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Maternal control and early child dysregulation: Moderating roles of ethnicity and child delay status

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Abstract

Background Maternal controlling behaviour has been found to influence child development, particularly in behavioural and emotional regulation. Given the higher rates of interfering parent control found in mothers of children with developmental delays (DD) and Latina mothers, their children could be at increased risk for behavioural and emotional dysregulation. While studies generally support this increased risk for children with DD, findings for Latino children are mixed and often attributed to cultural models of child rearing. The present study sought to determine the moderating roles of child DD and mother ethnicity in determining the relationships between two types of parent control (supportive directiveness and interference) and child dysregulation over time.

Methods The present study, involving 178 3-year old children with DD ($n = 80$) or typical development ($n = 98$), examined observed parent control (directive versus interfering) of Latina and Anglo mothers as it relates to change in preschool child dysregulation over 2 years.

Results Interfering parent control was greater for children with DD and also for Latino mothers. Supportive directive parenting generally related to relatively greater decline in child behaviour and emotion dysregulation over time, while interfering parenting generally related to less decline in child behaviour dysregulation over time. In Anglo but not Latino families, these relationships tended to vary as a function of child disability.

Conclusions Parent directives that support, rather than deter, ongoing child activity may promote positive regulatory development. These results particularly hold for children with DD and Latino families, and have implications for parenting practices and intervention.

Keywords developmental delays, emotion regulation, ethnicity, intellectual disability, parenting

Introduction

The ability to regulate one's emotions and behaviours is central to positive functioning across social, academic and relational domains (e.g. Eisenberg *et al.* 2010). Emotion regulation involves behaviours, skills and strategies, whether conscious or unconscious, automatic or effortful, that serve to modulate, inhibit and enhance emotional experiences and expressions (Calkins & Hill 2007). The distinction between behaviour and emotion regulation lies in the locus of regulation; emotion regulation targets internal or physiological reactions, while behaviour regulation targets overt behaviour and is often achieved through voluntary inhibition or activation of behaviour (Eisenberg *et al.* 2000). Although these processes are mutually influential, emotion and behaviour regulation may demonstrate unique implications for important facets of development such as social

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functioning (Eisenberg *et al.* 2000). Conversely, deficient regulation (i.e. dysregulation) is associated with maladjustment over time (Eisenberg *et al.* 2010; Vazsonyi & Huang 2010).

Parenting behaviour has emerged as one central mechanism through which children develop self-regulatory skills (Kopp 1982). Early in development, parents act as external regulators of child emotion and behaviour, but they gradually facilitate child self-regulation over time (Morris *et al.* 2007). Specifically, parent controlling behaviour contributes to how parents socialise these self-regulatory skills. For example, it has been argued that children need to be granted autonomy to experiment and select appropriate regulation strategies (Fox & Calkins 2003). Indeed, maternal overcontrol has been associated with less adaptive regulation strategies and physiological reactivity (Calkins & Johnson 1998), while greater autonomy support is related to better child self-regulation (e.g. Bernier *et al.* 2010).

Control is exerted by all parents, but it appears to be more prevalent within certain subpopulations, such as parents of children with developmental delays (DD; Green *et al.* 2014; Nader-Grosbois & Lefèvre 2012) and Latino parents (e.g. Halgunseth *et al.* 2006). However, specifying the nature of this control is crucial in understanding its contributions to child development. Green *et al.* (2014) differentiated between parent control that coincides with a child's ongoing behaviour or goals (supportive directiveness) and control that redirects the child's activity or focus of attention (interference), finding that children with DD may be particularly susceptible to the negative influence of interfering parent control. There is some evidence, however, that while Latina mothers tend to implement more interfering control than Anglo mothers, this control generally predicts positive or neutral (rather than negative) developmental outcomes (Halgunseth *et al.* 2006). The present study focuses on how child delay status and mother ethnicity relate to controlling behaviour and child self-regulation development.

Parent control and children with developmental delays

Parents of children with DD tend to demonstrate more controlling parenting behaviours than parents of typically developing (TD) children (Herman & Shantz 1983; Laing *et al.* 2010; Nader-Grosbois & Lefèvre 2012). While parental control has been reported to have negative effects on the skills and behaviour of TD children (Ispa *et al.* 2004; McDowell & Parke 2005), findings with DD children are mixed, with some studies finding a negative impact (e.g. Nader-Grosbois & Lefèvre 2012; Stevenson & Crnic 2013) and others finding a positive impact (e.g. Cielinski *et al.* 1995).

Inconsistent findings may be due to a failure to differentiate between supportive control related to the child's current focus or goal, and intrusive or interfering control unrelated to the child's goal (Flynn & Masur 2007). For example, Cielinski *et al.* (1995) operationally defined control as 'the parent attempts to lead the (child's) behaviour', while Herman & Shantz (1983) defined it as 'the summed frequency of maternal directing, interfering, and restricting'.

Green *et al.* (2014) differentiated between parent control that coincides with a child's ongoing behaviour or goals (supportive directiveness) and that which redirects the child's activity or focus of attention (interference), finding that mothers of children with DD implemented more interfering controlling acts than those of TD children. Moreover, interfering control negatively predicted social skills and adaptive behaviours for children with DD, but not TD children. Such findings suggest that children with DD are exposed to more interfering parenting and are more susceptible to the negative influence of interfering parenting. Using a similar differentiation of child-centred and interfering parenting, Siller and Sigman (2002) found that maternal verbalizations coinciding with the child's ongoing activity, as opposed to those demanding a change in child activity, were related to gains in child language and response to joint attention in young children with autism. This suggests that youth at developmental risk may benefit from child-centred parent direction. Further research is needed to evaluate whether supportive and interfering parent control differentially influence child self-regulation, often compromised in children with DD (Baker *et al.* 2007).

Anglo-Latino differences in parent control

Latino children (under age 18) now comprise 23% of the total child population in the (United States Census Bureau 2011), and scientific efforts are

increasingly focused on understanding this burgeoning US Latino population. One fruitful area of research focuses on ethnic differences in parenting practices and implications for child development.

Cross-ethnic examinations of Anglo-Latino parenting differences suggest that Latina mothers tend to implement more parent control than do Anglo mothers (Halgunseth *et al.* 2006 for review). Drawing from studies of young children, both physical guidance (Carlson & Harwood 2003) and intrusive maternal behaviour (Ispa *et al.* 2004) were more prevalent in Latina (Puerto Rican and Mexican American) mothers than their European-American counterparts, even when samples were matched for socio-economic status (SES; Ispa *et al.* 2004). Similarly, Ispa *et al.* (2013) found that Mexican-American mothers used more directives with their young children, while Cardona *et al.* (2000) found that Latina mothers of children ages 3–5 reported using more discipline than Anglo mothers. SES was related to discipline in an unexpected direction, with higher SES Latina mothers reporting using more discipline than lower SES Latina mothers. Thus, there is mounting evidence that Latina mothers use greater controlling behaviour, a difference that cannot be explained by SES.

Interfering control, however, may relate differently to child outcomes across families of different ethnicities. Ispa *et al.* (2004) found that intrusive parenting used by Latina mothers did *not* predict negative change in child engagement from child age 1 to 2 years, although it did for European-American mothers. Subsequently, Ispa *et al.* (2013) found that maternal directives predicted negative changes in child behaviour for all three ethnic groups examined (European American, African American, Mexican American), but much less so for the Mexican-American group.

Thus, maternal controlling behaviour, even when interfering in nature, appears to predict relatively benign outcomes in Latino families as compared with Anglo families. This differential influence of parent control on child development by ethnicity (Latino, Anglo) is suggested to result from cultural models of parenting (Halgunseth *et al.* 2006; Bornstein 2012) whereby parenting does not only differ across ethnicities in its form, but also in the meaning it represents for parents and children of different cultures.

Specifically, parenting beliefs within Latino families may be influenced by an *interdependent* (collectivistic, sociocentric) cultural orientation (Halgunseth *et al.* 2006). In contrast to Anglo culture, which is often categorised as individualistic (*independent)*, interdependent cultures emphasise harmonious interpersonal relationship, conforming to external standards, and beliefs that the group is central to one's identity (Hofstede 1980). Reflective of this interdependent orientation are the cultural values of *familismo,* which underline the importance of family closeness, getting along with the family and contributing to the family's well-being (Cauce & Domenech-Rodriguez 2002) as well as *respeto*, which emphasises obedience to authority and public decorum (Calzada *et al.* 2010). These values may be influential in parents' interpretations of child behaviour, and thus their parenting practices, including parent control (Halgunseth *et al.* 2006; Calzada *et al.* 2010). Using this cultural lens, parental control may be seen as a mechanism through which Latino parents socialise cultural values to their children and may thus influence child development differently than in Anglo families.

Parenting differences by ethnicity and child delay status

Relatively little is known about the use and influence of controlling behaviour in Latina mothers of children with DD. There is evidence that Latina mothers share different views than Anglo mothers regarding their children with DD and thus may parent their children differently. For example, Latina mothers (relative to Anglo mothers) of children with DD generally view their children as being less responsible for their own behaviour problems (Chavira *et al.* 2000). Additionally, Latina mothers on average demonstrate more acceptance of their children's cognitive and practical limitations than Anglo mothers of children with DD (Rueda *et al.* 2005) and report their children with DD to have a higher positive impact on the family than do Anglo mothers (Blacher & Baker 2007). Anglo mothers, in contrast, tend to foster independence in their children with DD more so than Latina mothers (Rueda *et al.* 2005). Thus, it is reasonable to expect that parent control exhibited by Latino and Anglo mothers of children with DD may differ in both quality and relationship with child outcomes such as self-regulation. For example, as Latina

mothers tend to be more accepting of the behaviour and abilities of their children with DD, they may feel less inclined (relative to Anglo mothers) to control or correct their child's behaviour and thus may exert similar levels of parent control with children with TD or DD. This has yet to be empirically examined.

The present study

We examined how mother ethnicity and child disability status related to the use of parent control and its relationship with young children's self-regulatory development. We assessed two dimensions of maternal controlling behaviour: directions that followed the child's lead (supportive directiveness) and those that redirected the child's behaviour or focus of attention (interference). We also distinguished between two domains of child dysregulation: behaviour and emotion dysregulation.

We aimed to (a) assess whether mother ethnicity and/or child delay status relate to maternal supportive and interfering control at child age 3; (b) determine whether ethnicity and child disability status interact to predict levels of mother control; and (c) assess whether parent control at age 3 relates to changes in child self-regulation from ages 3 to 5, and whether changes and moderated by mother ethnicity and/or child disability status. We tested three primary hypotheses:

1 Latina mothers and mothers of children with DD will exhibit higher levels of interfering, but not supportive, control.
2 Ethnicity and child disability status will interact to predict parent control; Latina (but not Anglo) mothers will implement similar levels of control regardless of child delay status.
3 Interfering control, but not supportive control, will be associated with increased child dysregulation (behavioural and emotional) over time, with stronger associations found for Anglo mother–child dyads and for children with DD.

Methods

Participants

Participants were families enrolled in a longitudinal study of children with or without developmental delays. Families were drawn from Southern California ($n = 130$) and Central Pennsylvania ($n = 55$) of the USA. The study was conducted at (blinded for review). The Institutional Review Boards of each university approved the study procedures. Of the original 238 children who participated in the first year of the study (child age 3), 185 families belonged to the target ethnic groups (Anglo, Latino) and were thus considered for the study. Within these, 178 had complete data for the key variables and were included in the present analyses. The seven families excluded from this study because of missing data did not differ from the 178 participants on any demographic variables.

Families were recruited either through agencies that provide diagnostic and intervention services for individuals with developmental delays or through local preschools and day care programmes. Participants were classified as either having a DD or TD based on the referral and confirmed by the child's Mental Development Index (MDI) from the Bayley Scales of Infant Development (Bayley 1993) administered at child age 3 years. While intelligence testing at this young age is sometimes unstable, it is fortunate that in the present sample the correlation with Stanford Binet cognitive assessment at age 5 was rather high, $r = .86$.

Children placed in the DD group ($n = 80$) scored in the moderate (MDI = 40–70) or borderline delay (MDI = 71–84) range on the Bayley, using DSM IV criteria (APA, 2000). These two groups with delayed functioning did not differ on key descriptive variables (e.g. emotion or behaviour dysregulation, Child Behaviour Checklist total behaviour problems). Within the DD group, participants were identified as having Down syndrome (8), autism spectrum disorder (10), cerebral palsy (8), another syndrome or multiple syndromes (7) or undifferentiated developmental delay (47). Children in the TD group ($n = 98$) had normative cognitive development (MDI greater than 84), were not born prematurely nor had a diagnosis of a developmental disability. All children in the study were ambulatory.

Table 1 shows demographics for the TD and DD groups at child age 3. In this sample, 75% of mothers identified as white, non-Hispanic and 25% as Hispanic. About half (50.3%) of the families had an annual income of $50 000 or above, and 44.4% of mothers had at least 4 years of college education.

Table 1 Demographic characteristics by ethnicity (Anglo, Latino) and child delay status (DD, TD)

	Anglo		Latino		*F* or χ^2	*F* or χ^2
	TD (*n* = 81)	DD (*n* = 53)	TD (*n* = 17)	DD (*n* = 27)	Status	Ethnicity
Child						
Mean age in months (SD)	34.7 (3.0)	35.3 (2.8)	35.4 (3.7)	35.4 (2.9)	*F* = 1.5	*F* = 1.1
Mental Development Index (SD)	105.2 (11.5)	60.6 (12.5)	101.1 (13.4)	60.0 (13.3)	*F* = 568.1***	*F* = 7.3**
Sex (%boys)	53.1	73.6	58.8	48.1	χ^2 = 2.2	χ^2 = 1.1
Parent/family						
% Married	88.9	84.9	88.2	74.1	χ^2 = 2.0	χ^2 = 1.6
Mother's physical health (1–4)	3.4 (.6)	3.3 (.6)	3.4 (.8)	2.9 (.8)	*F* = 6.7*	*F* = 6.6**
Mother's highest grade (SD)	15.8 (2.4)	14.5 (2.5)	14.5 (2.5)	13.3 (1.3)	*F* = 16.6***	*F* = 14.8***
Annual income (% > $50 000)	56.3	50.9	52.9	25.9	χ^2 = 3.0	χ^2 = 4.2*

*$P < .05$.
**$P < .01$.
***$P < .001$.
Total $N = 178$.
DD, developmental delays; TD , typically developing.

Between-group analyses indicated higher levels of physical health and grade in school for mothers who were Anglo or had children with TD. Family income was also higher for Anglo mothers. These variables were considered as covariates (see Data Analytic Plan).

Procedure

Age 3 assessment

At child age 3, participating families received a home visit to obtain informed consent and to verify the child's eligibility for the study and group classification. The child was administered a developmental assessment (Bayley Scales), and parents completed measures regarding their child's development. Participants were then scheduled for a centre visit. The protocol included a series of tasks involving both mother and child: a free play activity with age-appropriate toys (10 min), an 'easy' problem-solving task (2 min), a 'medium' problem-solving task (3 min), and a 'difficult' problem-solving task (5 min), a delay-of-gratification task (3 min) and clean up (3 min). Materials and procedures for each task were standardised across sites.

The difficulty of the problem-solving tasks was determined by a developmental assessment of the skills level needed to complete each task. The easy task was designed to be readily completed by the child in a short amount of time; the medium task to be challenging, warranting some assistance from the mother; and the difficult task to necessitate participation of the mother, as no child was able to complete the task alone. Problem-solving tasks were chosen based on the consensus of a group of developmental experts and modulated according to the child's developmental status (TD or DD) to ensure equivalent levels of experienced difficulty across groups. These tasks were designed to be challenging enough to elicit mild frustration and therefore provided opportunities to observe child behaviour and emotion (dys)regulation. See Baker *et al.* (2007); Gerstein *et al.* (2011) and Hoffman *et al.* (2006) for more detail.

Age 5 assessment

Participants returned to the centre for a follow-up assessment at age 5. Similar to the age 3 visit, mothers completed a battery of questionnaires and participated in a series of tasks with their children that paralleled those at age 3, with the problem-solving tasks age-adjusted.

Measures

Bayley scales of infant development-II (Bayley 1993)

The Bayley scales of infant development-II is a widely used assessment of mental and motor development in

children ages 1 to 42 months. The MDI was administered by an examiner and an assistant, with the mother present. The MDI is normed with a mean of 100 and standard deviation of 15. Bayley (1993) reported high short-term test–retest reliability ($r = .91$).

Parenting directiveness and interference coding system (Green et al. 2014)

Maternal controlling behaviour (supportive directive, interference) was rated using a coding methodology adapted from that of Flynn and Masur (2007) and reported in Green *et al.* (2014). Trained coders rated video recordings of centre-based free-play mother–child interactions, wherein mothers were instructed by an experimenter to play with their child as they normally would at home. Coders rated a 5-min selection of the 10-min interaction: minutes 1 to 2 (to observe how parents initially engage their children) and minutes 5 to 8 (to rate how parents continue to engage their children over time). Global ratings of mother *supportive directiveness* and i*nterference* were made on a 1 to 5 incremental scale and took into account the perceived quality and appropriateness of maternal directives. *Supportive directiveness* was operationally defined as any parent behaviour, verbal (e.g. comments and questions) or nonverbal (e.g. orienting gestures, demonstrations and giving of objects), that is used supportively to direct the child in the course of activities in which the child is already engaged or in line with the child's goal. *Interference* was operationally defined as any behaviour, verbal (e. g. command, suggestion) or nonverbal (e.g. physical redirection), that constrains or redirects the child's behaviour or attention away from an ongoing activity, leading to the imposition of the maternal agenda. See Green *et al.* (2014) for further description of the coding system.

Four trained coders worked in teams of two to rate maternal control; teams were considered reliable when they reached a reliability of 70% exact agreement with a master coder and 95% within one code of the master coder. Final reliability in the present study was 73.7% exact and 97.1% within one code agreement.

Dysregulation coding system (Hoffman et al. 2006)

Children's emotional and behavioural dysregulation were assessed using the Dysregulation Coding System (Hoffman *et al.* 2006), an observational coding scheme that assesses a child's failure to regulate emotions and behaviours in relation to contextual demands. Raters coded video-recorded laboratory tasks designed to necessitate behaviour and emotion regulation, including three problem-solving tasks, a clean-up task, a wait task and a delay-of-gratification task (see Procedures). Different pairs of raters (blind to the study hypotheses) coded child dysregulation at child ages 3 and 5. None of these raters coded parent control. The *Dysregulation Coding System* takes into consideration the duration, intensity, frequency and lability of emotional and behavioural expressions and reactions, as these factors are emphasised as important indicators of self-regulation (Cole *et al.* 1994). Thus, the Dysregulation Coding System captures emotional and behavioural expressions that interfere with the task at hand. Refer to Hoffman *et al.* (2006) for further details of the coding system.

Children were assigned separate scores for emotion and behaviour dysregulation along a 5-point dysregulation continuum. Ratings varied from (0), no observed instances of dysregulation, to (4) several inappropriate expressions or reactions with pronounced intensity and lability; the child is unable to regain regulation without assistance. Six trained coders who were blind to the study hypotheses coded in pairs; 20% of the pair's codes were then compared with those of a master coder. The Emotion Dysregulation subscale ($r = .79$) and Behavioural Dysregulation subscale ($r = .90$), each demonstrated high reliability. Composite scores for behaviour and emotion dysregulation were derived from averaging ratings across all tasks.

Results

Data analytic plan

Data were checked for outliers (beyond 3SD from the mean) on parent control and dysregulation codes; there were none. For demographic variables found to differ by child delay status and/or mother ethnicity, bivariate correlations were run with the target variables of parent control and child dysregulation. Only maternal education and health were significantly related to any of the target variables; these were covaried as appropriate. Analyses of variance were run to determine differences in parent control and child

regulation variables at child ages 3 and 5, by child delay status (TD vs. DD), ethnic group (Anglo vs. Latino) and status-by-ethnicity interactions.

The primary study aims, to characterise the relationship between early parent control and change in child dysregulation by ethnicity and child disability status, were tested using hierarchical linear regression. To aid the interpretation of hierarchical regressions, linear trends in child emotion and behaviour dysregulation by ethnicity and delay status were first characterised using repeated measures analysis of variance. Next, hierarchical regressions were run separately by ethnicity to determine status-by-parenting interactions within each ethnic group, as well as for each parent control (supportive directiveness and intrusiveness) and child dysregulation (emotion and behaviour) index. Age 3 child emotion or behaviour dysregulation (respectively) were entered in Step 1 of the regression to control for initial levels of child dysregulation. Thus, these analyses represent *change* in child dysregulation from ages 3 to 5. Covariates were considered in the second step; however, as no covariates were significant in the final model (i.e. did not predict significant variance in child age 5 emotion or behaviour dysregulation), they were removed to conserve power. Parent control variables were mean-centred by ethnic group prior to creating interaction terms to avoid problems of multicollinearity (Cohen *et al.* 2003). Models with significant interactions were followed up with tests of simple effects. Non-significant interaction terms were dropped; these models were followed up with tests of main effects.

Group differences in parent control

Table 2 reports differences in parent control by ethnicity and child delay status; analyses were conducted with and without the appropriate SES covariates. Mothers of children with TD, relative to those with DD, demonstrated more supportive directiveness and less interference. These differences remained significant at the $P < .01$ level after controlling for maternal education and health for supportive directiveness, and maternal education for interference.

A similar pattern of results emerged when looking at ethnic group differences. Anglo mothers had more supportive directiveness and less interference than Latina mothers. Again, these group differences in parent control remained significant after controlling for the covariates noted previously. In addition, ethnic group differences remained significant when controlling for child delay status as well (supportive directiveness: $F = 4.78$, $P = .03$; interference: $F = 8.22$, $P = .005$). No significant delay status-by-ethnicity interactions were found.

Table 2 Differences in mother control and child dysregulation variables by ethnicity (Anglo, Latino) and child delay status (TD, DD)

	Anglo		Latino		*F* status	*F* ethnicity	*F* status:	*F* ethnicity:
	TD (*n* = 81)	DD (*n* = 53)	TD (*n* = 17)	DD (*n* = 27)			SES covaried	SES covaried
Supportive directiveness	4.1 (.9)	3.5 (1.2)	3.4 (1.1)	3.1 (.9)	*F* = 15.6***	*F* = 12.4**	*F* = 8.1**	*F* = 5.9*
Interference	1.6 (.8)	2.2 (1.1)	2.3 (1.1)	2.6 (1.0)	*F* = 16.4***	*F* = 14.1**	*F* = 12.0**	*F* = 10.1**
Emotion dysregulation age 3	.8 (.6)	1.4 (.7)	.7 (.5)	1.2 (.7)	*F* = 30.0***	*F* = .1	—	—
Emotion dysregulation age 5	.4 (.4)	.7 (.8)	.5 (.4)	.6 (.07)	*F* = 9.4**	*F* = .1	—	—
Behaviour dysregulation age 3	1.7 (.8)	2.8 (.9)	1.9 (.9)	2.6 (1.0)	*F* = 53.7***	*F* = 1.5	—	—
Behaviour dysregulation age 5	.4 (.4)	1.3 (1.1)	.8 (.6)	1.3 (1.0)	*F* = 51.7***	*F* = 4.8*	*F* = 47.3***	*F* = 3.1

SES covariates in each analysis were those that entered into the regression. Supportive directiveness: maternal education and health; Interference: maternal education; emotion dysregulation age 3 and 5: none; behaviour dysregulation age 3: none; behaviour dysregulation age 5: maternal education.

*$P < .05$.

**$P < .01$.

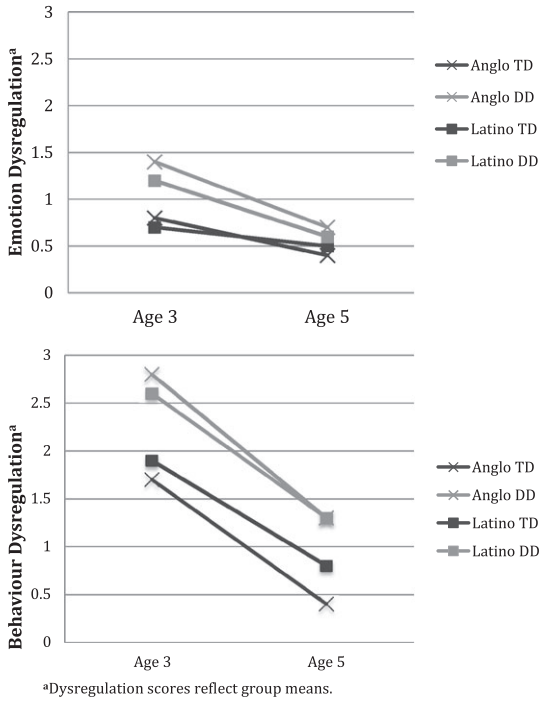
***$P < .001$.

Total $N = 178$.

DD, developmental delays; TD , typically developing; SES, socio-economic status.

Group differences in child dysregulation

For child dysregulation variables (at both time points), group differences were found for delay status, with children with DD rated as more dysregulated than children with TD. No group differences by ethnicity were found for age 3 and age 5 emotion dysregulation and age 3 behaviour dysregulation. A significant ethnic group difference (Latina > Anglo) was found for age 5 behaviour dysregulation, but was no longer significant after controlling for maternal education. Figure 1 depicts the linear trends of child emotion and behaviour dysregulation by ethnicity and child delay status. For emotion dysregulation, there was a significant main effect of age, such that overall mean emotion dysregulation decreased from child age 3 to age 5 ($F = 45.8$, $P < .001$). This main effect is qualified by an age-by-delay status interaction ($F = 5.11$, $P < .05$), such that children with DD showed greater decline in emotion dysregulation from age 3 to 5. In looking at linear trends for behaviour dysregulation, there was a significant main effect of age, such that mean dysregulation decreased from child age 3 to 5 ($F = 270.9$, $P < .001$). No significant interactions were found for ethnicity or child delay status.



[a]Dysregulation scores reflect group means.

Figure 1 Developmental trends in child dysregulation by ethnicity and delay status.

Correlations among parent control and child dysregulation variables

Table 3 shows correlations among the two parent control variables and four child dysregulation variables for Anglo and Latino families. Both groups demonstrated a moderate, negative correlation between supportive directiveness and interference (Anglo: $r = -.63$, Latino: $r = -.46$), indicating an inverse relationship, yet with substantial non-overlapping variance. Supportive directiveness was negatively associated with child behaviour and emotion dysregulation codes at both times points (all $P < .001$), with the exception of age 3 behaviour dysregulation for the Latino families only. Interference was positively associated with the dysregulation variables (with a trend-level relationship with age 5 emotion dysregulation) for the Anglo families, while interference only related to age 5 behaviour dysregulation for the Latino families. Among the dysregulation variables, all correlations fell into the moderate to high range and, with one exception, were statistically significant at $P < .05$.

Change in child dysregulation by ethnicity and delay status

Tables 4 and 5 report regression coefficients and R^2 (total and change) for supportive directiveness and interference, respectively, predicting age 5 child emotion and behaviour dysregulation, controlling for prior (age 3) dysregulation.

Supportive directiveness predicting change in child emotion dysregulation

Table 4a shows that within the Anglo group, there was a significant main effect of supportive directiveness, such that more directiveness at child age 3 predicted relatively lower age 5 child emotion dysregulation, controlling for age 3 dysregulation ($B = -.16$, $P < .01$). There was no significant main effect of delay status, nor a delay status-by-directiveness interaction. Within the Latino group, there were no significant main effects of delay status or supportive directiveness and there was no significant interaction.

Table 3 Intercorrelations among maternal control variables (at child age 3 years) and child dysregulation variables

	Supportive directiveness	Interference	Emotion dysregulation (age 3)	Emotion dysregulation (age 5)	Behaviour dysregulation (age 3)	Behaviour dysregulation (age 5)
Supportive directiveness	1	−.56***	−.46**	−.30*	-.05	−.41**
Interference	−.63***	1	.19	.04	.12	.33*
Emotion dysregulation (age 3)	−.29**	.34***	1	.37*	.43**	.33*
Emotion dysregulation (age 5)	−.36***	.16	.31***	1	.15	.70***
Behaviour dysregulation (age 3)	−.39***	.37***	.56***	.35***	1	.49**
Behaviour dysregulation (age 5)	−.35***	.30***	.31***	.62***	.56***	1

Correlations for Latino families ($n = 44$) are reported above the diagonal row of ones. Correlations for Anglo families ($n = 134$) are reported below the diagonal row of ones.

*$P < .05$.

**$P < .01$.

***$P < .001$.

Table 4 Supportive directiveness predicting child dysregulation (age 5)

	Anglo ($n = 134$)				Latino ($n = 44$)			
	B	SE B	Total R^2	ΔR^2	*B*	SE *B*	Total R^2	ΔR^2
a. Emotion dysregulation								
Step 1:								
Emotion dysregulation (age 3)	.27***	.07	.09***	.09***	.33*	.13	.14*	.14*
Step 2:								
Delay status (0/1)	.13	.11	.18***	.09**	.01	.20	.16+	.02
Directiveness-centred	−.16**	.05			-.11	.10		
Step 3:								
Directiveness* status	-.10	.10	.19***	.01	.06	.19	.16	.00
b. Behaviour dysregulation								
Step 1:			.31***	.31***				
Behaviour dysregulation (age 3)	.50***	.16			.42**	.12	.24**	.24**
Step 2:								
Delay status (0/1)	.51***	.14	.39***	.08***	.16	.23	.39***	.15*
Directiveness-centred	-.10	.06			−.33*	.11		
Step 3:								
Directiveness* status	−.30*	.12	.42***	.03*	-.01	.22	.39**	.00

+$P < .10$.

*$P < .05$.

**$P < .01$.

***$P < .001$.

Table 5 Interference predicting child dysregulation (age 5)

	Anglo ($n = 134$)				Latino ($n = 44$)			
	B	SE B	Total R^2	ΔR^2	*B*	SE *B*	Total R^2	ΔR^2
a. Emotion dysregulation								
Step 1:								
Emotion dysregulation (age 3)	.27	.07	.09***	.09***	.33*	.13	.14*	.14*
Step 2:								
Delay status (0/1)	.19	.12	.12**	.02	.01	.20	.14	.00
Interference-centred	.02	.06			-.02	.09		
Step 3:								
Interference* status	.23*		.14***	.03*	-.17	.19	.16	.02
b. Behaviour dysregulation								
Step 1:								
Behaviour dysregulation (age 3)	.50***	.07	.31***	.31***	.42**	.12	.24**	.24**
Step 2:								
Delay status (0/1)	.52***	.14	.38***	.08*	.19	.25	.32**	.09
Interference-centred	.07	.07			.22	.11		
Step 3:								
Interference* status	.24	.13	.40	.02	.00	.23	.32**	.00

*$P < .05$.
**$P < .01$.
***$P < .001$.

Supportive directiveness predicting change in child behaviour dysregulation

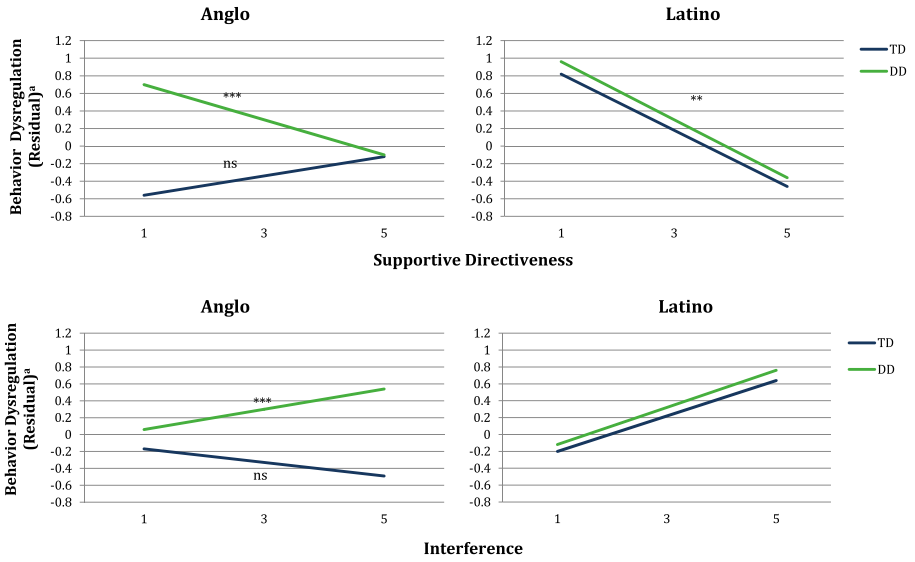
Table 4b shows that within the Anglo group, the interaction between supportive directiveness and child delay status in predicting change in behaviour dysregulation from ages 3 to 5 years was significant. Simple effects are depicted in Fig. 2; within the Anglo sample, greater levels of supportive directiveness predicted greater declines in child behaviour dysregulation for children with DD ($B = -.23$, $P < .001$), but not those with TD ($B = .07$, $P = .73$). Within the Latino group, a significant main effect was found for supportive directiveness (but not child delay status), with higher levels of directiveness predicting relatively greater declines in child behaviour dysregulation from ages 3 to 5 ($B = -.33$, $P = <.01$).

Interference predicting change in child emotion dysregulation

Table 5a shows a significant delay status-by-interference interaction for the Anglo group only, such that greater interference predicted relative increases in child emotion dysregulation at a marginal level for Anglo children with DD ($B = .12$, $P = .05$), while the Anglo TD group demonstrated a non-significant effect in the opposite direction ($B = -.10$, $P = .15$). For the Latino group, there were no significant main effects of child delay status ($B = .01$, $P = .98$) or interference ($B = -.02$, $P = .81$), nor a status-by-interference interaction.

Interference predicting change in child behaviour dysregulation

Table 5b shows a marginally significant interaction ($P = .06$) of delay status and interference in predicting change in child behaviour dysregulation for the Anglo group. Simple effects are depicted in Fig. 2; higher levels of maternal interference predicted greater decline in child behaviour dysregulation for the DD group ($B = .19$, $P < .001$), but not the TD group ($B = -.11$, $P = .44$). The interaction term for the Latino group was not significant, and the main effect of interference predicting behaviour dysregulation from age 3 to age 5 did not reach significance ($B = .22$, $P = .05$). There was no main effect of child delay status for the Latino group.



p<.01,* p<.001
[a] Behavior Dysregulation is the unstandardized residual from Age 5 Behavior Dysregulation regressed on Age 3 Behavior Dysregulation. Thus, this score represents change in behavior dysregulation from age 3 to 5 years.

Figure 2 Supportive directiveness and interference and predicting change in behaviour dysregulation (age 3 to 5).

Discussion

We sought to determine the role of two types of maternal control (supportive directiveness and interference) in predicting change in observed emotional and behavioural dysregulation of preschool children by child delay status and mother ethnicity. To our knowledge, this is the first study to examine parent controlling behaviour of Anglo and Latina mothers of children with and without developmental delays, which allowed for direct testing of both disability and ethnicity-driven models of parent control.

Consistent with study hypotheses, mothers of children with DD showed less supportive directiveness and more interfering control than mothers of children with TD, even after controlling for sample differences in maternal education and maternal health. This is consistent with previous research demonstrating that mothers of children with DD (compared with mothers of TD children) employ more interfering or intrusive parenting (Herman & Shantz 1983; Nader-Grosbois & Lefèvre 2012). This difference in parent controlling behaviour may relate to child behaviour, as children with DD (compared with those without) are behaviourally more impulsive, less active and less social (Boström *et al.* 2010), and therefore parents may view their children as needing more redirection. Further supporting this notion, mothers of children with DD tend to be more directive with younger children or those with lower cognitive ability (Mahoney 1988).

Latina mothers also exhibited less supportive directive and more interfering control than Anglo mothers after statistically controlling for relevant SES variables. This is consistent with prior work demonstrating higher levels of parent control by Latina than Anglo mothers, particularly for children under the age of 5 (Halgunseth *et al.* 2006). As noted earlier, the extent to which parents seek to instill cultural values (e.g. *familismo* and *respeto*) in their children, as well as their expectations for their children to behave in a way consistent with these values, may relate to more interfering and less supportive directive control as a means to teach and reinforce cultural values.

A primary aim of the present study was to assess whether maternal supportive directiveness and interference predict changes in child emotion and behaviour dysregulation across the preschool years. Analyses of developmental trends in dysregulation revealed that, on average, all children decrease in emotion and behaviour dysregulation from age 3 to age 5. With these trends in mind, we found that in

Anglo families, supportive directiveness related to relatively greater decreases in child emotion dysregulation regardless of child status and to greater decreases in behavioural dysregulation for DD group children. Thus, Anglo children with DD appear to be more susceptible to the influence of supportive parent directives in terms of regulating their behaviour. This is consistent with prior studies demonstrating a relative susceptibility of children with DD to positive parenting as compared with those with TD (e.g. Baker *et al.* 2007; Norona & Baker 2014). The benefits of supportive directiveness for emotion regulation in all Anglo sample children can be considered in the context of self-determination theory (Deci & Ryan 1985; Ryan & Deci 2000) and seen as supporting the child's ability to learn to regulate his or her own emotions.

For the Latino group children, early maternal supportive directiveness *did not* predict change in child emotion dysregulation but it *did* predict greater decreases in child behaviour dysregulation from ages 3 to 5. Interestingly, these findings were not related to delay status. Thus, parental directiveness that coincided with ongoing child activities (i.e. that followed the child's lead) was beneficial in terms of child behaviour development. These results are consistent with findings that positive parenting predicts positive child behaviour change in Latino families (e.g. Mesman *et al.* 2012; Marquis & Baker 2014), and may likewise fit with self-determination theory (Deci & Ryan 1985; Ryan & Deci 2000) in that directives that were more autonomy-granting (by following the child's lead), were associated with better self-regulatory adjustment.

For Anglo families, greater interference was hypothesised to predict relative increases in child emotion and behaviour dysregulation, particularly for children with DD. Study findings partially supported these hypotheses; interference was found to predict relatively less decline in emotion dysregulation (at a marginal level) and behavioural dysregulation, but *only* for children with DD. This is consistent with other research demonstrating that children with DD are at risk for poorer development than children with TD in the presence of negative parenting (e.g. Brown *et al.* 2011; Green & Baker 2011; Green *et al.* 2014), although some studies demonstrate a similarly negative effect of negative parenting for children with or without DD (e.g. Newland & Crnic 2011).

One potential factor contributing to the lack of effect in the TD group may be the minimal change in emotion dysregulation for this group from age 3 to 5, leaving less variance to predict relative to the DD group. Thus, although theory may predict that interference negatively influences all children, our methods may not be sensitive enough to detect subtle changes over time. Alternatively, it may be that as children with DD are at increased risk for poor regulatory development more generally (Crnic *et al.* 2004), the relatively well-developed regulatory abilities of children with TD may serve as a protective factor against the negative influence of parent interference. Conversely, negative regulatory abilities and negative parenting (both more likely to be present in families of children with DD) may serve to influence each other in a transactional process.

For Latino families, we hypothesised that interference would *not* predict increases in child behaviour or emotion dysregulation over time. We anticipated a non-relationship, or possible negative relationship, of mother interference and change in child dysregulation by drawing on cultural models of child rearing. This hypothesis was largely supported, given that the relationships between interference and change in emotion and behaviour dysregulation did not reach significance. These findings are parsimonious with previous research demonstrating neutral or positive effects of interring control for this population (Halgunseth *et al.* 2006 for review). Thus, it may be that parent interfering control may be viewed as a way of promoting interdependent cultural values, such as *familismo* or *respeto*, and may thus be transmitted in a way that promotes more positive development than in Anglo families (Halgunseth *et al.* 2006). However, given the near-significant ($P = .05$), positive association between interference and behaviour dysregulation over time, replication studies with larger samples are warranted to affirm this non-relationship between interference and child dysregulation development.

Finally, no significant delay status-by-parenting interactions were found for Latino families. Thus, child delay status may be more impactful in determining the relationship between parent control and dysregulation for Anglo than Latino families. However, because direct statistical comparisons of Anglo and Latino families were not made in the current study, any differential findings between ethnic

groups remain descriptive and require further comparison.

Limitations and conclusions

These results must be interpreted within the context of several study limitations. First, emotion dysregulation scores across all groups were relatively low at age 3, leaving less room to predict decreases over time. Future investigators may choose to utilise procedures that successfully elicit more emotion dysregulation or start earlier in development when these regulatory capacities are less developed. In addition, the sample size of our Latino group was relatively small, which may have impacted the relative power of the Anglo versus Latino samples, and thus limited the ability to detect small effects (if present) in the Latino but not Anglo group. Further, our findings must be interpreted as ethnic and not cultural representations, as we were unable to directly measure culture in the present sample. Future research examining Anglo-Latino differences in parent control could include more explicit indicators of culture, such as measures of acculturation, *familismo*, *respeto* or interdependence. This is particularly important, as there is increased need to consider the great variability within cultures, as well as between cultures (Harwood *et al.* 2002).

Lastly, it is important to consider that parenting (as with child behaviour) does not occur in a vacuum. In the current examination, parenting behaviour was rated in the context of a parent–child interaction, and child behaviour was rated in the presence of the parent. Thus, while the current investigation was limited to a focus on parenting behaviour as it contributes to child regulatory development, it will be important to follow-up with studies of transactional processes of child regulatory behaviour and parent controlling behaviour over time to better characterise these relationships.

This study also contained many methodological strengths. First, we used objective and reliable observation-based coding systems to indicate levels of parent control and child dysregulation. Analyses also controlled for socio-economic variables (e.g. maternal education, maternal health) as appropriate to tease apart potential confounds in assessing group differences in, and relative influence of, parent control. We also utilised a longitudinal design, allowing for analyses to control for prior levels of child dysregulation at child age 3 in predicting child dysregulation at age 5.

The results of the current investigation have implications for evidence-based practices. Findings regarding supportive directiveness suggest that programmes that teach parents to follow their child's lead, such as parent–child interaction therapy (Eyberg 1988), may be particularly relevant for populations vulnerable to the negative influence of interfering parenting, such as children with DD and Latino families.

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