

Brief Report

Promoting Positive Interactions between Mothers and Their At-risk Young Children

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Abstract

This study explores the impact of an exploratory, minimalist intervention based on the principles of social communication training that aimed at promoting positive interactions between mother and child and increasing child initiations in mother-child communication. Encouraging data indicated a shift towards a more positive interaction style between mother and child. Time-series analyses indicated that at the beginning of the intervention period mothers were mainly responsible for initiating interactions with their children. By the end of the intervention period, children were initiating positive interactions and mothers were responding in like fashion.

INTRODUCTION

The parent-child relationship is one factor that consistently emerges in research as a contributor to problem behaviour (Brophy & Dunn, 2002; Hemphill, 1996; Hester, Baltodano, Gable, Tonelson & Hendrickson, 2003; Martin, Linfoot, & Stephenson, 2000; Stormont, 1998). Antisocial aversive patterns of child and parental behaviour in some families may lead to periods of emotional isolation for children (and parents), possible absence of parental supervision, and eventual involvement with a "deviant peer group" (Hemphill, 1996). In the more extreme cases, this pathway may lead to a persistent pattern of aggressive behaviour, possibly involving stealing, cruelty, and other serious antisocial behaviour. It follows, therefore, that efforts to assist parents and young children to overcome developing patterns of coercive interactions and aggression will be important for the mental health of all concerned (Bierman, Greenberg, & Conduct Problems Prevention Research Group, 1996; Kazdin, 1996; Webster-Stratton, 1996).

Social Communication Training

Kaiser and Hester (1997) have shown that a social communication training approach can be used effectively to help break down the cycle of coercive behaviours between parents and children. The goal of social communication training is to promote positive interaction between parents and their children and to reduce parent control of their joint activities. Parents are encouraged to use naturally occurring events and situations that arise in play and daily routines to promote positive

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interactions with their child, to follow the child's lead, to allow the child to initiate, to respond contingently to the child, and to provide the natural consequences. This style of intervention has been shown to increase parent responsiveness and to decrease controlling and directive behaviours of parents. It has led to improvement in social communicative skills of young children and increases in the time mother-child dyads spend in interactive episodes (Alpert & Kaiser, 1992; Hemmeter & Kaiser, 1994; Kaiser, Hemmeter, Ostrosky, Fischer, Yoder, & Keefer, 1996; Kaiser & Hester, 1997).

Aims of the Present Research

This report presents the findings of research conducted in an Australian setting to explore the effects of a minimalist intervention aimed at increasing positive parent-child interactions initiated by the child in a supportive environment promoting play-based interactions. The intervention took the broad brush principles from the work on social communication training, presented them to mothers in a low key style and provided a supportive environment with engaging activities in which the mothers could apply these principles to their interaction with their young child. Specifically, the present study explored the impact of the intervention on (a) the rate of positive and negative interactions between parent and child and (b) the rate of child initiations followed by a positive parent response.

METHOD

Participants

Two preschools that were known to be in communities where significant numbers of young children were found, on public school admission, to experience serious behaviour problems were identified with the assistance of senior personnel from the NSW Department of Education and Training with knowledge of behaviour patterns across those schools.

Letters of invitation were sent to all parents of children aged 3 to 5 years who had children attending the selected preschools. The invitation was directed at parents who were experiencing difficulties managing their child and who would like assistance in managing young children's behaviour. The letters advised parents about the details of the play group intervention. The purpose of the play sessions was to help parents who were concerned about a child's behaviour and who might wish to develop their interaction skills with their children in positive ways. Hence, participants were those parents who identified themselves as experiencing difficulties with their young child and who were willing to engage in a program to address these difficulties.

There were 16 mothers who agreed to take part in the sessions with their child at Preschool 1, and 15 parents volunteered to participate at Preschool 2. At Preschool 1 there were 10 dyads who attended at least three of the eight sessions, while the number at Preschool 2 was 6. Only those cases were used in the data analysis and these comprised 11 boys and 5 girls. There were 8 dyads who attended six or more sessions, 3 who attended five sessions and 4 who attended four and one who attended 3. Three dyads attended only early sessions, for others absences were intermittent.

Other participants included the research manager, the specialist Early Childhood teacher, and two observers recording data on parents' and children's interactions. Child minding facilities were also provided for siblings of children who participated in the intervention study.

Materials

At each venue, the hall had been made available for the eight 2-hour weekly sessions of the study, along with a supply of foam mats which parents and children could use to sit with each other at floor level. Activities were on mats or low tables with low seats so parent and child would be at the same physical level to facilitate eye contact and interaction.

The collection of toys and selected reading materials provided was chosen specifically to facilitate engagement between mother and child and to encourage interactive behaviour. Toys used such as cards and games involved turn-taking, that is, they elicited a response from children, or they required that children seek assistance from their parent, for example, puzzles, puppets, craft activities and construction toys. These toys were placed at separate 'play stations' around the hall, and child and parent dyads moved between them to play with each toy. Movement around the stations was determined by each dyad, ideally guided by child interest.

Procedures

At the first session parents were provided with an overview of the aims of the project and the principles to be used in interacting with their children. Apart from some group activities at the beginning and end, the sessions involved play interaction between each parent and child. During this session we presented the broad principles of positive interaction drawn from social communication training and asked parents to focus on and follow the child's lead in play, to talk about the child's play activities in a positive way, and to be responsive to their child's initiations. Mothers were asked to respond to child initiations to maintain interactions and not to dominate interactions. If problems and confrontations did occur, they were asked to use strategies to shift the child's attention positively with short, clear directions. Mothers received no further formal group input on the behaviours we wished to encourage. Formal training was thus minimal; the focus was on providing an opportunity and a setting for positive interaction. In subsequent sessions the group leader and other members of the research team moved around the dyads and modeled and encouraged appropriate interaction.

All data were collected from live observation. Each parent-child dyad was observed during each play session for a period of around 5 minutes by observers trained to acceptable reliability levels, using the interval recording observation format shown in the Appendix I. There were two observers who carried out these observations. In each week, the two observers selected 2 to 3 dyads to rate simultaneously but independently. This enabled checks on inter-rater reliability. The observations were carried out using interval recording with 15 second intervals. For each 15 second interval the observers recorded data on both parent and child and recorded whether the interaction during that interval was predominately verbal or physical, positive or negative in tone and whether the parent or child had initiated the interaction.

RESULTS

Inter-observer Reliability

Inter-observer reliability was calculated from the independent but simultaneous observations on selected dyads. For each dyad for each week, reliability (kappa) statistics are presented in Table 1. In all cases kappa values are significant and demonstrate acceptable inter-rater reliability.

Table 1: Reliability (Kappa) Statistics for Selected Dyads for Each Week

	Dyads jointly rated	Dyad 1	Dyad 2	Dyad 3	Mean
Week 1	2	.88*	.75*	-	.815
Week 2	3	.80*	.76*	1.00*	.853
Week 3	1	.93*	-	-	.930
Week 4	3	.90*	.79*	.90*	.863
Week 5	2	.86*	.96*	-	.910
Week 6	3	.96*	.97*	.88*	.937
Week 7	1	.95*	-	-	.950
Week 8	2	1.00*	.96*	-	.980

Note. Dyads not jointly rated in this week are denoted by -.
* $p < 0.05$

The Subscales

For each week, eight subscale scores were computed. These were the number of (a) intervals with mother's positive initiations (MPOSIN), (b) child's positive responses (CPOSRSP), (c) child's positive initiations (CPOSIN), (d) mother's positive responses (MPOSRSP), (e) mother's negative initiations (MNEGIN), (f) child's negative responses (CNEGRSP), (g) child's negative initiations (CNEGIN), and (h) mother's negative responses (MNEGRSP).

Descriptive statistics for each of these subscales for each of the eight weeks are presented in Tables 2 and 3. Results in Table 2 indicate that, for any given positive subscale, most dyads yielded data. In addition, the distribution of the majority of the subscales is acceptable. Results in Table 3,

Table 2: Descriptive Statistics for Positive Initiations and Responses

	Mean	SD	Kurtosis	Skewness	N
Mother's positive initiations					
Week 1	10.57	3.96	.68	.70	14
Week 2	10.67	1.83	-.49	.59	12
Week 3	12.21	5.21	-1.51	-.15	14
Week 4	12.46	4.31	-1.27	-.29	13
Week 5	13.00	4.05	-1.22	.10	12
Week 6	11.57	4.79	.44	.78	7
Week 7	9.56	6.64	-1.56	.54	9
Week 8	9.50	6.93	-1.34	.41	8
Child's positive responses					
Week 1	10.86	3.68	.23	-.91	14
Week 2	10.17	2.86	-.85	.28	12
Week 3	11.07	5.30	-1.42	-.25	14
Week 4	10.46	5.14	-1.60	-.08	13
Week 5	13.25	4.31	-.62	-.50	12
Week 6	12.14	4.67	.11	.48	7
Week 7	10.33	6.16	-.92	.13	9
Week 8	7.40	6.75	-.53	.86	10
Child's positive initiations					
Week 1	6.64	3.73	-1.36	.12	14
Week 2	7.08	2.11	-1.48	.08	12
Week 3	7.46	4.48	-1.74	-.03	13
Week 4	6.62	4.37	-.79	.42	13
Week 5	5.83	3.86	-.97	.57	12
Week 6	7.67	2.34	-.91	.04	6
Week 7	10.38	5.01	-1.13	-.40	8
Week 8	12.45	7.03	-.96	-.79	11
Mother's positive responses					
Week 1	5.50	3.30	-1.30	.37	14
Week 2	5.58	2.39	-.78	.59	12
Week 3	6.08	4.07	-1.96	.32	13
Week 4	6.23	3.94	-1.04	.33	13
Week 5	5.67	3.65	-.25	.66	12
Week 6	8.33	1.75	3.56	-1.76	6
Week 7	9.50	4.44	-1.59	-.47	8
Week 8	12.45	7.06	-.96	-.76	11

however, indicate that few negative interactions were observed, and the distributions for each of the subscales are not acceptable given the high (or absent) skew and kurtosis. In light of these problems, it was considered inappropriate to pursue analyses using the negative subscales. Accordingly, subsequent analyses relate to positive interactions only.

Testing for Differences between Sites

A series of independent samples t-tests compared the means between the two sites on each subscale in each week. Results indicated that, after Bonferroni correction, the two sites were not significantly different at any stage during the program on all subscales. Accordingly, data were pooled across the entire sample, and subsequent analyses were conducted using the entire sample and not separately across sites.

Using Time to Predict Mother-Child Interactions

The present analysis is centrally concerned with the change in mother-child relations over time. One way to explore this relationship is through regression analysis such that Time is the predictor and each of the four mother-child interactions is the dependent variable. A series of three regressions was therefore performed: linear, quadratic, and cubic (the latter two to test for possible non-linear relationships). The results of these analyses are presented in Table 4. Also in Table 4 are Durbin-Watson statistics that test for autocorrelation in residuals.

Table 3: Descriptive Statistics for Negative Initiations and Responses

	Mean	SD	Kurtosis	Skewness	N
Mother's negative initiations					
Week 1	2.80	1.92	2.61	1.52	5
Week 2	2.25	1.26	2.23	1.13	4
Week 3	1.86	1.07	2.71	1.52	7
Week 4	1.75	.96	-1.29	.85	4
Week 5	2.25	1.26	2.23	1.13	4
Week 6	1.00	.00	-	-	3
Week 7	3.67	3.79	-	1.60	3
Week 8	1.33	.58	-	1.73	3
Child's negative responses					
Week 1	2.00	2.00	5.12	2.25	6
Week 2	1.25	.71	8.00	2.83	8
Week 3	1.71	.76	-.35	.60	7
Week 4	4.57	4.47	4.17	1.98	7
Week 5	1.50	.58	-6.00	.00	4
Week 6	1.00	.00	-	-	2
Week 7	1.00	.00	-	-	2
Week 8	2.00	1.73	-	1.73	3
Child's negative initiations					
Week 1	1.50	.58	-6.00	.00	4
Week 2	1.00	.00	-	-	7
Week 3	1.60	.89	.31	1.26	5
Week 4	1.00	.00	-	-	3
Week 5	1.67	.58	-	-1.73	3
Week 6	2.50	.71	-	-	2
Week 7	1.00	-	-	-	1
Week 8	1.00	.00	-	-	3
Mother's negative responses					
Week 1	1.50	.58	-6.00	.00	4
Week 2	2.00	.93	-2.10	.00	8
Week 3	1.33	.52	-1.88	.97	6
Week 4	1.75	.50	4.00	-2.00	4
Week 5	1.00	.00	-	-	3
Week 6	3.00	-	-	-	1
Week 7	1.50	.58	-6.00	.00	4
Week 8	1.00	.00	-	-	3

Results in Table 4 indicate firstly that the residuals in regression analyses are not autocorrelated. Thus it was justifiable to pursue Ordinary Least Squares (OLS) regression rather than autoregression. The best-fitting regression line for MPOSIN is the quadratic line. The best fitting regression line for CPOSRSP, CPOSIN, and MPOSRSP is the cubic line. In all cases these lines are significant, indicating that there is a relationship between the course of the program and mother-child interactions. These best-fitting regression lines are presented in Figure 1.

The profile presented in Figure 1 shows that the program begins with mothers initiating interactions in a positive fashion and children responding in like fashion. As the program develops, however, children come to take the initiative so that, by the end of the program, they are responsible for initiating positive interactions and mothers responding in like fashion. Hence, the data show a change in mother-child interactions from a parent-centred to a child-centred approach to communication.

Mother and Child Interactions Predicting Current and Later Interactions

We also explored aspects of the mother-child interaction that predict later interactions. For example, do interactions in Week 2 predict responses in Week 3? Or, are Week 3 responses primarily a function of Week 3

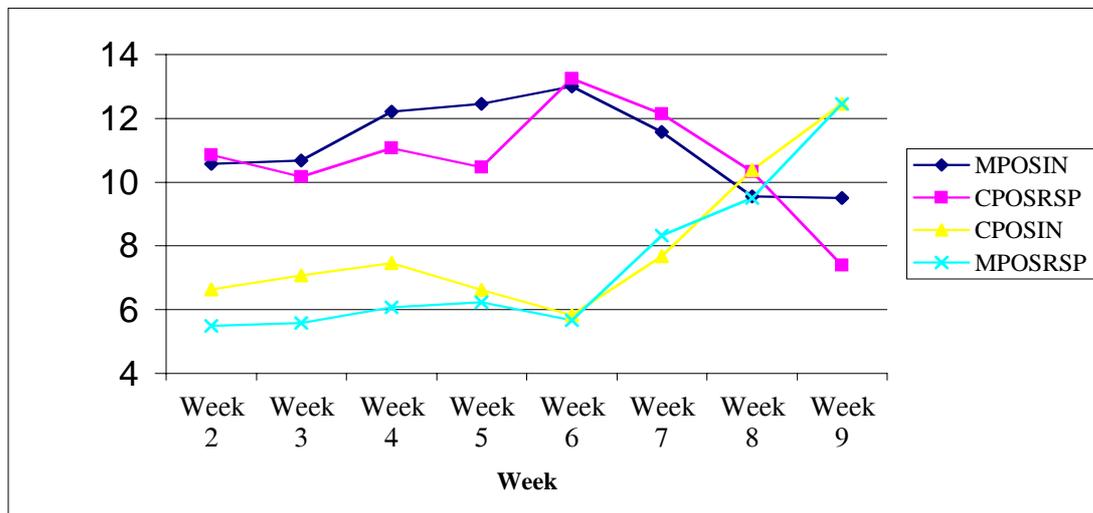
initiations? Testing the effects of current interactions on later interactions involves time series forecasting using a leading indicator. Leading indicators lag a predictor by one or more time periods. In the present case, lagging the four positive subscales by one week created four new variables. Thus, when predicting later child positive responses, for example, the lagged child positive response is used as a predictor.

Table 4: Predicting Initiations and Responses over Time

	Method	RSQ	F	p	B1	B2	B3	Durbin-Watson ^a
MPOSIN	Linear	.101	.68	.442	-.17			.78
	Quadratic	.800	9.97	.018	1.86	-.23		
	Cubic	.800	5.33	.070	1.98	-.26	.01	
CPOSRSP	Linear	.089	.59	.472	-.21			1.17
	Quadratic	.560	3.19	.128	1.93	-.24		
	Cubic	.875	9.37	.028	-3.39	1.16	-.10	
CPOSIN	Linear	.549	7.31	.035	.68			.76
	Quadratic	.870	16.68	.006	-1.65	.26		
	Cubic	.938	20.06	.007	1.62	-.60	.06	
MPOSRSP	Linear	.753	18.26	.005	.89			1.01
	Quadratic	.949	46.63	.001	-1.15	.23		
	Cubic	.969	41.04	.002	.80	-.28	.04	

Note. ^a Durbin-Watson values between 0.76 and 1.33 indicate that residuals are not autocorrelated. MPOSIN = Number of mother’s positive initiations, CPOSRSP = Number of child’s positive responses, CPOSIN = Number of child’s positive initiations and MPOSRSP = Number of mother’s positive responses.

Figure 1: Best fitting regression lines: Time predicting mother-child interactions



MPOSIN = Number of mother’s positive initiations, CPOSRSP = Number of child’s positive responses
 CPOSIN = Number of child’s positive initiations, MPOSRSP = Number of mother’s positive responses

We were interested in predicting mother and child responses and initiations using current and lagged subscales as predictors. This involved performing a series of simple regressions. Results are presented in Table 5. The first series involved predicting MPOSRSP using lagged MPOSRSP and CPOSIN and current CPOSIN in three simple linear regressions. The second series involved predicting CPOSRSP using lagged CPOSRSP and MPOSIN and current MPOSIN. The third series used lagged MPOSIN and CPOSRSP to predict MPOSIN. The fourth series involved predicting CPOSIN using lagged CPOSIN and MPOSRSP.

Table 5: Regressions Using Previous and Current Mother-Child Interactions to Predict Later and Current Interactions

Predictor variables	Outcome variables			
	MPOSRSP	CPOSRSP	MPOSIN	CPOSIN
	β	β	β	β
LAGGED MPOSRSP	.90*			
LAGGED CPOSIN	.77*			
CPOSIN	.96*			
LAGGED CPOSRSP		.28		
LAGGED MPOSIN		.82*		
MPOSIN		.74*		
LAGGED MPOSIN			.59	
LAGGED CPOSRSP			-.18	
LAGGED CPOSIN				.83*
LAGGED MPOSRSP				.92*

Note. MPOSIN = Number of mother's positive initiations, CPOSRSP = Number of child's positive responses, CPOSIN = Number of child's positive initiations, MPOSRSP = Number of mother's positive responses.

* $p < 0.01$

In terms of the first series, the strongest predictor of current MPOSRSP was current CPOSIN. Importantly, however, the previous week's MPOSRSP and CPOSIN also significantly predicted MPOSRSP. In the second series, the strongest predictor of current CPOSRSP was the previous week's MPOSIN followed by current MPOSIN. It is noteworthy that mother's initiations are the main predictor of a child's response and not the previous week's child's responses. Both the previous week's initiations and the previous week's mother's responses significantly predicted the child's positive initiations. The previous week's interactions did not significantly predict mother's current initiations.

DISCUSSION

This study involved observations of interactions between mothers and their children who participated in an intervention designed to increase child-initiated communication and positive responding by parents. Findings, although restricted to the 8 weeks of the study context, indicated that at the beginning of the intervention mothers were mainly responsible for initiating the play interactions with their children. By the end of the intervention, however, children were initiating positive interactions and mothers were responding in like fashion. Data also showed that mothers' positive responsiveness in later weeks was predicted by positive interactions of previous weeks. Children's positive responsiveness in later weeks was also predicted by positive interactions of earlier weeks. Also, children's positive initiations in later weeks were predicted by positive mother-child interactions of previous weeks.

It must be acknowledged that effective early intervention is likely to require intervention across several environments and with both parents and children. There are complex interrelationships between person and setting variables that influence problem behaviour (Hester et al., 2003). This study attempted to change the dynamics of mother-child interaction through a low key approach of providing a supportive context for mother/child interaction outside the home and through encouraging mothers to interact positively and to follow their child's initiation rather than controlling the activities.

Limitations and Future Directions

This study is not without its limitations. It is limited to observations of a small sample of mothers who identified their child as having problem behaviour, there was no external, formal identification of child behaviour problems. Given the scant and unreliable data on negative interactions, it seems prudent to regard this as a sample of mothers and children at risk of problem behaviour, rather than as dyads with entrenched coercive interaction styles. It was confined to an outer-metropolitan sample and generalising to the population of behaviourally-

problematic children and their parents should therefore be undertaken with care. Further, the findings need to be interpreted with the relatively small sample size in mind.

It is also important to note that the intervention was primarily exploratory in nature and conducted over a relatively short term. There was no control or comparison group, so it is possible that the changes observed were not due to the intervention itself. There was no follow up to contexts outside the intervention. While apparent short-term gains were observed, these need to be assessed over longer periods for more expanded evaluations of intervention effects and also need to be evaluated against a control group. Longer term measures need to be taken for both the assessment of children's behaviours and, importantly, for the extent to which parents may be able to continue with the responsive interaction style demonstrated. This longer term assessment is needed for periods when parents may be receiving training and assistance but, more importantly, in periods after formal intervention assistance has been concluded. At the same time, this minimalist intervention did appear to have a positive impact on mother-child interaction.

CONCLUSION

The role of early childhood experiences in the formation of problem behaviour has increasingly been recognised along with the view that a preventative approach in the early childhood years may be effective in mitigating the development of behavioural disorders in at least some of our young people. This study has provided support for the view that maladaptive features of young children's lives can be effectively addressed through targeted intervention. Specifically, a short-term intervention conducted with a sample of at-risk children and their parents was able to demonstrate a change in parent-child interactions from a parent-centred to a child-centred approach to communication.

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Appendix I: Observation Checklist

CHILD: _____ **DATE:** _____ **OBSERVER:** _____

You are to observe the mother and child dyad for a total of 5 minutes, using 15 second intervals. Place a tick in the appropriate section using the following codes as a guide for the major activity (verbal or physical) and either positive or negative. Also circle I (for initiates actions) or R (for responses).

CODING GUIDE

POSITIVE (+) VERBAL (V) Question, comment, praise, approval, express affection, smiles, laughs	POSITIVE (+) PHYSICAL (P) Model or imitate positive gesture, affectionate touch (hug, pat), comply with request or direction, show
NEGATIVE (-) VERBAL (V) Reprimand/protest direction, refusal, non compliance, nags, complains, whines, cries, smart talk/defiance, frown, criticise	NEGATIVE (-) PHYSICAL (P) Stops, prevents actions, aggression (hits, kicks, bites, pinch), destroys/damages play material

ACTIVITY: _____

MOTHER

CHILD

T I M E	15 SEC		30 SEC		45 SEC		1 MIN		T I M E	15 SEC		30 SEC		45 SEC		1 MIN	
	I or R		I or R		I or R		I or R			I or R		I or R		I or R		I or R	
	V	P	V	P	V	P	V	P		V	P	V	P	V	P	V	P
+																	
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T I M E	15 SEC		30 SEC		45 SEC		1 MIN		T I M E	15 SEC		30 SEC		45 SEC		1 MIN	
	I or R		I or R		I or R		I or R			I or R		I or R		I or R		I or R	
	V	P	V	P	V	P	V	P		V	P	V	P	V	P	V	P
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T I M E	15 SEC		30 SEC		45 SEC		1 MIN		T I M E	15 SEC		30 SEC		45 SEC		1 MIN	
	I or R		I or R		I or R		I or R			I or R		I or R		I or R		I or R	
	V	P	V	P	V	P	V	P		V	P	V	P	V	P	V	P
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T I M E	15 SEC		30 SEC		45 SEC		1 MIN		T I M E	15 SEC		30 SEC		45 SEC		1 MIN	
	I or R		I or R		I or R		I or R			I or R		I or R		I or R		I or R	
	V	P	V	P	V	P	V	P		V	P	V	P	V	P	V	P
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T I M E	15 SEC		30 SEC		45 SEC		1 MIN		T I M E	15 SEC		30 SEC		45 SEC		1 MIN	
	I or R		I or R		I or R		I or R			I or R		I or R		I or R		I or R	
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