
  - Then: more natural, spontaneous responses

How do you facilitate generalization?

- Brings aspects of natural environment into teaching
  - This will depend on learner's ability
- Give lots of opportunities for mastered skills to be practiced
  - Across contexts
  - Across people
  - Across instructions
  - Across responses

The Acquisition Process

- The name for a process that allows for discrimination training to occur
- Makes teaching and learning easier
- Allows for effective discrete trials
- Helps us identify difficulties in acquisition

The process of skill acquisition

- This process has been utilised within the evidence base surrounding the effectiveness of Intensive Behavioural Intervention (IBI) and Early Intensive Behavioural Intervention (EIBI)
- Each stage within this process allows for the learn unit/target skill to be broken down to a level of discrimination where learners can be successful and is gradually built up to a level where a skill is acquired and can be used in a functional context.

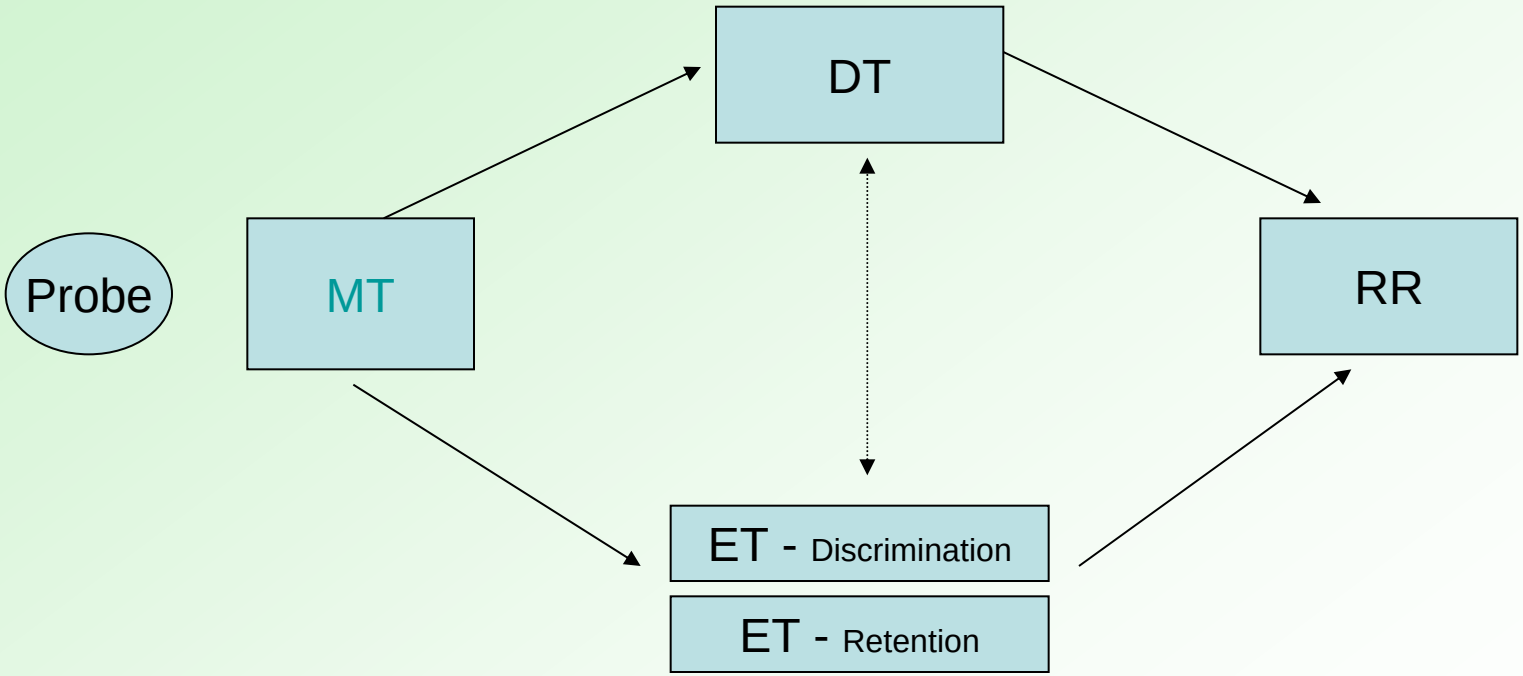
Benefits of the acquisition process

- Very specific approach and process to teaching. Allows for:
  - skills to be broken down, so more achievable
  - skills to be specific, in that they are clearly defined with a start, middle and end
  - Repeated learning opportunities
  - Consistency in approach
  - The process is incremental in terms stages

Benefits of the acquisition process Continued…

- Other characteristics:
  - Allows for incremental approach to discrimination and target setting
  - Discrete (defined and specific mastery criteria)
  - Planned evidence based sequence
  - Prompts provided most to least – but doesn't have to be faded in same sitting
  - Promotes maintenance of learnt skills/behaviour through practice opportunities

The acquisition process



Child specific teaching

- The acquisition process is a flexible tool!
  - Target selected
  - Pathway chosen
  - Prompt used and faded
  - Discrimination level needed (distracters or type of Exp trial)
  - Amount of repetition
  - Mastery criteria
  - Variations to the process

- It can be used with a child of any age, any ability and with most skills (exception being task analysis and shaping).

Data Collection

- Types of data collection will depend on the skill that is being taught, behaviour being increased/decreased.
- Before and after
- Baseline
- Measures during intervention

- Count - number of responses
- Rate/Frequency – count per obs period
- Duration – amount of time in which behaviour occurs
- Percentage – ratio per 100 opportunities

Programming

- Early learning goals
- Links to developmental expectations and progression
- Links to early year curriculum and ongoing curriculum
- Specific examples of programming…

Break time

Questions

Case Studies

- 1. Tanish

Finally…

Thanks!

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