

Teacher, Caregiver, and Child Predictors of Educational Outcomes of Children with Autism



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Introduction

- Public schools have reported a notable increase in the numbers of students with autism served. To help schools provide more efficacious services for students with autism, information is needed on predictors of educational outcomes.
- Although information is available on pre-treatment child predictors (i.e., intelligence, language, social abilities, and autism severity), little information is available on caregiver and teacher predictors of school-based educational outcomes.
- Data on the contributions of possible moderators on child outcomes will inform future intervention research in autism.

Methods

- Thirty-five special education teachers responsible for the IEPs of students with autism between 3 and 8 years were recruited to participate in a randomized controlled study of a COMPASS consultation Ruble, Dalrymple, & McGrew, 2010).
- A teacher consultation theoretical framework was adapted (see Figure 1).
- Prior to group assignment, each teacher, caregiver, and child completed a baseline evaluation at the start of the school year (Time 1; see Table 1).
- The experimental group consisted of 18 teachers. Both groups received a Time 2 evaluation at the end of the school year by an independent evaluator unaware of the group assignment. Observational rating of child goal attainment of select IEP objectives using curriculum based assessment at Time 2 was used to assess outcomes. The Time 1 goal attainment score was used as a covariate in the analyses and the Time 2 goal attainment score was used as the dependent variable.
- A correlation analysis between potential predictor variables and child outcome was conducted (see Tables 2 and 3).

Figure 1. Adapted Model of Teacher Consultation (Sparks, 1988)

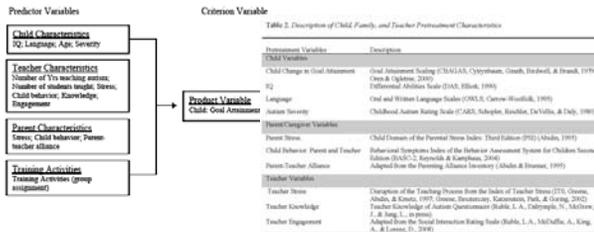


Table 1. Between Group Comparison of Child, Family, and Teacher Characteristics at Time 1

Characteristic	Control M (SD)	Experimental M (SD)	t	df
Child				
Age	6.0 (1.5)	6.2 (1.9)	-.34	
Childhood Autism Rating Scale	41.43 (8.2)	36.38 (9.9)	1.55	
Differential Abilities Scale-Totals	39.47 (18.4)	53.78 (27.1)	-1.81	
Child and Written Language Scales-Score	41.13 (19.6)	51.56 (17.2)	-1.67	
Vineland Adaptive Behavior Scales-Score ^a	62.29 (9.2)	64.88 (16.7)	-.56	
Behavior Assessment System for Children-2 T-score ^b	59.53 (8.5)	59.83 (7.0)	-.11	
Parent/Caregiver				
Parent/Caregiver Income	2.71 (1.0)	3.36 (1.9)	-1.77	
Teacher				
Teacher Total Number of Children Taught	8.85 (11.5)	4.56 (6.1)	1.29	
Teacher Total Years Working with Children with Autism	9.94 (9.9)	5.50 (3.6)	1.24	

^aBased on teacher report. ^bBased on Standardized Composite Score. Note. None of the comparisons were statistically significant.

Methods cont.

- Separate hierarchical regression analyses were conducted for each predictor: the first block included only one pretreatment variable (all were centered to adjust for effects of multicollinearity) plus the covariate (Time 1 goal attainment score), the second block added group assignment (COMPASS vs no COMPASS), and the third block added the interaction between group assignment and a pretreatment variable (Tables 4 and 5).
- This analysis was repeated but for each pretreatment variable comparing a model with only group assignment and Time 1 goal attainment score (block 1) to a model that added a pretreatment variable (block 2).
- Because of the multiple tests being conducted and interrelatedness among some pretreatment predictors, all analyses were examined with an adjusted experimentwise error rate ($p < .01$).

Results

- Correlation analyses indicated that no parent, one teacher, and three child variables correlated with child outcome.
- The first analysis tested separately the effects of the predictor, group, and the group by predictor interaction. Teacher engagement was the only significant variable. Specifically, the intervention impact on time 2 GAS scores was greatest for those with lower teacher engagement at time 1. That is, the intervention was most helpful for those who started the intervention trial relatively disengaged.
- A secondary analysis (Table 5) was conducted that used Time 2 engagement levels in an identical regression analysis. The group by engagement interaction was again significant. However, now the intervention was found to be most helpful for those with the highest levels of post-intervention engagement.
- A second hierarchical regression analyses tested separately the effects of group and predictor, after adjusting for baseline levels of GAS (Table 4). Group assignment and the covariate- Time 1 goal attainment, added to the model in the first block, was significant ($p < .02$) for 11 of the 13 variables.
- When the predictor was added in the second block, only autism severity and teacher stress contributed significantly to the model, i.e., explained significant variance in Time 2 GAS scores beyond that explained by group assignment.

Table 3. Partial Correlations between Child, Caregiver, and Teacher Pretreatment Variables and Child Outcome After Controlling for Baseline GAS

Pretreatment Variable/Child Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Final GAS Score														
2. AGE														
3. IQ														
4. Language														
5. Autism Severity														
Parent/Caregiver Variables														
6. Parent Stress														
7. Child Behavior: FR														
8. Parent-Teacher Alliance														
Teacher Variables														
9. Number of YRS teaching autism														
10. Number children taught														
11. Teacher Stress														
12. Child Behavior: TR														
13. Teacher Knowledge														
14. Teacher Engagement														

Note. * $p < .05$, ** $p < .01$

Table 4. Hierarchical Analysis of Pretreatment Variables

Pretreatment Variable/Child Variables	Model	Significant F Change	Model	Significant F Change
AGE	1. Age & PreGAS	.50	1. Group & PreGAS	.011
	2. Group	.006	2. Age	.987
	3. Age x Group	.052		
IQ	1. IQ & PreGAS	.211	1. Group & PreGAS	.011
	2. Group	.028	2. IQ	.845
	3. IQ x Group	.037		
Language	1. Language & PreGAS	.014	1. Group & PreGAS	.008
	2. Group	.209	2. Language	.029
	3. Language x Group			
Autism Severity	1. Severity & PreGAS	.003	1. Group & PreGAS	.008
	2. Group	.016	2. Severity	.907
	3. Severity x Group	.237		
Parent/Caregiver Variables	1. Stress & PreGAS	.026	1. Group & PreGAS	.014
	2. Group	.056	2. Stress	.191
	3. Stress x Group			
Child Behavior: FR	1. Behavior & PreGAS	.203	1. Group & PreGAS	.017
	2. Group	.028	2. Behavior	.761
	3. Behavior x Group	.786		
Parent-Teacher Alliance	1. Alliance & PreGAS	.157	1. Group & PreGAS	.018
	2. Group	.011	2. Alliance	.783
	3. Alliance x Group	.840		
Teacher Variables	1. Years & PreGAS	.443	1. Group & PreGAS	.018
	2. Group	.010	2. Years	.499
	3. Years x Group			
Number children taught	1. Number & PreGAS	.533	1. Group & PreGAS	.026
	2. Group	.010	2. Number	.749
	3. Number x Group	.414		
Teacher Stress	1. Stress & PreGAS	.015	1. Group & PreGAS	.011
	2. Group	.002	2. Stress	.902
	3. Stress x Group	.108		
Child Behavior: TR	1. Behavior & PreGAS	.008	1. Group & PreGAS	.002
	2. Group	.011	2. Behavior	.017
	3. Behavior x Group	.111		
Teacher Knowledge	1. Knowledge & PreGAS	.541	1. Group & PreGAS	.011
	2. Group	.006	2. Knowledge	.797
	3. Knowledge x Group	.422		
Teacher Engagement	1. Engagement & PreGAS	.287	1. Group & PreGAS	.010
	2. Group	.014	2. Engagement	.461
	3. Engagement x Group	.004		

Table 5. Time 2 Hierarchical Analysis of Time 2 Teacher Engagement and Outcome

Time 2 Variable	Model	Significant F Change	Model	Significant F Change
Teacher Engagement	1. Time 2 Engagement & PreGAS	.014	1. Group & PreGAS	.013
	2. Time 2 Engagement	.009	2. Time 2 Engagement	.993
	3. Time 2 Engagement x Group	.039		

Discussion

- This exploratory study showed that only autism severity exhibited predictive power to explain child outcomes beyond the contribution of the intervention.
- Three explanations for these findings are offered. First, COMPASS intervention is an innovative approach that results in the generation of treatment goals and teaching methods personalized to the strengths and challenges from the child and the environment, thus it may not be expected that the level of functioning of the children before treatment will impact child outcomes. Second, the dependent variable represents an idiographic approach that may be better suited for authentic and child-specific outcome assessment and is perhaps more sensitive in detecting change. Third, the relatively small sample size may underpower the ability to find effects.
- COMPASS intervention is helpful for improving the quality of teacher engagement for low engaged teachers.
- Teacher stress was identified as a new and potentially important pretreatment predictive variable to consider in school based research.
- The findings suggest that COMPASS consultation may provide a novel approach for improving the educational outcomes of children with autism regardless of child pretreatment variables such as IQ, age, and language. Results should be interpreted with caution due to the relatively low sample size.

References:
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