

## SURVIVOR AND FAMILY RECOVERY FOLLOWING TBI: EVIDENCE FOR RECIPROCAL INFLUENCES

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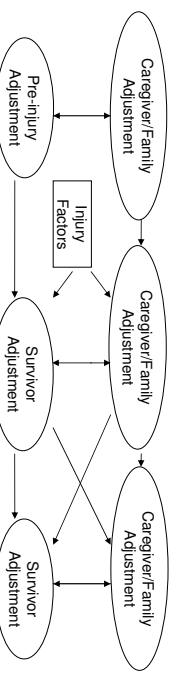
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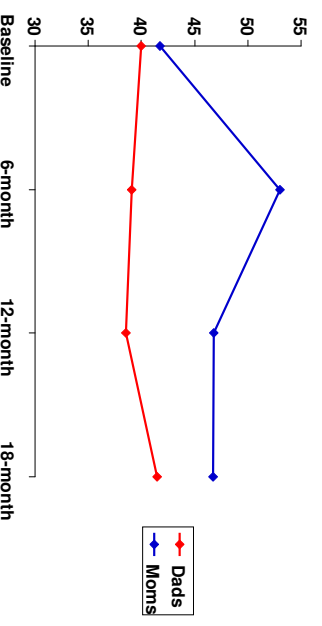
## Brain Injury is a Family Affair: A model of reciprocal influences over time



## The Effects of TBI on Families

- Increased injury-related burden and distress
- Anxiety and depression
- Family conflict and dysfunction

## Mother's vs. Father's Ratings of Parenting Disagreements over Time following Severe TBI



## The Relationship between the Injured Individual's and the Family's Functioning

- There is a reciprocal relationship between the family's and the injured individual's functioning.
- Individuals from well functioning families show greater recovery.
- Individuals with more severe injuries and greater changes in behavior have more stressed families and caregivers.

## Unraveling the Connection between Caregiver and Survivor Outcomes: The Role of Caregiver-Survivor Interactions

- Examined 2 aspects of relationships believed to be important based on developmental literature:
  - Characteristics of the parent's behavior toward the child
  - The quality of parental discipline

## Background

- Parenting behaviors exert an important influence on typical child development with warm responsive parenting contributing to better child self regulation and fewer behavior problems.
- Conversely, critical or harsh parenting has been linked to higher levels of externalizing behaviors.
- The quality of discipline is also related to behavior problems with harsh or lax discipline contributing to greater problems.

## Relationship of family functioning to progress in post-acute rehabilitation

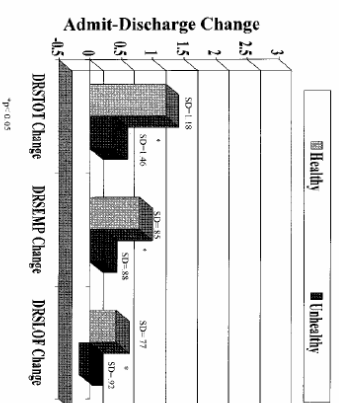


Figure 1. Progress in post-acute rehabilitation by family functioning.

Sander AM, Caroselli JS, High WM, Jr, Becker C, Neece L, Scheibel R. Relationship of family functioning to progress in a post-acute rehabilitation programme following traumatic brain injury. *Brain Inj.* 2002 Aug;16(6):548-57.

## Aims

- To determine whether parenting behaviors and discipline strategies change as result of TBI.
- To examine the relationship of both positive and negative parenting behaviors and discipline strategies to the emergence of behavior problems following early childhood TBI relative to a cohort of children with orthopedic injuries (OI).

## Participants

- 72 children with TBI (21 severe and 51 moderate)
- 96 children with OI
- Ages 3 – 6 years 11 months at the time of injury
- Assessed shortly after the injury and at 6-month intervals across the initial 18-months post injury.
- Parental ratings of child behavior at baseline were made to reflect pre-injury status.

## Participants

- The groups did not differ with respect to pre-injury delays in growth and development or problems with emotions and behavior.
- The groups differed significantly on maternal race and education and there were trends for differences in income.

## Measures

- Parents and children were videotaped while engaged in unstructured free play and during a structured teaching task.
- Coded the dimensions of warmth, contingent responsiveness, and negativity using a 5-point scale (higher scores = more positive behavior)
- Also made counts of parental directives and restrictions
- Intraclass correlation coefficients for all codes and raters were .8 or higher.

## Measures

- Warmth and contingent responsiveness were highly correlated ( $> .75$ ) and thus averaged to form a composite score reflecting warm responsiveness.
- Child regulation and cooperation was coded during the interactions.
- The Child Behavior Checklist was used to assess internalizing, externalizing, and ADHD behavior problems.

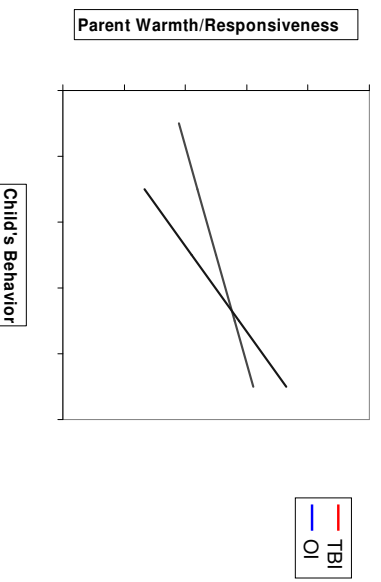
## Differences in Parenting Behaviors at Baseline and 6-months Postinjury

- At baseline, parents of children with TBI displayed higher levels of directiveness and lower levels of warm responsiveness, particularly during the structured teaching task.
- However, by 6-months, the groups did not differ on any of the ratings of parental behavior.

## Group Differences in the Association between Child Behavior Regulation and Parental Responsiveness

- OI > TBI
- In the OI group, parents were more responsive when the child's behavior was well regulated

## The Interaction of Group with Child Behavior Regulation in Predicting Parental Warm Responsiveness

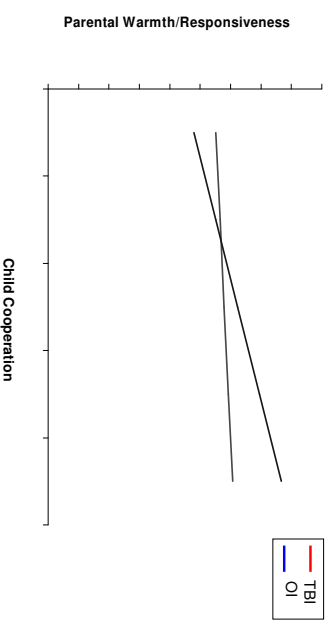


## Relationship of Parental Responsiveness to Child Cooperation

- OI > TBI

In the TBI group, there was no association between child cooperation and parent responsiveness

## The Interaction of Group with Child Cooperation in Predicting Parental Warm Responsiveness



## Conclusions

- Evidence of different parent-child interactions in initial weeks following TBI
  - Parents may become less warm and responsive when they need to exert greater efforts to manage the child's behavior

Aim 2: Does parenting behavior contribute to the emergence of behavior problems

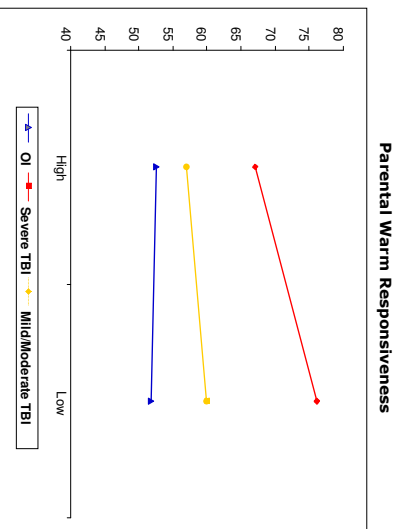
## Analyses

- Linear regression analyses were conducted to examine the relationships of parental warm responsiveness and negativity at baseline to child behavior at 6 months post-injury.
- Negativity was dichotomized into none versus any.
- Pre-injury ratings of child behavior, parental race, and a composite score of parental education and income served as covariates.

## The Relationship of Parental Responsiveness to Emerging Behavior Problems

- Parental warm responsiveness moderated the relationship between moderate and severe TBI and emerging ADHD symptoms ( $p = .002$ ).

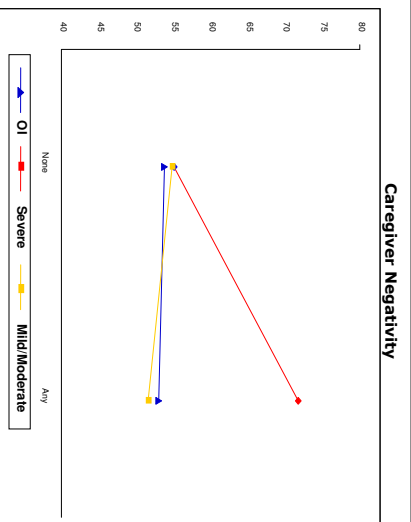
## Differential Effects of Parental Responsiveness as a Function of Injury Type



## The Relationship of Parental Negativity to Emerging Behavior Problems

- Caregiver negativity also moderated the association between TBI and ADHD symptoms. Again, severe TBI coupled with parental negativity was associated with higher levels of ADHD symptoms.
- Caregiver negativity moderated the association between TBI and externalizing behavior problems with parental negativity resulting in higher levels of externalizing behaviors following severe TBI.

## ADHD Symptoms by Group as a Function of Caregiver Negativity



## Conclusion

- The current findings provide evidence regarding the importance of both parental warm responsiveness and negativity to behavioral recovery.
- Consistent with previous research, parental behaviors were more strongly associated with emerging externalizing problems than internalizing symptoms.
- Taken together, these findings have important implications regarding the use of positive parenting interventions.

## Parenting Practices and Behavioral Recovery Following TBI: The Role of Discipline

- Authoritative- consistent and reasoned rules and follow through
- Permissive- lack of rules or failure to enforce the rules
- Authoritarian- strict and often punitive enforcement of rules- “spare the rod and spoil the child”

## Aims

- Examine changes in parenting practice following early TBI.
- Examine the relationship of parenting practices to recovery of executive function skills and behavior over the initial 18 months post injury.

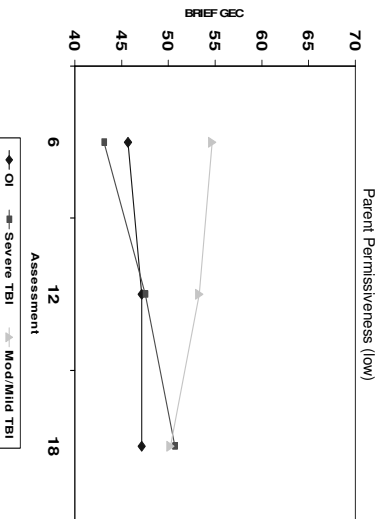
## Changes in Parenting Style over Time

- The groups did not differ on parenting styles prior to the injury.
- Only authoritative parenting changed over time.
- Parents of children with severe TBI reported significantly lower levels of authoritative parenting at 6-months post injury relative to the OI group.

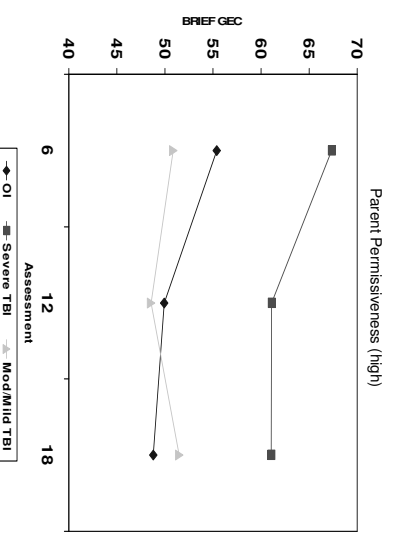
## Parenting Style and Executive Functioning

- Following moderate TBI, lower permissiveness was associated with higher executive dysfunction relative to the OI group at 6 and 12 months following injury.
- Following severe TBI, greater permissiveness was associated with higher executive dysfunction compared to the OI group across all time points.

## BRIEF GEC by Group at Low Levels of Permissiveness



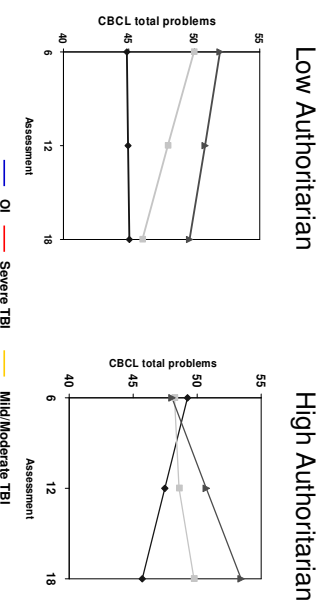
## BRIEF GEC at High Levels of Permissiveness



## Effects of Authoritarian Parenting on Executive Dysfunction

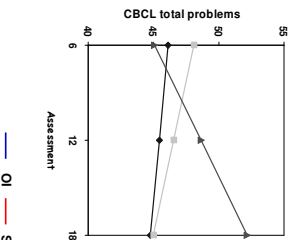
- In children with severe TBI, high levels of authoritarian parenting were protective (no group differences on the BRIEF).
- Low levels of authoritarian parenting were associated with significantly higher levels of executive dysfunction in the severe TBI group relative to the OI group.

## Authoritarian parenting moderates child behavior problems (CBCL)

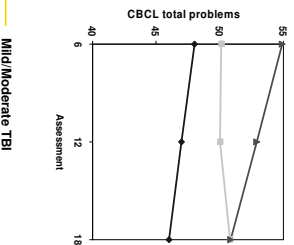


## Permissive parenting moderates adjustment (CBCL)

### Low Permissive



### High Permissive



## Summary

- Parenting at a variety of levels plays an important role in early recovery following preschool TBI.
- The effects of parenting on recovery diminish with increasing time since injury.

## Summary

- Parental warm responsiveness and negativity contribute to the emergence of behavior problems in expected ways.
- Parental disciplinary styles that are typically seen as maladaptive function differently in the initial months following early TBI.

## Summary

- The same parenting characteristics (i.e., permissiveness) may serve different functions depending on the nature and severity of the injury.

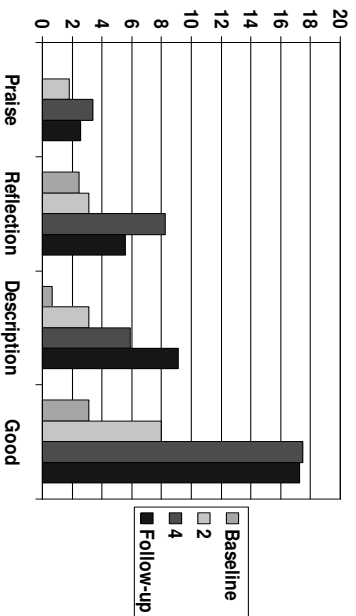
## Implications for Intervention

- The quality of parenting is important to behavioral recovery, especially following severe TBI.
- Interventions that emphasize sensitive parenting coupled with consistent discipline may be particularly effective.

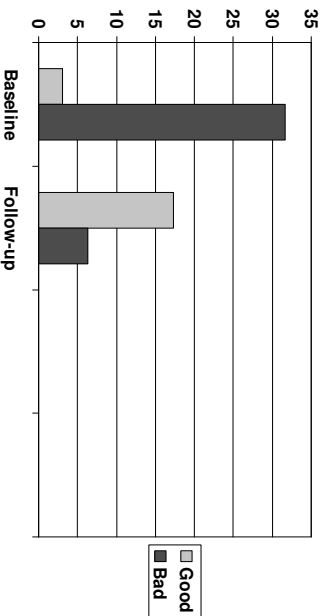
## I-INTERACT

- Online intervention to improve parent-child interactions following TBI
- Based on parent-child interaction therapy
- Parents learn to follow their child's lead and to provide consistent direction and follow through.

## Changes in Positive Parenting Behaviors from Baseline to Follow-up



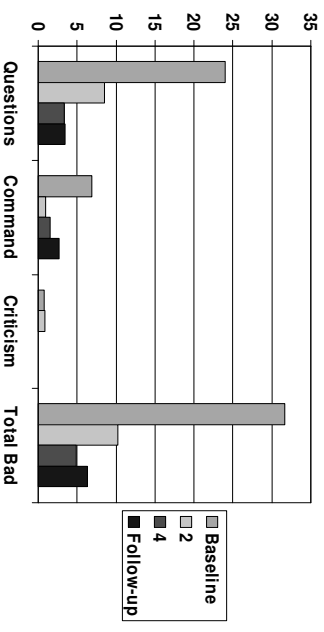
## Overall Changes in Positive and Negative Parenting between Baseline and Follow-up



## Future Directions

- Understanding the relationship of other family dynamics to the caregiver-survivor relationship
- Understanding what role sibling issues, marital quality and other factors play
- Gene-environment interactions

## Changes in Negative Parenting Behaviors from Baseline to Follow-up



## Questions

- Do these parenting factors play the same role in the recovery of older children?
- What are the relevant interactional characteristics that facilitate recovery from TBI in adults-do warmth and negativity play similar roles?