



A REVIEW OF EVIDENCE-BASED TRAINING STRATEGIES

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- **Incorrect implementation may:**
 - Result in variable treatment outcomes (Wolery et al., 2002)

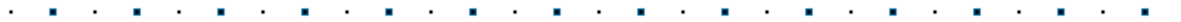
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- Direct service provided by entry-level staff with minimal experience (Taylor, Bradley, & Warren, 1996)
- **Incorrect implementation may:**
 - Result in variable treatment outcomes (Wolery et al., 2002)
 - Limit ability to interpret outcomes

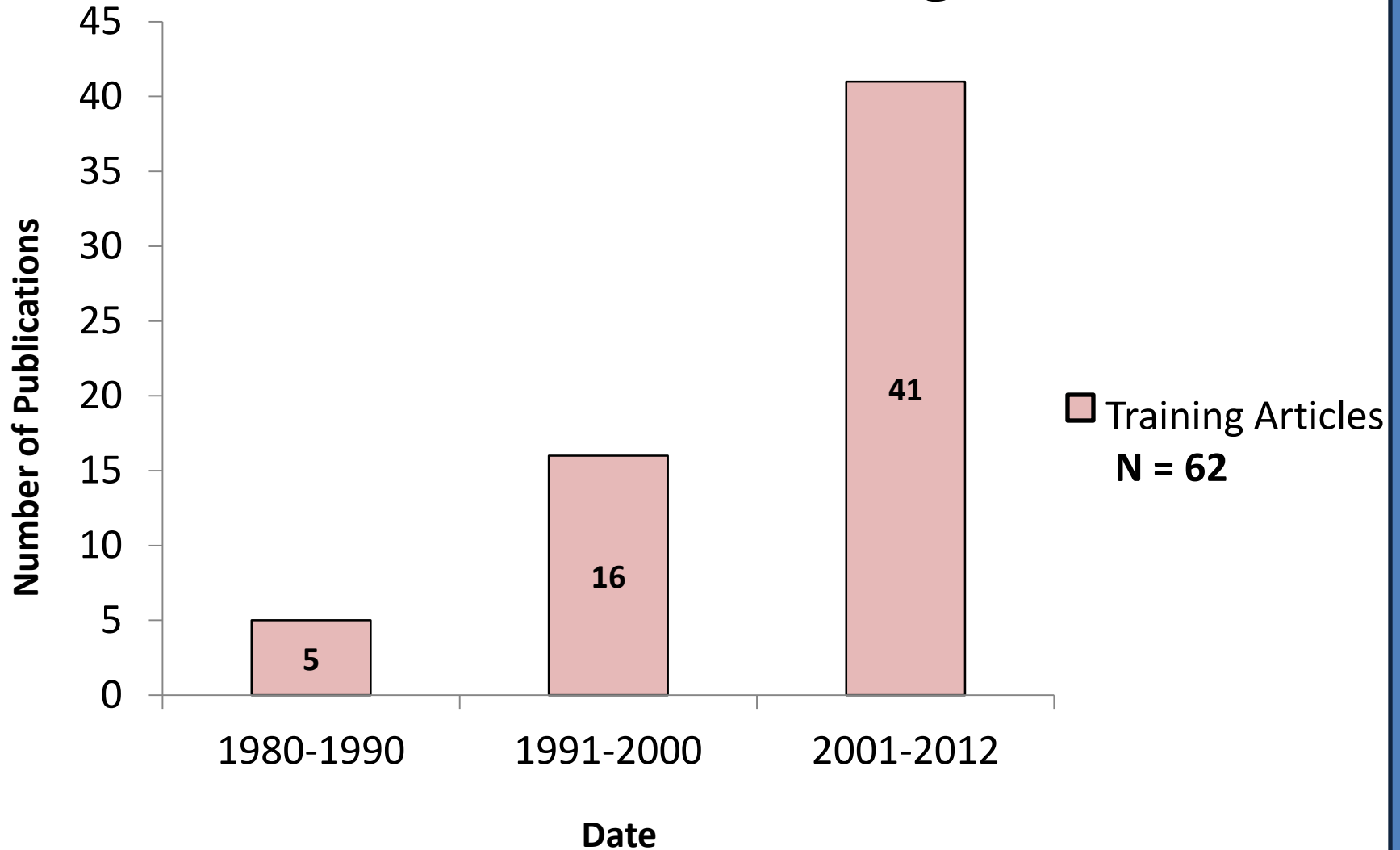
MAIN OBJECTIVES

- Focus on reviewing training literature
- Provide examples of effective training strategies

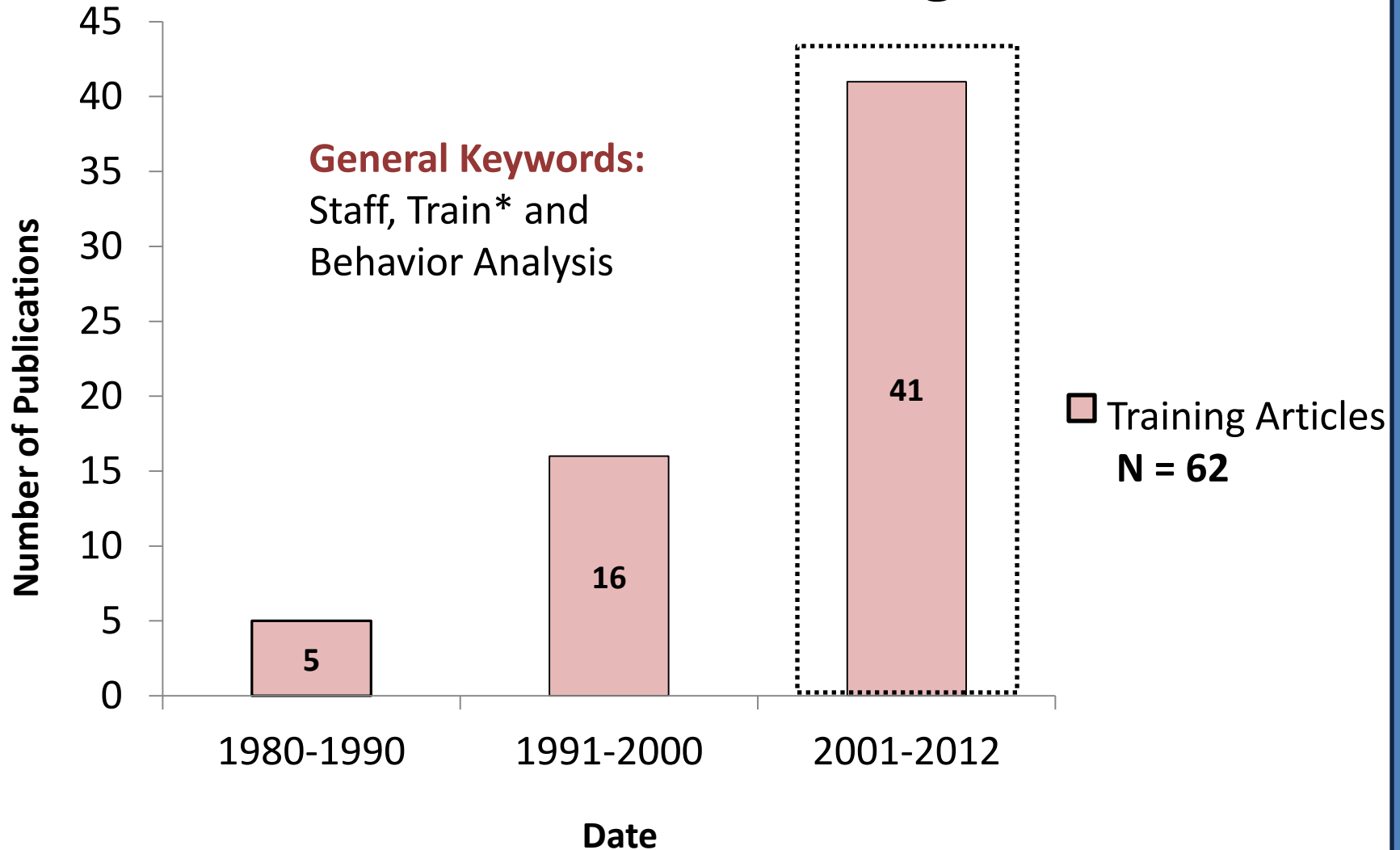
What can we learn about effective training?



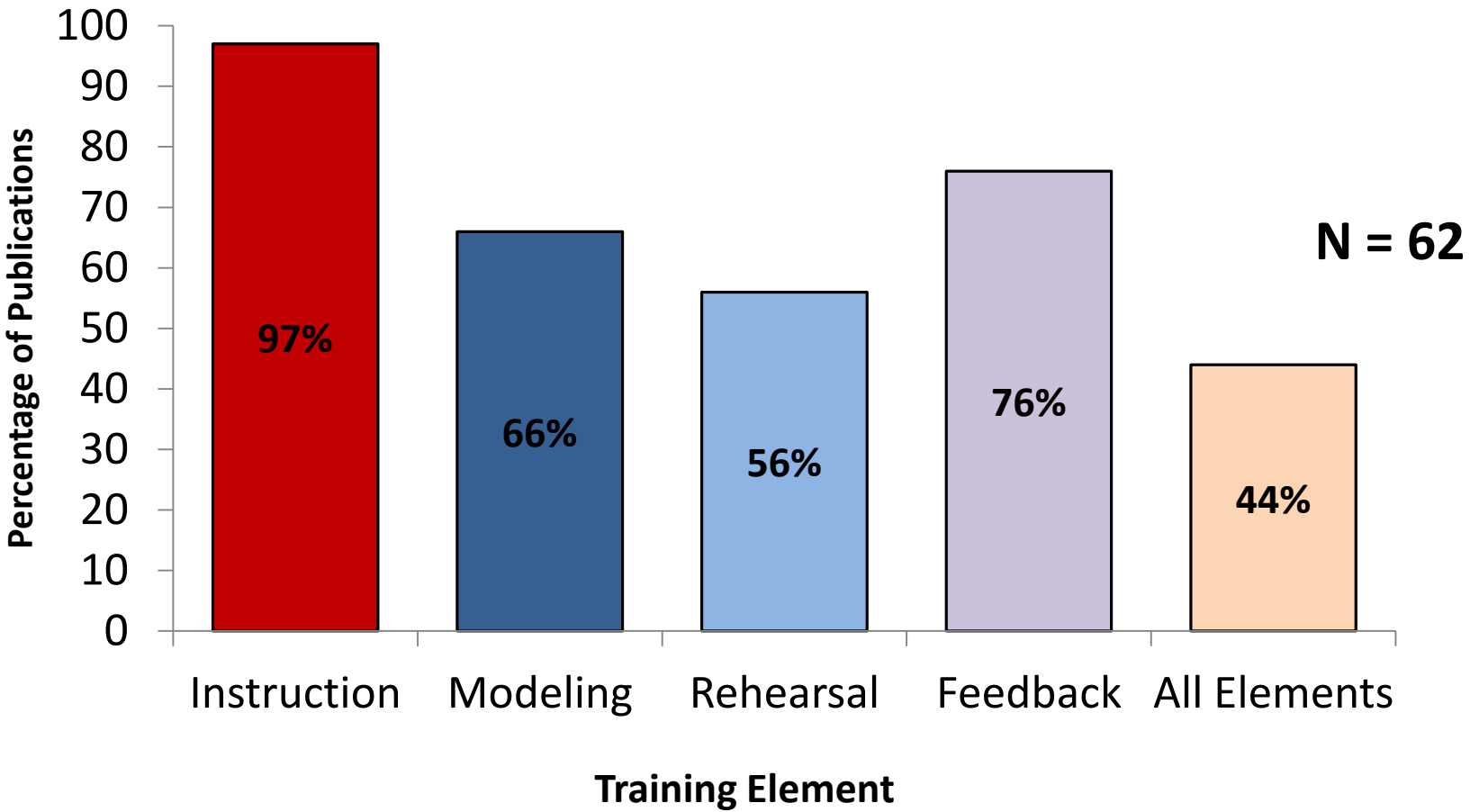
Publications on Training



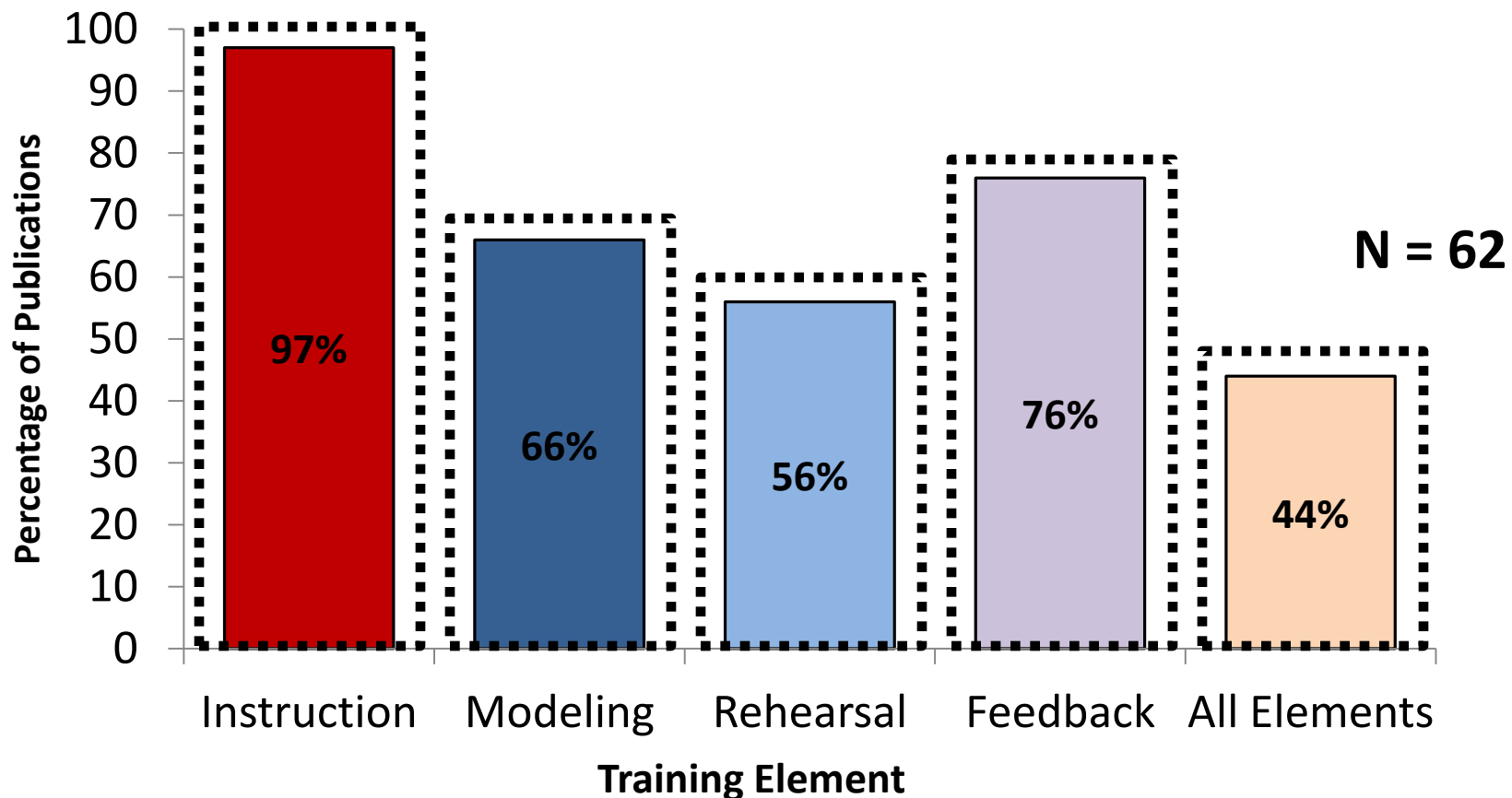
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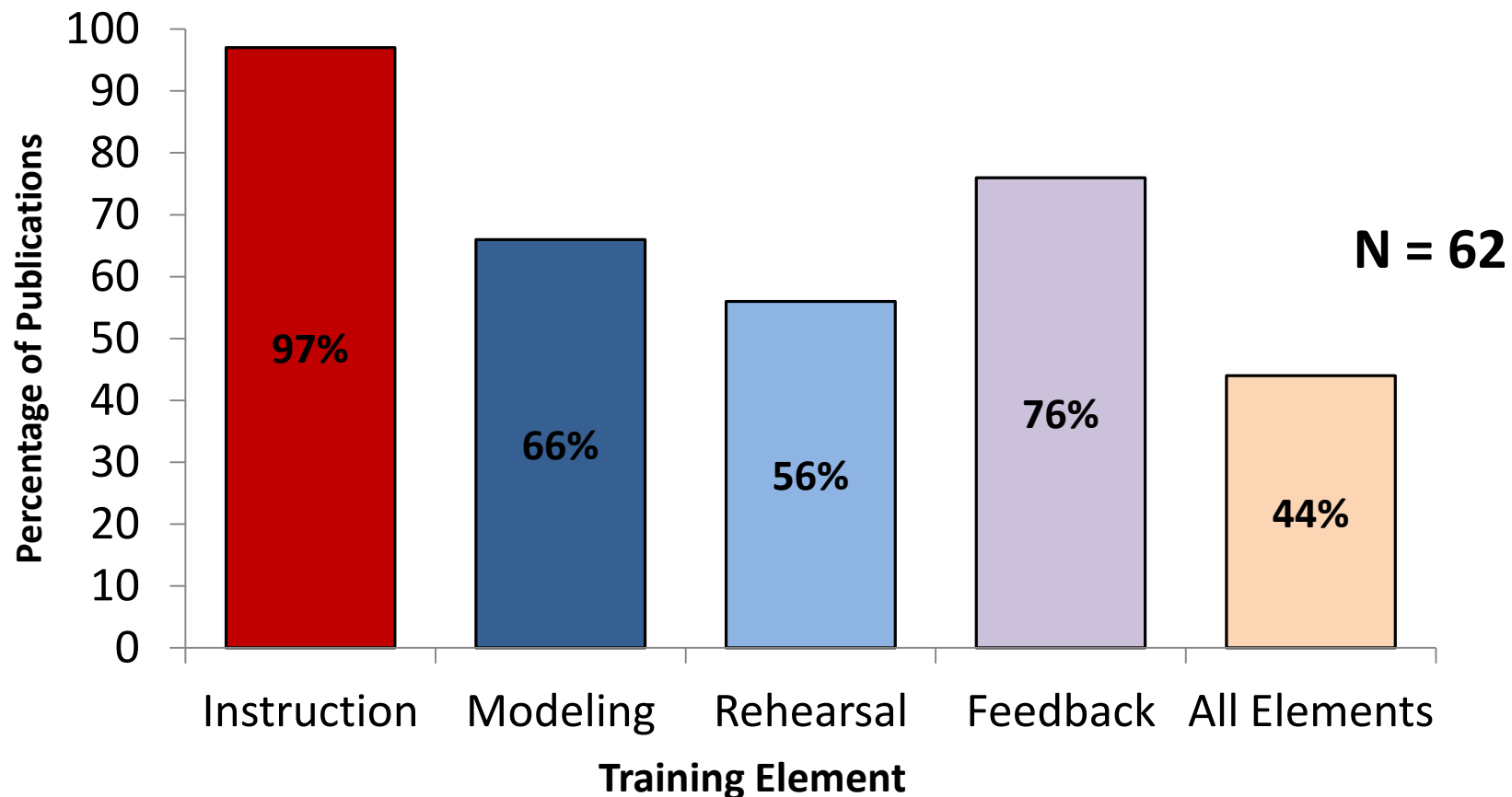
BEHAVIOR SKILLS TRAINING (BST)



BEHAVIOR SKILLS TRAINING ELEMENTS (BST)



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➔ Instructions

- Clear, concise verbal or written objectives (e.g., task analyses)

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- ➔ 97% of articles included an instructional component

INSTRUCTION EXAMPLE

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- ➔ Trained undergraduate students to conduct functional analyses (Iwata et al., 2000)
 - Written descriptions of assessment conditions
 - Brief summaries focusing on salient components
 - Purpose of each condition
 - Target behaviors
 - How to conduct a session

COMMONALITIES ACROSS LITERATURE

➔ Instructions:

- Verbal (Petscher et al., 2007; Schepis et al., 2000)
- Written (Arnal et al., 2007; Salem et al., 2009)
- Class/workshop (Burgio et al., 1983; Wallace et al., 2004)
- Individualized (Graff et al., 2012; Sarokoff et al., 2004)

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- Video (Barnes et al., 2011; Nosik et al., 2011)

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- Class/workshop (Burgio et al., 1983; Wallace et al., 2004)
- Individualized (Graff et al., 2012; Sarokoff et al., 2004)
- Video (Barnes et al., 2011; Nosik et al., 2011)
- Few days before or immediately prior to training

FUTURE CONSIDERATIONS

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 - Graff and Karstsen (2012)
 - **Instructions alone for low risk procedures?**

MODELING

→ Modeling

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- 66% of articles included a modeling component

MODELING EXAMPLE

- ➔ Trained staff to conduct discrete-trial sessions
(Catania et al., 2009)
 - 7 minute video
 - Match-to-sample task



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 - Match-to-sample task
 - Voice over script



COMMONALITIES ACROSS LITERATURE

→ Modeling:

- In vivo models
 - Peers (Coddling et al., 2008; Flemming et al., 1992)
 - Experimenter/Supervisor (Crossland et al., 2008; Roscoe et al., 2008)
- Video models (Catania et al., 2009; Luiselli et al., 2010)

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→ Modeling:

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 - Peers (Coddling et al., 2008; Flemming et al., 1992)
 - Experimenter/Supervisor (Crossland et al., 2008; Roscoe et al., 2008)
- Video models (Catania et al., 2009; Luiselli et al., 2010)
- In conjunction with instruction (Barnes et al., 2011; Selinske et al., 1991)
- Interspersed with role-play/rehearsal (Pétursdóttir et al. 2006; Roscoe et al., 2008)

FUTURE CONSIDERATIONS

→ Modeling:

- Do not know which medium of modeling results in most gains for staff

FUTURE CONSIDERATIONS

→ Modeling:

- Moore et al. (2007)
 - Compared two different types of video modeling
 - Video containing full range of behaviors staff will be required to emit is most effective

REHEARSAL

→ Rehearsal

- Practice until mastery criterion is reached

REHEARSAL






















➔ Rehearsal

- Practice until mastery criterion is reached

➔ 56% of articles included a rehearsal component






















REHEARSAL EXAMPLE

- ➔ Trained students to implement a picture exchange communication system (Rosales et al., 2009)

 I want		 I see		 thank you	
 drink	 biscuit	 apple	 cake	 crisps	 banana
 book	 sand	 bricks	 pens	 farm	 puzzle
 shoe	 jumper	 trousers	 coat	 sock	 hat

REHEARSAL EXAMPLE

- ➔ Trained students to implement a picture exchange communication system (Rosales et al., 2009)
 - Advanced undergraduate student as confederate
 - Rehearsed with confederate

 I want		 I see		 thank you	
 drink	 biscuit	 apple	 cake	 crisps	 banana
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COMMONALITIES ACROSS LITERATURE

→ Rehearsal:

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→ Rehearsal:

- Uniform: immediately following training
- Experimenter or supervisor (Rosales et al., 2009; Kissel et al., 1983)
- **Peer** (Ducharme et al., 1992; Wallace et al., 2004)
- **Actual consumer** (Lavie & Sturmev, 2002; McBride et al., 2003)

COMMONALITIES ACROSS LITERATURE

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➔ Which medium results in most rapid gains?

FEEDBACK

→ Feedback

- Praise, tangibles, or corrective statements are provided contingent on performance

FEEDBACK

➔ Feedback

- Praise, tangibles, or corrective statements are provided contingent on performance
- ➔ 76% of articles included a feedback component

FEEDBACK EXAMPLE

- Trained staff to accurately implement discrete trial teaching (Sarokoff & Sturmey, 2004)

FEEDBACK EXAMPLE

- Trained staff to accurately implement discrete trial teaching (Sarokoff & Sturmey, 2004)
 - Verbal feedback immediately following practice
 - Positive comments
 - Corrective statements

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- Corrective element (DiGennaro et al., 2007; Noell et al., 2000)

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- R+: Contingent money (Austin et al., 1996; Roscoe et al., 2006)
- Corrective element (DiGennaro et al., 2007; Noell et al., 2000)
- During or after training

FUTURE CONSIDERATIONS

→ Feedback:

- When should feedback be delivered?

SUMMARY

- ➔ Training packages in all studies resulted in socially significant gains
 - Weinkauff et al. (2011) taught teachers to implement over 100 skills, including:
 - FCT
 - Learning to learn programs
 - Domain specific skills and many more...

SUMMARY

- Training packages in all studies resulted in socially significant gains
 - Weinkauff et al. (2011) taught teachers to implement over 100 skills, including:
 - FCT
 - Learning to learn programs
 - Domain specific skills and more
- ➔ **Components of BST** (i.e., instruction, modeling, rehearsal, and/or feedback) have shown to be effective at teaching:
 - Functional analyses, preference assessments, token economies, DTT, prompting, feedback, chaining, and more...

SUMMARY

- Training packages in all studies resulted in socially significant gains
 - Weinkauff et al. (2011) taught teachers to implement over 100 skills, including:
 - FCT
 - Learning to learn programs
 - Domain specific skills and more
 - Components of BST (i.e., instruction, modeling, rehearsal, and/or feedback) have shown to be effective at teaching:
 - Functional analyses, preference assessments, token economies, DTT, prompting, feedback, chaining, token economies, and more...
- ➔ Variability in the literature

FUTURE RESEARCH & COMMENTS

- ➔ Few key training elements:
 - Training must be practical and time efficient

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FUTURE RESEARCH & COMMENTS

- Few key training elements:
 - Training must be practical and time efficient
 - Socially valid
 - Competences acquired should last and generalize
- ➔ **Component and parametric analyses:**
 - E.g., component analysis of BST during FA (Ward-Honrner & Sturmey, 2012)

REFERENCES

- Arnal, L., Fazzio, D., Martin, G. L., Yu, C. T., Keilback, L., & Starke, M. (2007). Instructing university students to conduct discrete-trials teaching with confederates simulating children with autism. *Developmental Disabilities Bulletin, 35*(1-2), 131-137.
- Austin, J., Kessler, M., Riccobono, J. E., & Bailey, J. (1996). Using feedback and reinforcement to improve the performance and safety of a roofing crew. *Journal of Organizational Behavior Management, 16*(2), 49-75. doi:10.1300/J075v16n02_04
- Barnes, C. S., Dunning, J. L., & Rehfeldt, R. (2011). An evaluation of strategies for training staff to implement the picture exchange communication system. *Research In Autism Spectrum Disorders, 5*(4), 1574-1583. doi:10.1016/j.rasd.2011.03.003
- Bishop, M. R., & Kenzer, A. L. (2012). Teaching behavioral therapists to conduct brief preference assessments during therapy sessions. *Research In Autism Spectrum Disorders, 6*(1), 450-457. doi:10.1016/j.rasd.2011.07.005
- Burgio, L. D., Whitman, T. L., & Reid, D. H. (1983). A participative management approach for improving direct-care staff performance in an institutional setting. *Journal of Applied Behavior Analysis, 16*(1), 39-53. doi:10.1901/jaba.1983.16-37
- Catania, C. N., Almeida, D., Liu-Constant, B., DiGennaro, R., & Florence D. (2009). Video modeling to train staff to implement discrete-trial instruction. *Journal of Applied Behavior Analysis, 42*(2), 387-392. doi: 10.1901/jaba.2009.42-387
- Coddling, R. J., Feinberg, A. B., Dunn, E. K., & Pace, G. M. (2005). Effects of immediate performance feedback on implementation of behavior support plans. *Journal of Applied Behavior Analysis, 38*, 205-219. doi:10.1901/jaba.2005.98-04
- Crosland, K. A., Cigales, M., Dunlap, G., Neff, B., Clark, H. B., Giddings, T., & Blanco, A. (2008). Using staff training to decrease the use of restrictive procedures at two facilities for foster care children. *Research on Social Work Practice, 18*(5), 401-409. doi:10.1177/1049731507314006

REFERENCES

- DiGennaro, F. D., Martens, B. K., & Kleinmann, A. E. (2007). A comparison of performance feedback procedures on teachers' treatment implementation integrity and students' inappropriate behavior in special education classrooms. *Journal of Applied Behavior Analysis, 40*(3), 447-461. doi:10.1901/jaba.2007.40-447
- Ducharme, J. M., & Feldman, M. A. (1992). Comparison of staff training strategies to promote generalized teaching skills. *Journal of Applied Behavior Analysis, 25*(1), 165-179. doi:10.1901/jaba.1992.25-165.
- Feldman, M. A., Case, L., Rincover, A., Towns, F., & Betel, J. (1989). Parent Education Project III: Increasing affection and responsivity in developmentally handicapped mothers: Component analysis, generalization, and effects on child language. *Journal of Applied Behavior Analysis, 22*, 211–222. doi:10.1901/jaba.1989.22-211
- Fleming, R., & Sulzer-Azaroff, B. (1992). Reciprocal peer management: Improving staff instruction in a vocational training program. *Journal of Applied Behavior Analysis, 25*(3), 611-620. doi:10.1901/jaba.1992.25-611. doi:10.1901/jaba.1992.25-611
- Graff, R. B., & Karsten, A. M. (2012). Evaluation of a self-instruction package for conducting stimulus preference assessments. *Journal of Applied Behavior Analysis, 45*(1), 69-82. Retrieved from <http://seab.envmed.rochester.edu/jaba>
- Hudson, A. M. (1982). Training parents of developmentally handicapped children: A component analysis. *Behavior Therapy, 13*, 325–333. doi:10.1016/S0005-7894(82)80041-5
- Iwata, B. A., Wallace, M. D., Kahng, S., Lindberg, J. S., Roscoe, E. M., Conners, J., & Hanley, G.P., Thompson, R.H., & Worsdell, A. S. (2000). Skill acquisition in the implementation of functional analysis methodology. *Journal of Applied Behavior Analysis, 33*(2), 181-194. doi:10.1901/jaba.2000.33-181

REFERENCES

- Lavie, T., & Sturmey, P. (2002). Training staff to conduct a paired-stimulus preference assessment. *Journal of Applied Behavior Analysis, 35*, 209–211. doi: 10.1901/jaba.2002.35-209
- Luiselli, J. K., Bass, J. D., & Whitcomb, S. A. (2010). Teaching applied behavior analysis knowledge competencies to direct-care service providers: Outcome assessment and social validation of a training program. *Behavior Modification, 34*(5), 403-414. doi:10.1177/0145445510383526
- McBride, B. J., & Schwartz, I. S. (2003). Effects of teaching early interventionists to use discrete-trials during ongoing classroom activities. *Topics in Early Childhood Special Education, 23*(1), 5–17. doi:10.1177/027112140302300102
- Moore, J. W., & Fisher, W. W. (2007). The effects of videotape modeling on staff acquisition of functional analysis methodology. *Journal of Applied Behavior Analysis, 40*, 197–202. doi: 10.1901/jaba.2007.24-06
- Noell, G. H., Witt, J. C., Gilbertson, D. N., Ranier, D. D., & Freeland, J. T. (1997). Increasing teacher intervention implementation in general education settings through consultation and performance feedback. *School Psychology Quarterly, 12*, 77-88. doi:10.1037/h0088949
- Nosik, M. R., & Williams, W. (2011). Component evaluation of a computer based format for teaching discrete trial and backward chaining. *Research In Developmental Disabilities, 32*(5), 1694-1702. doi:10.1016/j.ridd.2011.02.022
- Petscher, E., & Bailey, J. S. (2006). Effects of training, prompting, and self-monitoring on staff behavior in a classroom for students with disabilities. *Journal of Applied Behavior Analysis, 39*(2), 215-226. doi:10.1901/jaba.2006.02-05

REFERENCES

- Pétursdóttir, A., & Sigurdardóttir, Z. (2006). Increasing the Skills of Children with Developmental Disabilities through Staff Training in Behavioral Teaching Techniques. *Education And Training In Developmental Disabilities, 41*(3), 264-279. Retrieved from <http://daddcec.org/Publications/ETADDJournal.aspx>
- Rosales, R., Stone, K., & Rehfeldt, R. (2009). The effects of behavioral skills training on implementation of the picture exchange communication system. *Journal of Applied Behavior Analysis, 42*(3), 541-549. doi:10.1901/jaba.2009.42-541
- Roscoe, E. M., Fisher, W. W., Glover, A. C., & Volkert, V. M. (2006). Evaluating the relative effects of feedback and contingent money for staff training of stimulus preference assessments. *Journal of Applied Behavior Analysis, 39*(1), 63-77. doi:10.1901/jaba.2006.7-05
- Roscoe, E. M., & Fisher, W. W. (2008). Evaluation of an efficient method for training staff to implement stimulus preference assessments. *Journal of Applied Behavior Analysis, 41*(2), 249-254. doi:10.1901/jaba.2008.41-249
- Salem, S., Fazzio, D., Arnal, L., Fregeau, P., Thomson, K., Martin, G. L., & Yu, C. T. (2009). A self-instructional package for teaching university students to conduct discrete-trials teaching with children with autism. *Journal on Developmental Disabilities, 15*(1), 21-29. Retrieved from http://www.oadd.org/Published_Issues_142.html
- Schepis, M. M., Ownbey, J. B., Parsons, M. B., & Reid, D. H. (2000). Training support staff for teaching young children with disabilities in an inclusive preschool setting. *Journal of Positive Behavior Interventions, 2*(3), 170-178. doi:10.1177/109830070000200305
- Sarokoff, R. A., & Sturmey, P. (2004). The effects of behavioral skills training on staff implementation of discrete-trial teaching. *Journal of Applied Behavior Analysis, 37*(4), 535-538. doi: 10.1901/jaba.2004.37-535

REFERENCES

- Wallace, M. D., Doney, J. K., Mintz-Resudek, C. M., & Tarbox, R. F. (2004). Training educators to implement functional analyses. *Journal of Applied Behavior Analysis*, 37(1), 89-92. doi:10.1901/jaba.2004.37-89
- Ward-Horner, J., & Sturmey, P. (2012). Component analysis of behavior skills training in functional analysis. *Behavioral Interventions*, 27(2), 75-92. doi:10.1002/bin.1339
- Wolery, M., & Garfinkle, A. N. (2002). Measures in intervention research with young children who have autism. *Journal of Autism And Developmental Disorders*, 32(5), 463-478. doi:10.1023/A:1020598023809