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Patterns and Predictors of Parent–Child Endorsement
Discrepancies among Youth at Chronic-Risk for Depression

A Thesis

Presented in

Partial Fulfillment of the
Requirements for the Degree of
Master of Science

By

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July, 2016

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Biography

The author was born and raised in Chicago, Illinois. She graduated from Whitney M. Young High School in 2009, after which she earned a Bachelor's of Science in Psychology from the University of Illinois at Urbana-Champaign in 2013. Following her undergraduate education, she worked as an English teacher in Beppu, Japan. She returned to Chicago and earned her Master's of Science in General Psychology from DePaul University in 2016.

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Abstract

Depressive disorders are some of the most common mental health problems among U.S. adolescents, particularly among Latino youth (Merikangas et al., 2010; Twenge & Nolen-Hoeksema, 2002). When parents and their children provide ratings on the presence and severity of the child's depressive symptoms, their ratings show only low to moderate agreement (Mascendaro et al., 2012). Research has shown that parent-child discrepancies in ratings of youth emotional and behavioral problems are linked to factors such as parental depression and ethnicity. However, discrepancies research has focused primarily on European American families in clinical settings. Subsequently, research has failed to examine discrepancies in populations with the highest levels of unmet need and much less is known about patterns of parent-child endorsement agreement in depressive symptoms among ethnic minority families in community samples. Using a sample of 313 low-income, predominantly Latino students at chronic risk for depression, the present study addressed methodological limitations by utilizing Latent Class Analysis (LCA) to uncover patterns of parent-child endorsement of core diagnostic depressive symptoms. Three classes emerged, including classes characterized by high endorsement and agreement (HH), low endorsement and agreement (LH), and high youth endorsement and low agreement (HCL). Multinomial regression models revealed that prior mental health service use, higher comorbid externalizing problems, and parental Spanish interview language were associated with HCL class membership, in which parents under-reported core depressive symptoms, relative to youth themselves. In contrast, youth age, youth gender, youth ethnicity, parental depression, and parental education were not associated with endorsement agreement classes. Findings provide evidence that cultural and clinical factors impact parental endorsement of youth depression and suggest that psychoeducation aimed at

increasing parental awareness of youth depression and minimizing stigma may increase access to mental health services among youth with chronic depression.

Introduction

When parents and their children are asked to rate the child's emotional and behavioral problems, their ratings often diverge, representing one of the most consistent findings in clinical child research. In a seminal meta-analysis of 119 studies, Achenbach and colleagues (1987) found a mean correlation of .25 between parent and child reports of youth problems across studies. In addition, parent-child agreement was particularly low for internalizing (e.g., anxiety and depression) compared to externalizing problems (e.g., conduct problems and aggression). As there is no gold standard or objective method by which a child's actual symptoms can be determined, current best practices are to utilize multiple informants, assuming each provides unique information (Hunsley & Mash, 2007). Nonetheless, the task of integrating often contradictory information is complex, and doing so has implications for determining prevalence rates of disorders and levels of risk, as well as appropriate case conceptualization and treatment plans (De Los Reyes & Kazdin, 2004; Hawley & Weisz, 2003). Given the ubiquity of parent-child discrepancies, extensive research has examined their correlates and has revealed that demographic, clinical, and psychosocial factors influence reporting, independent of a child's actual symptoms. However, these findings are largely limited to clinical samples examining parental over-reporting of youth mental problems among non-Latino families. Less is known about discrepancies in ratings of internalizing problems such as depression, and among non-referred, underserved ethnic minority families. The present study aims to address this gap in the literature by using a sample of predominantly low-income and Latino parent-child dyads to conduct an in-depth examination of the patterns of endorsement in reports of youth depressive symptoms.

Youth Depression: Prevalence and Service Use Rates

Depression is a common and recurrent mental health problem among adolescents that causes significant academic, interpersonal, and physical impairment in a young person's life, often with long-term consequences (Jaycox et al., 2009). According to the Diagnostic and Statistical Manual of Mental Disorders (5th ed.; *DSM-V*; American Psychiatric Association, 2013) depressive disorders include: Major Depressive Disorder (MDD) and Persistent Depressive Disorder (Dysthymia). The onset of depressive disorders typically occurs in adolescence, and lifetime prevalence rates increase steadily through this period from 8.4% at age 13 to 15.4% at age 18 (Merikangas et al., 2010). Although gender differences in rates of these disorders are nonexistent in childhood, girls (15.9%) are nearly twice as likely as boys (7.7%) to develop a depressive disorder in adolescence. It is important to note that many more youth report significant subthreshold symptoms of depression, placing them at-risk for adverse outcomes in young adulthood such as persistent depressive symptoms, MDD, suicidal ideation and suicide attempts (Klein, Shankman, Lewinsohn, & Seely, 2009). While rates of mood disorders in European American and African American youth are comparable, Latino youth, who make up 22% of the under-18 population in the U.S. (Fry & Passel, 2009), are 1.4 times more likely to develop a depressive disorder in adolescence (Merikangas et al., 2010). Results from the 2013 Youth Risk Behavior Surveillance Survey (YRBSS; CDC), a nationally representative sample of 9th to 12th grade U.S. students, suggest that persistent feelings of sadness or hopelessness (29.9%), suicidal ideation (17.0%), and suicide attempts (8.0%) are reported at concerning rates among U.S. adolescents. However, persistent feelings of sadness or hopelessness (36.8%), suicidal ideation (18.9%), and suicide attempts (11.3%) are reported at even higher rates among Latino compared to African American and European American youth. Additionally, in a meta-analysis of the Children's Depression Inventory (CDI), Latino children and adolescents were

found to report significantly more depressive symptoms on the CDI than youth from all other ethnic groups (Twenge & Nolen-Hoeksema, 2002).

Although depressive disorders are associated with significant impairment, only 39.4% of adolescents meeting diagnostic criteria utilize mental health services (MHS) (Merikangas et al., 2011). Unmet need is particularly high among ethnic minority adolescents, with 31% of Latinos and 32% of African Americans receiving mental health treatment for depression relative to 40% of European Americans (Cummings & Druss, 2011). More generally, youth with internalizing problems are less than half as likely to receive treatment relative to those with externalizing problems, with ethnic minority and immigrant youth exhibiting the lowest rates of service use (Gudiño, Lau, & Hough, 2008; Gudiño, Lau, Yeh, McCabe, & Hough, 2009). These disparities in MHS use cannot be fully explained by sociodemographic and clinical factors such as family income, severity of symptoms, or functional impairment (Garland et al., 2005). Research on parent–child discrepancies suggests that parental under-recognition may play a critical role in low rates of MHS use. Although parents are generally seen as gatekeepers to their child’s treatment, research has yet to examine the association between previous MHS use and parent–child discrepancies. Thus, examining parent–child reports of depressive symptoms among ethnic minority samples in which the largest disparities in MHS use exist may elucidate critical information about a fundamental barrier to treatment.

Patterns of Parent–Child Discrepancies

Two important patterns emerge from parent–child discrepancies research regarding problem type and sample source. First, with respect to problem type, parent–child ratings of internalizing problems are consistently found to be more discrepant than ratings of externalizing problems (Achenbach, McCoaughy & Howell, 1987; De Los Reyes & Kazdin, 2005). Recent

work has affirmed that parent–child ratings of internalizing problems show low-to-moderate agreement with coefficients ranging from 0.10 to 0.20 (Fung & Lau, 2010; Garstein, Bridgett, Dishion, & Kaufman, 2009) and 0.20 to 0.30 (Grills & Ollendick, 2003; Youngstrom & Findling, 2003). In most cases, these discrepancies are driven by youth reporting more internalizing problems than their parents (Barker, Bornstein, Putnick, Hendricks, Suwalsky, 2007; Breland-Noble & Weller, 2012). Although few studies have examined parent–child agreement in ratings of youth depression, those that have found ratings to be particularly low ($k = .09$), with parents and their children agreeing on the presence of only 7.7% of symptoms (Grills & Ollendick, 2003). In a study using data from clinic intakes, youth who reported clinically significant symptoms that their parents did not (7.9% of the total sample) were more likely to have a mood or depressive disorder than dyads in which parents reported more symptoms than their children, and dyads that agreed on the presence or absence of symptoms (Martin et al., 2004). Larger parent–child discrepancies in ratings of youth internalizing problems, relative to externalizing problems, are often interpreted as arising from the nature of the two categories of problem types. While internalizing problems involve over-control of a child’s inner distress, externalizing problems involve under-control of behaviors and are directed toward the child’s external environment (Weisz, Suwanlert, Chaiyasit, & Walter, 1987). Indicators of internalizing problems are relatively inconspicuous, which may make them difficult for parents to accurately detect. By and large, symptom level examinations demonstrate that, across disorders, informants more often agree on the presence and severity of symptoms that are observable relative to those that are unobservable (Comer & Kendall, 2004). These findings suggest that relying on youth reports when rating internalizing problems may be important due to the covert nature of the problem, and the incongruity of a child’s experience with parental report.

A second important pattern in discrepancies research concerns sample source. Specifically, parents in clinical samples generally report more youth emotional and behavior problems than their child, while the inverse pattern is found for parent–child reports in community samples. For example, while Martin et al. (2004) found that 38.1% of parents of clinic-referred youth reported more problems than their child, Barker et al. (2007) found that 74% of youth in a community sample reported more problems than their parents. This is likely due to the fact that parents in clinic settings—who are typically responsible for initiating their child’s treatment—enter the assessment process with significant concerns about emotional and behavioral problems that they have identified in their child (Hawley & Weisz, 2003). Ultimately, these two patterns in parent–child discrepancies research suggest that youth in non-clinical samples with internalizing problems, and particularly depression, may be most likely to have parents who under-report their symptoms.

Correlates of Parent–Child Discrepancies

Youth age and gender. Studies examining the relationship between parent–child discrepancies and demographic characteristics such as youth gender and age have been largely inconclusive. For instance, while some studies have found that parents and children are more likely to disagree on the presence and severity of emotional and behavioral problems when the child is male (Gartstein et al., 2009; Carlston & Ogles, 2009; Weems, Taylor, Marks, & Varela, 2010), other studies have found higher disagreement when the child is female (Barker et al., 2007; Gartstein et al., 2009; Mascendaro et al., 2012; Penny & Skilling, 2012). Moreover, others have found no gender differences (Breland-Noble & Weller, 2012; Choudhury, Pimentel, & Kendall, 2003; Fung & Lau, 2010; Martin et al., 2004).

Empirical evidence for patterns of parent–child disagreement across age groups is also inconsistent; while some studies have found that parent–child disagreement is higher for older children (Achenbach et al., 1987; Barker et al., 2007; Krain & Kendall, 2000; Martin et al., 2004), others have found that it is higher for younger children (Grills & Ollendick, 2003), while others have found no significant age differences (Breland-Noble & Weller, 2012; Choudhury, et al., 2003; Penny & Skilling, 2012; Carlston & Ogles, 2009; Fung & Lau, 2010). Inconsistent findings may be due in part to varying methodologies used across studies such as different age cutoffs for youth. While some studies have used “7-11” and “11-17” as age cutoffs for younger and older children respectively (e.g., Grills & Ollendick, 2003), others have used “9-11” and “12-18” (e.g., Carlston & Ogles, 2009). Furthermore, gender and age may operate in nuanced ways depending on the problem type being assessed. For example, one study found that parents over-reported only their sons’ externalizing problems (Barker et al., 2007) while another found they were more likely to over-report their daughters’ somatic complaints (Penny & Skilling, 2012). However, a consistent pattern of findings has yet to be identified, and the role of youth demographic characteristics on parent–child discrepancies, if any, remains unclear.

Parental depression. There is considerable evidence to suggest that when parents report elevated levels of their own psychopathology they are also more likely to over-report their child’s internalizing and externalizing problems. The *depression-distortion hypothesis* posits that parental depressive symptoms promote a negative perceptual bias by which a child’s behavior is more readily perceived as problematic (Ritchers & Pellegrini, 1989). As mothers most often provide ratings of their child’s symptoms in clinical settings, empirical evaluation of the depression-distortion hypothesis has been largely limited to comparisons of ratings made by mothers relative to other informants. In clinical samples, maternal depression is associated with

maternal over-reporting relative to youth self-report for youth anxiety symptoms (Krain & Kendall, 2000) and internalizing and externalizing problems more generally (Ehrlich, Richards, Lejuez, & Cassidy, 2015; Treutler & Epkins, 2003; Youngstrom, Loeber, & Stouthamer-Loeber, 2000). In addition, mothers with at least one lifetime episode of MDD are more likely to over-report youth stressors relative to youth self-report when compared to mothers with no history of MDD (Daryanani et al., 2015). No study to date has documented the role of parental depression on parent–child discrepancies in ratings of youth problems among U.S. Latinos.

Sociocultural factors. Findings regarding patterns of parent–child discrepancies across racial/ethnic groups are more consistent than those concerning other demographic correlates (i.e., age and gender), although relatively few studies have examined their association. Studies examining race/ethnicity, most of which have been conducted with non-clinical samples, suggest that discrepancies across problem types are larger for parent–child dyads from ethnic minority backgrounds. African American parents have been found to be more likely than European American parents to under-report relative to their child regarding anxiety symptoms (Walton, Bennet Johnson, & Algina, 1999; Weems et al., 2010) and internalizing problems more generally (Youngstrom et al., 2000). Two studies have found that while youth across racial/ethnic groups reported similar levels of emotional and behavioral problems, parent-report of their child’s problems varied widely (Lau et al., 2004; Roberts, Alegria, Roberts, & Chen, 2005). Specifically, relative to European American parents, African American and Latino parents reported significantly fewer youth internalizing and externalizing problems (Lau et al., 2004) and agreed less with their child on the child’s global mental health and problems at home and school (Roberts et al., 2005). These findings remained even after holding constant key covariates such as youth age and gender, parent mental health, and family income. Although youth in the Lau et

al. (2004) study were enrolled in various public systems of care (e.g., mental health services), ethnic minority parents still reported fewer problems than their adolescent. This suggests that the common finding that youth in clinical samples report less symptoms than their parents may hold primarily for European American parent–child dyads and not generalize to ethnic minorities. These studies are limited to making comparisons across racial/ethnic groups without examining specific variables that may account for these ethnic differences in parent–child discrepancies. In addition, studies have not systematically included ethnicity, language, and SES as predictors of informant discrepancies.

Racial/ethnic variations in parent–child discrepancies in ratings of youth emotional and behavioral problems may be explained in part by cultural orientations that influence parental appraisal of youth behaviors. Although some research suggests that discordant parent–child cultural values are associated with adverse youth outcomes such as depression (e.g., Stein & Polo, 2013), less is known about the impact of cultural factors on parent–child endorsement discrepancies. Weisz and colleagues' (1988) *adult distress threshold model* provides a useful framework for conceptualizing ethno-cultural factors that may influence parent–child reporting discrepancies. According to the model, culture plays an important role in determining the thresholds that adults use to decide whether or not youth behaviors are maladaptive and warrant attention. Parents from interdependent cultures, which value interpersonal harmony and deference shown towards adults, may more readily identify their child's externalizing problems while overlooking their child's internalizing problems (Weisz, Suwanlert, Chaiyasit, Weiss, & Jackson, 1991). Indeed, patterns of divergent reports of youth problems among ethnic minority parent–child dyads suggest that these parents may use higher thresholds than their children when rating youth psychopathology, and especially for internalizing problems such as depression (Lau

et al., 2004; Roberts et al., 2005). These culturally-informed thresholds may influence parental recognition of symptoms and in turn, play a role in disparities in rates of depressive disorders and MHS use among ethnic minority youth. Among Latino families in particular, emphasis on values such as respect for authority and familism may impact socialization goals and parental attunement to specific youth problem types (Stein & Polo, 2014).

In the only study that has directly examined the effects of culture on parent–child discrepancies, Fung and Lau (2010) found that, among immigrant Chinese parents and their children, parent–child acculturation dissonance and parental acculturative stress were associated with worse agreement in ratings of youth internalizing problems. Parents and children were most likely to agree when both endorsed high levels of Chinese language and lifestyle preferences (e.g., attending Chinese gatherings). Culturally-informed thresholds used to rate youth problems may be informed by factors such as language. However, as this is the only study in discrepancies research to directly examine culture, many questions remain such as whether these findings extend to parent–child discrepancies among other U.S. ethnic groups. One of these groups are Latinos, who constitute the largest ethnic minority and immigrant group in the U.S. (U.S. Census Bureau, 2014). While the majority of first generation Latinos are Spanish dominant (61%), second generation Latinos are most often bilingual (53%) and third generation Latinos are most often English dominant (69%) (Pew Hispanic Center, 2012). Approximately 60% of U.S. born Latinos speak Spanish in the home and have one or two parents who are foreign born and have higher Spanish than English proficiency (Federal Interagency Forum on Child and Family Statistics, 2015; Pew Research Center, 2015). No study to-date has examined the relationship between parental language and patterns of endorsement of youth symptoms across parent and child informants. Parental language could be associated with parent–child communication

barriers, particularly about youth mental health problems such as depression which is more common in second-generation compared to first-generation Latinos (Peña et al., 2008). Language brokering, the phenomena in which youth assist parents with translating and interpreting, may also be associated with parental endorsement of youth mental health problems. High levels of language brokering in Latino families has been found to be associated with decreased parental monitoring, which may make parents less attuned to their child's internalizing problems (Martinez, McClure, & Eddy, 2008). Finally, language may also serve as a proxy for Latino cultural values (e.g., familism).

A family's socioeconomic status (SES) may also be relevant to patterns of parent-child agreement in endorsement of youth internalizing problems, although previous research has not consistently linked informant discrepancies to SES. A meta-analysis of interparental agreement found that parents were more likely to disagree on their child's problems when they were from low-SES, compared to middle-SES, backgrounds (Duhig, Renk, Epstein, & Phares, 2000). A more recent study using a sample of clinic-referred families found that lower income and younger mothers were more likely to over-report child internalizing and externalizing problems compared to the child's teacher (Stone, Speltz, Collett, & Werler, 2013). Parents from lower SES backgrounds face more pronounced and chronic stressors, which may have a similar impact as parental depression by lowering the threshold used by parents to determine if their child's behaviors are problematic (e.g., Ehrlich et al., 2015). However, other research has found that a combined measure of parental employment and education is not associated with parent-teacher (Youngstrom et al., 2000) or parent-child (Treutler & Epkins, 2003; De Los Reyes & Kazdin, 2004) discrepancies in ratings of youth internalizing or externalizing problems. In addition, when SES has been measured as a combination of maternal income and education (Chi & Hinshaw,

2002), it has not been linked to parent–child discrepancies in ratings of these problems. Overall, the effect of SES on parent–child agreement in report of youth internalizing problems is unclear, and may depend in part on the method used to measure SES.

Methodological Strategies and Limitations

Although substantial research is dedicated to examining parent–child discrepancies and their correlates, progress in discrepancies research has been slowed by methodological limitations that the present study attempts to address. These limitations include a reliance on broad categories of problem types, lack of consideration of comorbidity, lack of a gold standard by which to determine which informant is more accurate, reliance on cross-sectional data, and use of difference scores to calculate informant discrepancies. Research examining parent–child discrepancies as they relate to problem type are largely limited to studies comparing parent–child ratings across broad categories (i.e., internalizing vs. externalizing), with fewer studies focusing on parent–child ratings of specific syndromes. In particular, relatively less is known about parent–child discrepancies in reports of youth depression and studies that have been conducted are primarily limited to samples of clinic-referred youth and their families. Questions remain about parent–child reporting patterns for core depressive symptoms in youth (i.e., depressed mood, anhedonia, irritability), which are necessary criteria for an MDD diagnosis. Given that youth depression may be the most likely disorder that parents under-report relative to youth (Martin et al., 2004), such information would have great clinical utility by informing practitioners about symptoms that are especially likely to be missed by parents and those that they are likely to recognize. This is particularly important considering that practitioners are more likely to rate parents as the reliable informant when parents and children disagree (De Los Reyes et al., 2011). Furthermore, discrepancies research has largely ignored patterns of parent–child

ratings of comorbid youth emotional and behavioral problems. Although Youngstrom and colleagues (2004) found that the presence of youth manic symptoms is associated with worse parent–child agreement in endorsement of youth internalizing and externalizing problems, no study to-date has evaluated externalizing problems as a covariate. In particular, it is unclear whether comorbid youth externalizing problems impact parent–child agreement in ratings of youth depression. Given the high rates of comorbid mental health problems among children and adolescents (Merikangas et al. 2010), it is important to understand whether parental endorsement of distinct comorbid problem types (e.g., aggression) improve or worsen parent–child agreement in ratings of youth depression.

An additional limitation inherent in all informant discrepancies research is the lack of a gold standard by which to determine which informant is more accurate or valid. To address this problem, some investigators have examined informant discrepancies in ratings of youth emotional and behavioral problems as they relate to diagnoses obtained by a clinician (Breland-Noble & Weller, 2012; Martin et al., 2004) or observed variations in youth behaviors across contexts (De Los Reyes, Henry, Tolan, & Wakschlag, 2009). Despite the contributions of these novel methods, they do not allow for one reporter to be considered more accurate or valid in their reports. Furthermore, most discrepancies research relies on informant reports at a single time point, and studies using longitudinal data are confined to those examining the effects of parent–child endorsement discrepancies on treatment processes and outcomes in clinical samples (Jensen-Doss & Weisz, 2008), and later adverse youth outcomes in community samples (e.g., van de Looij-Jansen, Jansen, Wilde, Donker, & Verhulst, 2011). A novel strategy that addresses both of these methodological limitations but has yet to be utilized in discrepancies research is the inclusion of multiple reports from the same informant. No study to-date has examined parent–

child discrepancies in dyads in which youth chronically endorse depressive symptoms. Such a study could speak to factors associated with parental under-reporting of youth internalizing problems that are persistently self-reported by youth.

The vast majority of recent research on informant discrepancies has utilized difference scores (i.e., subtracting one informant's score from the other's) to calculate discrepancies. These difference scores are used as predictors or are predicted in theoretical models investigating the correlates of informant discrepancies. However, regardless of how difference scores are calculated (i.e., directional, absolute, standardized, or squared), they present serious interpretative challenges. Laird and De Los Reyes (2013) demonstrated that using difference scores creates mathematical constraints that substantially reduce predictive power. For example, when difference scores are used in a regression equation, parent and child report are examined as orthogonal predictors of the outcome variable. However, even when parent-child discrepancies are present, parent and child reports are, in most cases, positively correlated. In addition, Laird and De Los Reyes (2013) demonstrated that differences in the correlation and variance of parent and child report, rather than the difference score itself, underlie significant associations between difference scores and psychosocial constructs. Ultimately, this work demonstrates that the difference score approach is problematic and may lead to erroneous conclusions about the nature of parent-child reporting patterns and their correlates.

An alternative approach, exploratory Latent Class Analysis (LCA; McCutcheon, 1987), eliminates the statistical problems associated with difference scores. Exploratory LCA is a person-centered approach that allows for the examination of latent structures using a set of categorical or ordinal variables that can be directly measured. Exploratory LCA goes beyond sample level descriptions provided by the difference score approach, and can be used to identify

classes of parent–child endorsement of youth mental health problems characterized by varying levels of agreement. Exploratory LCA has been used to identify classes of informant reporting that are linked to theoretically relevant constructs. For example, De Los Reyes, Alfano, Lau, Augenstein, and Borelli (2015) used exploratory LCA to identify classes of inter-parental convergence in ratings of adolescent psychopathology. Three classes were identified, and inter-parental convergence was associated with higher adolescent self-reported mental health concerns and hostile adolescent-caregiver interactions.

Statement of Aims and Hypotheses

The present study aims to determine the number and nature of classes of parent–child endorsement of youth primary depressive symptoms on a structured diagnostic interview using a school-based sample of predominantly low-income and ethnic minority youth chronically at-risk for depression. Additionally, predictors of class membership are explored, including key demographic characteristics, secondary depressive symptoms, youth functional impairment, clinical factors, and sociocultural factors.

More specifically, the following hypotheses are evaluated:

Aim I – Endorsement Levels across Primary and Secondary Symptoms

It is expected that youth will report higher levels of depressive symptoms than their parents. This pattern will emerge for a) primary symptoms (e.g., depressed mood); and b) secondary symptoms (e.g., sleep disturbances). Aim I is evaluated via paired sample *t*-tests.

Aim II – Parent–Child Endorsement Agreement Classes

No a priori hypotheses are made about the number, structure, and distribution of endorsement agreement classes. However, it is expected that the degree of

endorsement of youth primary depressive symptoms will vary across youth and parent reports, and that classes characterized by different levels of parent–child endorsement and agreement will be identified. Exploratory LCA, a person-centered approach to informant discrepancies, will be used to identify classes of agreement in parent–child endorsement of youth depression symptoms.

Aim III – Diagnostic Predictors

Youth and parent-reported secondary MDD symptoms, domain-specific functional impairment, and global functional impairment will be evaluated as predictors of latent class membership. It is hypothesized that higher parent and child endorsement of secondary symptoms and impairment will predict membership in classes characterized by high levels of parent–child agreement in high levels of endorsement. Analyses to evaluate these hypotheses will include eight multinomial logistic regressions. The first six will separately evaluate each of the three diagnostic predictors independently for both parent and child report. Two additional multinomial regression models will be evaluated including the three predictors entered simultaneously for both parent and child report.

Aim IV – Clinical Predictors

Past year MH service use, parental reports of youth externalizing problems, and parental depression will be evaluated as clinical predictors of latent class membership. It is hypothesized that past year MHS use, higher youth externalizing problems, and higher parental depression will predict membership in classes characterized by higher levels of parent–child endorsement agreement.

Analyses to evaluate these hypotheses will include four multinomial logistic regressions. The first three will separately evaluate each of the three clinical predictors independently. A fourth multinomial regression model will be evaluated including the three predictors entered simultaneously.

Aim V – Sociocultural Predictors

Parental interview language, parental education, and child ethnicity (Latino vs. non-Latino) will be evaluated as sociocultural predictors of latent class membership. It is hypothesized that English-speaking parents, higher parental education, and non-Latino ethnicity will predict membership in classes characterized by higher levels of parent–child endorsement agreement. Analyses to evaluate these hypotheses will include four multinomial logistic regressions. The first three will separately evaluate each of the three sociocultural predictors independently. A fourth multinomial logistic regression will be evaluated including the three predictors entered simultaneously.

Method

Participants

The sample includes 313 youth at-risk for depression, and their parents. The parent–child dyads were recruited from 10 public elementary schools in a large metropolitan area in the Midwest. The study includes two data collection points. Youth data were collected from classroom surveys (Time 1) and from individual youth and parent interviews (Time 2). At Time 2, youth were 10 to 14 years of age ($M = 11.9$, $SD = 1.0$) and in the 5th (20.8%), 6th (36.7%), and 7th (42.5%) grade. They included 184 girls (58.8%) and 129 boys (41.2%) and were of predominantly Latino (79.9%), African American (8.9%), European American (1.9%) or mixed

race (9.3%) backgrounds. Latino youth identified as Mexican American (70.4%), Puerto Rican (10.2%), Central or South American (4.2%), and mixed Latino/non-Latino ethnicity (21.6%). Parents were primarily mothers (86.9%), although fathers (8.6%) and other relatives (4.5%) were interviewed when they were the primary or only caretakers of the youth. Families were from primarily low socio-economic backgrounds. Most (78.2%) reported annual incomes of \$40,000 or less. In terms of highest level of education attained, 32.3% of parents started or completed post-secondary education (e.g., college). Sixty-five percent of parents were foreign-born and, at the time of the interview, had lived in the U.S. for an average for 19.2 years. Among this sample of at-risk youth, only about one in five youth ($n = 71$; 22.7%) had received any services to address behavioral or emotional problems in the past year, according to parental reports. A total of 9 (2.9%) had received inpatient MHS; 43 (13.7%) had received outpatient MHS; and 43 (13.7%) reported school-based MHS use. Among the 71 youth who had received MHS, most had only received one type of service ($n = 50$; 70.4%); 18 (25.4%) had received two types of services; and 3 (4.2%) received three types of services.

Measures

Children's Depression Inventory (CDI; Kovacs, 1992). The CDI is a widely used 27-item self-report measure of cognitive, affective, and behavioral depressive symptoms in youth. For each item, youth choose one of three sentences that describes how they have felt in the previous two weeks (e.g., "I feel like crying every day", "I feel like crying most days", "I feel like crying once in a while"). Each item is then scored with a 0, 1, or 2, with higher scores indicating more severe depressive symptoms. All items are then summed and youth with a total score of 9 or greater are considered at-risk for depression. The CDI has been validated in samples of ethnically diverse children and adolescents (Kovacs, 1992). In the present study, the

CDI was administered at two time points, once during the in-class survey and again during the in-person interview, and will be the primary indicator used to determine the degree of chronicity of depressive symptoms in youth. Based on preliminary analyses on a subset of the total sample, the CDI demonstrated adequate internal consistency in this sample in the first ($\alpha = .78$) and second waves ($\alpha = .88$) of data collection.

Diagnostic Interview Schedule for Children (DISC; Costello, Edelbrock, Dulcan, Kalas, & Klaric, 1984). The DISC is a highly structured interview with parallel parent and child forms that can be administered by trained lay interviewers. Parents and children were administered parallel versions of the Major Depression Disorder (MDD) module of the DISC which includes a checklist of 3 primary and 18 secondary symptoms considered for diagnosis in accordance with the *DSM-V* (APA, 2013). The 3 primary symptoms include: depressed mood, anhedonia, and irritability. Secondary symptoms include 7 symptom clusters matching *DSM-V* (APA, 2013) diagnostic criteria: changes in appetite (i.e., significant weight loss or decreased appetite, significant weight gain or increased appetite), sleep problems (i.e., insomnia, hypersomnia), psychomotor agitation (i.e., feeling slowed down, restlessness), fatigue (diminished energy, fatigue, feeling weighed down), self-esteem problems (i.e., excessive guilt, feelings of worthlessness), cognitive problems (i.e., diminished ability to think, difficulty concentrating, difficulty making decisions), and suicidal ideation (i.e., thoughts of death or dying, suicidal ideation). For each symptom, respondents are asked about the presence of the symptom for themselves (child self-report) or for their children (parent report) during the past month. In the present study, parent and child reports for the primary depressive symptom questions are evaluated to determine levels of endorsement and agreement across informants. Youth and parents responded to three parallel items, including depressed mood (“During the past

month have you often felt sad or depressed?”), anhedonia (“During the past month, has there been a time when nothing was fun for you and you just weren’t interested in anything?”), and irritability (“During the past month, have you often felt grouchy or irritable and often in a bad mood, when even little things have made you mad?”). In addition, functional impairment is evaluated for any MDD symptoms endorsed. This includes a 6-item measure of the presence and extent of impairment in specific domains (i.e., family, friends, affective, and school) as well as a 10-point global interference scale of overall impairment. Using both clinical and community samples, the DISC has demonstrated high test-retest reliability and has been validated in both English and Spanish (Shaffer, Fisher, Lucas, Dulcan, & Schwab-Stone, 2000; Bravo et al., 2001).

Child Behavior Checklist (CBCL; Achenbach and Rescorla, 2001). The 35-item externalizing broadband scale of the CBCL was used to assess the presence of externalizing problems in youth. Parents rated whether items such as “Gets in many fights” were true of their child in the past 6 months on a scale with anchors of 0 (*not at all true*), 1 (*somewhat or sometimes true*), and 2 (*very true or often true*). The CBCL has demonstrated high test-retest reliability and validity among both English (Achenbach, 1991) and Spanish-speaking samples (Rubio-Stipec, Bird, Canino, & Gould, 1990). The CBCL demonstrated high internal consistency in this sample ($\alpha = .89$).

Service Assessment for Children and Adolescents (SACA; Horwitz et al., 2001). The SACA was administered to parents and assesses the child’s past-year mental health service use, including inpatient, outpatient, and school-based services. The SACA assesses use of both formal (e.g., community mental health center) and informal (e.g., help from a priest) sources of support for emotional and behavioral problems. The parent version of the SACA has

demonstrated fair to excellent validity when compared to actual service use (Hoagwood et al., 2000), and high test-retest reliability among both English and Spanish-speaking samples (Horwitz et al., 2001; Bean et al., 2003).

Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977). The CES-D is a 20-item measure administered to parents that assesses the frequency of depressive symptoms. Parents rated items such as “I felt like everything I did was an effort” on a Likert scale ranging from 0 (*rarely or none of the time*) to 4 (*almost or all of the time*). Reliability and validity of the English and Spanish versions of CES-D have been established in both community and clinical samples (Radloff, 1977; Roberts, 1992). The CES-D demonstrated high internal consistency in this sample ($\alpha = .90$).

Demographics. Information regarding participant demographic characteristics was obtained from youth and parents. Youth responded to items about their age, sex, race/ethnicity, and country of origin. Parents also responded to items about their race/ethnicity, family income, country of origin, length of time living in the United States (when applicable), and educational attainment. For both parents and youth, ethnicity was assessed with the item, “Which of the following is your ethnic group?” and participants chose from one or more of the following ethnic categories: European American/Caucasian, African American, Asian American, Hispanic/Latin American, or other ethnic group. Parents indicated their highest level of education obtained from 8 categories ranging from 1 (*never went to school*) to 8 (*completed professional training beyond 4 year college*). Parents also indicated the family’s total income using a scale with 8 categories ranging from 1 (*\$5,000 to \$10,000*) to 8 (*\$100,000 and up*) as well as the number of people living off of the reported income.

Procedure

Parents first learned about the study through a consent form sent home to request their child's participation in a classroom survey. Parental consent and student assent were obtained for 1,249 youth who completed the survey. The survey was used to identify youth at-risk for depression as part of a larger longitudinal study that included an intervention component. The parents of youth who completed the survey were then contacted by phone and recruited to participate in individual, two-hour interviews. Youth who were at-risk for depression were over-sampled, in part to identify youth who were more likely to be eligible to be enrolled in the intervention study. For the purposes of this study, all data collection occurred prior to enrollment in the intervention program.

Parent and child interviews were conducted simultaneously and in separate rooms by undergraduate, B.A.-level, and doctoral-level students as well as the principal investigator of the study. Dyads were informed that their answers would be kept private unless the interviewers had reason to believe that the child was at-risk of being harmed or of harming others. Questions were read aloud and paper response scales were provided for each measure. Interviews that were forward-translated and back-translated into Spanish were used for Spanish-speaking participants. A majority of parents (55.3%) were interviewed in Spanish, and all but one child was interviewed in English. Parents received a cash incentive and youth received a gift card for their participation.

Results and Analyses

Preliminary Analyses

A CDI score of nine points or greater was used as a cutoff for determining chronicity in risk for youth depression. As noted earlier, the sample was made up of youth who reported CDI symptoms above this threshold in at least one of the two data collection time points. Analyses

revealed that 129 youth (41.2%) reported elevated levels of depression at either Time 1 or Time 2, but not both. This group was labeled the Intermittent Risk Group (IRG). The remaining 184 youth (58.5%) reported elevated levels of depression at both Time 1 and Time 2 and this group was labeled the Chronic Risk Group (CRG). Table 1 compares the CRG and IRG groups across key demographic and clinical variables. Relative to the IRG group, the CRG group was made up of a higher proportion of females and endorsed higher mean depression scores at both time points. The two groups did not significantly differ on any other demographic characteristic evaluated. All subsequent analyses are conducted only with the CRG group.

Endorsement Levels across Symptoms

Paired-sample *t*-tests were conducted to determine whether endorsement levels of *DSM-V* MDD youth depressive symptoms significantly differed by informant. As predicted, youth endorsed significantly more primary symptoms ($M = 1.79$; $SD = 0.96$) than their parents ($M = 1.24$; $SD = 1.07$), $t(184) = 5.67$, $p < .001$. Also as predicted, youth endorsed significantly higher levels of secondary depressive symptoms ($M = 7.77$; $SD = 3.11$) than their parents ($M = 2.86$; $SD = 2.99$), $t(184) = 16.31$, $p < .001$.

Parent–Child Endorsement Agreement Classes—Model Selection

Exploratory LCA using Mplus Version 7.1 (Muthén & Muthén, 2013) allows for the examination of latent structures using a set of categorical or ordinal variables that can be directly measured. This analysis rests on the assumption of conditional independence, which holds that observed indicators must be statistically independent within each latent class. Classes were imposed iteratively to determine the latent class model with the best fit in terms of statistical and conceptual validity. The process began with the specification of a one-class solution, which represents an independence model and includes only the observed frequencies in the data.

Subsequently, the number of classes were increased until no further improvement in the models was observed as indicated by the evaluation fit criteria.

Absolute and relative fit of the models were evaluated using three criteria. First, model fit is evaluated using the Bayesian Information Criterion (BIC; Schwartz, 1978) and Akaike Information Criterion (AIC; Akaike, 1987), widely used information evaluation criteria that indicate how parsimonious a solution is to the observed data, with lower scores on either indicating better model parsimony. Greater emphasis was placed on BIC scores given that previous research has demonstrated that the AIC inconsistently estimates model parsimony (Nylund, Asparouhov, & Muthen, 2007). Second, model fit was evaluated using the Bootstrapped Lo-Mendell-Rubin Adjusted Likelihood Ratio Test (BLMR-LR; McLachlan & Peel, 2000), which provides a statistical indicator of the number of classes that provide the best fit to the data. When the addition of a class results in a significant BLMR-LR, this indicates that the model has a better fit to the data than a model with one fewer class. Third, model fit was evaluated using the entropy index (Ramaswamy, DeSarbo, Reibstein, & Robinson, 1993), which can be used to determine the accuracy of classifying parent-child dyads into their respective classes. Entropy values can range from 0 to 1.00, with higher values indicating that a solution provides a better fit to the data. In addition to using these model fit criteria, latent class models were evaluated for their interpretability.

Using the aforementioned model fit criteria, latent class models were estimated sequentially. A total of six observed indicators were entered into the model, which included parent and child report of the three youth primary depressive symptoms. The one-class solution represented the independence model, and additional classes were added sequentially to explore models containing the best fit to the data. Next, one- through four-class solutions were run using

parent–child endorsement of youth primary depressive symptoms as observed indicators in the latent class model. Results indicated that a three-class solution provided the best fit to the data (see Table 2). The model did not show any further improvement in any evaluation criteria with the addition of a fourth class. The two-class solution had a lower BIC value and satisfactory entropy (1.0), while the three-class solution had a lower AIC value and satisfactory entropy (0.81). In addition, the BLMR-LR was significant for the three-class solution, indicating that three classes provided a significantly better fit to the data than did two classes. The three-class solution also provided optimal interpretability and theoretical utility. The three-class solution captured parent–child dyads with low probability of endorsement of any of the primary depressive symptoms, while these dyads were contained within another class in the two-class solution. Thus, the three-class solution was retained (see Figure 1). The estimated probabilities of endorsing MDD primary symptoms for each class are presented in Table 3.

Class 1, labeled *Low Endorsement High Agreement* (LH) ($n = 64$; 34.8%), is a class characterized by a relatively low probability of youth and parent endorsement of depressed mood or anhedonia, but a moderate likelihood of youth and parent endorsement of irritability. No parents in the LH Class endorsed depressed mood, and only a small proportion of youth did.

Class 2, labeled *High Child Endorsement Low Agreement* (HCL) ($n = 52$; 28.3%), is a class characterized by relatively high symptom endorsement by youth and low symptom endorsement by parents across all three primary symptoms. In the HCL Class, all youth endorsed depressed mood and most endorsed anhedonia. In contrast, a relatively low number of parents endorsed depressed mood and none endorsed anhedonia.

Class 3, labeled *High Endorsement High Agreement* (HH) ($n = 68$; 37.0%), is a class characterized by relatively high symptom endorsement by both youth and parents. Parent–child

endorsement of anhedonia and irritability was comparably high in the HH class. Within this class, most youth and all parents endorsed depressed mood.

Covariates. To determine whether youth age and gender were related to latent class membership, multinomial logistic regressions were conducted by regressing these covariates on the categorical latent classes. The HH class was entered as the reference group and evaluated relative to the LH and HCL classes. No significant differences in class membership were found as a function of age, [$LR \chi^2 (2, N = 184) = 4.20, p = .12$], or gender, [$LR \chi^2 (2, N = 184) = 0.78, p = .69$], (see Table 4). Because age and gender did not predict class membership, they were not included as covariates in any of the subsequent analyses.

Predictors of Class Membership

Multinomial logistic regression models were run to determine whether diagnostic (i.e., secondary MDD symptoms, domain-specific functional impairment, global functional impairment), clinical (i.e., parental endorsement of youth externalizing problems, past year MHS use, parental depression) and sociocultural factors (i.e., parental language, parental education, child ethnicity) were predictive of endorsement agreement classes. In all of these models, the HH class was selected as the reference group. This allowed for a comparison between the HCL and HH class, and the elucidation of factors associated with parental under-reporting of youth depressive symptoms.

Diagnostic predictors. Parent and child endorsement of secondary MDD symptoms, domain-specific functional impairment, and global functional impairment were first independently regressed on the categorical latent classes using multinomial logistic regression. Youth-endorsed secondary symptoms, [$LR \chi^2 (2, N = 184) = 7.56, p < .05$], and domain-specific functional impairment, [$LR \chi^2 (2, N = 184) = 13.14, p < .01$], emerged as significant predictors of

class membership. Youth endorsement of secondary symptoms did not show a significant relation in the comparison between the HH and LH or HH and HCL classes. In addition, youth were more likely to belong to the HH class relative the LH class as youth endorsement of domain-specific functional impairment increased, and no significant relation was found in the comparison between the HH and HCL classes. Youth-endorsed global functional impairment did not emerge as a significant predictor of class membership, [$LR \chi^2 (2, N = 184) = 5.85, p = .05$], (see Table 5). The overall model fit for the youth-endorsed diagnostic predictors when entered simultaneously was good [Deviance $\chi^2 (320, N = 184) = 356.88, p = .08$; Pearson $\chi^2 (326, N = 184) = 333.63, p = .29$]. None of the youth-reported diagnostic predictors emerged as significant predictors of class membership in the total model (see Table 5).

Parent-endorsed secondary symptoms, [$LR \chi^2 (2, N = 184) = 34.63, p < .001$], domain-specific functional impairment, [$LR \chi^2 (2, N = 184) = 15.01, p < .01$], and global functional impairment, [$LR \chi^2 (2, N = 184) = 13.92, p < .01$], emerged as significant predictors of class membership when evaluated separately. Specifically, parents were more likely to belong to the HH class relative to the LH or HCL class as parent endorsement of secondary symptoms, domain-specific functional impairment, and global functional impairment increased (see Table 6). The overall model fit for the parent-endorsed diagnostic predictors when entered simultaneously was not satisfactory [Deviance $\chi^2 (320, N = 184) = 252.29, p = .07$; Pearson $\chi^2 (326, N = 184) = 331.47, p < .001$]. Although model fit was not satisfactory, parent-endorsed secondary symptoms emerged as the only significant predictor of class membership, [$LR \chi^2 (2, N = 183) = 11.48, p < .01$]. Parents were more likely to belong to the HH class relative to the LH or HCL class as parent endorsement of secondary symptoms increased. Parent-endorsed domain-

specific functional impairment and global functional impairment did not emerge as significant predictors of class membership in the total model (see Table 6).

Clinical predictors. When entered independently, parental endorsement of youth externalizing problems, [$LR \chi^2 (2, N = 183) = 193.66, p < .001$], and past year MHS use, [$LR \chi^2 (2, N = 183) = 11.48, p < .01$], emerged as significant predictors of class membership. Specifically, parent–child dyads were more likely to belong to the HH class relative to the LH or HCL class as parental endorsement of youth externalizing problems increased. In addition, parent–child dyads were more likely to belong to the HH class relative to the LH or HCL class if the parent reported past year MHS use. When entered independently, parental depression did not emerge as a significant predictor of class membership, [$LR \chi^2 (2, N = 183) = 5.10, p = .08$]. However, in the comparison between the LH and HH class, parents were significantly more likely to belong to the HH class relative to the LH class as parent self-reported depression increased (see Table 7). The overall model fit for the clinical predictors (youth externalizing problems, past-year MHS use, and parental depression) when entered simultaneously was good [$Deviance \chi^2 (326, N = 184) = 351.29, p = .16$; $Pearson \chi^2 (326, N = 184) = 361.91, p = .08$]. Parental endorsement of youth externalizing problems emerged as a significant predictor of class membership, [$LR \chi^2 (2, N = 183) = 10.75, p < .01$]. Parent–child dyads were more likely to belong to the HH class relative to the LH or HCL class as parental endorsement of youth externalizing problems increased. Past year MHS use and parental depression did not emerge as significant predictors of class membership when entered in the total model (see Table 7).

Sociocultural predictors. Parental language, parental education, and child ethnicity were first independently regressed on the categorical latent classes using multinomial logistic regression. Given that the sample is predominantly Latino (79.9%), child ethnicity was

dichotomized for the multinomial logistic regression analysis into Latino and non-Latino (i.e., African American, European American, mixed ethnicity). When evaluated independently, only parent interview language emerged as a significant predictor of class membership, [$LR \chi^2 (2, N = 184) = 9.04, p < .05$]. Specifically, parent–child dyads were more likely to belong to the HH class relative to the LH class if interviewed in English, and no significant relation was found in the comparison between the HH and HCL classes. Parental education, [$LR \chi^2 (2, N = 184) = 0.47, p = 0.79$], and child ethnicity, [$LR \chi^2 (2, N = 184) = 1.93, p = 0.38$], did not emerge as significant predictors of class membership (see Table 8). The overall model fit for the sociocultural predictors was excellent [Deviance $\chi^2 (38, N = 184) = 20.65, p = .24$; Pearson $\chi^2 (38, N = 184) = 16.19, p = .63$]. When entered along with parental education and ethnicity, parental language emerged as a significant predictor of class membership, [$LR \chi^2 (2, N = 184) = 12.25, p < .01$]. Parent–child dyads were more likely to belong to the HH class relative to both the LH and HCL class if interviewed in English. Parental education and youth ethnicity did not emerge as significant predictors of class membership in the total model (see Table 8).

Discussion

The present study identified classes of endorsement agreement in parent–child reports of core youth depressive symptoms using a school-based sample of primarily ethnic minority youth. Consistent with previous research on informant discrepancies in non-clinical samples (e.g., Barker et al., 2007), the present study found that, relative to their parents, youth endorsed significantly more depressed mood, anhedonia, and irritability, which constitute the primary symptoms used in the *DSM-V* (APA, 2013) criteria for MDD. The pattern extended to secondary symptoms such as weight and appetite changes, sleep disturbances, and concentration difficulties, along with the functional impairment associated with these depressive symptoms.

This pattern emerged in a sample of youth who self-reported moderate to severe symptoms of depression that were above an at-risk threshold across two time points. The findings of the current study underscore that parental under-reporting of youth depressive symptoms is present even among youth who consistently report moderate to severe levels of depression.

Using exploratory LCA, a person-centered approach to informant discrepancies, three distinct classes of parent–child endorsement agreement were identified with unique patterns of endorsement and agreement. Interestingly, each of the classes was represented by a substantial proportion of the sample, ranging between 28.3% and 37.0% of the total. Furthermore, two of the three classes were characterized by similar probabilities of endorsement by youth and parents, and these two high agreement classes made up approximately 71% of the sample. In the *Low Endorsement High Agreement* (LH) class, parents and youth both reported relatively lower levels of endorsement of youth depressive symptoms. In the *High Endorsement High Agreement* (HH) class, both parents and youth had high probabilities of symptom endorsement across all three primary symptoms, with particularly high endorsement of depressed mood by parents. Over one in four dyads were classified as belonging to the final class, in which parent–child endorsement disagreement was present. The *High Child Endorsement Low Agreement* (HCL) class, which was characterized by youth with a very high likelihood of endorsement of each of the primary depressive symptoms and parents with significantly lower likelihood of endorsement levels across these symptoms. In the study’s school based sample of youth at chronic risk for depression, a class characterized by parental over-reporting of youth depressive symptoms was not identified.

The HCL class represents an important group of youth that have received little attention in discrepancies research. As noted earlier, the typical pattern of discrepancies among clinical

samples includes parents who tend to over-report their child's emotional and behavioral problems—which are more often misconduct and other externalizing problems—relative to youth themselves (e.g., Hawley & Weisz, 2003). It is notable that in one study conducted with a general outpatient sample, a small group of youth (approximately 8% of the total sample) was identified who endorsed higher clinically significant symptoms relative to their parents. This subgroup of youth was most likely to be diagnosed with a mood or depressive disorder. Therefore, this highlights the importance of considering both parents and youth as informants in both referred and community samples, and particularly for youth who may be experiencing internalizing problems such as depression, anxiety, and somatic complaints. Our findings suggest that the proportion of parents who are more likely to under-report youth symptoms, relative to the youth themselves, was much greater in this school setting (28.3%), suggesting that depression goes undetected for a large group of early adolescents. Future work should determine the longitudinal consequences of undetected and prolonged distress, such as academic and interpersonal impairment. In addition, future work should track the course of youth in the HCL class to determine if, over time, they are at a greater risk of developing other maladaptive responses that are more likely to receive attention from parents and other adults, relative to other youth whose parents are more attuned with their distress. For example, youth in this class may be at increased risk for developing problems such as conduct disorder and delinquency, which are more likely to result in MHS (Gudiño et al., 2008). Their undetected depression may also take a severe course over time, resulting in increased suicidality and rates of hospitalization.

Diagnostic Predictors

In addition to identifying latent class models of parent–child endorsement agreement in primary depressive symptoms, additional diagnostic criteria were examined as predictors of

latent class membership. Although primary depressive symptoms capture the core components of depression, parents and children not endorsing primary symptoms may still endorse secondary symptoms (e.g., cognitive difficulties) and impairment (e.g., relationship problems) that are different in nature. Surprisingly, youth-endorsed secondary symptoms and impairment showed little variability across latent classes, while parent-endorsement varied widely. Youth in the HH class endorsed higher domain-specific functional impairment than youth in the LH class, but not in the HCL class. Interestingly, parents in the HH class endorsed higher levels of secondary symptoms and impairment compared to the other two classes. These findings suggest that when parents recognize core depressive symptoms in their child, they are likely to also be attuned to levels of secondary symptoms and impairment. It is important to note that the HH and HCL classes do not significantly differ in youth-report of functional impairment caused by symptoms. This suggests that the two classes do not differ in other indicators that could have alerted parents to the presence of depression in their child. Rather, the differences between the HH and HCL classes emerged from parental recognition of depression and associated impairment. The LH class, in which parent-child dyads were only likely to endorse irritability, seems to represent a unique symptom presentation that is associated with both lower levels of symptoms and limited functional impairment. Future research should examine objective indicators of functioning as they relate to parent-child endorsement agreement. For example, measures such as academic functioning and peer nominations for social competence may reveal whether observed functional impairment is associated with membership in classes characterized by higher parental endorsement of depression. This would provide further insight given that the instrument used to evaluate impairment in the present study was collected alongside depressive symptom endorsement, making them dependent on one another.

One explanation for reporting patterns may be that parent–child dyads in the HCL Class have more distant relationships than those in the HH Class. Previous research has found that insecure and lower-quality parental attachment predicts parent–child discrepancies in reports of youth depressive symptoms, with parents reporting fewer symptoms than their child (Ehrlich, Cassidy, & Dykas, 2011). This finding suggests that when parent–child relationships are emotionally distant or are characterized by dysfunction, parents may be less attentive to their child’s problems or youth may be less likely to disclose their problems to their parents. Parental attachment may play a key role in parental recognition of youth depression, as symptoms are relatively covert and most likely to go unrecognized by parents (Martin et al., 2004). However, parental attachment has not yet been evaluated in a sample of Latino youth, and future work is needed to understand how these factors impact parent–child reporting in this group.

Clinical Predictors

Clinical factors were examined as predictors of latent class membership. Overall, the findings were consistent with the study predictions. Parental endorsement of youth externalizing problems, when entered individually and along with other clinical predictors, were highest in the HH class, in which parents, who were in agreement with youth, were more likely to endorse all depressive symptoms. Research on informant discrepancies has consistently demonstrated that parent–child agreement is higher for externalizing problems compared to internalizing problems (De Los Reyes & Kazdin, 2005). Externalizing problems are relatively more overt and directed towards the child’s external environment (Weisz et al., 1987), which may make them easier for parents to accurately detect. More observable symptoms such as those found in externalizing problems have been found to show higher parent–child agreement (Comer & Kendall, 2004). For parents in the present study, comorbid externalizing problems may have also increased the

likelihood that parents were alerted to other mental health problems, including comorbid internalizing problems. To our knowledge, the present study is the first to investigate whether comorbid externalizing problems improve or worsen parent–child agreement in ratings of youth internalizing problems. Findings suggest that parents who report comorbid externalizing problems are more likely to agree with youth endorsement of core symptoms of depression.

Surprisingly, a pattern did not emerge suggesting that youth irritability was associated with higher agreement between parent–child symptom endorsement. This finding is contrary to the current literature demonstrating that within disorders, more overt symptoms show higher parent–child endorsement agreement (Comer & Kendall, 2004). Given that depression manifests itself differently across developmental stages, *DSM-V* (APA, 2013) criteria for MDD includes irritable mood as a symptom that may be present in the absence of depressed mood in children and adolescents. Although irritability represents an externalizing dimension of MDD in youth, it may be that irritability among youth who have chronic symptoms of depression manifests itself in a way that is just as difficult to detect as other more covert internalizing problems such as depressed mood or anhedonia. However, as evidenced by the LH class, a subgroup of youth with chronic depression may exhibit a primarily irritable presentation. The LH class was characterized by a moderate likelihood of parent–child dyads endorsing irritability, suggesting that agreement may be more likely with a primarily irritable presentation.

Support was also found for the hypothesis that past year MHS use would be associated with classes characterized by higher levels of parent–child endorsement and agreement, although MHS use was no longer significant when entered along with the other clinical predictors. Youth in the HH class were more likely than youth in the HCL and LH classes to have received MHS in the previous year. As previously noted, patterns in parent–child discrepancies research suggest

that youth in non-clinical samples with depression are more likely to have their symptoms go unnoticed and untreated (Martin et al., 2004; Barker et al., 2007). In this school-based sample of youth reporting chronically high depressive symptoms, only approximately one in four youth received inpatient, outpatient, or school-based MHS in the previous year. This pattern is consistent with previous research demonstrating that 31% of Latinos and 32% of African Americans meeting criteria for a depressive disorder receive MHS for depression (Cummings & Druss, 2011). Although diagnoses were not obtained in the present study, parents who recognized depression in their child may have faced significant barriers to obtaining MHS. Previous research has identified less availability of providers, lack of income or insurance and perceived stigma as barriers that prevent ethnic minority and low-income parents from obtaining needed MHS for their child (Garland et al., 2013). For those youth who did receive MHS, their parents may have entered the study's assessment for depression, although in a non-clinical setting, with preexisting concerns about emotional or behavioral problems in their child that previously initiated MHS. Given that past year MHS use also included school-based services, these parents may have also been alerted to their child's emotional or behavioral problems through school mental health staff. Stigma around disclosure of mental health problems may be reduced when parents have positive experiences with the mental health system, such as with mental health providers in school and other settings. Overall, this finding suggests that youth who have previously received MHS are more likely to have parents who agree with them in high symptom endorsement of core depressive symptoms. Thus, youth with chronic depressive symptoms that are not receiving MHS are more likely to have parents who under-report their depression, suggesting that parental recognition likely serves as an additional barrier to receiving needed MHS among youth.

Although the *depression-distortion hypothesis* (Ritchers & Pellegrini, 1989) has received extensive support in discrepancies research, parental depression was not associated with a bias towards indiscriminately perceiving children as being more depressed. This is contradictory to past research on the role of parental depression in informant discrepancies and suggests that Latino parents are not less accurate in their reporting due to their own psychological distress. Another possible explanation is that levels of parental depression in clinical samples is higher and that parents who have lower symptoms of depression themselves in community samples may not be as likely to misinterpret youth behaviors as problematic. Parental depression itself may also contribute to the initiation of MHS for youth in clinical samples, where youth report significantly lower levels of symptoms relative to their parents, and particularly when parents self-report elevated depression (e.g., Ehrlich et al. 2015). Studies examining the role of parental depression and stress in community samples have not yet identified the role of depression as a perceptual bias in endorsement of youth mental health problems. While De Los Reyes et al. (2008) found that parental depression predicted greater discrepancies in ratings of parental monitoring, with parents providing more negative ratings than children, Fung & Lau (2010) found that acculturative stress predicted parental under-reporting of youth internalizing problems relative to youth self-report. Consequently, parental over-reporting of symptoms as a function of parental distress may be less likely to be present among community samples of parents, or may operate differently than in clinical samples.

Sociocultural Predictors

The present study is the first in informant discrepancies to examine language and ethnicity within the same sample, and to do so with Latinos, who are the largest ethnic minority group in the U.S. (Federal Interagency Forum on Child and Family Statistics, 2015). Previous

research has consistently found that ethnic minority parents are more likely to under-report youth mental health problems relative to youth self-report (Lau et al., 2004; Roberts et al., 2005).

However, the vast majority (>70%) of parents in the present study were classified as having high levels of endorsement agreement, and child ethnicity (Latino vs. non-Latino) did not show any relation to endorsement agreement when entered individually or in the total sociocultural model. No differences were observed in youth ethnicity between the two chronicity risk groups, suggesting Latino parents were not more likely over or under-report youth symptoms, relative to parents of other ethnic groups. In addition, despite having relatively low levels of educational attainment, the majority of parents exhibited high agreement with their child in symptom endorsement and lower education was not associated with membership in the HCL class. These findings suggest that among youth with chronic depression in community settings, most low-income and Latino parents align with youth in the detection of core depressive symptoms.

Results revealed that when parental language was entered in the total sociocultural model, parents were more likely to belong to the HH class relative to the other two classes if interviewed in English. Therefore, parents who were interviewed in Spanish were more likely to under-report youth symptoms. However, this finding was only evident when the model included parental education and ethnicity. There are several potential explanations for the relation between parental language and class membership. When parents' primary language is Spanish, U.S. Latino youth may be more likely to experience communication gaps with their parents, and particularly when experiencing prolonged depression. Spanish-language use may also be a proxy for cultural variables more closely linked with parental perception and endorsement of depression. For example, Spanish-speaking parents may be less acculturated to U.S. culture. Within immigrant families, intergenerational differences in the process of acculturation are

common, with youth acculturating more readily than their parents (Berry, 2006). Thus, parents and children in these families may be most likely to show large disagreement in their endorsement of youth depression because they view them through different cultural lenses. In line with Weisz and colleagues' (1988) *adult distress threshold model*, Latino parents endorsing cultural values such as respect towards adults and familism likely have a higher threshold for conceptualizing youth internalizing problems as maladaptive.

Foreign-born and Spanish speaking parents may also have less exposure to Western conceptions about youth mental health, and may be less likely than youth to recognize a collection of behaviors as an indication of a serious mental health problem warranting treatment (Gudiño et al., 2008). Even when recognizing problems with depression in their child, these parents are less likely to disclose their child's problems because of perceived stigma (Chandra et al., 2009). Depressed low-income Latino immigrants are more likely to perceive stigma about depression than adults from other ethnic groups, and when doing so, are less likely to disclose their diagnoses to family or friends and to receive depression treatment (Vega, Rodriguez, & Ang, 2010). This may also apply to immigrant Latino parents when asked about the presence of core depressive symptoms in their child, and may lead to parents not endorsing symptoms they have previously identified. Future work could examine the role of cultural values and stigma to better understand the role that these factors exert on parent-child endorsement agreement among youth with chronic depression. In addition, given that parental language was not associated with parental under-reporting of youth depression when individually evaluated, further research is needed to clarify the role that parental language plays alongside other cultural factors in parental recognition of youth depression.

Conclusion

The present study is the first to utilize a sample of primarily Latino families, a group that has received limited attention in discrepancies research. Latino youth are an important group for discrepancies research given that they represent a growing population in the U.S. (Fry & Passel, 2009) and are at heightened risk for developing a depressive disorder (Merikangas et al., 2010). More generally, youth with internalizing problems are over 50% less likely to receive treatment relative to those with externalizing problems, with ethnic minority and immigrant youth exhibiting the lowest rates of service use (Gudiño et al., 2008; Gudiño et al., 2009). Findings suggest that, among our sample of chronically at-risk youth, most parents of low-income and ethnic minority backgrounds were aligned with their children in their levels of endorsed youth depressive symptoms.

At the same time, a substantial subgroup, roughly made up of one quarter of the sample, emerged that consisted of parents who appear to under-report relative to youth reports. This HCL class is a crucial group to target, and psychoeducation and school-based programs aimed at raising parental awareness about emotional and behavioral problems that parents have difficulty accurately detecting should be implemented. For example, parents in the HCL class may gain increased awareness through programs that address misconceptions about youth depression and treatment, as well as normalize depression. Earlier intervention is critical as the present study shows that about a quarter of youth with chronic depressive symptoms could go unnoticed. School-based assessments could help identify youth experiencing unrecognized internalizing problems, such as depression, that are often difficult for parents to recognize.

Methodological constraints and the nature of clinical assessment limit the extent to which researchers can determine which informant is more accurate, particularly for youth depression, a disorder which exhibits some of the lowest rates of parent-child agreement (Grills & Ollendick,

2003). Current best practices are to incorporate reports from multiple informants in order to gain a more comprehensive picture of the problems the child may be experiencing (Hunsley & Mash, 2007). Without a gold standard by which to determine which informant is correct, it is difficult to determine the extent to which problems are being under-identified by parents. To address this limitation, the present study utilized a sample of youth chronically at-risk for depression based on an independent measure of depression. Using primary depressive symptoms, two groups of youth were identified with similarly high likelihood of endorsing all core depressive symptoms, while one group of parents agreed with youth endorsement and another group under-identified youth symptoms.

Methods for calculating informant discrepancies have been largely limited to difference scores, which present interpretive and statistical difficulties (Laird & De Los Reyes, 2013). Addressing this limitation, exploratory LCA was used to examine patterns of agreement and disagreement in parent–child endorsement of core youth depressive symptoms. This person-centered approach also allowed for the identification of sub-populations, and beyond sample-level descriptions of the level of parent–child endorsement agreement. If the present study used difference scores to calculate endorsement discrepancies, parents could only be described as under-reporting their child’s depressive symptoms. Given that parental depression, an established predictor of informant discrepancies, was not associated with endorsement agreement classes suggests that future work using exploratory LCA should reevaluate previously identified predictors of parent–child discrepancies.

Limitations and Future Research

Primary depressive symptoms were used to determine patterns of agreement in parent–child endorsement of youth depressive symptoms given their central role in the phenomenology

and diagnosis of depression. However, secondary depressive symptoms may have revealed distinctive latent classes from those derived with parent–child endorsement of primary depressive symptoms. Future research should examine specific clusters of secondary symptoms to determine whether critically important items such as suicidal ideation predict class membership.

Inclusion in the present study required youth to be at chronic risk for depression, based on elevated CDI scores of 9 points or greater. Thus, although the sample is non-clinical, youth were more likely to report higher levels of depressive symptoms and impairment given eligibility criteria. However, given that informant discrepancies have been examined to a greater extent in clinical samples, the present study extends informant discrepancies research by focusing on ethnic minority youth in community settings, who have the highest levels of unmet need in MHS for depression.

Future work should use a more nationally representative sample of youth with larger proportions of other ethnic groups. Given that the sample was primarily Latino, the study lacked statistical power to examine class membership similarities and differences across ethnic groups. Future research using a sample inclusive of other ethnicities should build and expand on the present study, specifically clarifying the role of ethnicity and culture relative to other established predictors of informant discrepancies (e.g., parental stress) on parent and child endorsement of youth depression.

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Table 1.

Demographic and Clinical Characteristics of Parents and Youth by Chronicity Risk Groups

	IRG (N=129)	CRG (N=184)	t/X2
Age, years mean (SD)	12.4 (1.0)	12.3 (1.0)	-1.2
Gender (% female)	36.4	63.6	4.2*
Ethnicity (%)			1.3
Latino	80.6	79.3	
African American	7.0	10.3	
European American	2.3	1.6	
Mixed	10.1	8.7	
Parent nativity (% U.S. born)	32.6	35.9	0.4
Family income (% ≥ \$40,000)			
Parent education (% ≥ Post-Secondary)	62.0	71.2	2.9
CDI mean (SD)			
Time 1	13.1 (5.6)	18.8 (6.5)	7.5**
Time 2	5.4 (3.1)	16.3 (6.8)	17.1**

Note. * $p < .05$, ** $p < .001$.

Table 2.

*Model Fit Indices for One- to Four-Class Solutions of Parent–Child Endorsement of Youth**Primary MDD Symptoms (N=184)*

	BIC	Adj. BIC	AIC	BLMR-LR	Entropy
1 class	1473.02	1454.02	1453.73	n/a	n/a
2 classes	1428.92	1387.74	1387.12	78.46*	1.0
3 classes	1445.65	1382.31	1381.35	19.24*	0.81
4 classes	1474.92	1389.40	1388.12	7.05	0.79

Note. AIC=Akaike Information Criterion; BIC=Bayesian Information Criterion; Adj. BIC=

Sample Size-Adjusted Bayesian Information Criterion; BLMR-LR = Bootstrapped Lo-Mendell

Rubin Likelihood Ratio.

* $p < .05$.

Table 3.

Conditional Probabilities for Endorsing Primary MDD Depressive Symptoms by Class

	Low Endorsement High Agreement (LH) Class (34.8%)	High Child Endorsement Low Agreement (HCL) Class (28.3%)	High Endorsement High Agreement (HH) Class (37.0%)
Child report			
Depressed Mood	.20	1.00	.57
Anhedonia	.32	.62	.63
Irritability	.57	.85	.84
Parent report			
Depressed Mood	.00	.28	1.00
Anhedonia	.14	.00	.60
Irritability	.38	.38	.80

Table 4.

Multinomial Logistic Regression Analyses for Covariate Predictors of Endorsement Agreement Classes

	LH Class				HCL Class			
	<i>B</i>	<i>SE</i>	<i>Wald</i>	<i>Exp (B)</i>	<i>B</i>	<i>SE</i>	<i>Wald</i>	<i>Exp (B)</i>
Gender	0.29	0.37	0.65	1.40	0.04	0.39	0.01	1.04
(Male = 1, Female = 2)								
Age	-0.30	0.17	3.06	0.74	0.02	0.18	0.01	1.02

Note. Reference Group = High Endorsement High Agreement (HH) Class. LH = Low

Endorsement High Agreement Class, HCL= High Child Endorsement Low Agreement Class.

Table 5.

Multinomial Logistic Regression Analyses for Youth-Endorsed Diagnostic Predictors of Endorsement Agreement Classes

	LH Class				HCL Class			
	<i>B</i>	<i>SE</i>	<i>Wald</i>	<i>Exp (B)</i>	<i>B</i>	<i>SE</i>	<i>Wald</i>	<i>Exp (B)</i>
<u>Individual Predictors</u>								
Secondary Symptoms	-0.10	0.06	2.82	0.91	0.07	0.06	1.34	1.07
DSF Impairment	-0.74*	0.34	4.80	0.48	0.47	0.31	2.39	1.61
GF Impairment	-0.29	0.09	10.52	0.75	-0.22	0.09	6.23	0.80
<u>Total Model</u>								
Secondary Symptoms	-0.04	0.07	0.39	0.96	0.04	0.07	0.29	1.04
DSF Impairment	-0.48	0.41	1.39	0.62	0.49	0.39	1.60	1.63
GF Impairment	-0.07	0.08	0.68	0.93	-0.05	0.09	0.32	0.95

Note. Reference Group = High Endorsement High Agreement (HH) Class. LH = Low

Endorsement High Agreement, HCL= High Child Endorsement Low Agreement Class, DSF

Impairment = Domain-Specific Functional Impairment, GF Impairment = Global Functional

Impairment.

* $p < .05$.

Table 6.

Multinomial Logistic Regression Analyses for Parent-Endorsed Diagnostic Predictors of Endorsement Agreement Classes

	LH Class				HCL Class			
	<i>B</i>	<i>SE</i>	<i>Wald</i>	<i>Exp (B)</i>	<i>B</i>	<i>SE</i>	<i>Wald</i>	<i>Exp (B)</i>
<u>Individual Predictors</u>								
Secondary Symptoms	-0.30**	0.07	16.30	0.74	-0.38**	0.09	17.69	0.68
DSF Impairment	-1.10*	0.34	10.29	0.33	-0.98*	0.35	7.72	0.38
GF Impairment	-0.29*	0.09	10.52	0.75	-0.22*	0.09	6.23	0.80
<u>Total Model</u>								
Secondary Symptoms	-0.25*	0.09	7.81	0.78	-0.40**	0.11	13.32	0.67
DSF Impairment	0.01	0.49	0.00	1.01	0.25	0.53	0.22	1.28
GF Impairment	-0.15	0.12	1.61	0.86	-0.06	0.12	0.21	0.95

Note. Reference Group = High Endorsement High Agreement (HH) Class. LH = Low

Endorsement High Agreement, HCL= High Child Endorsement Low Agreement Class, DSF

Impairment = Domain-Specific Functional Impairment, GF Impairment = Global Functional

Impairment.

* $p < .05$, ** $p < .001$.

Table 7.

*Multinomial Logistic Regression Analyses for Clinical Predictors of Endorsement Agreement**Classes*

	LH Class				HCL Class			
	<i>B</i>	<i>SE</i>	<i>Wald</i>	<i>Exp (B)</i>	<i>B</i>	<i>SE</i>	<i>Wald</i>	<i>Exp (B)</i>
<u>Individual Predictors</u>								
Externalizing Problems	-0.10**	0.03	12.67	0.90	-0.09**	0.03	9.46	0.91
Parental Depression	-0.97*	0.46	4.53	0.38	-0.50	0.43	1.32	0.61
Past year MHS use	-1.33*	0.42	9.87	0.27	-0.85*	0.41	4.25	0.43
(Use = 1, No Use = 2)								
<u>Total Model</u>								
Externalizing Problems	-0.08*	0.03	6.35	0.93	-0.08*	0.03	6.67	0.92
Parental Depression	-0.70	0.47	2.22	0.50	-0.29	0.44	0.44	0.75
Past year MHS use	-0.86	0.46	3.56	0.42	-0.38	0.45	0.71	0.69
(Use = 1, No Use = 2)								

Note. Reference Group = High Endorsement High Agreement (HH) Class. LH = Low

Endorsement High Agreement, HCL= High Child Endorsement Low Agreement Class.

* $p < .05$, ** $p < .001$.

Table 8.

*Multinomial Logistic Regression Analyses for Sociocultural Predictors of Endorsement**Agreement Classes*

	LH Class				HCL Class			
	<i>B</i>	<i>SE</i>	<i>Wald</i>	<i>Exp (B)</i>	<i>B</i>	<i>SE</i>	<i>Wald</i>	<i>Exp (B)</i>
<u>Individual Predictors</u>								
Parental education	-0.01	0.12	0.00	1.00	0.08	0.13	0.37	1.08
Parental language (English =1, Spanish = 2)	-1.06**	0.36	8.60	0.35	-0.63	0.37	2.88	0.53
Youth ethnicity (Latino = 1, Non-Latino = 2)	-0.31	0.51	0.42	0.72	-0.70	0.51	1.90	0.50
<u>Total Model</u>								
Parental education	0.23	0.15	2.42	1.29	0.22	0.15	2.09	1.25
Parental language (English =1, Spanish = 2)	-1.41**	0.43	10.84	0.25	-0.99*	0.44	5.03	0.37
Youth ethnicity (Latino = 1, Non-Latino = 2)	-0.31	0.53	0.34	0.74	-0.64	0.52	1.49	0.53

Note. Reference Group = High Endorsement High Agreement (HH) Class. LH = Low

Endorsement High Agreement, HCL= High Child Endorsement Low Agreement Class.

* $p < .05$, ** $p < .001$.

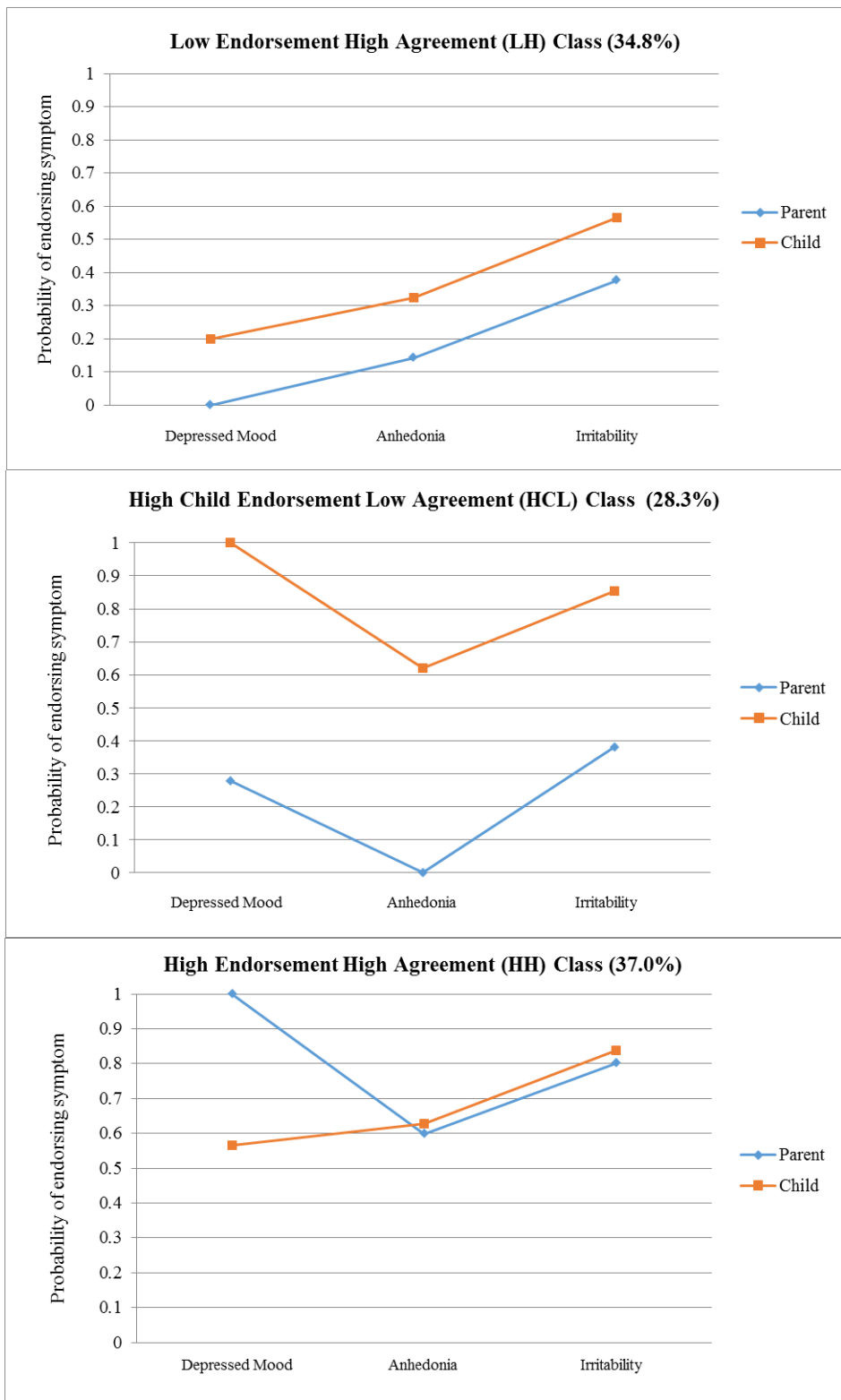


Figure 1. Depiction of LCA-Derived Parent–Child Endorsement Agreement Classes (N=184).