

Educating Children about Household Hazards and Warning Symbols

Christopher B. Mayhorn,
Michael S. Wogalter,
& Christina C. Mendat

*North Carolina State University
Department of Psychology
Raleigh, NC USA*



Acknowledgements

- Wendy Aves
- The daycare administrators, teachers, and children who participated.



Frequency of Household Injury to Young Children in the U.S.

- Approximately one million children aged 3-6 were hospitalized for injuries received in the home during 2004 (NEISS).
- Annually, US hospital emergency rooms treat 4.3 million children for product-related injuries.
- US government and health service organizations recommend routine “age-appropriate counseling” for educating children about safety.



How Might Children be Warned of Household Hazards?

- Few studies have researched warnings that target young children.
 - Although some research has described the development of pictorial warnings for childcare products, these warnings were designed for use by adults (Trommelen & Ackerboom, 1999).
- Recent evidence suggests that children over the age of 2.5 years have the cognitive capacity to grasp the relationship between symbols and concepts (DeLoache, Uttal, & Pierroutsakos, 1998).



Goals of the Current Research

- Develop an approach that uses safety symbols to educate young children about household hazards.
 - Determine whether children can identify common household hazards.
 - Assess children’s interpretation of safety symbols.
 - Evaluate whether children can match household products with appropriate safety symbols.



Participants

- Fifteen young children aged 3-6 ($M= 4.7$ years, $SD= 1.2$ years) were recruited from a local daycare center.
- Gender was relatively balanced with 8 males and 7 females.
- The sample was ethnically diverse.
- All children spoke English as their primary language.



Procedure

- Participants completed individually administered structured interview sessions that lasted 35 minutes.
- Part 1: Children identified the hazards associated with five household products



Procedure

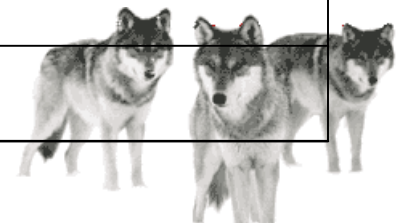
- Part 2: Children evaluated six commercially available ANSI-style symbols.
- Part 3: Children matched five household products to five safety symbols.



Results: Identification of Household Hazards

Household item	Mean (SD)
Fireplace	1.33 (1.0)
Window	2.00 (0.0)
Electrical Plug	0.67 (1.0)
Bathtub	1.33 (1.0)
Clorox	0.50 (.84)
Door	1.63 (.74)
Window Blinds	0.44 (.88)
Iron	1.56 (.88)
Television	0.67 (.87)
Stairs	1.56 (.53)

Comment Here



Results: Symbol Interpretation

Symbol	Mean (SD)
Burn	0.60 (.51)
Crush	0.14 (.36)
Electrical Shock	0.50 (.55)
Fall	0.22 (.44)
Poison	0.50 (.55)
Slip	0.80 (.41)



Results: Matching of Household Products and Symbols

Item	Symbol	Mean (SD)
Fireplace	Burn	2.00 (0.0)
Window	Crush	2.00 (0.0)
Electrical Plug	Shock	2.00 (0.0)
Bathtub	Fall	2.00 (0.0)
Clorox	Poison	1.83 (.41)
Door	Crush	1.44 (.88)
Iron	Burn	1.44 (.88)
Television	Fall	1.78 (.67)
Stairs	Slip	1.56 (.73)



Conclusions

- Children's ability to identify household hazards was highly variable by product.
- Warning symbol interpretation was remarkably low (fewer than half were correctly identified 50% of the time).
- Children were able to learn to make symbols with the appropriate household products.
- These data suggest that young children may benefit from the use of warning symbols during safety education.



Future Work

- The present exploratory findings might be extended by replicating the results with larger sample sizes.
- Further efforts might also focus on determining whether various age groups had qualitatively different responses patterns.
 - “How old does a child have to be to effectively learn from the matching procedure described here?”

