


Redesigning Representations of Early Emerging Concepts : A Comparison of Two Approaches

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Introduction

- Childhood is typically a period of rapid linguistic development
- 12% of preschool children who receive special education services have complex communication needs (CCN)
(Binger & Light, 2006)



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Introduction

- Access to augmentative and alternative communication (AAC) systems is critical in supporting the development of language and communication
(Light et al. 2005)




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Need for a wide range of vocabulary


| | |
|---|--|
| Concrete | Abstract |
| <ul style="list-style-type: none"> Ball Mom Tree | <ul style="list-style-type: none"> Come More What |

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Representing vocabulary




Photo



PCS
(Picture
Communication
Symbol)



Text



Lexigrams


←————→

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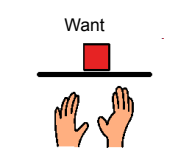
Representing Abstract Concepts

- Representing abstract linguistic concepts in graphic form is challenging
- Difficult to incorporate the flexibility of language in graphic representations

Eat



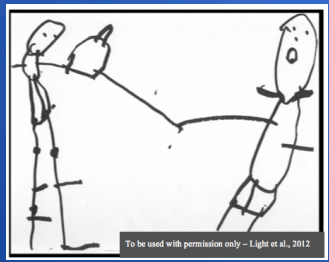
Want



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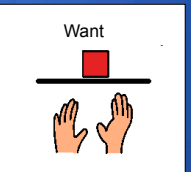
How do children conceptualize representation of vocabulary?

- Light and colleagues (Light et al., 2008, 2012)



To be used with permission only - Light et al., 2012

Want



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Guidelines for a new approach to representing vocabulary

| Conceptual Issues | Appeal Issues |
|-------------------|---------------|
| Concreteness | Familiarity |
| Familiarity | Color |
| Context | Shape |
| "Wholeness" | |
| Color | |
| Focus | |

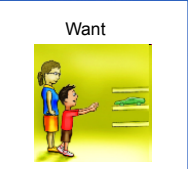
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Developmentally Appropriate Symbols (DAS)

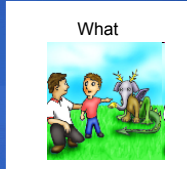
Come



Want



What



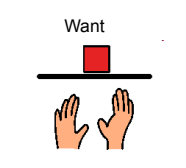
- Conceptual: Concreteness, familiarity, context, "wholeness", color, focus
- Appeal: Familiarity, color, shape

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Research Questions

- Which symbol set - Picture Communication Symbols (PCS) or Developmentally Appropriate Symbols (DAS)
- is easier to identify for young children?
- is identified as more appealing by young children?

Want



Want



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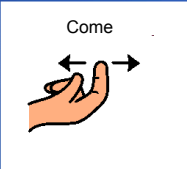
Methods

- Experimental Design
 - Posttest only, Between subjects comparison
- Participants
 - 40 typically developing children (2 1/2 - 3 1/2 Yrs)
 - Randomly assigned to 2 groups (PCS, DAS)
- Materials
 - Two symbol sets (PCS, DAS)
- Target Concepts
 - Ten early emerging concepts in three categories
 - Action words: come, eat, want, open
 - Descriptors: all gone, big, more, up
 - Questions: what, who

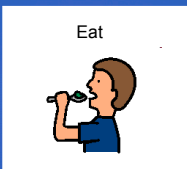
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Picture Communication Symbols (PCS)

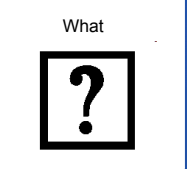
Come



Eat

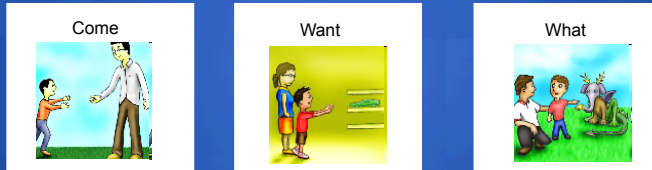


What



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Developmentally Appropriate Symbols (DAS)



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Procedures

- Training
 - Child shown symbol (on a card), given name and explanation
 - 10 symbols reviewed
- Assessment of Identification
 - Child was asked to "Touch the (target item)" on a display with 10 symbols
- Assessment of Appeal
 - Child was shown both displays (PCD and DAS)
 - "Look at these pictures, and look at these pictures. Which pictures do you like?"

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Video



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Results: Identification

| Symbol Set | Mean (range) |
|------------|-----------------------|
| DAS | 81% (35-100%)* |
| PCS | 59.5% (25-90%) |

* significant level $p \leq 0.05$

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Identification

| Word Category | Symbol Set | |
|------------------|--------------|-----|
| | DAS | PCS |
| Action Words (4) | 90% | 60% |
| Descriptors (4) | 87.5% | 66% |
| Questions (2) | 50% | 45% |

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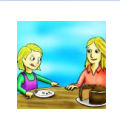
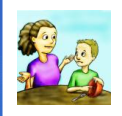
Identification

| Concept | Symbol Set | |
|----------|-------------|-----|
| | DAS | PCS |
| All gone | 90% | 80% |
| Big | 95% | 70% |
| Come | 85% | 45% |
| Eat | 95% | 90% |
| More | 70% | 40% |
| Open | 100% | 70% |
| Up | 95% | 75% |
| Want | 80% | 35% |
| What | 35% | 25% |
| Who | 65% | 65% |

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Error Analysis

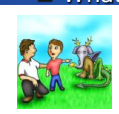
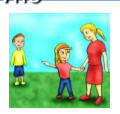


- DAS
 - More = All gone

- Common confusions

DAS & PCS

- What ↔ Who

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Results: Appeal

- No difference in preference choices between the symbol sets

| Training Set | Set Selected | | |
|--------------|--------------|-----|-----|
| | DAS | PCS | NR |
| DAS | 25% | 65% | 10% |
| PCS | 85% | 15% | |

NR = No response

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Discussion

- Identification
 - **DAS>PCS**
 - Symbol set that incorporated “best practices” was more accurately identified
- Challenges
 - All gone, more

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Discussion

Appeal

- No difference
- Relationship between training and response to appeal question ?
- Data collection method may have influenced responses
 - Novelty has an influence on preference

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Limitations

- The study
 - included typically developing children
 - examined a very small number of early emerging concepts
- The training did not necessarily replicate the processes typically involved in learning to use AAC
- The assessment task did not replicate a typical communication activity

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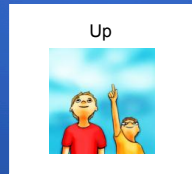
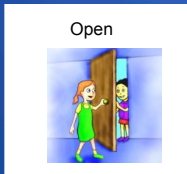
Future Research

- Investigate
 - better understanding of children’s conceptualization and use of concepts such as *what, who, and more*
 - representations for concepts that closely mirror children’s conceptualizations of abstract vocabulary items

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Summary

- There is evidence that the representations of early emerging concepts that are based on children's reported conceptualizations may significantly improve identification performance



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