INTRODUCING 'THE INTEREST TABLE'- A COMPARISON OF ANTECEDENT STIMULI ON PEER INTERACTIONS IN CHILDREN WITH A DIAGNOSIS OF AUTISM

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Children with a diagnosis of autism often face difficulties with early verbal development and social interaction with peers. This study determined the effect of environmental manipulation, through a comparison of stimuli introduced on a central table in the play area. The presence of anthropomorphic toys, animals (guinea pigs) and toys themed on preferred interests all resulted in an increase in social behaviours for all participants in comparison to baseline conditions.

Literature Review

Importance of the environment

- **Quilitch and Risley (1973)** evaluated the effects available play materials had on the social behaviour emitted by children in a recreation centre. Providing social toys resulted in 78% of time spent in social play whereas isolate toys resulted in 16% of time spent in social play. Results highlight the importance of environmental arrangement.
- CABAS® teacher training **(Greer, 2002; Greer & Ross, 2008)** suggests arranging the classroom environment to promote independent play and group activities. Students are first taught to engage independently and appropriately with materials in replacement of passive or stereotypical behaviour using conditioning procedures **(Nuzzolo-Gomez et al., 2002).** It is suggested that the toys that have been conditioned are then placed within the play area, however how to select specific toys to promote cooperative play or peer interactions is not detailed.

Preferred interests

- One of the criteria for diagnosis of autism is 'circumscribed or perseverative interests' **(American Psychiatric Association, 2013)** this can result in repetitive language and play routines and limited conversation skills.
- Research has shown these interests can be positively used as embedded reinforcement to increase engagement with learning materials **(Clarke et al., 1995; Hanley et al., 2009)** and to support and increase social interactions whilst integrating children in to peer groups. **(Baker et al., 1998; Watkins et al., 2019)**.
- The need for further research to identify optimum environmental conditions required to facilitate social behaviour for those with autism is highlighted **(Boyd et al.,2007)**.

Anthropomorphic toys

- **Lodhi and Greer (1989)** examined the behaviour of typically developing children during solitary play with anthropomorphic or human-like toys (e.g., dolls, stuffed animals) and with nonanthropomorphic toys (e.g., books, puzzles).
- All participants emitted significantly more verbal behaviour and a wider range of operants in the anthropomorphic condition and little-to-no conversational units in the nonanthropomorphic condition, demonstrating that the children acted as both speakers and listeners when interacting with the anthropomorphic toys.
- Further studies at Jigsaw **(Ruff and Hewett, 2015)** have replicated these findings in the presence of peers. Results demonstrated an increase in language and peer interactions in the presence of anthropomorphic toys.

Animal assisted interventions

- **O'Haire et al. (2013)** compared the social behaviours of children with autism towards typically developing peers and adults when given access to toys or animals (guinea pigs).
- Findings supported previous research **(Talarovičová et al., 2010; O'Haire et al., 2013)** that the presence of animals resulted in increased social interactions for children with autism with their typically developing peers and that this was higher in the presence of animals than the presence of toys.

Method

Participants

- Five males and one female with a diagnosis of autism took part in the study, they ranged in age from 5-7 years old.
- Table 1 shows the percentage of components in repertoire for each participant across each verbal development stage from ongoing assessment using the ELCAR **(Greer et al., 2019).**

Setting

- The study took part at a specialist ABA school in England.
- The study took place in the participants classroom play corners.
- Class A consisted of Participants 1-3 and Class B Participants 4-6.

Table 1: Verbal development components

Participant	Preverbal Foundations	Speaker	Listener	Joining of Listener Speaker	Social Learning
1	100%	96%	100%	50%	0%
2	100%	100%	100%	50%	0%
3	90%	93%	100%	33%	0%
4	100%	89%	100%	33%	40%
5	90%	46%	50%	0%	0%
6	90%	39%	67%	17%	0%

Definition of behaviour

The main dependent variable of interest was peer interactions, however further social and verbal behaviours were also analysed including initiations to peers, reactions to peers, prosocial behaviours, vocalisations to animals, vocalisation to adults, shared experience with peers and engagement in self-talk behaviour.

Data collection

Sessions were recorded using a video camera. Data was then collected from the recordings using timers to record duration and tally sheets for occurrence.

Design and Procedure

A multiple treatment reversal design across classes was used. The conditions were presented three times daily for five minutes in each phase, they then moved to the next phase the following day, the conditions were presented in the following order:

Class A: ABACADA

Class B: ADACABA

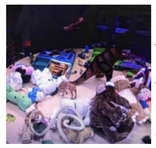
Description of independent variables

Condition A – Baseline

This was spent in the typical play area set up for the class, the pupils were directed to play in the play area. The play area contained a range of toys presented around the sides of the corner of the room. One teacher sat to the side and redirected pupils if they attempted to leave the area.

Condition B- Preferred Interests

Three toy sets relating to their selected preferences were then purchased and presented on a table added to the play area. Each participant was initially directed to their category of the table but was then free to play with any of the available toys on the table or in the free play area.



Condition C- Anthropomorphic Toys

A range of anthropomorphic toys were arranged on the table including puppets, dolls, animals, dinosaurs, and Playmobil figures. The children were initially directed to the table and told it was playtime, they could access the other toys in the play area.

Condition D – Animal Presence

Prior to the session the teacher outlined the rules to the pupils reminding them they could stroke the two guinea pigs, offer them toys and offer them food however they should not put their fingers in front of their mouths or pick them up. Alongside the guinea pig run on the table was a range of toys and foods. The pupils could also access to the other toys in the play area.

Inter-observer Agreement

Data was collected by a second observer across one session for baseline and each treatment condition for each participant.

Table 2: Mean total count IOA

Count behaviours	Mean agreement (range)
Initiations to peers	99% (83-100%)
Reactions to peers	97% (67-100%)
Prosocial behaviours	85% (75-100%)
Vocalisation to animal	92% (84-100%)

Table 3: Mean total duration IOA

Duration behaviours	Mean agreement (range)
In shared experience	95% (78-100%)
Emitting self-talk	97% (82-100%)

Table 4: Social validity results

Statements	Teacher of Class A	Teacher of Class B
The study was enjoyed by participants	Strongly Agree	Strongly Agree
The study highlighted to me the importance of evaluating the play area	Strongly Agree	Agree
I could easily implement the suggested changes	Agree	Strongly Agree
I am likely to consider adding: Toys based on preferred interests	Strongly Agree	Strongly Agree
Anthropomorphic toys	Strongly Agree	Agree
School pets/Animal visits	Strongly Agree	Undecided

Figure 1: Average Initiations to Peers

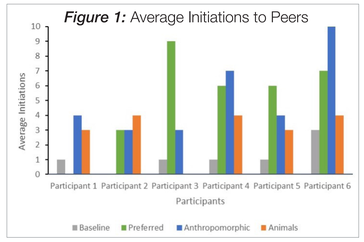


Figure 2: Average Reactions to Peers

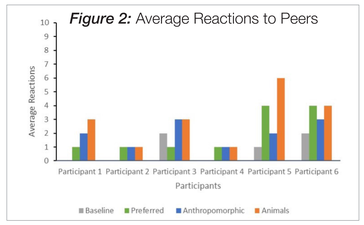


Figure 3: Average Prosocial Behaviours

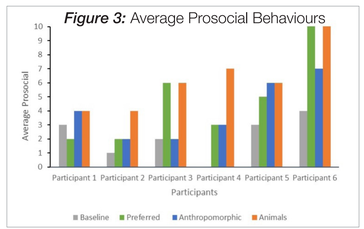


Figure 4: Average Vocalisations to Animals

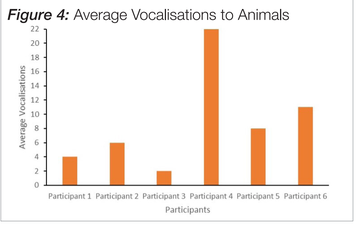


Figure 5: Average Time Spent in Shared Experience

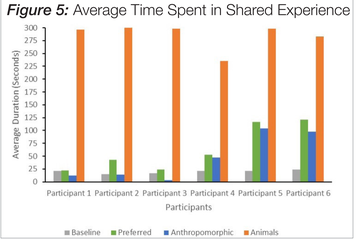
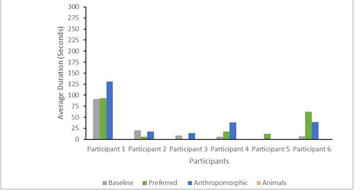


Figure 6: Average Time Emitting Self-talk Behaviour



Summary of Results

- For five out of the six participants all added stimuli conditions resulted in an increase in average peer interactions.For Participant 1, only the anthropomorphic toys and animals resulted in an increase.
- Interestingly, Participant 6 demonstrated highest initiations across conditions. He also used one of his peer's interest toys to attempt to engage him. This participant had one of the lowest levels of verbal development components in repertoire.
- In regards to verbal behaviour despite a high level of tacts emitted there was a low level of mands observed, likely linking to transformation of stimulus function across mands and tacts not being in repertoire for some participants.
- At the time of the study being designed several participants had very specific interests, the results of the preference assessments suggest their interests had expanded, which may be complementary to conditioning programmes **(Nuzzolo-Gomez et al., 2002)**.This condition may therefore be more effective for newer pupils with restricted interests.
- Self-talk behaviour was demonstrated by five of the six participants in the anthropomorphic toys condition supporting **Skinner's (1957)** theory that people may act as both speakers and listeners demonstrating both overt and covert behaviour in play.
- For Class B anthropomorphic toys resulted in increased verbal behaviours and time spent in a shared experience. As well as interacting using the toys they would also look at them together supporting findings by **Ruff & Hewett (2015)**.
- The presence of animals resulted in a considerable increase in time spent in a shared activity with peers for all participants.
- It was observed that peers often seemed to communicate through the animals. This supports findings from the study by **Talarovičová et al. (2010)** that interactions with peers increase in the presence of guinea pigs.

Discussion

- Antecedent interventions can be applied to create motivating operations and setting events that evoke peer social interactions in the natural play environment.
- This is even more important at times when access to other social environments is limited.
- The results and observations suggest that the addition of the central table may also have acted as a positional prompt which reduced the response effort for interactions.
- Settings that include individuals with a diagnosis of autism are recommended to run regular assessments of their class play spaces to evaluate the stimuli in place and the positional layout of the room.
- If we look at our own social behaviour it is often affected by antecedent stimuli in our environment that act as motivating operations, we may be more likely to talk to someone in reference to a shared interest, animals can facilitate us communicating with strangers for example out on a dog walk, and when we interact with young children we often use anthropomorphic toys to encourage early interactions.
- The results of the study suggest antecedent stimuli can also evoke social interactions between children with a diagnosis of autism.

References

For a full list of references please contact the author: hayleylocke@jigsawschool.co.uk