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Developmental Trajectories of Maladaptive Perfectionism among African American Adolescents

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Abstract

The present study examined the developmental trajectories of maladaptive perfectionism over a seven-year period among African American youth living in an urban setting ($N=547$). In particular, the study attempted to determine whether two maladaptive aspects of perfectionism (socially-prescribed and self-critical) changed over time and could be distinguished by variables in 6th and 12th grade (mean age at study entry (first grade) was 6.22 years ($SD = 0.34$)). Four classes best described the developmental trajectories on both measures of maladaptive perfectionism: high; low; increasing; and decreasing. Sixth and twelfth grade correlates, including measures of internalizing symptoms mostly confirmed the distinctiveness of these classes. Parallel process analyses suggested that the two processes are complementary, yet distinct. Implications regarding the prevention of maladaptive perfectionism are discussed.

Keywords

adolescents; African American; maladaptive; perfectionism

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Over the past two decades evidence has accumulated suggesting that perfectionism is a multidimensional construct (Stoeber & Otto, 2006). Investigation into the multiple dimensions of perfectionism has mostly focused on distinguishing two higher order perfectionism factors—positive- adaptive and negative-maladaptive—and the association of maladaptive perfectionism with various psychological disorders (Bieling, Israeli, & Antony,

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2004; Frost, Heimberg, Holt, & Mattia, 1993). Increasing numbers of studies with adolescents support the association of maladaptive perfectionism with depression (Huggins, Davis, Rooney, & Kane, 2008), anxiety (Essau, Leung, Conradt, Cheng, & Wong, 2008; O'Connor, Rasmussen, & Hawton, 2010), suicidal ideation (Jacobs, Silva, Reinecke, Curry, Ginsburg, Kratochvil, & March, 2009), eating disorders (Boone, Soenens, Braet, & Goossens, 2010), and obsessive-compulsive disorder (Ye, Rice, & Storch, 2008).

Among the various conceptualizations of perfectionistic dimensions, Hewitt and Flett's (1991) framework, which focuses on the interpersonal origins of perfectionism, has received much attention. In particular, they differentiated perfectionistic expectations that originated from one's self (Self-Oriented Perfectionism; SOP) from those that were perceived as coming from others (Socially Prescribed Perfectionism; SPP). SPP has been particularly associated with higher levels of anxiety, depression, and interpersonal problems (Klibert, Langhinrichsen-Rohling, Saito, 2005). In contrast, researchers have found that SOP, initially viewed as a negative aspect by Hewitt & Flett (1991), relates to positive outcomes as well (e.g., Bieling, Israeli, Smith & Anthony, 2003; Cox, Enn, & Clara, 2002). More recently, using the Child and Adolescents Perfectionism Scale (CAPS; Flett, Hewitt, Boucher, Davidson, & Munro, 2000), two factors have been differentiated within SOP—striving and critical, which better distinguish the adaptive and maladaptive components (McCreary et al., 2004; O'Connor et al., 2009). The critical factor (SOP-C) is associated more strongly with depression and anxiety (McCreary et al., 2004; Rice & Ashby, 2007; Wang, Slaney, & Rice, 2007). The primary hypothesized mechanisms by which SOP-C and SPP lead to internalizing symptoms include cognitive discrepancies (between perceived and desired self), interpersonal distress, and achievement-related stress (Hewitt, Flett, & Ediger, 1996; Rice, Ashby, Slaney, 1998).

Despite the convincing evidence of the impact of maladaptive perfectionism on mental health (see Shafran & Mansell, 2001, for review), there is relatively little information on how maladaptive perfectionism develops over time. Only a handful of studies have measured perfectionism across different time points (Cox & Enns, 2003; Nilsson, Sundbom, & Hagglof, 2008; O'Connor et al., 2009; Rice & Aldea, 2006). Results from these four studies suggested that overall perfectionism is a relatively stable trait, though there could be some levels of changes over periods of time. In other words, evidence exists pointing to more *relative stability* (relative differences among individuals remained consistent over time) and less so for *absolute stability* (mean group score consistencies over time) in perfectionism levels over time (Cox & Enns, 2003; Rice & Aldea, 2006).

Importantly, available evidence suggests that perfectionism may be malleable in response to intervention (Arpin-Cribbie et al., 2008; Hawley, Ho, Zuroff, & Blatt, 2006). Arpin-Cribbie et al. found that exposure to a web-based intervention predicted decreases in perfectionism among college students over a ten-week period. Two other studies found that perfectionism decreased along with the level of depression over time with psychotherapy (Hawley et al.; Zuroff et al.).

It is worth noting that all these studies examining perfectionism stability and response to intervention used aggregated sample data, which does not take into account possible individual or subgroup variations over time. In other words, perfectionism qualities may be more stable for some groups than others. This may be especially true during adolescence as personalities and self-perceptions are becoming crystallized. For instance, some youth may have stable, low self-critical perfectionism beliefs throughout adolescence whereas others may experience an increase in these beliefs over time in response to significant development transitions such as entry into middle school or high school. Existing studies have not considered person-centered developmental variations such as this. In addition, all existing

studies have either examined perfectionism changes within a short period of time (less than one year) or only compared perfectionism differences across two or three time points. A more nuanced examination of the development of maladaptive perfectionism would examine these qualities over the course of adolescence. Such analyses could guide future prevention efforts by identifying youth most at risk for adverse outcomes related to maladaptive perfectionism at key developmental points.

Moreover, a developmental approach would also identify potential precursors to perfectionism profiles. Flett and colleagues' (2002) integrated model of perfectionism attempted to specify the origins of maladaptive SOP-C and SPP. Although their model places great emphasis on child temperament and early parent-child interactions, Flett et al. hypothesized that perfectionism was influenced and shaped by environmental pressures over the course of development. In particular, they hypothesized that adolescence was a critical period for understanding socially-prescribed (SPP) as well as self-critical (SOP-C) aspects of perfectionism given the heightened self-consciousness and increasing social evaluations that occur during this developmental stage. They emphasized three aspects of the social field that could influence the early adolescent's emerging perfectionism patterns: peers, teachers, and cultural context. It is not entirely clear from their model, however, if environmental influences during adolescence could actually alter perfectionism patterns and trajectories or if they merely served to exacerbate pre-existing tendencies. This is a critical question for research given that evidence of absolute instability would contradict a strict trait perspective on perfectionism and instead suggest it may be better understood as a malleable characteristic, responsive to environmental manipulations during adolescence.

Although Flett and colleagues (2002) highlighted peers, teachers, and culture as key influences on adolescent perfectionism, they only vaguely described elements of these domains. On the other hand, Cole and colleagues' competency model explains specific pathways by which peers and teachers affect youths' emerging sense of self and their own performance standards. They have found that performance and feedback from peers and teachers in social and academic spheres leave lasting impressions on youth self-beliefs and ultimately their mood (Cole, Jacquez, & Maschman, 2001). Not surprisingly, youth with academic or social deficits or with problems known to interfere with academic and social success (such as depression, attention problems, or defiant behaviors) are more likely to develop negative self-perceptions and expectations (Herman & Ostrander, 2007; Ostrander & Herman, 2006).

Missing from both the integrated model of perfectionism and the competency model of depression, however, are explanations about the role of other dimensions of culture including race or ethnicity. Emerging evidence has suggested that perfectionism types may vary across cultural contexts (e.g., Wang, Slaney, & Rice, 2007). Equally likely, though understudied to date, some precursors of maladaptive self-beliefs may also be contingent upon cultural dimensions. For instance, experiences with racism may undermine children's sense of personal agency which contributes to negative self-beliefs in youth from non-majority groups (Lambert, Herman, Bynum, & Ialongo, 2009).

African American youth, in particular, have been underrepresented in studies on perfectionism types and origins. A few past studies have compared African Americans with Whites and other ethnic groups (Castro & Rice, 2003; Chang, Watkins, & Banks, 2004; Nilsson, Paul, Lupini, & Tatem, 1999; Rice, Tucker, & Desmond, 2008) and found some differences such as African Americans having higher levels of SOP, but not SPP, than White students. A recent study with African American youth from low income backgrounds suggested that the two types of maladaptive perfectionism may not be needed to differentiate perfectionism types for these youth (Herman et al., 2011). That is, SOP-C and SPP were

nearly identical within each of the four identified classes suggesting that they may represent overlapping aspects of perfectionism in this population.

The Unified Theory of Depression provides a conceptual framework for understanding how perfectionism related processes may vary for African American youth, especially those living in disadvantaged conditions (Hammack, 2003). Hammack integrated four conceptual traditions into a macrotheory explaining depression among urban African American youth. The Unified Theory identifies experiences with oppression as the core construct. That is, historical oppression (forced migration, enslavement, cultural marginalization) predisposes urban African American adolescents to experience detrimental environmental contexts (racism, alienation from culture) that set the stage for enduring physiological burden (chronic stress), maladaptive self-beliefs (internalized racism, helplessness, hopelessness), and depressive symptoms. Consistent with the Unified Theory, Herman et al. (2011) found a unique perfectionism type among urban, disadvantaged African American youth, one marked by extreme absence of striving. This pattern of perfectionism, as expected, was associated with low levels of perceived control and high levels of depression. The authors speculated that this pattern of perfectionism may only emerge under conditions of extreme oppression, disadvantage, or both, as it had not been reported in any other prior sample. In a separate study, Herman and colleagues (2007) found that critical perfectionism beliefs predicted depressive symptoms in African American and European American adolescents but suggested the origins of those beliefs might vary by cultural group. For instance, perfectionism beliefs mediated the effects of family conflict on depression in European Americans whereas only family cohesion had direct and unmediated effects on depression in African American, leaving the origins of maladaptive perfectionism in this group unexplained.

Although research suggests that perfectionism patterns are fairly consistent across sexes, the competency model used to specify peer and teacher influences in this study would suggest continued examination of possible sex differences. Females are more prone to adopt certain academic and social attributional biases during adolescence which in turn may influence perfectionism patterns (Frey & Ruble, 1987). For instance, they tend to focus on their low ability in explaining failure experiences which could lead to stable or increasing critical perfectionism.

Present Study

This study examines the developmental trajectories of maladaptive perfectionism in a group of African American urban adolescents during the time period between 6th and 12th grades. This study's main goal was to (a) examine the natural progression of two maladaptive perfectionism beliefs and their degree of malleability during this developmental period. In addition, we were interested in determining (b) which developmental precursors in 6th grade distinguished the different trajectories; and (c) what outcomes were associated with any identified trajectories. Finally, we examined (d) the conditional probabilities of co-occurring SPP and SOP-C trajectories and their associated risk for adverse outcomes.

First, based on Flett et al.'s (2002) integrated model, we hypothesized that one or more trajectories of both processes would be characterized by change (either increasing or decreasing) rather than stability, highlighting adolescence as a period of influence over perfectionism patterns. Second, in line with the competency model and Unified Theory described above, we hypothesized that social, emotional, or academic deficits and cultural risk factors in 6th grade would predict different perfectionism patterns. In particular, we expected emotional symptoms, negative self-perceptions, shyness, inattention, academic skill deficits, and community context (neighborhood risk or exposure to racism) to

distinguish perfectionism trajectories. Third, we predicted trajectories with stable, high and increasing patterns of SOP-C and SPP would predict internalizing symptoms and disorders in 12th grade, given the established links between maladaptive perfectionism and depression and anxiety (Klibert et al., 2005; Rice & Ashby, 2007). Finally, given the lack of prior studies, we did not have a specific hypothesis about the joint probabilities or the combined risks of SPP and SOP-C profiles. Our research question pertaining to the parallel process analyses was whether combinations of maladaptive perfectionism trajectories conferred greater risk for adverse outcomes relative to either process alone (e.g., would youth in high or increasing classes on both processes have worse outcomes than youth in high or increasing classes on one process).

We used the same sample of children as the McCreary et al. (2004) and Herman et al. (2011) studies to capitalize on their prior work in determining the sample-specific factor structure of the CAPS for these children. Because their primary interest was in the factor structure and single time-point classification of perfectionism types, McCreary et al. and Herman et al. did not attempt to model perfectionism beliefs over time. Two aspects of the current manuscript are unique compared to any prior study. First, this is the first study, to our knowledge, to determine the growth of perfectionism beliefs over a seven-year period of adolescence. Second, it is the first study to assess predictors and outcomes of perfectionism trajectories over the same developmental period. We focused on 6th grade predictors of perfectionism types because middle school entry represents a critical developmental transition (Kellam & Rebok, 1992) and can set in motion the processes that we expected to contribute to maladaptive aspects of perfectionism.

Method

Participants

Data were drawn from a longitudinal study conducted by the Prevention Intervention Research Center (PIRC) at Johns Hopkins University (JHU). The original study population consisted of a total of 678 children and families, representative of students entering first grade in nine Baltimore City public elementary schools (Ialongo et al., 1999). Ninety-seven percent of parents in these schools provided informed consent for their child's participation. In first grade, children provided verbal assent and, in later follow-ups that occurred during secondary school, they provided their written consent. The children were recruited for participation in two school-based, preventive, intervention trials targeting early learning and aggression (Ialongo et al., 1999). Three first grade classrooms in each of the nine elementary schools were randomly assigned to one of the two intervention conditions or a control condition. The interventions were provided over the first grade year, following a pretest assessment in the early fall. We examined and controlled for intervention effects in predictor and outcome analyses described below.

Six hundred sixty-one children participated in the intervention trial in the Fall of 1993 and completed one or more assessments through grade 12. Eighty-nine percent ($n = 585$) of these children were African American and the majority were from low-income families (over 60% qualified for free- or reduced-lunch at school). Analyses for this study focused on African American children who enrolled in the study in 1st grade and who completed one or more assessments during the spring of 6th through 12th grade ($N=547$). African American children who completed 6th to 12th grade assessments did not significantly differ from the African American children who did not on measures of self-reported depression, teacher-rated attention problems, or academic achievement scores collected during fall of 1st grade (p s < .05). As an indicator of low socioeconomic status, 73% of the sample for the present study received free lunch or reduced lunches according to parent report in the fall of 1st

grade. This percentage did not significantly differ for those who completed 6th to 12th grade assessments and those who did not ($ps < .05$).

Measures: Class Indicators

Child and Adolescent Perfectionism Scale (CAPS)—Perfectionism was assessed using the Child and Adolescent Perfectionism Scale (CAPS) developed by Flett, Hewitt, Boucher, Davidson, and Munro (1997). The CAPS scale assesses one's perfectionistic beliefs and their source (self- or other-prescribed). Youth rated the extent of their agreement with each item of the 22 items on a five-point scale from 1 (“false--not at all true of me”) to 5 (“very true of me”). In their factor analysis, McCreary and colleagues (2004) found 3 factors best captured the 6th grade responses of the African American youth in this study. The factors and corresponding α s were as follows: Self-Oriented Striving (.58), Self-Oriented Critical (.66), and Socially-Prescribed (.85). Items on the SOP-C scale include: “I get mad at myself when I make a mistake;” and “I get upset if there is even one mistake in my work.” SPP items include: “There are people in my life who expect me to be perfect;” and “People expect more from me than I am able to give.” After 6th grade, the Striving subscale was dropped from the study; thus, youth only provided data on the two maladaptive subscales: Critical and Socially-Prescribed.

Measures: Class Predictors (6th grade) and Outcomes (12th grade)

Depressive and Anxious Symptoms—The *Baltimore How I Feel-Young Child Version, Child Report* (BHIF-YC-C; Ialongo, Kellam, & Poduska, 1999) is a child self-report scale of depressive and anxious symptoms. Students completed the BHIF-YC-C in Spring of 6th and 12th grade. The internal consistency for the BHIF-YC-C 14-item Depression subscale was .70 in 1st grade, and .75 in 3rd grade. Two-week test-retest reliability coefficients have ranged from .60 in first grade to .70 in middle school (Ialongo, Kellam, & Poduska, 1999). The 6-month, test-retest correlation coefficient in 1st grade for the BHIF-YC-C Depression subscale was .31, reasonable stability given the fluctuating nature of the construct. In terms of concurrent validity, for each standard deviation increase in BHIF-YC-C Depression subscale scores in 1st grade, there was a 3-fold and statistically significant increase in the likelihood of the child's parent reporting that the child was in need of mental health services for “feeling sad, worried or upset.” Data from the first generation PIRC datasets revealed that child self-reports on the BHIF Depression subscale during elementary school predicted report of a lifetime suicide attempt (O.R. = 2.38, C.I. = 1.30-4.25) and a diagnosis of a lifetime episode of Major Depressive Disorder (O.R. = 1.84, C.I. = 1.16-2.92) up to age 20.

Major Depressive Disorder Diagnoses—The *Diagnostic Interview Schedule for Children-IV* (DISC-IV; Shaffer, Fisher, Lucas, Duncan, & Schwab-Stone, 2000) is a structured clinical interview that yields Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV, American Psychiatric Association, 1994) diagnoses, as well as a symptom count for each disorder. Prior studies suggest the DISC has adequate test-retest reliability and validity (see Shaffer et al., 2000). The DISC-IV's Major Depressive Disorder (MDD) module was administered to youth in grades 6 to 12. At each annual assessment, youth were asked about any mood episodes that may have occurred over the prior year. Given the relatively low incidence of diagnoses within a given year, we aggregated across the seven years and assigned youth a 1 if they ever met MDD criteria during that period and a 0 if they did not.

Perceived Control—Perceived control was assessed using the 18-item *Control-Related Beliefs (CRB)* scale developed by Weisz and colleagues (Weisz, Sweeney, Proffitt, & Carr, 1993; Weisz, Southam-Gerow, & McCarty, 2001). The CRB scale assesses beliefs about

one's ability to exert control over outcomes in academic, social, and behavioral domains. It has demonstrated relations with depressive symptoms and low perceived personal competence, another type of control-related belief, and also with perceived non-contingency of outcomes (Weisz et al., 1993). Youth respond to each item using a four point scale ranging from 1 ("not at all true") to 4 ("very true"). Weisz et al. (2001) reported an α of .88 for total CRB scores; in our sample the α for total scores was .76. Using data from the PIRC trial, Lambert et al. (2009) reported that scores on the CRB mediated the relations between racism experiences and depression for African American youth.

School Behaviors and Symptoms—*Teacher Observation of Classroom Adaptation-Revised (TOCA-R;* Werthamer-Larsson, Kellam, & Wheeler, 1991). Teacher ratings of shyness and attention problems were obtained in the spring semester of the sixth and twelfth grade using the TOCA-R (Werthamer-Larsson, Kellam, & Wheeler, 1991). The TOCA-R was developed and employed by the JHU PIRC in the evaluation of the 1st and 2nd generation JHU PIRC trials, and thus was validated on African American youth living in urban settings. The TOCA-R asks teachers to respond to 43-items pertaining to the child's adaptation to classroom task demands over the last three weeks. Adaptation is rated by teachers on a six-point frequency scale (1 = almost never to 6 = almost always). Each subscale is reported as a mean score of all items. Items for the subscales were largely drawn from the DSM-III, III-R and IV. The Shy subscale includes four-items that measure social avoidance or low social participation ("Avoided classmates", "Stayed to him/herself"). The Attention Problems (Inattention) subscale has nine items (e.g., "pays attention," "easily distracted"). Test-retest correlations over a four month interval were .60 or higher for each of these subscales, whereas the coefficient α s ranged from .80 to .94 for all subscales. The α s for the TOCA-R subscales were .83 (Shyness) and .97 (Attention Problems).

Academic Competence—*Kaufman Test of Educational Achievement-Brief and Comprehensive Forms* (Kaufman & Kaufman, 1998). The K-TEA is an individually administered diagnostic battery that measures reading, mathematics, and spelling skills. The brief form of the K-TEA is designed to provide a global assessment of achievement in each of the latter areas. In the present study, we employed the Reading (reading decoding and comprehension) sub-test from the brief form in grade 6. The K-TEA Math Computation test was not administered in grade 6 in light of initial concerns over the length of the overall battery. Both forms provide age and grade-based standard scores, grade equivalents, percentile ranks, normal curve equivalents, and stanines. The K-TEA norms are based on a nationally representative sampling of over 3,000 children from grades 1-12.

Neighborhood Disorder—The Neighborhood Environment Scale (NES; Elliot et al. 1985) was used to assess neighborhood disorder. The NES is a measure of neighborhood disorganization, including questions about violent crime (e.g., "Every few weeks, some kid in my neighborhood gets beat up or mugged.") and drug use and sales (e.g., "I have seen people using or selling drugs in my neighborhood."). Youth rate each item on a 4-point Likert scale (1 = not at all; 4 = very much) and higher scores indicate greater neighborhood disorganization (10 items, α = .86). Studies with youth in the PIRC trials show that the NES predicts meaningful youth outcomes such as drug use in African American youth (Crum et al., 1996).

Racism—Seven items drawn from the Racism and Life Experiences Scales (RaLES; Harrell, 1997) were used to assess experiences with racism and discrimination. The RaLES assesses how often youth have experienced racism or negative events associated with his or her race (e.g., "How often have you been ignored, overlooked, or not given service in a restaurant, store, etc?"; "How often have you been treated rudely or disrespectfully because

of your race?”). Youth respond to each item using a six-point frequency scale (1 = “never,” 2 = “less than once a year,” 3 = “a few times a year,” 4 = “about once a month,” 5 = “a few times a month,” 6 = “once a week or more”). A summary score may be created by taking the mean of the seven items, and higher scores indicate more experiences with racism. In this sample, mean summary scores ranged from 1.00 to 5.57 ($M = 1.78$) in grade 7, the first year this scale was administered. Coefficient α for the 7-item scale was .88. In terms of concurrent validity, the RaLES correlates positively with conceptually similar measures including the Index of Race-Related Stress (Utsey & Ponterotto, 1996) which assesses stress experienced due to racism and discrimination. Lambert et al. (2009) reported that scores on the RaLES scores in 8th grade predicted depression in 10th grade for PIRC participants. Criterion validity was demonstrated by evidence that in each of grades 8, 9, and 10, African American participants in the PIRC study reported significantly more experiences with racism and discrimination on the RaLES than White participants (Lambert et al., 2009).

Statistical Methods

Growth Mixture Modeling—Growth mixture modeling (GMM) using the Mplus version 6 statistical software package (Muthén & Muthén, 2009) was used to identify patterns of growth in SPP and SOP-C over time. The analysis occurred in several stages. In the first stage, separate analyses were conducted for SPP and SOP-C to determine the need for growth parameters, the number of trajectory classes, and the shape of growth within the trajectories. The observed indicators for SPP and SOP-C included annual youth reports of SPP in grades 6 to 12. Time was treated as a fixed parameter in the models based on the spacing between assessment sessions. All analyses used automated multiple starting values in the optimization to reduce the risk that solutions represent local rather than global optima.

Before mixture modeling, unconditional latent growth curve (LGC) models (without covariates) were estimated to determine the shape of the trajectories that would provide guidelines for subsequent analyses. The next step in the analysis was to fit the conditional LGC model by including the covariate measures at baseline.

The GMM analyses were then conducted and based on the conditional LGC models (i.e., included growth indices). To determine the relative fit of the models for varying numbers of classes, we used the most accepted and widely cited methods (Bauer & Curran, 2003; Muthén, 2003). First, we compared models with differing numbers of classes using the Bayesian information criterion (BIC; Schwartz, 1978) and the sample-size adjusted BIC (aBIC; Sclove, 1987). Additionally, we used a likelihood difference test, the Lo-Mendel-Rubin (LMR; 2001) which assesses the fit between two nested models that differ by one class. We conducted a recently developed Parametric Bootstrap Likelihood Ratio Test (LRT) (Mplus 6) on the final class solution testing to determine whether the selected class model was statistically better than the solution with one less class. Mplus computes loglikelihood values for the final class solution (k) and for the solution with one less class ($k-1$) which in turn are used to calculate LRTs for each bootstrap draw. The initial solution is compared to the distribution of statistics generated from the bootstrap draws to compute a p -value; p -values less than .05 indicate that the solution with k classes offered significantly better fit than the $k-1$ solution. In addition, we evaluated the classification precision as indicated by estimated posterior class probabilities, summarized by the entropy measure (Ramaswamy, DeSarbo, Reibstein, & Robinson, 1993). Finally, models with varying numbers of classes were evaluated and compared according to substantive utility, distinctiveness, and interpretability of the resultant class sets.

Once the appropriate number of trajectories was determined for each GMM, these classes were used to predict distal outcomes by means of latent class regression analysis (Guo,

Wall, & Amemiya, 2006) and examination of the odds ratio estimates. Each outcome was modeled separately.

To examine the relations between the two separate mixture models, parallel process GMM was used. The parallel process model was used to estimate the probability of each individual being in a class for each of the two growth processes. These individual class probabilities provided a cross-classification of the two sets of growth mixtures. In other words, the two growth mixtures (SOP-C and SPP trajectories) were modeled simultaneously rather than as a single process with multiple indicators, enabling us to examine which trajectories individuals were associated with across both growth processes (self-critical and social prescribed perfectionism) during the same time frame.

Missing Data—The Mplus software uses full information maximum likelihood estimation under the assumption that the data are missing at random (Arbuckle, 1996; Little, 1995), which is a widely accepted way of handling missing data (Muthén & Shedden, 1999; Schafer & Graham, 2002). Overall, 82% of the participants had at least five of the seven assessment time points from Grades 6 to 12. The minimum covariance coverage recommended for reliable model convergence is .10 (Muthén & Muthén, 2009). In this study, coverage ranged from .76 to .91, well within the recommended range. Moreover, for 6th grade predictors, 100% of participants completed the BHIF-Depression and Anxiety scales, CRB scale, and the K-TEA; 98% of participants had teacher-rated TOCA scores. For 12th grade outcomes, 100% of participants had MDD diagnostic data; 92% completed the BHIF scales.

Results

Unconditional Latent Growth Curve Modeling

The correlation matrix for all study variables is given in Table 1. As a preliminary step to determine the shape and trajectories of growth processes, we conducted unconditional latent growth curve (LGC) modeling on the single growth trajectories for both Socially Prescribed Perfectionism (SPP) and Self-Oriented Critical Perfectionism (SOP-C) from grades 6-12. Fit indices for the LGC revealed that intercept, slope, and quadratic trends were evident in both the SPP and SOP-C models. Including a slope parameter significantly improved the fit over that of the intercept model for both SPP ($\Delta\chi^2(3) = 71.27$; $p < 0.001$) and SOP-C ($\Delta\chi^2(3) = 39.99$; $p < 0.001$) models. The addition of the quadratic term further improved the model for each (SPP: $\Delta\chi^2(4) = 99.60$; $p < 0.001$; SOP-C: $\Delta\chi^2(4) = 76.57$; $p < 0.001$; respectively). Additionally, all estimated values of the intercept, slope, and quadratic growth factors were significantly different from zero, suggesting individual differences in pathways of SPP and SOP-C.

Determination and Description of Latent Growth Classes

Next, we conducted General Mixture Modeling (GMM) using Mplus 6 to identify patterns of growth within each process. The GMM is an extension of the conditional LGC models formed by adding a latent categorical variable. As described in the Analysis subsection, to determine the best-fitting GMM model, we considered the BIC, aBIC, and LMR indices, with the smaller value indicating a better fit model. In addition, entropy was examined. Entropy values close to 1.0 indicate higher classification precision. We then included class prevalence and interpretability (the extent to which an additional class provided unique information) as additional criteria while selecting the best-fitting models. Finally, we conducted a Parametric Bootstrap LRT to confirm that the selected model provided a statistical significant better fit than the model with one fewer classes; p-values below .05 on this test indicate that the loglikelihood differences favoring models with k versus k-1 classes

were unlikely to have occurred by chance. Initial runs were conducted in which all growth parameters were allowed to vary. However, examination of the variance of the quadratic and slope terms with multiple classes revealed lack of variability within each class (variance < .01). Thus, on subsequent runs, we constrained the variance for these terms to zero.

SPP—According to the BIC, aBIC, and LMR, significant improvements in model fit were observed up to four classes (see Table 2). Each of the classes in the four class solution had adequate prevalence and was readily interpretable. The Parametric Bootstrap test confirmed this as the best fitting solution. The four trajectories included a group of adolescents exhibiting high levels of SPP across each assessment (10.3%), a group with scores that increased over time (15.7%), a group with decreasing scores (11.7%), and a group exhibiting consistently low scores (62.3%). Notably, no class was characterized by absolute stability. The High class continued to increase over time and the Low class decreased over time. Additionally, the Increasing class had a delayed onset with scores accelerating after entry into high school (grade 10). After obtaining the predicted group membership from the GMM analyses, the estimated means were calculated and graphed (see Figure 1). We included sex as a covariate to determine if males or females were more likely to be in one class relative to the others. No differences were observed across the classes. Likewise, intervention status was unrelated to class membership.

SOP-C—Similarly, the SOP-C analyses supported a four class solution. The BIC values for the four and five class solutions were comparable and the LMR was lower for the four class solution. A four class model was selected over three because the BIC was lower for the four class solution, the fourth added class was prevalent and interpretable, and the Parametric Bootstrap test indicated that the four class provided a superior fit (see Table 2). The four trajectories included similar groups as those observed for the SPP analyses: a group of with high scores over time (5.5%), one with scores that increased over time (22.6%), one with decreasing scores (19.3%), and another with consistently low scores (52.6%). The only notable differences between the two processes was that the High and Low classes for SOP-C were stable over time and the Increasing class began its steady increase in 7th grade compared to the delayed onset for the SPP group. After obtaining the predicted group membership from the GMM analyses, the estimated means were calculated and graphed (see Figure 2).

Sex and intervention status were used as covariates of class membership to determine if unique demographics could distinguish the groups. Males were more likely (and in turn females were less likely) to be in the Decreasing class relative to the Low (Odds Ratio [OR]: 1.89; Confidence Interval [CI]: [1.10, 3.17]) and High classes (OR: 2.58; CI: [1.09, 6.10]). There were no other significant gender or intervention status differences among the various classes. We retained these variables as covariates for subsequent analyses, however.

Outcomes Associated with Class Membership

Following identification of the appropriate number of classes, the classes were used to predict distal outcomes. For continuous variables we used the auxiliary function in MPlus to report the equality of tests of means across classes using posterior probability-based multiple imputations. For categorical outcome variables, we report the odds ratios associated with class membership.

SPP—As expected, the High and Increasing SPP classes were associated with the highest depression and anxiety scores in 12th grade (see Table 3). The mean depression score for the High class was significantly higher than the mean scores for both the Low ($\chi^2 [1] = 9.01$; $p = .003$) and Decreasing classes ($\chi^2 [1] = 6.70$; $p = .01$). The Increasing class mean depression

score in 12th grade was also significantly higher than the Low class ($\chi^2 [1] = 6.34; p = .01$). The mean anxiety scores for the High and Increasing classes were also significantly higher than the Low class ($\chi^2 [1] = 4.98; p = .03$; $\chi^2 [1] = 4.07; p = .04$; respectively). The High classes had the highest probability of MDD diagnosis (.33). They were 13 times more likely to be diagnosed with MDD during the study period than the Low group (CI: 3.64-47.62). Although by 12th grade, the Decreasing classes mean depression and anxiety scores were in the normal range, they were 3.64 times as likely to have received a diagnosis of MDD at some point during the seven-year period as the Low group (CI: 1.30-10.71), presumably during early adolescence.

SOP-C—The outcome analyses for SOP-C paralleled the findings for SPP (see Table 3). The High and Increasing SOP-C classes were associated with significantly higher depression ($\chi^2 [1] = 5.23; p = .02$; $\chi^2 [1] = 5.71; p = .02$; respectively) and anxiety scores ($\chi^2 [1] = 5.33; p = .02$; $\chi^2 [1] = 6.48; p = .01$; respectively) compared to the Low SOP-C class. The High class was also most likely to receive an MDD diagnosis (.15), and this translated into a 4.61 increased odds compared to the Low class (CI: 1.11-19.23). The Increasing group had the second highest probability of MDD diagnoses (.12) and this was a significantly greater risk compared to the Low class (OR: 3.64; CI: 1.30-10.17).

6th Grade Predictors of Class Membership

Child- and teacher-reported characteristics in 6th grade as well as academic performance provided independent tests of the discriminant and convergent validity of the respective classes. Latent class regressions (LCR) were conducted to determine if these characteristics distinguished the classes.

SPP—The High and Decreasing classes had the highest internalizing symptoms in 6th grade (see Table 4). The High class depression scores ($M = 1.04$) were significantly higher than the Low ($M = .63$) and the Increasing ($M = .73$) classes ($Z = 3.57, p < 0.001$). The Decreasing class also had significantly higher mean depression scores (.97) than the Low class ($Z = 3.10; p = 0.002$). Additionally, the Decreasing class had significantly higher mean anxiety scores compared to the Low class ($Z = 3.21, p < 0.001$) and the Increasing class ($Z = 2.24, p < 0.03$); the High class had significantly higher anxiety scores than the Low class ($Z = 2.45, p = 0.01$). Moreover, the High and Decreasing classes had the lowest perceived control scores. The Decreasing class reported significantly lower perceived control scores compared to the Low and Increasing classes ($Z = 3.78; p < 0.001$; $Z = 2.41; p = 0.01$, respectively). The High class was also had significantly lower perceived control scores than the Low class ($Z = 3.17; p = 0.002$).

In addition to these self-reported internalizing differences, the High and Decreasing classes also had the lowest academic skills in 6th grade. The High class ($M = 30.50$) had significantly lower mean K-TEA reading scores compared to the Low ($M = 33.91$) class ($Z = 2.01, p = 0.04$). The Decreasing class had mean reading scores ($M = 30.06$) that were significantly lower than both the Low and Increasing ($M = 33.40$) classes ($Z = 3.70, p < 0.001$; $Z = 2.32; p = 0.02$; respectively).

Teacher ratings provided two points of distinction between the Decreasing and High classes. The Decreasing class had significantly worse social (shy) and school problems (inattention) in 6th grade. Their Shy score was significantly higher than the Low and High class ($Z = 3.66; p < 0.001$; $Z = 2.12; p = 0.03$; respectively). Additionally, their Inattention score was significantly higher than the other three classes: Low ($Z = 4.04; p < 0.001$), High ($Z = 2.11; p = 0.04$), and Increasing ($Z = 2.72; p = 0.007$).

In terms of social context, no neighborhood effects were observed, however, the Decreasing class reported significantly higher experiences with racism in 7th grade than the Low and Increasing classes ($Z=2.93$; $p = 0.003$; $Z=2.00$; $p < .05$; respectively).

SOP-C—Many of the same findings regarding the 6th grade risk factors for High or Decreasing SPP groups were found with the SOP-C analyses. The Decreasing class reported the highest mean depression symptoms in 6th grade (see Table 4). Their depression score ($M=1.05$) was significantly higher than Low ($M=.57$) and the Increasing ($M=.73$) classes ($Z=5.37$, $p < 0.001$; $Z=2.02$, $p < 0.05$). The High class also had significantly higher mean depression scores (1.01) than the Low class ($Z=4.42$; $p < 0.001$). The Decreasing class also had significantly higher anxiety scores than the Low ($Z=7.13$; $p < 0.001$) and Increasing ($Z=3.68$; $p < 0.001$) classes. The High class was also significantly higher than the Low ($Z=4.60$; $p < 0.001$) and Increasing ($Z=2.91$; $p = 0.002$) classes. These mood symptoms were confirmed in lower ratings of perceived control for both the High and Decreasing classes. The Decreasing class had significantly lower perceived control scores than the Low ($Z=3.42$; $p = 0.001$) and Increasing ($Z=3.68$; $p < 0.001$) classes. The High class was also significantly lower than the Low ($Z=3.75$; $p < 0.001$) and Increasing ($Z=2.73$; $p < 0.001$) classes.

The High and Decreasing classes also had the lowest academic skills. The High class was lower than the Low ($Z=2.18$; $p = 0.029$) and Increasing ($Z=2.09$; $p = 0.037$) classes. The Decreasing class was lower than the Low ($Z=2.83$; $p = 0.005$) and Increasing ($Z=2.87$; $p = 0.004$) classes.

Teacher ratings provided a glimpse into the potential impending onset of problems for the Increasing group. They had significantly higher Inattention scores than the Low ($Z=1.98$; $p < 0.05$) class. The Decreasing group had the worst Shy and Inattention scores. Their Shy score was significantly higher compared to the Increasing group ($Z=2.02$; $p = 0.04$), and their Inattention score was significantly higher than the Low ($Z=2.47$; $p = 0.01$) class.

There were no significant neighborhood differences among the groups. However, the High class had significantly higher Racism scores than the Low class ($Z=2.76$; $p = 0.004$).

Parallel Process of Co-Occurring Problems

Co-Occurrence—The co-occurrence of SPP and SOP-C was evaluated using parallel process analysis. Table 5 presents the estimated frequency and joint probability of membership in trajectory groups. For instance, 289 youth (53%) were simultaneously in the low SPP and SOP-C classes.

Although joint probabilities provide us with information about the probability of membership in more than one class, conditional probabilities may provide more meaningful information about co-occurrence. The lower portion of Table 5 provides two sets of conditional probabilities: the probability of membership in each SPP class conditional on each SOP-C class, and vice versa. For instance, if youth were in either Low SPP or SOP-C classes they were very likely to be in the other low class (0.73 and 0.78 conditional on SPP and SOP-C, respectively). When looking at joint probabilities, less than 1% of adolescents in the entire sample were in the High SPP symptoms class and the High SOP-C class. By contrast, the conditional probabilities indicate that 17% of youth who were in the High SOP-C class were also in the High SPP class compared to 12% of High SPP youth who were also High SOP-C.

Some unexpected findings emerged from the conditional probabilities. All of the maladaptive classes for each process had the highest probability of being in the Low

normative class for the other process (0.47-0.71). This pattern is likely due to the large proportion of youth classified in the Low SPP and SOP-C classes. However, given that each process separately accounted for adverse outcomes, this suggests the value of unique information provided by each. For instance, youth in the High SOP-C class were equally likely to fall in the Increasing, High, or Decreasing SPP classes (17% for each). Youth in the High SPP class were twice as likely to be in the Decreasing SOP-C class (24%) as in the High or Increasing SOP-C classes (12%).

Does either process afford protection over time? For instance, if stable, low SOP-C scores provided protection against worsening SPP we would expect Low SOP-C youth to be more likely to appear in the Decreasing SPP class rather than the Increasing SPP class. In fact, the opposite was true. Those low on SOP-C were more than twice as likely to be in the Increasing SPP class (0.17) as the Decreasing SPP class (0.07). On the other hand, some evidence emerged to suggest that SPP may provide some protection against worsening SOP-C. Youth in the Low SPP class were twice as likely to appear in the Decreasing SPP class (0.13) compared to the Increasing SOP-C class (0.07) and six times as likely compared to the High SPP class (0.02). Likewise, those in the Decreasing SPP class were nearly three times more likely to be in the Decreasing SOP-C class (30%) as the Increasing SOP-C class (11%). On the other hand, stable high SPP may not interfere with recovery from high SOP-C. Those in the High SPP class were twice as likely to be in the Decreasing SOP-C class as in the High or Increasing SOP-C classes.

The processes appear to be complementary. As expected, those in either Increasing class had the greatest probability of falling in the Increasing class for the opposing process (20% and 36% conditional on SPP and SOP-C, respectively). Increasing SOP-C was more likely to be associated with worsening SPP whereas worsening SPP is as likely to be associated with stable Low SOP-C.

MDD Outcomes Associated with Co-Occurring Classes—We examined the probabilities of MDD diagnoses associated with the combined classes. These analyses were limited by the small cell size of some of the classes, thus the wide confidence intervals reported here. Still some noteworthy findings emerged. The combined class with the single highest probability of MDD diagnosis was the High SPP, Increasing SOP-C class; 60% of youth in this class were given an MDD diagnosis at some point during the seven year period. Their odds of diagnosis was 29.41 times higher than the Low SPP, Low SOP-C class (.05) (CI: 1.02-1000). Other groups with significantly higher risk of MDD diagnoses compared to the Low, Low class included the High SPP, Low SOP-C (.44; OR 15.87; 2.63-90.91), the Increasing SPP, Decreasing SOP-C (.39; OR=12.60; 2.27-69.90), the Decreasing SPP, Increasing SOP-C (.39; OR: 12.87; 1.09-152.52), and the High SPP, High SOP-C (.34; OR: 10.42; 1.10- 100). Two other classes with high risk for MDD diagnoses included the High SPP, Low SOP-C (.44) and the Low SPP, Increasing SOP-C classes (.39). Their odds of MDD diagnosis were 18.87 (1.77-200) and 15.15 (1.40-167) higher than the Decreasing SPP, Low SOP-C class. It is worth noting that all the High SPP classes were among those with high risks for MDD diagnoses.

Discussion

This study may be the first to have examined the natural progression of perfectionism qualities over a 7-year period of adolescence. One notable finding is that perfectionism may be more malleable during this developmental period than commonly conceptualized. Consistent with Flett et al.'s (2002) integrated models emphasis on the importance of adolescence in shaping perfectionism dimensions, some level of growth was evident in all trajectories. Moreover, in contrast to a strict trait perspective, a subset of the sample

experienced dramatic changes in their perfectionism profiles over time. The SPP scores for one-quarter of participants went from high to low, or vice versa, during the study period. Similarly, over 40% of participants' SOP-C scores had this striking shift. Thus, not only do the results call attention to the emergent qualities of perfectionism during adolescence but also to the possibility that the stability of perfectionism may vary within subgroups. In comparing SPP and SOP-C, there was also less absolute stability among the SPP classes. This may be due to SPP being more influenced by external-contextual factors than SOP-C given that SPP focuses on the perceived perfectionism conveyed by others.

Results focusing on the mental health impact of the various trajectories were partially in line with our expectations—high and increasing SPP and SOP-C scores were associated with higher depression and anxiety at 12th grade. Those with stable, high scores on either construct were also at greater risk for major depressive disorder during adolescence. Although this was also true for those with increasing SOP-C scores, this was not the case for youth in the increasing SPP class. This is likely an artifact of the delayed onset for this increasing class relative to the SOP-C group. The uptick in SPP scores for this group did not start until 10th grade, so it gave this group less time during the 7-year study period to present with MDD. An alternate explanation, however, would be that increasing SPP during adolescence is not in itself a risk factor for MDD.

Confirming the distinctiveness of the classes, sixth grade predictors of the various trajectories also found higher social emotional symptoms among the high classes. Competency models of depression suggest that academic, emotional, and social deficits during childhood contribute to enduring negative perceptions. Consistent with this model, we found that both classes with high levels of maladaptive perfectionism at baseline (High and Decreasing) on both SOP-C and SPP had evidence of low competencies; that is, lower academic scores and self-perceived control, higher inattention and shyness, and higher levels of anxiety and depression in 6th grade. However, none of the predictors clearly distinguished those who persisted with elevated maladaptive perfectionism beliefs from those who fell to normal levels (i.e., the Decreasing classes). Thus, competency variables may predict maladaptive perfectionism tendencies at middle school entry, and for a subset of youth, tendencies that persist through adolescence (e.g., the High class). However, other variables are needed to explain why maladaptive perfectionism may remit in other youth (e.g., the Decreasing class) during this same time period.

Parallel process analyses revealed the joint and conditional probabilities for the various trajectories across the two processes. These analyses suggested that SPP and SOP-C are complementary but distinct processes. Given that each process was separately associated with adverse outcomes in expected ways, it is important to note that many youth fell into the pathological groupings for only one but not the other process. That is, if only one process were considered, many youth would be deemed to be low risk for MDD even though their profile on the second process might indicate otherwise. Moreover, we found evidence to suggest that considering the co-occurrence of the processes can reveal youth most at risk for major depressive disorder. For instance, 60% of youth with stable high SPP and increasing SOP-C scores met criteria for MDD during the study period which represented nearly a 30-fold increased risk compared to the normative group. This appears to be a group of youth who are highly and consistently concerned about meeting the perfectionistic expectations of others, while feeling increasingly critical of their own performances. Having persistently high SPP in youth also warrants attention, as regardless of their SOP-C scores, this group tended to have higher risk for MDD diagnosis.

These findings are important both for the early identification of risk and also for the conceptualization of maladaptive perfectionism. Some have questioned whether SPP and

SOP-C are unique or overlapping maladaptive processes (see Herman et al., 2011). Here, we found evidence to suggest both constructs are needed for an adequate conceptualization of perfectionism and associated negative outcomes. Researchers should continue to use and examine both of these processes.

The findings suggest that SPP and SOP-C, individually and in combination, have deleterious effects on youth development. Identifying youth with or at risk for these self-perceptions and providing support may reduce the negative effects of these patterns. In particular, youth with persistently high SPP alone or in combination with increasing levels of SOP-C may represent a very high risk group for unipolar depressive episodes. On a positive note, the findings that perfectionism levels were more malleable than often conceptualized suggests that supports and environmental manipulations during adolescence may alter maladaptive perfectionism.

Our study not only expands the current perfectionism literature through examining growth trajectories, but also focuses on the African American population, which has been underrepresented in studies on this topic (Bardone-Cone, Weishuhn, & Boyd, 2009; Herman et al., 2011; McCreary et al., 2004; Mobley, Slaney, & Rice, 2005). Consistent with the Unified Theory, findings suggested that experiences with racism predicted class membership for both processes. Youth reporting higher levels of racism experiences were more likely to be in maladaptive perfectionism classes. On the other hand, neighborhood effects had no relations with class membership on either class. Although the Unified Theory does not explicitly identify neighborhood disorganization as a distal cause of depression in disadvantaged African Americans we used it as a proxy for “poverty and restricted economic opportunity” which appear prominently in the model. Unfortunately, in this archival dataset we did not have access to all the variables that would provide a more nuanced test of the culture-specific hypotheses of the Unified Theory. Although the findings regarding racism are promising, subsequent studies should include other measures consistent with Unified Theory including specific cognitive-emotional consequences of oppression such as alienation from dominant culture, internalized racism, chronic stress, and hopelessness.

More information is needed to understand precursors to the trajectories identified in the present study. We considered a limited range of predictors in the present study, primarily to validate the classes. In general, we found support for the distinction between the classes; however, we were unable make key distinctions that might guide prevention efforts. Of most interest, would be factors that distinguished those with stable, high patterns vs. those with decreasing patterns and to distinguish stable, low from those with increasing patterns. Prior research has offered some clues that other personality characteristics and family patterns might explain variations in perfectionism during adolescence. For instance, Stoeber, Otto, and Dalbert (2009) found that Conscientiousness predicted increases in SOP among adolescents, but neuroticism did not predict any changes in perfectionism—neither SOP or SPP. Additionally, in their 3-wave longitudinal study, Soenens et al. (2008) found that parental psychological control (reported by parent and adolescent) at age 15 predicted increased levels of maladaptive perfectionism one year later. Including such constructs in future studies of perfectionism could help clarify whether these can distinguish developmental patterns of maladaptive perfectionism.

The interactions among emerging self-perceptions, primary personality qualities, parenting, and educational contexts may provide a more nuanced perspective on predictors of maladaptive perfectionism in African American youth. Youth's self-perceptions and internal expectations only begin to crystallize during late childhood, a process that continues through adolescence. Middle school represents a key transition when students typically experience

increasing academic expectations which may present challenges to a student's self-beliefs. Perfectionism beliefs are likely altered when self-perceptions and aspirations are incongruent with actual performance or with the perceptions of significant others during this period. Student personal qualities (such as conscientiousness; Stoeber et al., 2009), parental expectations, and teacher support may modify the effect of these incongruent messages on perfectionism. Moreover, sociocontextual aspects of urban schools may thwart adaptive perfectionism when there is a mismatch between a student's aspirations and the school resources that are available to support those aspirations. In sum, future studies may need to consider more dynamic aspects of the social ecology that may contribute to perfectionism beliefs than were available in this study.

These sociocontextual factors may also be needed to fully examine sex differences in patterns of perfectionism, such as the different rates of office discipline referrals and different types of teacher and parent expectations experienced by males and females. Only one sex difference emerged in this study. Males were more likely to be in the decreasing SOP-C class. The finding is at least partially consistent with prior research showing males are less prone toward self-critical attribution biases than females (Frey & Ruble, 1987). Perhaps this tendency serves as a protective factor for males to lower self-critical perfectionism over time. Regardless, the finding encourages future research continue to examine sex differences in perfectionism patterns.

One limitation of the present study is that the class indicators were given by youth-report only. Although self-ratings of perfectionism remain the standard used by most studies of the construct, future studies are needed to assess any behaviors associated with perfectionism either as observed by significant others or by direct observations by researchers. Until such studies are conducted, the perfectionism construct will remain largely defined as a cognitive self-construal process rather than, as many authors contend, an observable trait. An additional limitation is that we were unable to include measurement of self-oriented striving in the present study because the measure was dropped after 6th grade as part of an effort to reduce participant burden in completing the comprehensive assessments. A future study is needed to determine if striving aspects of perfectionisms are similarly malleable during adolescence. Another measurement related concern is the modest internal consistency of the SOP-C. Even with this measurement error, the solutions for SOP-C had good model fit and adequate levels of entropy. Finally, it is important to note that this was a fairly specific sample so it is unknown if the findings will generalize to other settings.

On the other hand, our measurement strategy for defining predictors was a key strength of this study. We used multiple informants (teachers, self, clinicians) and multiple methods (self-reports, interviews, performance) at two time points to move beyond prior perfectionism research that have been plagued by method and source bias. Most prior studies have relied on self-ratings to define perfectionism and its correlates. Some other notable strengths of the study include the longitudinal design, relatively large sample of an understudied population, and the use of a sophisticated method (GMM). Continued investigations of developmental aspects of perfectionism will help better define the construct and its impact on youth outcomes.

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Figure 1. Developmental trajectories of SPP from Grades 6 to 12

Figure 2. Developmental trajectories of SOP-C from Grades 6 to 12

Table 1

Intercorrelations Among Study Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. SPP (6 th)	--												
2. SOP-C (6 th)	.46**	--											
3. Depression (6 th)	.31**	.35**	--										
4. Anxiety (6 th)	.31**	.40**	.77**	--									
5. PC (6 th)	-.26**	-.28**	-.43**	-.40**	--								
6. Shyness (6 th)	.10*	.07	.10*	.07	-.11*	--							
7. Inattention (6 th)	.19**	.11*	.12**	.07	-.17**	.52**	--						
8. KTEA Read (6 th)	-.15**	-.10*	-.11*	-.09*	.19**	-.08	-.23**	--					
9. Neighborhood (6 th)	.13**	.09	.23**	.24**	-.31**	.08	.09	-.26**	--				
10. Racism (7 th)	.18**	.10*	.13**	.11*	-.19**	-.08	.01	-.05	.19**	--			
11. Depression (12 th)	.07	.05	.22**	.15**	-.09	.02	.03	-.07	.11*	.20**	--		
12. Anxiety (12 th)	.05	.09	.18**	.19**	-.06	.03	.01	-.08	.11*	.21**	.78**	--	
13. MDD (12 th)	.01	.05	.02	.01	-.03	.08	.14**	.04	-.02	.06	.07**	.04	--

Notes. SPP= Social Prescribed Perfectionism; SOP-C=Self-Oriented Perfectionism-Critical; PC=Perceived Control

* $p < .05$

** $p < .01$

Table 2

Fit Indices of Growth Mixture Modeling for SPP and SOP-C

LC	SPP				SOP-C			
	BIC	aBIC	LMR	Entropy	BIC	aBIC	LMR	Entropy
2	6651.91	6604.30	.00	0.66	7480.94	7433.32	.00	0.60
3	6569.33	6509.02	.75	0.75	7436.78	7376.46	.00	0.72
4 *	6546.19	6473.17	.05	0.74	7413.11	7340.10	.34	0.71
5	6554.08	6468.36	.19	0.74	7410.26	7324.55	.68	0.75

* Parametric Bootstrap Likelihood Ratio Test indicated a 4-class solution provided significantly better fit than a 3-class solution for both SPP and SOP-C ($p < .001$).
Note. SPP = socially-prescribed perfectionism; SOP-C = self-oriented perfectionism-critical; LC = Latent class; BIC = Bayesian information criterion; aBIC = adjusted Bayesian information criterion; LMR = Lo-Mendell-Rubin Adjusted Likelihood Ratio Test. Smaller values indicate better fit of the model. Entropy values close to 1.0 indicate higher classification precision. All entropy ratings indicate acceptable fit. Bold indicates selected solutions.

Table 3
Estimated Mean Scores on 12th Grade Outcomes Child, Teacher, Parent, and Clinician-Reported Variables and Academics by SPP and SOP-C Class

	1 High <i>M</i> (<i>SE</i>)	2 Increasing <i>M</i> (<i>SE</i>)	3 Decreasing <i>M</i> (<i>SE</i>)	4 Low <i>M</i> (<i>SE</i>)	Significant Comparisons
SPP					
Depression	0.82 (.11)	0.64 (.06)	0.48 (.07)	0.47 (.03)	1 vs 3, 4** 2 vs. 4*
Anxiety	0.55 (.09)	0.46 (.05)	0.36 (.05)	0.34 (.02)	1 vs 4* 2 vs. 4*
MDD Diagnosis	.33	.00	.14	.04	1, 3 vs. 4
SOP-C					
Depression	0.76 (.12)	0.64 (.06)	0.53 (.06)	0.47 (.03)	1 vs 4* 2 vs. 4*
Anxiety	0.60 (.12)	0.46 (.120)	0.42 (.49)	0.32 (.02)	1 vs 4* 2 vs. 4*
MDD Diagnosis	.15	.12	.08	.04	1, 2 vs. 4

Note. MDD=Major Depressive Disorder

*
p < .05

**
p .01

Table 4
Estimated Mean Scores on 6th Grade Child- and Teacher-Reported Variables and Academics by Class

SPP	1 High <i>M</i> (<i>SD</i>)	2 Increasing <i>M</i> (<i>SD</i>)	3 Decreasing <i>M</i> (<i>SD</i>)	4 Low <i>M</i> (<i>SD</i>)	Significant Comparisons
Child-Report					
Depression	1.04 (.63)	0.73 (.40)	0.97 (.51)	0.63 (.46)	1 vs. 2 ^{*,4} 3 vs. 4 ^{**}
Anxiety	1.01 (.71)	0.66 (.49)	1.09 (.54)	0.67 (.49)	3 vs. 2 ^{*,4} 1 vs. 4 [*] 3 vs. 2 ^{*,4} 3 vs. 2 ^{*,4}
Perceived Control	2.32 (.41)	2.46 (.35)	2.18 (.40)	2.54 (.34)	1 vs. 4 [*]
Teacher-Report	2.54 (.65)	2.64 (.71)	2.91 (.75)	2.47 (.70)	3 vs. 1 ^{***,4}
Shy					
Inattention	3.02 (1.11)	3.04 (1.09)	3.78 (1.11)	2.88 (1.16)	3 vs. 1 ^{*,2} 2 ^{*,4} 4 ^{***}
Academics	30.50 (8.95)	33.40 (5.78)	30.06 (7.54)	33.91 (5.91)	3 vs. 2 ^{*,4} 4 ^{***}
KTEA Reading					1 vs. 4 [*]
Context	1.90 (.68)	1.90 (.65)	1.95 (.65)	1.75 (.61)	ns
Neighbor					
Racism (7 th grade)	2.18 (1.03)	1.68 (.76)	2.14 (1.08)	1.61 (.78)	3 vs. 2 ^{*,4} 4 ^{**}
SOP-C Child-Report					
Depression	1.01 (.48)	0.73 (.63)	1.05 (.53)	0.57 (.41)	1 vs. 4 ^{***}
Anxiety	1.16 (.54)	0.65 (.48)	1.21 (.57)	0.58 (.44)	3 vs. 2 ^{*,4} 4 ^{***} 3 vs. 2 ^{***,4} 1 vs. 2 ^{***,4} 3 vs. 2 ^{***,4} 4 ^{***}
Perceived Control	2.18 (.31)	2.52 (.34)	2.24 (.42)	2.53 (.25)	1 vs. 2 ^{***,4} 4 ^{***}
Teacher-Report	2.68 (1.05)	2.46 (.66)	2.72 (.69)	2.53 (.71)	2 vs. 3 [*]
Shy					
Inattention	2.95 (1.17)	3.32 (1.17)	3.94 (1.10)	2.81 (1.13)	2, 3 vs. 4 [*]
Academics					

SPP	1 High <i>M (SD)</i>	2 Increasing <i>M (SD)</i>	3 Decreasing <i>M (SD)</i>	4 Low <i>M (SD)</i>	Significant Comparisons
KTEA Reading	30.24 (.865)	33.89 (5.50)	30.47 (7.54)	33.78 (6.32)	3 vs. 2 **, 4 **, 1 vs. 2 **, 4 *
Context					
Neighbor	1.84 (.57)	1.72 (.66)	1.66 (.58)	1.70 (.63)	ns
Racism (7 th)	2.15 (1.01)	1.76 (.89)	1.89 (.91)	1.62 (.80)	1 vs. 4 *

* p < .05

** p < .01

*** p < .001

Table 5
Co-occurrence of SPP and SOP-C Trajectories

	Increasing SPP	High SPP	Decreasing SPP	Low SPP
<i>Estimated group membership</i>				
Increasing SOP-C	19	3	6	25
High SOP-C	3	3	3	9
Decreasing SOP-C	6	6	16	50
Low SOP-C	67	13	29	289
<i>Joint probability of SPP and SOP-C</i>				
Increasing SOP-C	0.035	0.005	0.011	0.046
High SOP-C	0.005	0.005	0.005	0.016
Decreasing SOP-C	0.011	0.011	0.029	0.091
Low SOP-C	0.122	0.024	0.053	0.528
<i>Probability of SPP conditional on SOP-C</i>				
Increasing SOP-C	0.358	0.057	0.113	0.472
High SOP-C	0.167	0.167	0.167	0.500
Decreasing SOP-C	0.077	0.077	0.205	0.641
Low SOP-C	0.168	0.033	0.073	0.726
<i>Probability of SOP-C conditional on SPP</i>				
Increasing SOP-C	0.200	0.120	0.111	0.067
High SOP-C	0.032	0.120	0.056	0.024
Decreasing SOP-C	0.063	0.240	0.296	0.134
Low SOP-C	0.705	0.520	0.537	0.775