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Predictors of anxiety symptom trajectory in children with or without ID from early childhood to adolescence

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Abstract

Introduction: We examined the development of anxiety in youth with or without intellectual disabilities (ID). We also examined the effects of child delay status, temperament, ethnicity, and negative parenting on anxiety symptom trajectory.

Method: Participants were 177 families in (blinded). We employed latent growth curve modeling to examine the trajectory of anxiety symptoms (ages 3-13 years) and to examine the individual and interactive effects of variables in predicting age 3 anxiety and change in anxiety.

Results: Anxiety symptoms increased over time. Children with ID demonstrated higher levels of anxiety compared to typically developing (TD) children. Social fearfulness was positively associated with anxiety at age 3. Anxiety increased at a slower rate in Latino children. Negative parenting positively predicted rate of change in anxiety for children with ID but not TD children.

Conclusions: These findings inform early intervention targets for culturally diverse families of children with or without ID.

Keywords: anxiety, parenting, ethnicity, intellectual disability, risk/protective factors

Introduction

Internalizing disorders (i.e. anxiety, depression) comprise the most common mental health concerns among youth, with lifetime prevalence rates of 31% for anxiety (Merikangas et al., 2010). These disorders tend to emerge during early childhood and, if left untreated, are associated with various negative sequelae later in development. For example, anxiety symptoms in early childhood have been shown to be a risk-factor for anxiety and depression disorders during adolescence and even into adulthood (Beesdo-Baum & Knappe, 2012; Bittner et al., 2007). Anxiety also has a broader impact on social-emotional functioning for children. It has been implicated in sleep, physical, and academic difficulties over time (Alfano, Ginsburg, & Kingery, 2007; Mychailyszyn, Mendez, & Kendall, 2010). The profound impact that internalizing disorders have on the lives of children highlights the need to examine their development further.

Trajectory patterns of internalizing behavior problems have not been as extensively investigated as those for externalizing disorders. There is some evidence that internalizing behavior problems are less stable than externalizing behavior problems across childhood (Leadbeater & Hoglund, 2009; Sterba, Prinstein, & Cox, 2007), but findings regarding the stability of anxiety disorders across childhood have been inconsistent. Various studies have demonstrated that symptoms of anxiety remain relatively stable throughout development (e.g., Pine et al. 1998; Rapee, Schniering, & Hudson, 2009). Prospective longitudinal studies have reported anxiety

disorders in childhood to be predictive of later anxiety, as well as other

mental health disorders into adolescence and adulthood (Copeland et al.,

2013; Essau, Leweinsohn, Lim, Ho, Rohde, 2018). However, while predictors

of course trajectories of anxiety have been examined in individuals with

typical development (e.g., Asselmann & Beesdo-Baum, 2015; McLean,

Asnaani, Litz, & Hofmann, 2011), there is a need to examine these processes

in children at developmental risk. This will help to inform targets of early

intervention for this population. Therefore, we examined how child

characteristics and negative parenting relate to child anxiety in children with

or without ID.

Developmental Delay Status and Anxiety

Children with intellectual disability (ID), aside from presenting with

deficits in cognitive and adaptive functioning, also present with higher rates

of comorbid psychopathology than their typically developing (TD) peers

(Baker & Blacher, 2015; Einfeld, Ellis, & Emerson, 2011; Emerson & Hatton,

2007). Studies have found that anxiety disorders are significantly more

prevalent in children with ID (Deb, Thomas, & Bright, 2001; Green et al.,

2014). Prevalence rates of anxiety disorders range from 10% to 22% in youth

with ID compared to rates of 3%-7% in TD youth (Dekker & Koot, 2003;

Emerson, 2003). Research has focused extensively on the elevated level of

externalizing disorders in children with ID; however, there is still much to be

learned about internalizing disorders in this population. Few studies have

examined trajectories of internalizing disorders in youth with ID. While there

is some evidence that TD and ID youth similarly demonstrate increases in

anxiety symptoms throughout childhood and adolescence (e.g. de Ruiter,

Dekker, Verhulst, & Koot, 2007; Green et al., 2014), further study of the

developmental course is needed. The present study expands upon prior

literature by examining the developmental course of anxiety symptoms from

early childhood through adolescence in children with or without ID, as well as

by examining predictors of anxiety symptoms trajectories. The examination

of early risk factors for heightened anxiety symptoms throughout

development could help to inform early interventions for children with ID,

which in turn could help in preventing the negative sequelae that result from

anxious symptomatology.

Temperament and Anxiety

Temperament traits have been regarded as the core of personality and

have been shown to have important associations with developmental

psychopathology (Nigg, 2006). There are various key traits encompassing

temperament, including: positive emotionality (i.e. variability in approach

motivation, activity, and joy), negative emotionality (i.e. fearfulness and

frustration/anger), and self-regulation (i.e. effortful attention which allows

situation-appropriate modification of emotional responses and inhibition)

(Gartstein & Rothbart, 2003; Putnam, Ellis, & Rothbart, 2001). Negative

emotionality in early childhood has been found to be positively associated

with internalizing behavior problems in later childhood (Rothbart & Bates,

2006). Additionally, anger/frustration have also been shown to predict

internalizing disorders (Oldehinkel, Hartman, De Winter, Veenstra, & Ormel,

2004). Fear, shyness, and emotional reactivity/inhibition have similarly been

shown to be associated with concurrent and later anxiety problems (Klein,

Dyson, Kujawa, & Kotov, 2012; Rapee, Schniering, & Hudson, 2009). These

temperamental factors are thought to decrease an individual's ability to cope

with emotional arousal, therefore, resulting in increased levels of anxiety.

Ethnicity and Anxiety

Furthermore, the depiction of the nation's youth is vastly transforming.

This transformation is in part due to the dramatic increase in the Latino

population. Latino Americans account for 17% of the U.S. population and this

percent is rapidly growing (U.S. Census Bureau, 2010). Fry and Gonzales

(2008) reported that one in five public school children are Latino, compared

to one in eight children in the 1990s. Research with typically developing

youth has also found that Latino American youth present with more

symptoms of anxiety when compared to White youth (Pina and Silverman,

2004; Varela et al., 2004). Given the strong presence of Latino youth in the

nation, coupled with their increased risk for psychopathology, it is important

to examine the underlying mechanisms that are at play in the development

of internalizing disorders for these youth.

Parenting and Anxiety

Research on the etiology of internalizing disorders in children with

typical development has indicated the importance of early parent-child

relationships (see Rose, Roman, Mwaba, & Ismail, 2018 for review). Hudson

and Rapee (2000) reported that observed interactions of mothers with anxious children were significantly less positive and encouraging than those of mothers with non-anxious children, supporting findings from retrospective questionnaire studies that have shown a relationship between parental rejection and child anxiety (McLeod, Wood, & Weisz, 2007; Wood, McLeod, Sigman, Hwang, & Chu, 2003). Parenting characterized as over solicitous, intrusive or controlling, and low in warmth has also been associated with greater child inhibition and anxiety (Degnan, Almas, & Fox, 2010).

Furthermore, parents of children with ID have been found to display higher levels of intrusive and negative parenting behaviors when compared to parents of children with TD (Blacher, Baker, & Kaladjian, 2013; Brown, McIntyre, Crnic, Baker, & Blacher, 2011; Rodas, Zeedyk, & Baker, 2016). Given that youth with ID appear to be at heightened risk for comorbid psychopathology, as well as for increased levels of negative parenting, it is important to examine whether parenting behaviors in early childhood have longitudinal effects on anxiety symptomatology. The current study expanded on the existing literature by examining the developmental trajectory of anxiety, as well as child and parent level predictors of anxiety symptom trajectory, in Latino and White children with or without ID.

Study Aims and Hypotheses

This study examined the development of anxiety symptoms, as well as the relationship of child delay status, child temperament, child ethnicity, and/or negative parenting to anxiety symptom trajectory from early

childhood to adolescence in youth with or without ID. The aims were: (1) to identify the developmental trajectory of anxiety symptoms from early childhood through adolescence, from 3 to 13 years of age; (2) to examine the extent to which anxiety symptom trajectory from early childhood through adolescence was predicted by (a) child delay status, (b) child temperament, (c) child ethnicity (Latino vs. White), and/or (d) negative parenting; and (3) to investigate whether child delay status moderated the effects of negative parenting on anxiety symptoms over time.

To summarize, we examined three child and one parent domain, each of which could potentially increase the child's anxiety risk. Based on prior research, we expected that children with ID would have more symptoms of anxiety than TD children. However, we expected that the *trajectories* of anxiety symptoms throughout development would be similar for the two groups (Green et al., 2014). We expected that dimensions of child temperament related to negative emotionality would be associated with increased levels of anxiety symptoms over time (Lengua, 2006; Oldehinkel et al., 2004). We also expected that Latino children would present with higher levels of anxiety. Lastly, we expected that negative parenting would relate to higher rates of anxiety symptoms, and more so for children with ID.

Materials and Methods

Participants

Participants were 177 families who participated in the (blinded for review), a longitudinal study conducted at three universities in (blinded for

review). We studied family processes in youth with ID or TD, from child age 3

through 13 years. The sample was comprised of families for whom there

were at least two data points available across the span of child ages 3, 4, 5,

6, 7, 8, 9, and 13 years. Additionally, given the aims of the present study, we

constrained the sample to participants from White (non-Hispanic) or Latino

ethnic groups. Children who were biracial, half Latino, were included in the

Latino group (9% of the sample)[1]. Families of children with ID were recruited

at child age 3 years from agencies that provided diagnostic and intervention

services for persons with intellectual disabilities. Children with autism

spectrum disorder (ASD) were excluded from the present study, given that

the sample of children with ASD were recruited during the adolescence

phase of the larger study. Families of children with typical development (TD)

were recruited through local preschools and daycare programs. Children

were included in the ID sample if, at their age 5 laboratory visit, they were

determined to have: (a) an IQ in the clinical or borderline range for ID, below

85 on the Stanford-Binet Intelligence Scale (Thorndike, Hagen, &Sattler,

1986), and (b) a standard score below 85 on the Vineland Adaptive Behavior

Scales (VABS; Sparrow, Cicchetti, & Balla, 2005). We combined those with IQs

below 70 and those with IQs ranging from 71-84 (i.e., in the borderline

range) in the ID group, using DSM IV criteria (APA, 2000). This decision was

based on prior research demonstrating similarities in the difficulties faced by

those with borderline intellectual functioning and those with ID (DSM-IV-TR,

_____

[1] All analyses were conducted both including and not including biracial children. The two sets of results did not differ, and thus analyses were conducted with the inclusion of biracial children.

APA, 2000; Fenning, Baker, Baker, & Crnic, 2007; Van der Molen, Henry, &

van Luit, 2013). Participants in the TD group had an IQ of 85 or above on the

Stanford-Binet Intelligence Scale, regardless of VABS score, and no previous

history of a developmental delay or other disability.

Demographics

Table 1 shows participant demographics at child age 3 by child delay

status (TD, ID), as well as by child ethnicity (White, Latino). The average

child age for the entire sample was 35.0 months (SD= 2.9) at study intake,

and there were more boys (60%) than girls. Mothers' mean age was 33.2

years. The socioeconomic status was generally high, with 48% of families

having an annual household income (in 1998-2000) above $50,000.

Mothers' years of schooling averaged 15.0. Demographics for the TD and ID

status groups were similar, though TD group mothers had significantly more

years of education and were slightly older. Demographics for the White and

Latino ethnicity groups followed a similar pattern with White mothers being

significantly older and with more years of education than Latina mothers.

[Table 1 near here]

Procedures

The Institutional Review Boards of the participating universities

approved study procedures. Participating mothers provided informed consent

and the children provided assent as age-appropriate. The child's intellectual

and adaptive functioning levels were assessed during a research center visit

at child age 5. Though we did obtain a measure of IQ at age 3, we elected to

use the age 5 Stanford-Binet score due to its increased reliability and validity

in measuring child IQ. Parenting data were coded from observations that

were conducted in the lab at child age 3 years. Child temperament was

assessed via mother's report at child age 3. Mothers completed measures of

child anxiety symptoms at child ages 3, 4, 5, 6, 7, 8, 9, and 13 years.

Families received an honorarium for their participation.

Measures

Stanford-Binet Intelligence Scale, 4th *Edition (Thorndike, et al., 1986).*

This widely used instrument is particularly well suited for evaluating children

with ID, because the examiner adapts the starting points according to the

child's developmental level. The eight sub-tests most appropriate for 5-year-

olds were administered (i.e., Vocabulary, Comprehension, Absurdities,

Pattern Analysis, Copying, Quantitative, Bead Memory, and Memory for

Sentences). The composite standard IQ score ($M = 100$; $SD = 16$) was used.

High internal consistency has been reported (Glutting, 1989), and there is

sufficient evidence for validity, as reported in the technical manual

(Thorndike et al., 1986).

Vineland Adaptive Behavior Scales (VABS; Sparrow, Cicchetti, & Balla,

2005). To assess child adaptive functioning, the VABS was administered to

mothers as a semi-structured interview at child age 5. The overall adaptive

composite ($M = 100$; $SD = 15$), which included communication, daily living

skills and socialization domains, was utilized. The VABS has an internal consistency from .75 to .80 and Cronbach's alpha of .93 (Sparrow et al., 2005).

    Child Behavior Checklist (CBCL) for Ages 1½–5 years and Ages 6–18 years (Achenbach, 2000; Achenbach & Rescorla, 2001). To assess child anxiety symptoms, mothers completed the CBCL at child ages 3, 4, 5, 6, 7, 8, 9 and 13. Two parent versions of the CBCL were used: the preschool version at child ages 3 through 5 years (for ages 1.5–5 years; 99 items), and the youth version at child ages 6 through 13 years (for ages 6–18 years, 113 items). Each item is rated as: 0 (not true), 1 (somewhat or sometimes true), or 2 (very true or often true). The CBCL yields a total problem score, broadband externalizing and internalizing scores, seven narrow-band scales, and DSM-oriented scales. The present study utilized T scores for anxiety problems ($M = 50$ and $SD = 10$). The CBCL subscales have been shown to have good validity and internal consistency, with alpha coefficients ranging from .78 to .84.

    Parent-Child Interaction Rating System (PCIRS; Belsky, Crnic, & Gable, 1995). Negative parenting was coded from a lab observation of mother and child. A number of parent, child, and dyadic behaviors were videotaped during free play, three problem-solving tasks, and clean up. Pairs of coders rated each videotape. Each of the behaviors was rated on a 5-point Likert scale (1=not at all characteristic, 5= highly or predominantly characteristic). The scale considered both the frequency as well as the intensity of the

expressed behavior or affective expression. Reliability was defined as a criterion of over 70% exact agreement with the primary coder and 95% agreement within one scale point.

The present study examined the dimensions of Negative Affect and Intrusiveness. The dimension of *negative affect* referred to the verbal and behavioral expression of negative emotion, disapproval, and hostility. *Intrusiveness* referred to imposition of the mother's agenda on the child despite signals from the child that a different activity, level, or pace of interaction was needed. The dimension scale scores were converted to z scores, which were combined to create the Negative Parenting composite (Negative Affect + Intrusiveness). These factors have been established and replicated through factor analyses conducted in several different labs (Aber, Belsky, Slade, & Crnic, 1999; Fenning, Baker, Baker, & Crnic, 2007).

Toddler Behavior Assessment Questionnaire (TBAQ; Goldsmith, 1988; Goldsmith, Elliot, & Jaco, 1986). To assess child temperament mothers completed the TBAQ at child age 3 years. This 65-item questionnaire asks parents to report on the frequency of behaviors over the past month. Each item is rated on a 6-point scale ranging from 1 (never) to 6 (always); there is also a not applicable option for use when the respondent has not seen the child in a particular situation in the prior month. The TBAQ measures various components related to temperament, including: activity level, pleasure, social fearfulness, anger proneness, and interest/persistence. The present study examined the social fearfulness subscale. The dimension of social

fearfulness refers to distress, withdrawal, or signs of shyness in a novel

social situation (e.g. "When your child was being approached by an

unfamiliar adult while shopping or out walking, how often did your child show

distress or cry?"). The internal consistencies reported for TBAQ scales range

from .66–.89 (Goldsmith, 1996; Rothbart, Ahadi, Hershey, & Fisher, 2001).

Data Analytic Plan

We employed latent growth curve modeling (LGCM; i.e., growth models

estimated within the Structural Equation Model framework) utilizing Mplus

7.0 (Muthén & Muthén,1998-2015), to examine the developmental trajectory

of anxiety symptoms (ages 3-13) and to examine the individual and

interactive effects of our four key variables measured in early childhood

(child delay status, temperament, and ethnicity, and also negative

parenting) in predicting age 3 anxiety symptoms and change in anxiety.

LGCM allows for examining individual differences in change over time, as

well as examining what factors are associated with these changes (Cheong,

MacKinnon, & Khoo, 2003; Raudenbush, 2001; Krull & Arruda, 2015). In

LGCM, repeated measures of the outcome construct (i.e., anxiety symptoms)

serve as indicators of latent growth factors. Parent reports of anxiety

symptoms on the CBCL at child ages 3, 4, 5, 6, 7, 8, 9, and 13 were used as

indicators to estimate latent factors (intercept and slope). The intercept

factor was centered at child age 3. The linear slope factor represented the

rate of change in anxiety symptoms (ages 3-13 years). All models initially

included only the intercept before adding a linear slope latent factor. Next,

predictors were added into the model and continuous predictors were

centered at the grand mean. Lastly, we ran a model examining whether child

delay status moderated the effects of negative parenting. We utilized the

comparative fit index (CFI; values at or above .95 indicate adequate fit) and

the root-mean-square error of approximation (RMSEA; values at or below

0.05 = excellent fit, 0.05–0.09 = good fit, and over 0.10 = inadequate fit)

(Hu and Bentler, 1999). Prior research has demonstrated that the standard

chi-squared test may not be a reliable indicator of model fit (Hu & Bentler,

1998); therefore, we utilized the RMSEA. Models were estimated using the

full information maximum likelihood (FIML) estimator in Mplus, which allows

the inclusion of participants with only partial data present. Full Information

Maximum Likelihood has been demonstrated to be a robust estimator

(Enders & Bandalos, 2001; Schlomer, Bauman, & Card, 2010), leading to less

biased estimates for coefficients and standard errors when compared to

utilizing listwise deletion. As required for the use of FIML (Li, 2013), the

sample met the assumption of missing completely at random (MCAR) based

on Little's test of MCAR [$\chi 2(106) = 101.84$, $p = 0.59$].

Additionally, to aid in the interpretation and presentation of our

findings, we include graphs utilizing Microsoft Excel. We constructed growth

curves depicting the model in which negative parenting (assessed at age 3)

predicted change in anxiety problems within each delay status group.

Coefficients for the intercept and linear slope generated in each LGCM were

utilized to calculate expected values of anxiety at the mean and $\pm$1SD of negative parenting.

Results

LGCM Results

Change Over Time. The unconditional (without covariates) model indicated that anxiety symptoms were on average increasing from child ages 3-13 years. A positive linear slope was found to best capture yearly change in anxiety symptoms across ages 3-13 (Intercept: B = 54.039, SE = 0.423, p < .001; Slope: B = 0.228, SE = 0.069, p < .05). The unconditional model was determined to have good fit with the data, CFI = .95, RMSEA= 0.06.

Next, to examine the effect of child delay status, child temperament, child ethnicity, and negative parenting on change in anxiety symptoms over time, we fit a conditional model, and these factors were included as predictors. We controlled for family income and child sex in all analyses. Additionally, we initially controlled for mother's education and mother's age given the significant differences in the two delay status groups, though they did not significantly enter into the model. Therefore, we utilized sequential model adjustment to improve the model (Yoon & Kim, 2014), and removed mother's education and age in order to have a more parsimonious final mode (Bentler & Mooijaart, 1989). The final model was determined to have good fit with the data, CFI= .95, RMSEA= 0.05.

Individual Effects. Child delay status and child temperament predicted initial levels (age 3) of anxiety symptoms (Table 2). Children with ID

presented with higher levels of anxiety than TD children. Also, higher levels

of social fearfulness in toddlerhood were associated with higher levels of

anxiety symptoms. The intercept was not predicted by child ethnicity, child

sex, or negative parenting. Change over time (linear slope), however, was

significantly predicted by child ethnicity and negative parenting. On average,

the yearly change rate in anxiety symptoms from ages 3-13 was lower for

Latino children than the yearly change rate of White children. Therefore,

Latino children's anxiety symptoms increased at a slower rate when

compared to White children. Moreover, higher levels of negative parenting

were associated with a steeper increase in anxiety symptoms for youth over

time.

[Table 2 near here]

     Interaction Effects. Next, we examined whether child delay status

moderated the effect of negative parenting on anxiety symptoms. Delay

status did not moderate the effect of negative parenting on initial levels of

anxiety symptoms at child age 3 (intercept; Table 3). However, delay status

did moderate the effect of negative parenting on rate of change in anxiety

symptoms over time (linear slope). For TD children, negative parenting was

not significantly related to rate of change in anxiety symptoms from ages 3-

13 ($B = 0.001$, $SE = 0.077$, *ns*). As depicted in Figure 1, children whose

mothers varied in their levels of negative parenting, on average, all changed

in their anxiety symptoms in a similar fashion across time. For the children

with ID, negative parenting was significantly related to rate of change in

anxiety symptoms from ages 3-13 (B = 0.279, SE= 0.103, p < .01). As seen

in Figure 2, high levels of negative parenting appeared to predict the

greatest increase in anxiety from ages 3-13, whereas lower levels of negative

parenting predicted the least steep increase in anxiety symptoms.

[Table 3 near here]

[Figure 1 and Figure 2 near here]

Discussion

The focus of this study was to examine the effect child delay status,

child temperament, child ethnicity, and negative parenting have on

longitudinally predicting anxiety symptom trajectory in youth with or without

ID from early childhood to adolescence. We addressed important gaps in the

literature by directly modeling change over time in anxiety symptoms, as

well as examining predictors of anxiety trajectory, in Latino and White

children with or without ID. Our first aim was to identify the developmental

trajectory of anxiety symptoms from early childhood through adolescence.

We utilized LGCM and found that, on average, anxiety symptoms increased

from child ages 3-13 years. A positive slope best fit this trajectory, which is

consistent with prior research that has examined change in anxiety

symptomatology over time (e.g., Merikangas et al., 2010).

We then examined the main effects of three child characteristics (delay

status, temperament, ethnicity), and/or negative parenting on (a) initial

levels of anxiety symptoms in early childhood and, (b) change in anxiety

over time from early childhood to adolescence. Child delay status predicted

initial levels of anxiety symptoms, such that children with ID presented with higher levels of anxiety symptoms than TD children. This is consistent with prior research that has demonstrated anxiety disorders to be more prevalent in children with ID (Deb, Thomas, & Bright, 2001; Green et al., 2014; Meltzer et al., 2000). Our study also corroborated and expanded upon prior research by finding that anxiety symptoms for children with TD or ID increased at a similar rate from early childhood through adolescence (de Ruiter et al., 2007; Green et al., 2014). Additionally, social fearfulness predicted initial levels of anxiety symptoms, such that higher levels of social fearfulness were associated with more anxiety at age 3. Our findings are in line with prior research, which has found temperament traits such as fear, shyness, and emotional reactivity/inhibition to be associated with anxiety symptomatology (Colder et al., 2002; Prior et al., 2000). Traits such as social fearfulness are thought to decrease an individual's ability to cope with emotional arousal, which in turn results in increased levels of anxiety.

Next, we examined the yearly change in anxiety symptoms from age 3 to 13 years, and found main effects for child ethnicity and negative parenting. Anxiety symptoms increased at a slower rate for Latino children as compared to White children. This finding was unexpected given that prior research with typically developing youth has shown that Latino youth present with more symptoms of anxiety when compared to White youth (Pina & Silverman, 2004; Varela et al., 2004). The discrepancy between our findings and others may be related to differences in study designs. Whereas prior

studies have examined levels of anxiety symptoms at a single time point, the

present study examined the trajectory of anxiety symptoms longitudinally

(examining rate of change from ages 3-13 years). Additionally, previous

studies examining the differences in anxiety symptoms between White and

Latino youth have focused on clinically anxious populations, whereas, the

present study targeted children with a wide range of anxiety symptomology.

Nonetheless, this finding could be due to the discrepant levels of mental

health literacy among White and Latino parents (Alegria et al., 2002), leading

Latino mothers to be less likely to identify symptoms of anxiety. This could

particularly be the case early on in development, when a child's symptoms of

anxiety are more likely to be misconstrued as externalizing behaviors (e.g.,

having a tantrum when feeling anxious). Further, this could also be due to

cultural beliefs, such as familism, which has previously been shown to be a

protective factor against internalizing symptoms in Latino youth (Smokowski

& Bacallao, 2007). This strong family cohesion may provide Latino youth with

a sense of security and warmth, in turn reducing symptoms of anxiety.

 Further, we found a significant interaction effect between child delay

status and negative parenting on change in anxiety symptoms age 3 to 13

years. For children with typical development, negative parenting did not

significantly predict the trajectory of anxiety symptoms. However, for

children with ID, higher negative parenting in early childhood predicted

faster increases in anxiety symptoms from early childhood through

adolescence. This is consistent with prior literature, showing that

environmental factors, such as parenting, have a greater impact on the well-being of children who are developmentally at high-risk (Denham et al., 2000; Fenning et al., 2007). Moreover, the effect of negative parenting on anxiety symptoms appears to be more pronounced as children enter middle childhood and continues into early adolescence. This could be due to the fact that anxiety is 4 to 10 times more likely to co-occur with externalizing behavior problems in children with ID (Green et al., 2014). Therefore, it may be more difficult to identify anxiety symptoms in early childhood, since children with ID may act out or be noncompliant when they become anxious due to their difficulties with emotion regulation and verbal expression. To the best of our knowledge, this is the first study to examine predictors of anxiety symptom trajectories in children with ID. The present findings demonstrate that experiencing negative parenting in early childhood has a longstanding effect on internalizing psychopathology well into adolescence for children with ID. This highlights the need for early intervention targeting parenting practices in children with ID.

Limitations and Future Directions

First, our small sample size of Latino mother-child dyads may have limited our ability to detect significant effects. Additionally, Hopefully future research by other investigators with larger samples will continue to examine anxiety symptomatology in Latino youth with ID. Second, we did not have information regarding other possible predictors, including immigration status, cultural values, or acculturation levels of our Latino sample. Future research

should examine whether acculturation levels and cultural values, such as

familismo, moderate and/or mediate these relationships. Third, our study

was limited by the fact that with this sample size we could not differentiate

types of anxiety disorders. Future research should examine trajectories of

various types of anxiety symptoms in culturally diverse children with ID.

Lastly, we did not collect information regarding the specific diagnoses

associated with ID for all of our children. Next steps could include examining

whether these processes differ based on child's specific diagnoses.

Implications

We know that anxiety has a broad impact on an individual's

socioemotional functioning (e.g. Mychailyszyn et al., 2010). The examination

of early risk factors for heightened anxiety symptoms throughout

development helps to inform early interventions, which in turn could help in

preventing the negative sequelae that result from anxious symptomatology.

The present study's findings have implications for interventions with

ethnically diverse children with or without intellectual disabilities. First,

identifying children who are most at-risk for developing anxiety early on

(e.g., children whose temperament or developmental risk predisposes them)

could aid in tailoring early intervention services, in order to prevent the

development of anxiety disorders in later childhood/adolescence.

Additionally, parents, especially those of children with ID, would benefit from

receiving psychoeducation regarding how anxiety symptoms present in early

childhood. This would allow caregivers to more easily identify and target

these mental health concerns early on in their child's development. Lastly,

interventions for families of children with ID should consider targeting

negative parenting practices in early childhood as these have long term

effects on child psychopathology.

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Table 1. Study Demographic characteristics by status (TD, ID) and ethnicity (White,
Latino).

	Child Delay Status			Child Ethnicity		
	TD (N= 113)	ID (N= 64)	*t* or x^2 status	White (non-Hispanic) (N= 126)	Latino (N= 51)	*t* or x^2 ethnicity
Child IQ (SD)	103.5 (11.2)	60.6 (16.3)	*t*= 18.65***			
Child Sex (% Male)	61.9	57.8	x^2 = .29	62.7	54.9	x^2= 0.92
Mother's age	33.9 (5.6)	31.9 (5.7)	*t*= 2.32*	33.8 (5.7)	31.7 (5.6)	*t*= 2.18*
Mother's education	15.5 (2.6)	14.0 (2.1)	*t*= 4.36***	15.4 (2.5)	13.9 (2.3)	*t*=3.43**
Income (% > $50,000)	53.6	39.1	x^2 = 3.43+	53.6	35.3	x^2 = 4.86*

Note. +*p*<.10 **p*<.05, ***p*<.01, ****p*<.001

Table 2. Individual Effects Latent Growth Curve Model

	Intercept at age 3		Linear Slope ages 3-13	
	B	**SE**	**B**	**SE**
Effect of:				
Child Sex	0.66	0.85	-0.23$^+$	0.13
Household Income	-0.42$^+$	0.23	-0.01	0.03
Delay Status	1.85*	0.97	0.01	0.16
Ethnicity	1.24	0.93	-0.53***	0.14
Temperament	1.01*	0.45	-0.09	0.07
Negative Parenting	-0.47	0.37	0.13*	0.06

Note. $^+p<.10$ *$p<.05$, **$p<.01$, ***$p<.001$

Table 3. Delay Status and Negative Parenting Interaction Latent Growth Curve Model

	Intercept at age 3		Linear Slope ages 3-13	
	B	**SE**	**B**	**SE**
Effect of:				
Child Sex	0.52	0.85	-0.19	0.13
Household Income	-0.39$^+$	0.23	-0.02	0.03
Delay Status	2.21*	0.99	-0.09	0.16
Ethnicity	1.00	0.94	-0.48**	0.14
Temperament	1.13*	0.45	-0.11	0.07
Negative Parenting	0.04	0.50	0.03	0.07

Status x Parenting	-1.16	0.73	0.24*	0.12

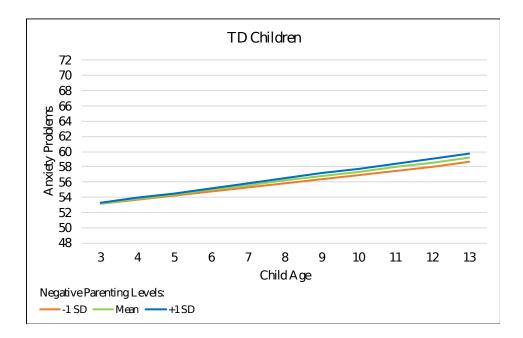*Note.* +*p*<.10 **p*<.05, ***p*<.01, ****p*<.001

Figure 1. Negative parenting in predicting change in anxiety problems among TD children.
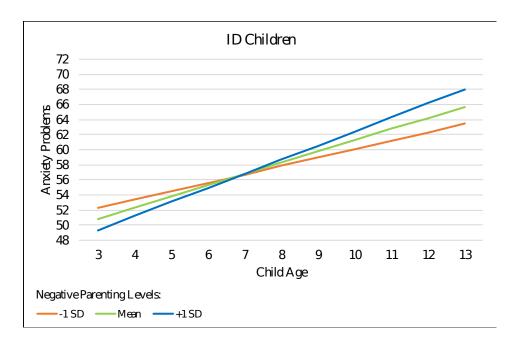
Figure 2. Negative parenting in predicting change in anxiety problems among children with ID.