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**Using Individual Determinants to Predict Behavioral Health Service Use in Integrated
Pediatric Primary Care**

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctorate of
Philosophy in Clinical Psychology at Virginia Commonwealth University

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Sursum ad Summum

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Abstract

Using Individual Determinants to Predict Behavioral Health Service Use in Integrated Pediatric Primary Care

Mental health problems (e.g., attention, externalizing, internalizing problems), are commonly observed in youth and are often associated with significant impairment and an increased need for mental health services. Conceptual frameworks, such as Andersen's Behavioral Model of Health Service Utilization, have proposed that several individual determinants (e.g., predisposing, enabling, and need factors) may influence service use for mental health problems among youth. Despite the glaring need for mental health treatment among youth with mental health problems, studies indicate that many affected youth do not receive mental health care. Integrated pediatric primary care (IPPC) settings provide an ideal setting for youth and families to receive adequate evidence-based services to assess and treat mental health problems. Guided by Andersen's Behavioral Model of Health Service Utilization, the present study sought to examine individual factors associated with behavioral health service utilization in an urban, mid-Atlantic IPPC clinic. The study ($N = 403$; $M_{\text{age}} = 10.74$, $SD = 3.67$ years; 50.6% female) identified two distinct subgroups ("Significant Comorbid Problems" and "Predominantly Internalizing") and significant predictors (age, gender) of subgroup membership. Although there were no significant differences in behavioral health service use between the two groups, the study found that older youth in the "Significant Comorbid Problems" subgroup were associated with higher behavioral health service use, whereas females in the "Predominantly Internalizing" subgroup were associated with higher behavioral health service use. Results of the present study provide support for factors associated with IPPC behavioral health service use among a mostly racial/ethnic minoritized, urban sample of youth and families.

Using Individual Determinants to Predict Mental Health Service Use in Integrated Pediatric Primary Care

Mental health problems, which include cognitive, emotional, and behavioral difficulties, are among the most common conditions observed in children and adolescents. These problems include depression, anxiety, conduct disorder (CD), attention-deficit/hyperactivity disorder (ADHD), eating disorders, and substance use disorder (SUD) (Ford & Ramchandani, 2009; Michaud & Fombonne, 2005). Such problems are associated with impaired performance and functioning in developmental, academic, cognitive, social, emotional, behavioral contexts across several settings (Kessler, Berglund, Demler, Jin, Merikangas, & Walters, 2005; Merikangas, He, & Burstein, 2010; Steinberg, Dahl, Keating, Kupfer, Masten, & Pine, 2006). Estimated rates of mental health problems, such as ADHD, conduct problems, anxiety, and depression are found in 9.4%, 7.4%, 7.1%, and 3.2% of children aged 3 to 17 years respectively (Centers for Disease Control and Prevention, 2020). Moreover, greater numbers of children and adolescents experience mental health problems that result in impairment or distress that do not meet diagnostic criteria for a disorder according to the Diagnostic and Statistical Manual of Mental Disorders – Fifth Edition (DSM-5; American Psychological Association, 2013). Although studies indicate that a significant number of children and adolescents experience difficulties in emotions, concentration, and behaviors (Simpson, Cohen, Bloom, & Blumberg, 2009), fewer than half of children and adolescents with mental health problems receive treatment (Merikangas et al., 2010; Merikangas, Nakamura, & Kessler, 2009). Due to the high rates of mental health problems, low rates of treatment, and substantial costs to individuals, families, and society associated with undertreated mental health problems, early identification and treatment of mental health problems in children and adolescents remains a public health concern (National Research

Council and Institute of Medicine, 2009; United States Department of Health and Human Services, 2016).

Broadband Definitions of Child Psychopathology

The terms “internalizing” and “externalizing” are widely used as part of a dimensional approach to describing and categorizing broad groupings of behavioral and emotional problems (Achenbach & Edelbrock, 1978; Achenbach, Ivanova, Rescorla, Turner, & Althoff, 2016).

Researchers have recommended a dimensional approach to examining mental health problems in children and adolescents for several reasons. For instance, researchers suggest that a dimensional approach to examining mental health problems reduces the likelihood of overlap and comorbidity of symptoms (Coghill & Songuga-Barke, 2012; Widiger & Samuel, 2005). A dimensional approach also examines and classifies symptoms along a linear continuum of severity (i.e., clinically elevated dimensional scores indicating low, moderate, and high levels of emotional or behavioral problems) (Clark, Watson, & Reynolds, 1995; Coghill & Sonuga-Barke, 2012; Widiger & Samuel, 2005). Additionally, a dimensional approach allows researchers and clinicians to examine the role of underlying risk and causal factors associated with internalizing and externalizing problems in youth. The existing research on the dimensional approach to developmental psychopathology indicates that contextual risk factors, such as genetic and environmental vulnerabilities, protective factors, as well as the interaction between these factors, influence the development of emotional and behavioral difficulties in children and adolescents (Busseri, Willoughby, & Chambers, 2006; Forbes, Tackett, Markon, & Krueger, 2016; Hudziak, Achenbach, Althoff, & Pine, 2007; Widiger & Samuel, 2005). As such, a dimensional approach to examining internalizing and externalizing problems may alert clinicians to the degree to which children and adolescents vary in emotional and behavioral difficulties.

Internalizing Problems

Internalizing problems refer to symptoms that are directed inward and reflect the child's psychological and emotional state (Campbell, Shaw, & Gilliom, 2000; Eisenberg et al., 2001; Kovacs & Devlin, 1998). Internalizing problems are characterized as overly-inhibited or internally-focused, such as anxious and depressive symptoms or disorders (e.g., fear, worry, shyness, social withdrawal, hopelessness, sadness), somatic complaints, and social withdrawal (Compton, Burns, Egger, & Robertson, 2002). Internalizing problems have an estimated prevalence rate of 10% in youth (Kessler et al., 2012; Merikangas et al., 2010). Studies indicate that internalizing problems are associated with a range of challenges and difficulties that disrupt and negatively impact the daily functioning of children and adolescents. For instance, internalizing problems are linked to the development of later internalizing disorders (e.g., social anxiety disorder, generalized anxiety disorder, somatic problems, depression) and increased risk for the emergence of externalizing disorders (Liu, Chen, & Lewis, 2011). They are also associated with an increased risk for negative adolescent outcomes, such as changes in eating or sleeping habits, interpersonal difficulties, social withdrawal, increased violence, substance use, academic poor performance, school drop-out, and suicide (Dekker, Ferdinand, Van Lang, Bongers, Van Der Ende, & Verhulst, 2007; Liu et al., 2011; Measelle, Stice, & Hogansen, 2006).

Externalizing Problems

Externalizing problems refer to symptoms that are displayed overtly and are reflected via behaviors towards others and the physical environment (Campbell et al., 2000; Eisenberg et al., 2001). Externalizing problems are characterized by dysregulated behaviors (e.g., rule-breaking, delinquency, aggression, impulsivity, hyperactivity) and specific disorders including conduct disorder (CD), and oppositional defiant disorder (ODD) (Liu, 2004). Estimated prevalence rates

of externalizing problems in children and adolescents vary from approximately 14% to 18% (Kessler et al., 2012; Merikangas et al., 2010). Externalizing problems have been shown to predict adverse adolescent outcomes, such as social impairment, academic problems, and risky sexual behavior (Bongers, Koot, van der Ende, & Verhulst, 2008; Frick et al., 1993; Moilanen, Shaw, & Maxwell, 2010; Timmermans, van Lier, & Koot, 2008; White, Xie, Thompson, Loeber, Stouthamer-Loeber, 2001).

Attention Problems

Not fitting neatly within either the internalizing or externalizing problems constructs, attention problems are another common condition experienced during childhood, with ADHD being the most prevalent disorder associated with attention problems in youth (Visser et al., 2014). Attention problems in school-aged children are moderately stable throughout childhood (Karam et al., 2015; Lavigne, Lebailly, Hopkins, Gouze, & Binns, 2009), with impulsivity/hyperactivity often decreasing during late adolescence (Monuteaux, Mick, Faraone, & Biederman, 2010). ADHD is estimated to occur in approximately 8-12% of children and adolescents in the U.S. (Danielson, Bitsko, Ghandour, Holbrook, Kogan, & Blumberg, 2018; Visser et al., 2014). Attention problems, particularly difficulties related to ADHD, are associated with significant impairment across home, social, and school settings, with children and adolescents experiencing greater conflict with parents, siblings, and teachers (Johnston & Chronis-Tuscano, 2014), low academic achievement, behavioral problems in school (DuPaul & Jimerson, 2014; Kuriyan et al., 2013), and difficulties interacting with peers (Hoza et al., 2005).

Given the elevated risk for poor outcomes and maladjustment associated with mental health problems for children and adolescents, there is a considerable need for the early identification and treatment of internalizing, externalizing, and attention problems in youth.

Despite the glaring need for mental health treatment among children and adolescents with internalizing, externalizing, and attention problems, studies indicate that many affected children and adolescents do not receive mental health care (Merikangas et al., 2010; Merikangas et al., 2011). Therefore, it is important to identify factors that influence mental health service utilization among children and adolescents.

Individual Determinants of Mental Health Service Utilization

Studies on mental health service utilization by children and adolescents have explored factors associated with the decision to seek help for mental health problems. Among youth, these factors, or individual determinants, include sociodemographic characteristics, cultural interpretation of symptoms, availability of healthcare services, and healthcare service organization. These individual determinants have been linked to the decision to seek help for mental health problems (Crabb & Hunsley, 2006; Fleury, Ngui, Bamvita, Grenier, & Caron, 2014).

While several researchers have proposed conceptual frameworks to examine individual beliefs and behaviors that inform the decision to utilize healthcare treatment (Pescosolido, 1992; Pescosolido, Wright, Alegria, & Vera, 1998; Power, Eiraldi, Clarke, Mazzuca, & Krain, 2005), most studies examining treatment-seeking for mental health reasons have used Andersen's Behavioral Model of Health Services Utilization (Aday & Andersen, 1974; Andersen, 1995; Andersen & Newman, 1973). According to this model (see *Figure 1*), mental health service utilization is posited as a function of societal and individual determinants consisting of predisposing, enabling, and need characteristics (Aday & Andersen, 1974; Andersen & Newman, 1973; Banta, James, Haviland, & Andersen, 2013). Additionally, the behavioral model of mental

health service use has been expanded to include sociocultural contextual factors that inform treatment-seeking (Cauce et al., 2002; Eiraldi, Mazzuca, Clarke, & Power, 2006).

Predisposing factors

Predisposing factors of mental health service utilization center on individual characteristics prior to an illness episode, in which individuals may be predisposed to use services more than others. This propensity toward service use is predicted by individual characteristics that exist prior to the onset of illness (Andersen, 1995). Predisposing factors include demographic characteristics (e.g., age, gender, and past illness), social structure (e.g., education, race/ethnicity, religion, family size), and beliefs (e.g., attitudes toward health service use, values related to health and illness, knowledge about the illness). Specifically, predisposing factors, such as age, gender, and race/ethnicity have been associated with internalizing, externalizing, and attention problems in children and adolescents. In order to stay within the framework of this model, a brief overview of these *bivariate associations* follows below, with the acknowledgment that these relationships are complex and interactional.

Age. Age is linked to internalizing, externalizing, and attention problems. Among younger children, internalizing problems on average tend to increase gradually from infancy to early childhood (Gilliom & Shaw, 2004). For instance, there is evidence that indicates that internalizing problems emerge as early as preschool years (Davis, Votruba-Drzal, & Silk, 2015), with researchers investigating potential temperamental characteristics (e.g., shyness, inhibition, sadness, rumination, and worry) as possible mediators of this relationship (Bufferd, Dougherty, Carlson, Rose, & Klein, 2012; Cotê, Boivin, Liu, Nagin, Zoccolillo, & Tremblay, 2009; Egger & Angold, 2006). Additionally, children who experience elevated internalizing problems during early childhood are at greater risk for exhibiting continuous internalizing problems in

adolescence (Sterba, Prinstein, & Cox, 2007). Continuing into adolescents, rates of internalizing problems gradually increase even more (Reynolds, Sanders, & Invin, 2010; Riina, Martin, & Brooks-Gunn, 2014; Zahn-Waxler, Klimes-Dougan, & Slattery, 2000). Internalizing problems in older children and adolescents have been associated with increased cognitive maturity and the ability to self-reflect on adverse events (Kovacs & Devline, 1998).

Age is also associated with externalizing problems in children and adolescents. Externalizing problems and age overall have an inverse relationship; however, there are additional contextual risk factors that may moderate these relationships (Lahey et al., 2000; Ross, Rescorla, & Perlman, 2020; Masfety et al., 2020; Van Der Ende & Verhulst, 2005). For instance, Morgan, Farkas, and Wu (2009) found that higher levels of externalizing problems (e.g., arguing, showing anger, fighting, impulsivity, classroom disruptions) in early-aged children increased the likelihood of future engagement in externalizing behaviors during middle childhood. Campbell and colleagues (2000) indicated that the early emergence of externalizing symptoms, such as ADHD, ODD, and CD, as well as their comorbidities during early childhood, increases the risk for externalizing problems and poor outcomes during middle childhood. Lahey and colleagues (2000) identified differences in externalizing problems among adolescents, with middle-aged children and younger adolescents displaying higher levels of aggression and oppositional behaviors, and older adolescents engaging in higher levels of property and status offenses. Research on the early onset and adolescent-onset of externalizing behavioral problems indicates that problems and impairment begin as early as childhood (Bongers, Koot, van der Ende, & Verhulst, 2004; Zahn-Waxler, Shirtcliff, & Marceau, 2008). Additionally, studies show that among adolescent-aged youth, younger adolescents exhibit greater levels of aggressive and

delinquent problem behaviors compared to older adolescents (Lahey et al., 2000; Zahn-Waxler, Shirtcliff, & Marceau, 2008; Van Der Ende & Verhulst, 2005).

Age is also associated with attention problems in children and adolescents, with problems likely to vary across the school and home settings (Van Der Ende & Verhulst, 2005). Attention problems occur to varying degrees throughout childhood and adolescence, with studies indicating higher prevalence rates in younger children compared to older children (Barkley, 1997; Ramtekkar, Reiersen, Todorov, & Todd, 2011; Riddle et al., 2013; Willoughby, 2003). While studies indicate that attention problems are common in children, studies show that rates of inattention vary during adolescence, with problems remaining relatively stable as children transition into adolescence (Fischer, Barkley, Fletcher, & Smallish, 1993; Hart, Lahey, Loeber, Applegate, Green, & Frick, 1995; Langberg, Epstein, Altaye, Molina, Arnold, & Vitiello, 2008). Other studies have found decreases in attention problems with increased age (Biederman, Mick, & Faraone, 2000), with changes attributed to biological factors and maturation (Willoughby, 2003).

Gender. Studies have also demonstrated gender differences in internalizing, externalizing, attention problems, and mental health service use in children and adolescents. Previous research examining gender influences on child and adolescent mental health outcomes has indicated that internalizing problems occur more commonly in girls than boys (Keiley, Lofthouse, Bates, Dodge, & Pettit, 2003; Van Der Ende & Verhulst, 2005). Specifically, girls are more likely to report higher levels of somatic complaints, negative self-evaluation, and rumination are than boys (Angold, Costello, & Worthman, 1998; Born, Shea, & Steiner, 2002; Hankin & Abramson, 1999; Leadbeater, Kuperminc, Blatt, & Hertzog, 1999; Liu et al., 2011; Twenge & Nolen-Hoeksema, 2002; Zahn-Waxler, Klimes-Dougan, & Slattery, 2000). While a

majority of studies identify early adolescence as the period in which significant gender differences in internalizing problems first emerge, other studies have challenged this consistent finding. For instance, Rudolph (2002) and Keenan and Shaw (1997) both reported similar rates of internalizing problems across gender during middle childhood. Moderators that may explain these seemingly discrepant findings include biological and environmental contextual factors (e.g., harsh parenting, maternal depression, childhood temperament, family income (Leve, Kim, & Pears, 2005; Yiji & Ni, 2019).

Gender differences have also been found in studies of child externalizing problems, with externalizing problems being more commonly observed in boys than girls (Costello, et al., 2003; Merikangas, Nakamura, & Kessler, 2009). Studies show that boys exhibit higher rates of externalizing behaviors, such as conduct problems and oppositional behavioral problems at younger ages than girls (Lahey et al., 2000; Masfety et al., 2020; Ross et al., 2020; Van Der Ende & Verhulst, 2005). At these ages, common externalizing problems reported include aggression, property destruction, theft, deceitfulness, and rule-breaking (Lahey et al., 2000; Van Der Ende & Verhulst, 2005; Zahn-Waxler et al., 2008).

Research on Gender differences suggests that attention problems in girls may be under-identified and underdiagnosed compared to boys (Skogli, Teicher, Andersen, Hovik, & Øie, 2013). However, there is some evidence that indicates that girls report more inattentive symptoms compared to boys (Biederman et al., 2005; Gaub & Carlson, 1997; Gershon, 2002; Weiss, Worling, & Wasdell, 2003). Further, girls with ADHD may present more commonly with the inattentive subtype than boys with ADHD (Hinshaw, Owens, Sami, & Fargeon, 2006). Overall, studies investigating gender differences in attention problems suggest that more attention problems are likely to accompany overt behaviors in boys, making them more likely to

detect. Conversely, inattentive behaviors in girls may be ignored, and lead to significant impairment in other domains, such as internalizing problems (Rucklidge, 2010).

Race/ethnicity. Research examining internalizing, externalizing, and attention problems among racial and ethnic minority (REM) youth has suggested mixed rates of depression, anxiety, conduct problems, and ADHD. Studies investigating the association between race and internalizing findings have yielded mixed findings, with studies indicating higher rates of internalizing problems (e.g., depression) among African American children compared to White children (Anderson & Mayes, 2010; Kennard, Mahtani, Hughes, Patel, & Emslie, 2006; Kistner, David-Ferdon, Lopez, & Dunkel, 2007; McLaughlin, Hilt, & Nolen-Hoeksema, 2007), while others showing lower prevalence rates of internalizing problems among African American children compared to White children (Angold et al., 2002; Saluja, Iachan, Scheidt, Overpeck, Sun, & Giedd, 2004).

Race and ethnicity are also associated with internalizing problems, with a number of studies indicating that REM children and adolescents report higher rates of internalizing problems than White youth. For instance, higher rates of depression were found among Indigenous/Native American and Latinx youth compared to other REM youth (e.g., Black/African and Asian American) and White youth (Eaton et al., 2008; Saluja et al., 2004). Symptom presentation in internalizing problems may vary by racial or ethnic group, with Black/African American-reported symptoms (e.g., diminished pleasure, anger, irritability), Asian American-reported symptoms (e.g., somatic symptoms, sad mood), and Latinx-reported symptoms (e.g., somatic symptoms, diminished pleasure, decreased energy, low self-esteem, crying) were associated with depressive symptoms (Choi & Park, 2006).

Internalizing problems among REM children and adolescents are associated with several contextual factors that moderate or mediate their relationships. For instance, depressive symptoms among Black/African American and Latinx children and adolescents are closely related to family and community characteristics such as socioeconomic status and community poverty due to their social stratification (Wickrama, Noh, & Bryant, 2005; Wight, Aneshensel, Botticello, & Sepulveda, 2005). Wickrama and colleagues (2005) found that African American adolescents reported elevated levels of distress, characterized by depressive symptoms, and poverty (community and family) compared to White adolescents. Wight et al. (2005) found that while ethnicity was predictive of elevated levels of depressive symptoms for African American and Latinx adolescents compared to White adolescents, this association was weakened when controlling for other risk factors, such as family structure and household income. Taken together, these studies show that REM children and adolescents may be at an increased risk of experiencing internalizing problems due to additional contextual factors associated with their racial and ethnic status.

Race and ethnicity are also associated with externalizing problems in children and adolescents. Several studies suggest racial differences in the engagement of externalizing behaviors, such as substance use and delinquent behavior (Daughters et al., 2009). For instance, White adolescents are more likely to engage in alcohol use than their Black/African American peers (Broman, 2007; Horton, 2007). Conversely, Black/African American youth are more likely to report higher rates of conduct problems, aggression, and delinquent behaviors (e.g., weapons offense, theft) than their White peers (Daughters et al., 2009; McLaughlin et al., 2007). Studies have also demonstrated ethnicity disparities in types of externalizing problems (e.g., aggression, conduct problems), with Black/African American and Latinx youth reporting higher rates of

externalizing problems compared to White youth (McLaughlin et al., 2007). Specifically, compared to White adolescents, Latinx adolescents report higher rates of externalizing behaviors (e.g., cigarette smoking, binge drinking, conduct problems) (Brenner et al., 2013; Forster, Grigsby, Soto, Schwartz, & Unger, 2014).

Similar to internalizing problems, several contextual factors have been suggested to influence the association between externalizing problems and REM status in children and adolescents. For instance, gender has been associated with externalizing problems among REM youth, with studies indicating higher levels of aggressive behavior among Black/African American and Latinx adolescent males compared to White (McLaughlin et al., 2007). Additionally, Latinx adolescent females report higher levels of passive aggression than their REM and White peers (McLaughlin et al., 2007). Studies also have identified neighborhood contextual factors (e.g., violence/crime, poverty) as having a significant influence on externalizing behaviors, with REM youth living in concentrated areas of poverty and violence reporting higher levels of externalizing behaviors compared to their White peers (Grant et al., 2003). Lastly, among Latinx youth, cultural stress (acculturative stress, ethnic discrimination) factors have been associated with higher levels of externalizing behaviors (Cano et al., 2015).

Several studies have examined attention problems in REM children and adolescents, with studies yielding mixed findings in relation to attention-related problems. Recent data examining national rates of ADHD suggest that Black/African American children are more likely to be diagnosed with ADHD compared to White children (Zablotsky & Alford, 2020). Additionally, Latinx youth are less likely to receive an ADHD diagnosis than Black/African American and White children (Zablotsky & Alford, 2020). Conversely, several studies indicate that ADHD is more likely to go undiagnosed *and/or* untreated in Black/African American and Latinx children

and adolescents compared to their White counterparts (Coker et al., 2016; Pastor & Reuben, 2005; Stevens, Harman, & Kelleher, 2005; Slobodin and Masalha, 2020). Research also suggests that disparities in the reporting of attention problems may be attributed to cultural norms and attitudes toward mental health, and fear of social stigma among REM youth and families (Slobodin & Masalha, 2020). Taken together, predisposing factors, including age, gender, race, and ethnicity are found to influence internalizing, externalizing, and attention problems in children and adolescents. Given the influence of predisposing factors as individual determinants of service utilization in youth, it is also important to examine additional individual- and family-level factors that influence service utilization.

Enabling factors

Enabling factors of mental health service utilization is defined as conditions that permit an individual or family to act on a value or satisfy a need related to health services, such that services are made available to the individual (Andersen & Newman, 1973). Studies indicate that enabling factors, which include income, insurance type, and costs of services, are likely to influence service use (Andersen & Newman, 1973). As such, there are family-level (e.g., income, health insurance) and community-level (region of country, urban/rural setting) enabling factors associated with mental health service use. Given the focus of the proposed study, the present study included a brief review of the relationships between insurance status and internalizing, externalizing, and attention problems.

Insurance Status. Studies indicate that higher rates of internalizing, externalizing, and attention problems are reported among children and adolescents with public insurance coverage (e.g., Medicaid) (Cunningham & Freiman, 1996). Simpson and colleagues (2005) found that children with Medicaid or other public health insurance coverage were twice as likely to have

internalizing, externalizing, and attention problems as were children with private health insurance coverage. Minsky and colleagues (2006) found higher rates of externalizing and attention problems (e.g., conduct and oppositional defiant disorders, ADHD) in children with Medicaid insurance coverage than in other insurance types (commercial insurance, charity care, self-pay). Additionally, studies found higher rates of severe internalizing, externalizing, and attention problems (e.g., suicidal and self-injurious behavior, depression, conduct disorder, substance use disorders) among children with Medicaid coverage receiving specialized mental health services (i.e., inpatient, partial hospitalization, day treatment) (Mendenhall et al., 2011). Moreover, studies have also found that children with Medicaid coverage account for a significant proportion of children with mental health diagnoses (e.g., ADHD) who receive psychotropic and psychostimulant medications (Howell & Teich, 2008). In sum, studies indicate that children with public insurance coverage may have more significant mental health problems that result in a greater likelihood of service use for a multitude of reasons.

Need Factors

The third type of individual determinant in Andersen's Behavioral Model of Health Services Utilization is need characteristics. The need for mental health services is largely based upon the perceived illness or probability of its occurrence in order to determine an individual's use of health services (Andersen & Newman, 1973). Need has been suggested as the most immediate cause of health service utilization, with clinical evaluation and patients' and/or parents' (in the case of youth) perception of need measured as symptoms or diagnoses (Banta et al. 2013; Cunningham & Freiman, 1997).

Symptoms and Diagnoses. The need for service utilization is typically demonstrated by the degree of symptom severity, type of disorder, and comorbidity (Fisher, Lichvar, Hogue, &

Dauber, 2018). Caregivers are more likely to be referred for and to seek treatment for child and adolescent externalizing and attention problems rather than internalizing problems (Cho, Kim, Cho, & Shin, 2007; Weisz & Weiss, 1991). Additionally, mental health treatment-seeking is dependent on several aspects of mental health problems, including the severity and duration of symptoms, symptoms that meet the criteria for mental health disorders, and psychiatric comorbidity (Brannan et al., 2003; Cheng & Lo, 2010; Costello et al., 2003; Dhingra, Zack, Strine, Druss, Berry, & Balluz, 2011; Fleury et al., 2014; Hogue & Dauber, 2011; Kataoka et al., 2002; McAlpine & Mechanic, 2000; Merikangas et al., 2010). These findings suggest that the decision to seek mental health treatment and service utilization may be dependent on several factors related to the severity of internalizing, externalizing, and attention problems.

Large Unmet Child Mental Health Need

Given the considerable influence of predisposing, enabling, and need factors on service utilization, it is important to understand the degree to which these individual determinants impact service use behaviors among youth and families. There is a substantial unmet need for youth mental health care in the United States, particularly among REM youth that may be most vulnerable to low rates of mental health service utilization, and experience greater risk for severe mental health problems and impairment (Alegria, Green, McLaughlin, & Loder, 2015). Economically disadvantaged REM youth are particularly vulnerable to challenges with accessing and obtaining needed mental health services, with studies demonstrating higher rates of mental health problems among socioeconomically disadvantaged REM youth (Qi & Kaiser, 2003; Wadsworth & Achenbach, 2005). The increased vulnerability has been associated with identifiable risk factors (e.g., poverty, food insecurity, neighborhood violence, socioeconomic disadvantage, discrimination, racism) that disproportionately affect REM youth (Alegria et al.,

2010; Flannery, Grant et al., 2004; Wester, & Singer, 2004; Slopen, Fitzmaurice, Williams, & Gilman, 2010). Moreover, caring for a child or adolescent with mental health problems may cause significant distress and added burdens for families, thus exacerbating internalizing and externalizing problems in both caregivers and children/adolescents.

Prior studies suggest that REM youth are less likely to receive mental health care services compared to their White counterparts (Alegria et al., 2015; Qi & Kaiser, 2003). Additionally, REM youth are less likely to receive specialty care, by way of inpatient and/or outpatient treatment (e.g., medication, counseling) by a psychiatrist or psychologist in a specialty mental health clinic (Kodjo & Auinger, 2004). Furthermore, REM youth are more likely to use crisis services and informal mental health services (e.g., peer counseling, clergy counseling) to manage internalizing and externalizing problems (Assari & Caldwell, 2017; Chow et al., 2003; Cummings & Druss, 2011; Garland et al., 2005; Katoaka et al., 2002; Malhortra, Shim, Baltrus, Heiman, Adekeye, & Rust, 2015). REM youth and families are also less likely to initiate referrals to mental health services and are more likely to be involuntarily referred to mental health services by law enforcement, child welfare, or juvenile justice services (Algeria et al., 2010; Chow et al., 2003).

Among REM youth who receive mental health services, the quantity and quality of available services remain a concern. For instance, linguistic minority youth report worse care than English-speaking REM youth (Alegria et al., 2010). Also, poor and REM youth receive lower quality and quantities of mental health services, placing youth at a greater disadvantage for adverse mental health outcomes (Alegria et al., 2010). Some studies have even found disparities in psychopharmacologic treatment of mental health problems in REM children and adolescents, with Black/African American and Latinx youth among those less likely to be prescribed

psychotropic medication to treat internalizing and externalizing problems (Rue & Xie, 2009; Safer & Malever, 2000; Zito, Safer, et al., 1998).

Additionally, although several well-established, evidence-based psychosocial interventions have been examined among REM youth (Huey & Polo, 2008), utilization remains relatively low for REM youth compared to White youth. This may be in part related to REM caregivers having lower levels of child mental health literacy than White caregivers (Roberts, Alegria, Roberts, & Chen, 2005). Furthermore, disparities in cultural perceptions of mental health may have a significant influence on mental health service utilization among REM families. For instance, Snowden and Yamada (2005) identified cultural factors that may influence mental health service utilization, such as stigma, beliefs, and attitudes around mental health, culturally normative ways of expressing mental health-related suffering and coping strategies, preferences for alternative interventions and treatment-seeking pathways, trust and treatment receptiveness, and unresponsive programs and providers. As a result of these cumulative factors associated with disparities in mental health service utilization, studies continue to identify sociodemographic differences in the prevalence of mental health problems, service needs, and service use. Specifically, studies suggest that race and ethnicity (i.e., Latino and Black/African American), age (i.e., children ages 2 to 5), and socioeconomic (i.e., low-income families and children without insurance or receiving public insurance) variables as risk factors for underutilization of mental health services (Lu, 2017).

Taken together, these findings suggest the importance of the underlying role of race, ethnicity, and socioeconomic factors in contributing to mental health outcomes and the utilization of mental health services in youth. Better identification and treatment of mental health problems, particularly for socioeconomically disadvantaged REM youth, is needed to improve

mental health outcomes and reduce disparities for youth at greater risk for psychological maladjustment and dysfunction.

Integrated Pediatric Primary Care

Delivering behavioral health services within the context of pediatric primary care has been recommended for addressing unmet mental health needs for children, adolescents, and families (American Academy of Pediatrics, 2017; Asarnow, Kolko, Miranda, & Kazak, 2017; Njoroge, Hostutler, Schwartz, & Mautone, 2016). Due to a growing body of research, health care reform, and collaboration of primary care and behavioral health professionals to enhance patient care (Asarnow & Miranda, 2014; Cohen et al., 2015; Croft & Parish, 2013; Pidano, Kimmelblatt, & Neace, 2011; U.S. Department of Health and Human Services, 2011), pediatric primary care has become an ideal health care setting in which to address the medical *and* mental health needs of youth. Thus, integrated pediatric primary care (IPPC) has the potential for improving access to primary care, as well as reducing rates of behavioral health problems in youth (Asarnow, Rozenman, Wiblin, & Zeltzer, 2015).

IPPC settings provide several opportunities for the identification of internalizing, externalizing, and attention problems in youth. There are several advantages to IPPC (Jones et al., 2018; Reiter, Dobmeyer, & Hunter, 2018). First, IPPC includes a multidisciplinary team of providers, such as pediatric primary care doctors, nurses, administrative support personnel, social workers, behavioral health clinicians, and pediatric psychiatrists. These multidisciplinary providers work collaboratively to identify, assess, and treat a wide array of internalizing, externalizing, and attention problems that may negatively impact youth mental *and* physical health. Second, IPPC utilizes mental health professionals trained in evidence-based treatment interventions and screening methods. Third, IPPC services are conveniently located in a medical

setting, which improves access to care for under-resourced families as well as reduces the stigma related to receiving mental health services. Lastly, IPPC provides brief, problem-focused services to a wide range of patients rather than extensive services to fewer patients.

IPPC providers also report a number of challenges with identifying, screening, assessing, and treating pediatric patients presenting with internalizing and externalizing problems (Williams, Klinepeter, Palmes, Pulley, & Foy, 2004; Olson, Kelleher, Kemper, Zuckerman, Hammond, & Dietrich, 2001). For example, Olson and colleagues (2001) found that IPPC providers reported challenges with treating depression in children and adolescents, citing barriers such as time management, limited training, or limited knowledge of issues pertaining to depression as factors related to treatment. Stein and colleagues (2008) found that a majority of pediatricians surveyed in their study viewed their role in assessing mental health problems (e.g., ADHD, eating disorders, depression, substance use/abuse, conduct problems) as identifying problems in youth and then referring to mental health providers for treatment. Moreover, these researchers found that few pediatricians surveyed completed fellowships with a focus on child mental health. Thus, IPPC helps to support pediatricians by collaborating together to identify and treat internalizing, externalizing, and attention problems in youth (Pidano et al., 2011).

Several models of behavioral health have been implemented throughout IPPC, with models focusing on key aspects of service deliveries of behavioral health interventions to children, adolescents, and families (Cohen et al., 2015; Talmi et al., 2016). Behavioral health services include (1) prevention and health promotion, with a focus on monitoring early-aged children in the first 5 years of life (Stancin & Perrin, 2014); (2) screening, consultation, and care coordination, with a focus on identifying emotional and behavioral disturbances, developmental problems, and other psychosocial concerns; (3) consulting with other providers to enhance

shared decision-making regarding identified concerns that may impact child/adolescent development and/or functioning; and (4) coordination with primary care providers to provide families with services to address complex challenges that may increase the risk for harmful medical and psychological outcomes (Anda et al., 2006; Kelleher & Stevens, 2009; Talmi et al., 2016).

Among the existing studies examining youth behavioral health outcomes in primary care, factors that influence service delivery and utilization among youth remain of great interest. Asarnow and colleagues' (2015) meta-analysis assessed the value of behavioral health in IPPC compared to treatment as usual in improving behavioral health outcomes in children and adolescents. These researchers found stronger evidence for integrated behavioral health programs that targeted diverse mental health problems (e.g., depression, anxiety, conduct problems), as well as problem-specific interventions, such as Triple P (Spijkers, Jansen, & Reijneveld, 2013) and Incredible Years (Lavigne et al., 2008; Perrin, Sheldrick, McMenamy, Henson, & Carter, 2014), interpersonal psychotherapy, and cognitive-behavioral therapy (CBT). As such, IPPC may provide a unique setting that helps mental health professionals to address individual, cultural, and systemic challenges associated with accessing quality mental health services and delivering adapted and culturally-tailored evidence-based interventions.

Statement of the Problem

Existing gaps in mental health evaluation and service utilization reveal stark disparities among REM and non-REM youth, demonstrating the complex interplay between and among individual determinants (i.e., predisposing, enabling, and need factors). To date, research examining mental health service utilization is limited. The majority of existing literature investigating mental health outcomes consists of an oversampling of White youth in primary care

settings, investigating the effectiveness of specific treatment interventions for specific presenting problems, and a lack of evidence supporting the use of multiple treatment and intervention modalities during brief behavioral health visits.

The present study sought to add to the literature on screening diverse youth, as well as examining mental health service utilization in IPPC. To date, no studies have investigated individual determinants of mental health service utilization in youth using behavioral health services in IPPC using person-centered latent class analysis (LCA). The use of individual determinants of mental health service utilization is critical in understanding the predisposing, enabling, and need factors that may influence REM families' use of mental health services, as well as perceptions of mental health problems impacting the development and functioning of children and adolescents. Further, the use of this person-centered approach, which can identify meaningful subgroups of individuals and subsequent variation in outcomes based on these subgroups, will allow for the observation of distinct characteristics of IPPC youth presenting with internalizing-, externalizing-, and attention-related problems based on sociocultural factors. The presence of group membership of internalizing, externalizing, and attention problems based on the degree of predisposing, enabling, and need factors may in turn predict mental health service use among children and adolescents.

Specific Aims and Research Questions

The current study aimed to advance the literature on individual and social determinants of behavioral health service utilization in IPPC settings. Further, the current study had three aims (See *Table 1* for a description of the relevant research aims, planned data analyses, and purpose of each data analysis associated with aims 1-3 that are presented in the current study).

The first aim of the present study was to determine whether latent classes of IPPC youth who differed in *need* factors of behavioral health service use can be identified. Using the Behavioral Model of Service Utilization, the current study used LCA to identify distinct subgroups of attention, externalizing, and internalizing problems in IPPC youth. LCA addresses the drawbacks of previous methods for classifying subgroups such that it makes use of the entire sample, minimizes measurement error, and produces statistical fit indices that can serve to inform decisions regarding the number of subgroups. LCA also allows for the detection of the unique contributions of individual and social determinants associated with behavioral health service utilization in the context of a brief screening of behavioral health problems in a pediatric primary care setting primarily serving urban, low-income families. Hence, the first aim of the present study was to characterize the heterogeneity of behavioral health outcomes among IPPC youth. Using exploratory LCA to identify subgroups of IPPC youth based on the risk of attention, externalizing, and internalizing problems, it was hypothesized that at least one unique group of IPPC youth would be identified. The second aim of the present study was to identify predictors of pediatric behavior problems in class membership among IPPC youth. Using the Behavioral Model of Service Utilization, predictors of class membership included individual and social determinants of behavioral health service use which included *predisposing* (e.g., age, gender, race/ethnicity) and *enabling* (e.g., insurance type) factors. It was hypothesized that at least one of these predictors would be uniquely associated with latent class membership. The third aim of the present study was to determine the association between latent class membership of *need*, *predisposing*, and *enabling* factors and behavioral health service use in IPPC youth. It was hypothesized that there would be distinct associations between class membership and behavioral health service use, with behavioral health service use associated with *need*,

predisposing, and/or *enabling* factors among subgroups of IPPC youth with elevated behavioral health problems.

Method

Participants

The proposed research study was a secondary analysis of data that were collected as part of a clinical service providing behavioral health services to underserved youth in a pediatric primary care setting. The IPPC behavioral health clinic was funded by a federal grant from the Health Resources and Services Administration (PIs: Jones M01HP31388; Rybarczyk D40HP33378). Demographic information, behavioral health service utilization, and behavioral health symptom data were routinely collected as part of clinic evaluation techniques. The mid-Atlantic clinic served a primary minority population of patients receiving publically-funded health care.

The clinic database contained data from 438 children and adolescents, ages 2.06 to 20.56 years at intake ($M = 10.73$, $SD = 3.80$), and their caregivers who were seen for behavioral health services by clinical psychology doctoral trainees. Youth were included if they were seen by a behavioral health clinician during their behavioral health visit between January 2017 and December 2019. This date range was selected for inclusion based on the availability of completed years of electronic medical record data at the time of data collection and analysis. During initial behavioral health visits, families completed the behavioral health problems screener. Twenty IPPC families were excluded from the present study because their child's developmental age was below 4 years, above 17 years, or the child had an established diagnosis of autism. Further, several racial/ethnic groups (e.g., bi-/multi-racial, Asian American/Pacific Islander/Asian Origin) were excluded from the current study due to their small sample sizes ($n =$

15) relative to other racial/ethnic groups. Thus, the current study consisted of 403 youth who attended behavioral health visits in IPPC.

Approximately half of IPPC youth were female (50.6%) and adolescent-aged (52.9%), and more than three-quarters of youth had public insurance (76.2%). IPPC youth were ethnically diverse, with nearly three-fourths identifying as non-Hispanic Black/African American (73.0%), non-Hispanic White (19.4%), or Hispanic/Latinx (7.6%). Sessions with pediatric patients typically included the primary caregiver(s), and interventions often targeted the families. In this cohort, 6.9% of sessions were conducted in Spanish with a trained interpreter. All other patients received sessions conducted in English. The majority of patients were accompanied by maternal caregivers (81.1%).

The most commonly referred internalizing-, externalizing-, and attention-related problems were ADHD (30.0%), depression (25.3%), anxiety (13.5%), emotion regulation/anger problems (13.1%), and conduct problems (10.7%). All other problems (e.g., sleep difficulties, toileting, substance abuse) were relatively rare concerning the aforementioned concerns, occurring in less than 7.4% of patients. Additionally, approximately 33.4% of patients were being treated with psychotropic medication for internalizing, externalizing, or attention problems at intake. Stimulant medication (22.5%) was the most common psychotropic medication. Although comorbid medical conditions were a part of standardized data collection procedures, this information was not routinely collected by behavioral health clinicians during the initial behavioral health sessions and thus was not included in the present study.

Procedures

Clinicians

For this study, data were collected by clinical psychology trainees enrolled in a scientist-practitioner doctoral training program with an emphasis on empirically supported, evidence-based psychotherapy interventions. As part of their training, all behavioral health clinicians in IPPC took courses in ethics, child and adolescent psychopathology, developmental psychology, and evidence-based psychotherapy for children and adolescents. Clinicians had weekly, on-site supervision with a licensed clinical psychologist.

Behavioral Health Visits

As part of the clinic's standard operating procedures, caregivers signed a patient consent form that specifies information in the patient's medical chart, and notes from the patient visits with members of the medical team may be used for research and program evaluation purposes. This study was submitted for Institutional Review Board approval prior to commencement.

Patients were referred to the behavioral health team if their primary care providers identified a behavioral health issue during the patient visit. At that time, they referred patients to an IPPC behavioral health clinician for an in-person consultation at the time of the patient's medical appointment or for a future appointment. Upon completion of a behavioral health visit, IPPC behavioral health clinicians scheduled follow-up sessions as necessary. Visits typically lasted approximately 30 minutes.

An initial session with an IPPC behavioral health clinician typically began with orienting the presenting patient and family to behavioral health services, which consisted of the clinician introducing themselves to the family, reviewing the purpose and procedures related to behavioral health services, and consenting families to limits of confidentiality. Next, the IPPC behavioral health clinician completed a brief functional analysis of the presenting problems in which the patient and family were referred to the IPPC behavioral health clinic by the primary care

provider. Upon completion of the functional analyses, clinicians discussed empirically supported, evidence-based interventions that may be used to treat the patient's presenting problems, emphasizing that the interventions were problem-focused, brief, and based in cognitive-behavioral approaches (e.g., psychoeducation, academic planning/organization, relaxation, behavioral activation, behavioral parent training (BPT), emotion regulation, and gradual exposure therapy). Prior to the conclusion of the behavioral health visit, caregivers were asked to complete the Pediatric Symptom Checklist – 17 (PSC-17; Gardner et al., 1999) to screen for potential internalizing, externalizing, and attention problems in their child or adolescent. Follow-up appointments were typically scheduled between 1 to 4 weeks apart, depending on the severity of presenting concerns, the purpose of the appointment, and the availability of the patient and/or caregiver (see *Table 2* for additional characteristics of behavioral health appointments).

Measures

Individual Determinants of Mental Health Service Utilization

For the proposed study, individual determinants were gathered from the demographic information in the clinical database. Treatment variables obtained from the clinical database included dates of IPPC behavioral health appointments (initial and follow-up visits), referral reason, and other pertinent medical information (e.g., medications, other medical conditions, psychiatric diagnoses and history, previous involvement with child welfare services).

Predisposing Factors. Predisposing factors consisted of demographic information obtained during the initial behavioral health visit, which included age at intake, gender, and race/ethnicity. Patient age was dummy coded into two categorical variables (0 = child-aged (i.e., youth under the age of 10 years), 1 = adolescent-aged (i.e., youth over the age of 10 years)).

Gender was also dummy coded into two categorical variables (0 = females, 1 = males). Race and ethnicity were dummy coded into two categorical variables for Black/African American (0 = non-Black/African American, 1 = Black/African American), White (0 = non-White, 1 = White), and Latinx/Hispanic (0 = non-Latinx/Hispanic, 1 = Latinx/Hispanic) respectively.

Enabling Factors. Enabling factors consisted of demographic information obtained during the initial behavioral health visit, which included the patient's insurance type. Patient insurance type was dummy coded into categorical variables (0 = "public insurance" (e.g., Medicaid), 1 = "private insurance").

Need Factors. Internalizing, externalizing, and attention problems in pediatric patients were measured using the PSC-17 (Gardner et al., 1999), a 17-item caregiver-report measure that is used to screen for emotional and behavioral health problems in youth presenting to a primary care setting. It has three subscales, which include Internalizing Problems, Externalizing Problems, and Attention Problems. Caregivers endorsed items on the PSC-17 on a three-point Likert scale based on the degree to which the youth experiences that problem, with scores ranging from 0 (*never*) to 2 (*often*). The internalizing problems subscale consisted of five items (e.g., "Feels sad/unhappy," "Worries a lot"). The externalizing problems subscale consisted of seven items (e.g., "Refuses to share," "Does not listen to rules"). The attention problems subscale consisted of five items (e.g., "Has trouble concentrating," "Fidgety/unable to sit still"). Youth were identified as being at risk on the PSC-17 by having a score above a specified cutoff on any subscale or the total measure (Gardner et al., 1999). The PSC-17 has demonstrated good construct and criterion validity (Kostanecka, Power, Clarke, Watkins, Hausman, & Blum, 2008; Murphy et al., 2016). The maximum value possible on both the internalizing and attention problems subscales was 10, indicating elevated problems in both emotional and attention

domains. The maximum value for the externalizing problems subscale was 14, indicating elevated problems in the behavioral domain. A cutoff score of 7 or more items for externalizing and attention subscales suggests the presence of externalizing *and/or* attention problems. A cutoff score of 5 or more items for the internalizing subscale suggests the presence of internalizing problems. Attention, externalizing, and internalizing problem subscales were dummy coded to determine whether IPPC youth were elevated or at risk for behavioral health problems based on whether youth met the cutoff score for each subscale. Attention problems were dummy coded to identify youth who were subthreshold (0 = did not meet cutoff score of 7) and youth who were elevated or at risk (1 = did meet cutoff score of 7) for attention problems. Externalizing problems were dummy coded to identify youth who were subthreshold (0 = did not meet cutoff score of 7) and youth who were elevated or at risk (1 = did meet cutoff score of 7) for externalizing problems. Internalizing problems were dummy coded to identify youth who were subthreshold (0 = did not meet cutoff score of 5) and youth who were elevated or at risk (1 = did meet cutoff score of 5) for internalizing problems.

Behavioral health service utilization

Behavioral health service utilization was defined as attending a behavioral health visit in IPPC for youth and families included in the present study. Behavioral health service use included an initial/intake session with a behavioral health clinician in IPPC and follow-up behavioral health appointments in IPPC. Consultation visits with a behavioral health clinician (i.e., warm hand-offs) that were not scheduled as a behavioral health visit were not included in the present study. The total number of behavioral health visits, which included the initial appointment and follow-up appointments through December 2019, were used to determine behavioral health service utilization for the present study.

Data Analytic Plan

Data Preparation

Clinical data were collected by clinicians and entered into REDCap (Harris et al., 2009). Data preparation and screening were performed in SPSS version 26. Data distributions were examined for normality and outliers. Apart from initial data preparation and screening, all analyses were completed using Mplus version 8.4 (Muthén & Muthén, 2018), which included the calculation of descriptive statistics for latent class indicators (i.e., *need* factors), predictors of subgroup membership (i.e., *predisposing* and *enabling* factors), and the outcome variables (i.e., behavioral health service use). First, a series of unconstrained latent class models were estimated to determine the optimal number and structure of attention, externalizing, and internalizing problem subgroups of IPPC youth. Attention, externalizing, and internalizing problem subscales from the PSC-17 were used as latent class indicators, with each subscale entered as a dichotomous variable to indicate if IPPC youth either exhibited behaviors that were below the proposed cutoff threshold (i.e., 0 = “low-risk”) or exhibited behaviors that were at or above the proposed cutoff threshold (i.e., 1 = “high-risk”) in the latent class models. LCA assumes that all indicators within a subgroup are independent (i.e., local independence), with the latent class variables explaining the relations among indicators (Collins & Lanza, 2010). The local independence assumption was evaluated by examining the modification indices for each parameter and the standardized bivariate residuals for each model. A violation of local independence is indicated by a significant chi-square statistic (Collins & Lanza, 2010).

Consistent with the recommendations of Masyn (2013) and others (Nylund, Asparouhov, & Muthén, 2007), model fit statistics and subgroup size considerations were used to determine the optimal number of subgroups. Fit indices for solutions specifying k number of subgroups

were tested using a stepwise approach (k , $k + 1$, etc.) to evaluate models with 1 to 8 latent classes. The number of k -class solutions tested was determined by the point at which adding a subgroup led to model non-identification or led the model to be empirically not well-identified. Model non-identification was indicated by a condition number less than 10^{-6} , poor replication of the best loglikelihood, and/or a substantial number of unperturbed start values that did not converge. Additionally, if one of the subgroups includes only a small proportion of the sample (i.e., less than 5%), the substantive meaning and interpretation of the latent class variable become more limited. Therefore, in the present study, models with one or more subgroups comprised of less than 5% of the data were considered to lack empirical identification and indicate that additional $k + 1$ models were not necessary because the subgroups were unlikely to represent meaningful subgroups.

Indices of relative fit were examined across solutions with different numbers of latent classes, including the loglikelihood value, Akaike information criterion (AIC), Bayesian information criterion (BIC), sample-size-adjusted BIC (aBIC), and entropy. The loglikelihood is the basis for the BIC and is what is maximized by the estimation algorithm (Nylund et al., 2007). A higher loglikelihood value indicates a better fit. The AIC and BIC are measures of the goodness of fit of a model that considers the number of parameters and number of observations (Nylund et al., 2007). The sample-size-adjusted BIC takes into account the sample size, with models with larger sample sizes having a smaller penalty (Nylund et al., 2007). The BIC and aBIC are considered to be the best indicators of goodness of fit and thus included in the analyses for the present study, with BIC determined to be superior to other information criterion statistics, and aBIC correctly identifying the number of subgroups more consistently across different models and sample sizes (Nylund et al., 2007). Entropy was used to measure the quality of

classification, with values ranging from 0 to 1. Values closer to 1 suggested greater accuracy in classification, with values less than 0.6 indicating poor classification quality.

The significance of likelihood ratio tests was also used as an indicator of relative model fit. Likelihood ratio tests produce a p -value that represents the increase in model fit between the $k - 1$ class model and the k -class model (Nylund et al., 2007). A small probability ($p < .05$) indicates the $k - 1$ class should be rejected in favor of the k -class model. In the present study, the significance of the bootstrap likelihood ratio test (BLRT; McLachlan & Peel, 2000) and the Lo-Mendell-Rubin likelihood ratio test (LMR-LRT; Lo, Mendell, & Rubin, 2001) were considered. Priority was given to the LMR-LRT and used in conjunction with the substantive meaning of classes, parsimony, and theoretical justification (Asparouhov & Muthén, 2012; Masyn, 2013; Nylund et al., 2007). For solutions identified as fitting the data well relative to other solutions, the average posterior probabilities (AvePPs) and the item endorsement probabilities within each latent subgroup were examined to determine if the subgroup demonstrated adequate separation and within-subgroup homogeneity. AvePPs greater than 0.8 indicated adequate separation and class precision (Masyn, 2013).

To test the associations between latent classes (i.e., *need* factors), covariates (i.e., *predisposing* and *enabling* factors), and the outcomes of interest (i.e., behavioral health service use), the three-step Bolck-Croon-Hagenaars (BCH) approach was used. The three-step BCH approach is advantageous because it allows for the inclusion of both covariates and distal outcomes within a model while avoiding shifts in latent class membership (Asparouhov & Muthén, 2014). In this stepped process, IPPC youth were assigned to the latent classes determined in the first step, at which point classification errors were calculated for each individual, and then inverse logits of those errors were used as weights in the third step. The

probability of membership in each subgroup given age, gender, insurance type, and race/ethnicity was calculated by dividing the exponentiated logit for each subgroup (versus the reference subgroup) by the sum of exponentiated logits for each subgroup. With regard to race/ethnicity, “Black/African American” was treated as the reference group given that it had the largest proportion of IPPC youth relative to other racial/ethnic groups in the study. Following examination of the influence of covariates on posterior probabilities, the three-step BCH approach was then used to estimate distal outcome models in which the outcomes of interest (i.e., behavioral health service use) were regressed onto latent class membership accounting for the influence of *predisposing* (e.g., age, gender, race/ethnicity) and *enabling* (e.g., insurance type) factors (see conceptual models in *Figure 1* and *2*). A series of omnibus Wald tests were used to determine whether latent class subgroups differed in behavioral health service use respectively, with *p*-values ($p < .05$) indicating significant differences in behavioral health use among subgroups. Pairwise comparisons were evaluated using the model constraint command in Mplus. The significance values for each analysis were set at $p < 0.05$.

Results

Descriptive Statistics

SPSS 26 (IBM Corp., 2019) was used to screen and clean the dataset prior to importing data into Mplus 8.4 for analysis. Skewness and kurtosis were examined for each covariate (i.e., *predisposing* and *enabling* factors) and outcome (i.e., behavioral health service utilization) variables. Three variables were found to have positively skewed and kurtotic distributions: race/ethnicity (Black/African American), insurance type (public insurance/Medicaid), and behavioral health service utilization. Scores on these three items were therefore log-transformed to increase their normality and improve the precision of analysis (Tabachnick & Fidell, 2007).

The log-transformed variables were used in all analyses. Means, standard deviations, and percentages for all *predisposing* (e.g., age, gender, race/ethnicity), *enabling* (i.e., insurance type), *need* (i.e., PSC-17 attention, externalizing, and internalizing problem scores), and the outcome variable (i.e., behavioral health service utilization) are presented in Table 2. All subsequent latent class and regression analyses were conducted in Mplus 8.4. Descriptive statistics for the overall study sample are presented in Table 2.

Unconditional Latent Class Analysis

Latent class enumeration

Model fit indices for a series of 1- to 8-class solutions were compared to identify the number of distinct subgroups that best represented the heterogeneity of individual response patterns for *need* factor (e.g., attention, externalizing, internalizing problems) subgroups of IPPC youths (see Table 3 for model fit indices). Examination of the fit statistics across models specifying one to eight latent classes provided the clearest support for a two-class model. The significance of both the LMR-LRT and VLMR-LRT of the two-class model indicated that they significantly improved compared to the fit indices of the one-class model. The LMR-LRT was not significant for the three-class model, indicating that the three-class model did not fit significantly better than the two-class model and that it should be rejected in favor of the two-class model. The AIC and BIC continued to increase across k -class solutions, such that the two-class model produced the lowest AIC and BIC values relative to the three-class and above models. Although the aBIC continued to increase across k -class solutions, a scree plot revealed that the magnitude of the decrease leveled off after the two-class model. The current recommended practice when this occurs is to identify the point at which the information criterion begins to plateau in terms of decreases from the k -class model to the $k+1$ class model (Masyn,

2013). In the current study, this occurred between the two- and three-class models. The entropy and condition numbers of the two-class model were also adequate, and the smallest latent subgroup in the two-class model represented 49% of the sample, which is large enough to suggest that it adds substantive meaning to the one-class model. Moreover, average posterior class probabilities (AvePPs) for the two classes were 1.0 respectively, indicating adequate subgroup separation and classification precision between classes and within-class homogeneity (i.e., IPPC youths were likely assigned to the correct class).

Aim 1: Homogeneity and separation of subgroups

Item response probabilities were examined to identify the response patterns within each subgroup, and to ensure the homogeneity and separation of subgroups (see *Figure 3*). Subgroup 1 represented the largest proportion of the sample (50.9%) and had a high estimated probability of IPPC youth above the cutoff level for attention, externalizing, and internalizing problems on the PSC-17. Subgroup 1 was characterized by IPPC youth who had a high probability of being at risk for attention problems (.94) and a moderate probability of being elevated or at-risk for externalizing (.66) and internalizing (.51) problems. It was therefore labeled “Significant Comorbid Problems.”

Subgroup 2 represented the remaining proportion of the sample (49.1%) and consisted of IPPC youth who had a low estimated probability of having elevated PSC-17 externalizing, attention, and internalizing problems. Specifically, Subgroup 2 was characterized by IPPC youth being below the cutoff level for attention, externalizing, and internalizing problems, with youth having a low probability of being at-risk for attention (.05), externalizing (.22), and internalizing (.46) problems. Of note, the two subgroups showed greater discrepancies in estimated probabilities in attention problems, with Subgroup 1 youth having a high probability of being

elevated or at-risk for attention problems (.94) whereas Subgroup 2 youth had a low probability of being elevated or at-risk for attention problems (.95). This pattern persisted, although decreased slightly with externalizing problems, with Subgroup 1 youth being high-risk for externalizing problems (.66) compared to Subgroup 2 youth who had a low probability of having elevated externalizing problems (.78). Estimated probabilities appeared to converge mostly with internalizing problems with the majority of Subgroup 2 youth having a higher probability of being high-risk for internalizing (.46) problems relative to attention (.05) and externalizing problems (.22), although remaining low compared to youth who did not have internalizing problems in this subgroup. Hence, Subgroup 2 was labeled “Predominantly Internalizing.”

Aim 2: Predisposing and Enabling Factors as Covariates of Latent Class Membership

Results from the model examining the associations between *predisposing* (i.e., age, gender, race/ethnicity) and *enabling* (i.e., insurance type) and latent class membership are presented in *Table 3*.

Age. Analyses were conducted to examine the proportions of IPPC child- and adolescent-age youth in each subgroup within models of the full sample. A Wald test revealed age significantly predicted subgroup membership ($w = 24.17, df = 1, p < 0.001$). Child-aged IPPC youth were more likely than adolescent-aged youth to be in the “Significant Comorbid Problems” subgroup ($b = -1.25, p < 0.001$), with adolescents being less likely than children to be in the “Significant Comorbid Problems” subgroup than adolescent-aged youth ($OR = 0.29, p < 0.001$). In contrast, adolescent-aged IPPC youth were more likely to be in the “Predominantly Internalizing” subgroup than children ($b = 1.25, p < 0.001$), and were more than three times as likely than child-aged youth to be in this subgroup ($OR = 3.45, p < 0.001$).

Gender. Analyses were conducted to examine the proportions of male and female IPPC youth in each subgroup within models of the full sample. A Wald test revealed gender significantly predicted subgroup membership ($w = 8.01$, $df = 1$, $p = 0.01$). Male IPPC youth were more likely than female youth to be in the “Significant Comorbid Problems” subgroup ($b = 0.71$, $p = 0.01$), with males twice as likely than females to be in this subgroup ($OR = 2.04$, $p = 0.04$). In contrast, females were more likely than males to be in the “Predominantly Internalizing” subgroup ($b = -0.71$, $p = .01$), and had significantly greater odds of being in this subgroup compared to males ($OR = 0.49$, $p < 0.001$).

Insurance type. Analyses were conducted to examine the proportions of public and private insurance in IPPC youth in each subgroup within models of the full sample. Findings did not reveal significant group subgroup differences between public and private insurance in IPPC youths ($w = 0.48$, $df = 1$, $p = 0.50$). Further, there were no significant differences in insurance types among IPPC youth in either the “Significant Comorbid Problems” subgroup ($b = -0.20$, $p = 0.50$) or “Predominantly Internalizing” subgroup ($b = 0.20$, $p = 0.50$).

Race/ethnicity. Analyses were conducted to examine the proportions of race/ethnicities of IPPC youth in each subgroup within the models of the full sample, with Black/African American as the reference group. Findings did not reveal significant differences in subgroup membership across race/ethnicity ($w = 3.94$, $df = 1$, $p = 0.14$). Among IPPC youth in the “Significant Comorbid Problems” subgroup, there were no significant differences between White IPPC compared to Black/African American IPPC youth ($b = -0.54$, $p = 0.11$). Additionally, there were no significant group differences in Latinx/Hispanic IPPC youth compared with Black/African American youth within the “Significant Comorbid Problems” subgroup ($b = -0.65$, $p = 0.15$). Further, there were no group differences between White IPPC youths compared to

Black/African American youth ($b = 0.54, p = 0.11$) and Latinx/Hispanic compared to Black/African American youth ($b = 0.65, p = 0.15$) within the “Predominantly Internalizing” subgroup.

Aim 3: Association between Class Membership and Behavioral Health Service Use

To test the predictive validity of the classes yielded with the LCA strategy, the present study examined whether IPPC behavioral health service use differed across the two *need* subgroups (i.e., “Significant Comorbid Problems” and “Predominantly Internalizing”). Using a general linear model (GLM) to assess these associations, behavioral health service use (i.e., the total number of behavioral health visits) was treated as the distal outcome in these analyses. Results from the model examining the associations between latent class membership and behavioral health service use are presented in *Table 5*.

To test whether latent class subgroups differed in behavioral health service use, a Wald test revealed that IPPC youth did not differ between subgroups and behavioral health service use ($w = 0.10, df = 1, p = 0.75$). Among IPPC youth in the “Significant Comorbid Problems” subgroup, age was found to predict behavioral health service use, such that adolescent-age IPPC youth were associated with greater behavioral health service use ($b = 0.96, p = 0.01$). Among the “Predominantly Internalizing” subgroup, gender was found to be associated with higher behavioral health service use, such that female IPPC youth were associated with greater behavioral health service use compared to males ($b = -1.00, p = 0.001$).

Discussion

The present study sought to empirically identify group membership of IPPC youth, characterized by individual determinants of behavioral health service utilization. Guided by Andersen’s Behavioral Model for Health Services Utilization (Aday & Andersen, 1974;

Andersen, 1995; Andersen & Newman, 1973), individual determinants, consisting of *predisposing* (e.g., age, gender, race/ethnicity), *enabling* (e.g., insurance type), and *need* (e.g., symptoms) factors were identified and used to predict IPPC behavioral health service utilization. First, exploratory latent class analyses were conducted to identify distinct classes of subgroups of IPPC youth who were elevated or at-risk for behavioral health problems. Next, covariates were analyzed to determine predictors of class membership in the identified subgroups. Finally, the study examined differences in behavioral health service use between latent class subgroups, as well as predictors of behavioral health service use within the identified subgroups. Using the internalizing, externalizing, and attention problem subscales of the PSC-17 (*need factors*) to identify unique membership of IPPC youth based on symptoms, findings from the first aim of the present study found that two distinct latent class subgroups emerged, in which IPPC youth belonged to either “Significant Comorbid Problems” or “Predominantly Internalizing” subgroups.

The “Significant Comorbid Problems” subgroup included slightly more than half of IPPC youth (50.9%) in the study, had a higher likelihood of having caregiver-reported elevated or at-risk attention problems, and a moderate likelihood of elevated or high-risk externalizing and internalizing problems. It was notable that IPPC youth in this subgroup had a high probability of caregiver-reported elevated or at-risk attention problems relative to externalizing and internalizing problems. This suggests that although caregivers were most likely to identify elevated or at-risk attention problems, youth in this subgroup were also fairly likely to exhibit elevated or at-risk externalizing and internalizing problems concurrently. These findings were consistent with previous research on community and at-risk populations, which suggest that attention problems (i.e., difficulties associated with ADHD) are among the most common

problems detected in youth in IPPC and increase the risk of comorbid externalizing (e.g., ODD, CD) and internalizing (e.g., depression, anxiety) symptoms and disorders (Brown et al., 2001; Connor et al., 2003; Connor & Ford, 2012; Langberg, Froehlich, Loren, Martin, & Epstein, 2008; Power, Mautone, Manz, Frye, & Blum, 2008). For instance, studies have suggested that attention problems (e.g., inattentiveness, difficulties with following classroom instructions and staying on task) are likely to negatively influence academic achievement in youth (e.g., reading and math difficulties, poor academic performance, grade retention), which may be compounded by co-occurring and/or subsequent externalizing (e.g., delinquency, conduct problems, classroom disruption and “acting out,” aggression behaviors) and internalizing problems (e.g., depression, anxiety) (Barnard-Brak, Sulak, & Fearon, 2011; Booster, Dupaul, Eiraldi, & Power, 2010; Carroll, Maughan, Goodman, & Meltzer, 2005; Maughan, Rowe, Loeber, & Stouthamer-Loeber, 2003; Visser, Linkersdörfer, & Hasselhorn, 2020). Attention problems in youth have also been associated with increased social difficulties, such that youth with attention problems (e.g., attention to social cues) are at an increased risk of developing poorer social skills (e.g., making and keeping friends, peer rejection and victimization, fewer positive peer interactions), which may be directly or indirectly associated with internalizing (e.g., anxiety, depression, low self-esteem, negative self-image, social withdraw) and externalizing behaviors (e.g., greater risk of gravitating towards other delinquent peers, substance use) (Becker, Luebbe, & Langberg, 2012; Becker, Mehari, Langberg, & Evans, 2016; Bishop, Mulraney, Rinehart, & Sciberras, 2019; Bornstein, Hahn, & Haynes, 2010). Further, studies have found that youth with comorbid attention, externalizing, and internalizing problems are at an increased risk of experiencing adverse family functioning outcomes, which include disruptions in family dynamics (e.g., negative caregiver-child interactions, family conflict), and negative parenting behaviors (e.g.,

overprotectiveness, increased caregiver distress, lack of positive parenting, use of less effective parenting strategies) (McRae, Stoppelbein, O’Kelley, Fite, & Smith, 2020; Pfiffner & McBurnett, 2006).

While several studies have found associations between comorbid attention, externalizing, and internalizing problems and impaired academic, social, and family functioning, the present study suggests that these problems are likely to occur concurrently to some degree in a distinct subgroup of youth who present for behavioral health services in an IPPC setting. It is important to note that elevated or at-risk symptoms associated with the “Significant Comorbid Problems” subgroup of IPPC youth were reported by caregivers in this study. Research has shown that attention and externalizing problems in youth are more overt and observable by caregivers, and that maternal caregivers are more likely to rate attention-related problems (e.g., ADHD) and externalizing behaviors more severely (Langberg et al., 2010). Given that the present study consists of mostly maternal caregivers, these findings were consistent with previous research and suggest that caregivers of youth in the “Significant Comorbid Problems” subgroup may observe attention and behavior problems in youth more readily and frequently, perceive the symptoms and associated impairments as more severe, and seek formal evaluation and treatment in IPPC settings (Cho et al., 2007; Connor & Ford, 2012; Johnston & Burke, 2020). Furthermore, although studies suggest that internalizing problems are less observable and may go undetected in youth by caregivers (Tandon et al., 2009), it is plausible that caregivers in the “Significant Comorbid Problems” subgroup were more aware of the cascade of attention and externalizing problems, impaired functioning (e.g., social disengagement, peer rejection, poor academic performance), and associated internalizing problems (e.g., low self-esteem, depression, anxiety) found in these youth. It could also be that caregivers were able to identify internalizing

symptoms in these youth that were a direct or indirect consequence of parenting behaviors (e.g., increased discipline/punishment, less modeling and problem-solving) and negative caregiver-child interactions commonly associated with attention and externalizing problems in youth (Leve et al., 2005).

The second subgroup of IPPC youth was labeled “Predominantly Internalizing” and was comprised of the remaining IPPC youth (49.1%) who were not in the “Significant Comorbid Problems” subgroup. The “Predominantly Internalizing” subgroup included youth who had a low likelihood of caregiver-rated elevated or at-risk attention and externalizing problems, however, had a moderate likelihood of elevated or at-risk internalizing problems. These findings which suggest that internalizing problems exist in the absence of elevated, co-occurring attention and externalizing problems within a distinct subgroup of IPPC youth, are noteworthy for several reasons. Research has shown that internalizing problems commonly occur in youth and can have an adverse impact on youth functioning and overall quality of life (Anderson & Mayes, 2010; Liu et al., 2011). Internalizing problems, such as depression and anxiety, have been associated with low self-esteem, poor academic performance, decreased social competence, and comorbid mental health problems (Liu et al., 2011; Merrell, 2008; Tandon, Cardeli, & Luby, 2009). Additionally, internalizing problems are believed to be less observable, less problematic to others (compared to attention and externalizing problems), and reflect internal distress rather than overt, socially negative, or disruptive behavior (Tandon et al., 2009). Thus, IPPC youth within this subgroup may have exhibited elevated levels of internal distress that were associated with significantly impaired functioning that was noticeable to others. Specifically, youth within this subgroup may have exhibited noticeable internalizing symptoms (e.g., sadness, anxiety, low self-esteem) that were associated with decreased engagement in school and home, and negative

problems (e.g., peer and caregiver/family conflict, poor communication) with peers, caregivers, family members, and teachers. Further, this internal distress among these youth may have been associated with poorer health behaviors (e.g., disrupted appetite and sleep patterns, increased risk of self-harm and suicide) which were detected *and/or* assessed by a primary care physician (Durbeej et al., 2019). It is also possible that IPPC youth within this subgroup demonstrated characteristics (e.g., effortful control, behavioral inhibition) that allowed them to suppress attention and externalizing symptoms (e.g., poor attention, aggression, disruptive behaviors) while also increasing their risk of experiencing internalizing problems (e.g., low mood, anxiety) (Tandon et al., 2009). As such, the “Predominantly Internalizing” subgroup of IPPC youth may have experienced elevated levels of emotional distress and impairment that warranted additional assessment and intervention through IPPC behavioral health services.

The present study also sought to determine whether latent class subgroups of IPPC youth could be distinguished by individual characteristics of behavioral health service use (i.e., *predisposing* and *enabling* predictors). The study demonstrated that both age and gender were significant predictors of class membership among “Significant Comorbid Problems” and “Predominantly Internalizing” subgroups of IPPC youth. Specifically, the study found that IPPC youth in the “Significant Comorbid Problems” subgroup were more likely to be younger (i.e., child-age) and male, while youth in the “Predominantly Internalizing” subgroup were more likely to be older (i.e., adolescent-age) and female. Neither of the other two variables (i.e., race/ethnicity, insurance type) examined as predictors in the present study was associated with membership in either subgroup of IPPC youth.

These results were consistent with previous studies that demonstrated age and gender differences in attention, externalizing, and internalizing problems in community samples of

youth, and suggest that both are closely associated with behavioral and emotional problems in youth. Previous research has shown that externalizing problems are commonly associated with youth who are younger and male, whereas internalizing problems are most associated with youth who are older and female (Zahn-Waxler et al., 2000). Gender and age differences have been found in youth with attention problems, with most studies examining these differences in ADHD (Weiss, Worling, & Wasdell, 2003). Although ADHD is more commonly diagnosed in younger males compared to females, some studies have found differences in the presentation of symptoms in youth, with males more commonly associated with hyperactive and impulsive symptoms, and inattention commonly found in females (Becker, McBurnett, Hinshaw, & Pfiffner, 2013; Weiss et al., 2003). Given that the “Significant Comorbid Problems” subgroup of IPPC youth was characterized by co-occurring attention and externalizing problems, it is not surprising that the two predictors, child-age and male, were closely associated with subgroup membership. Studies have found that younger males with comorbid ADHD and externalizing problems exhibit negative behaviors (e.g., hyperactivity, impulsivity, aggression, classroom disruption) which lead to negative consequences in school (e.g., school suspension and expulsion, poor academic performance, poor teacher ratings), peer relationships (e.g., peer rejection, peer-to-peer conflict), and family functioning problems (e.g., increased negative parenting, caregiver-child conflict) (Armstrong, Lycett, Hiscock, Care, & Sciberras, 2014). Further, studies have suggested that internalizing problems in younger males with comorbid ADHD and externalizing problems are such that youth may exhibit externalizing problems as a way of “acting out” internal distress (e.g., mood symptoms) (Fanti, Henrich, Brookmeyer, & Kuperminc, 2008; Lee & Bukowski, 2012). Given these challenges that youth and families experience in managing the increasingly difficult emotional and behavioral problems, caregivers

may seek alternative approaches to behavioral management (Brinkman & Epstein, 2011). Further, caregivers of youth with elevated comorbid attention, externalizing, and internalizing problems may be more likely to report problems and associated impairment to pediatricians during primary care visits, which may result in subsequent referrals to behavioral health services within IPPC (Brown et al., 2011; Njoroge et al., 2016). Thus, it is possible that caregivers of child-aged male youth in the “Significant Comorbid Problems” subgroup sought evaluation and treatment (e.g., medication management, educational intervention, behavior management) for the aforementioned problems in their youth in IPPC.

In contrast, it was unsurprising that adolescent-aged and female youth were not associated with “Significant Comorbid Problems” subgroup membership. Studies have found that externalizing problems decline in youth from childhood to adolescence (Leve et al., 2005). Further, female youth are less likely than males to exhibit elevated levels of externalizing behaviors, as studies have found that comorbid ADHD and internalizing problems (e.g., depression, anxiety, social withdrawal) are mostly associated with female youth (Rucklidge, 2010). It is possible that attention and externalizing symptoms in female IPPC youth were undetected among caregivers, and that attention symptoms (e.g., problems with concentration) were more closely associated with internalizing problems (e.g., depressive and mood symptoms) by these caregivers.

The “Predominantly Internalizing” subgroup was closely associated with both adolescent-aged and female IPPC youth. These findings were consistent with studies that suggest that not only do youth experience a decrease in externalizing behaviors and an increase in internalizing problems from childhood to adolescence, but female adolescent youth are more likely to report greater levels of internalizing problems than male adolescents (Leve et al., 2005;

Merikangas et al., 2010; Rescorla et al., 2007; Zahn-Waxler, Shirtcliff, & Marceau, 2008).

Attention problems in adolescent youth may be attributed to internalizing symptoms, such as anxiety (e.g., excessive worrying) and/or depression (e.g., low self-esteem, low mood, social withdrawal), and therefore may be difficult to distinguish in youth with comorbid attention and internalizing problems (Sevincok et al., 2020; So, Chavira, & Lee, 2022). Given these findings, it was not surprising that the “Predominantly Internalizing” subgroup of IPPC was comprised of mostly adolescent-age and female youth who were likely to have caregivers report subthreshold attention and externalizing problems, and elevated internalizing problems. It is possible that internalizing problems in these youth were more readily identified within the context of other psychosocial problems among adolescent-aged females in the present study by both caregivers and primary care providers in IPPC (Bor et al., 2014). It is also possible that adolescent female IPPC youth were more vulnerable than youth who were younger and/or male to experience elevated levels of internalizing problems associated with increased challenges (e.g., puberty and maturity, more social demands, negative peer evaluations and social interactions, school performance pressure, weight, and appearance) that were identified and reported by caregivers to pediatricians in IPPC (Bor et al., 2014; Reynolds & Juvonen, 2010). Further, caregivers may have sought and utilized behavioral health services for “Predominantly Internalizing” female adolescent IPPC youth given their own characteristics (e.g., maternal depression and anxiety) that may have negatively impacted the caregiver-child relationship. Taken together, the findings suggest the value of examining predictors that may be associated with distinct subgroups of symptom presentations in IPPC youth, such that child-aged males and adolescent-aged females may present for behavioral health services in IPPC settings and require disparate interventions to address behavioral and emotional concerns. Further, these predictors of subgroups of IPPC youth

may influence the degree to which behavioral health services are utilized by youth and caregivers in the IPPC setting.

The third aim of the study examined the association between behavioral health service utilization and the two distinct latent class subgroups of IPPC youth based on identified *need*, *predisposing*, and *enabling* factors. While findings from the study did not reveal overall differences in behavioral health service use (i.e., the total number of behavioral health visits) between the two subgroups of IPPC youth, there were nuanced differences within each group. Among IPPC youth in the “Significant Comorbid Problems” subgroup, age was associated with behavioral health service use such that older youth were associated with higher levels of behavioral health service use. Additionally, among IPPC youth in the “Predominantly Internalizing” subgroup, gender was associated with behavioral health service use such that females in this group evidenced higher levels of behavioral health service use than males.

The Behavioral Model for Health Services Utilization has suggested that several individual determinants and characteristics influence the decision of families to seek mental health treatment for youth. While mental health treatment may focus on addressing youth behavioral and emotional problems, caregivers tend to serve as the gatekeeper for their youth’s mental health treatment and likely play a critical role in addressing youth mental health needs (Banta, James, Haviland, & Andersen, 2013). As such, caregivers are likely to have a strong influence on the initiation, continuation, or termination of treatment, such that engagement in treatment may be contingent upon the motivation of caregivers (Banta et al., 2013; Yeh et al., 2005). Several studies have examined factors associated with treatment engagement and premature termination of treatment, which have identified factors, such as the recognition of problem behaviors (Thurston, Phares, Coates, & Bogart, 2015), barriers to treatment

participation (e.g., conflict with significant other about coming to treatment, concerns around cost or length of treatment, perceived relevance of treatment related to youth's problems, relationship with the therapist, significant life stressors) (Kazdin et al., 1997a; 1997b), youth-specific factors (e.g., increased contact with deviant peers, ethnic minority status, caregiver- and teacher-reported externalizing problems and disorders), and caregiver/family factors (e.g., young maternal caregiver, homelessness, caregiver's low confidence of doing well in treatment, caregiver's support system, lower socioeconomic status, single parenthood, caregiver's psychopathology) (de Haan, Boon, de Jong, Hoeve, & Vermeiren, 2013). Although several of these factors were outside of the scope of the present study, it is possible that some of these factors may have contributed to treatment engagement of the "Significant Comorbid Problems" and "Predominantly Internalizing" subgroups of IPPC youth.

While IPPC youth in the "Significant Comorbid Problems" subgroup were more likely to be younger and male, findings from the present study found that older youth within this subgroup were associated with higher levels of behavioral health service use in IPPC. These findings were consistent with previous research which has found that mental health service use increases from childhood to adolescence, with symptom severity and comorbidity in adolescents with attention-related problems (e.g., ADHD) and externalizing problems largely associated with increased rates of mental health treatment (Merikangas et al., 2011). It is possible that older youth in the "Significant Comorbid Problems" subgroup were more directly and actively involved in addressing their caregiver-reported attention and externalizing problems. This in turn may have provided more opportunities for adolescents to discuss their concerns independently with a behavioral health clinician, establish a positive therapeutic rapport, and provide their own insight into factors that may contribute to their attention and externalizing problems. Further, the

“Significant Comorbid Problems” subgroup included elevated internalizing problems, which may suggest that internal distress was associated with attention and externalizing problems among these youth. Thus, it could also be that the decision to seek treatment and utilize behavioral health services was largely made in agreement between both caregivers and adolescents, such that older youth may have benefited from behavioral and cognitive interventions that also treated the internal distress associated with attention and externalizing problems and impairment compared to younger IPPC youth. Treatment for adolescent-aged youth in the “Significant Comorbid Problems” subgroup may have targeted the youth’s internal distress directly by way of cognitive therapies (e.g., cognitive behavioral therapy; CBT), in conjunction with working with both the adolescent and caregiver to implement behavioral interventions to address attention and externalizing problems (e.g., home and classroom behavioral management, homework organization and planning). This approach may have in turn elicited greater confidence in treatment among adolescents and caregivers with regard to perceptions about the usefulness and efficacy of treatment, and addressed other potential barriers to treatment engagement (e.g., length of treatment, stigma about mental health, low levels of participation in treatment planning and intervention).

Conversely, the underutilization of behavioral health services among younger IPPC youth compared to older youth in the “Significant Comorbid Problems” subgroup may be explained by several potential barriers to treatment participation and engagement. First, treatment for younger IPPC youth, such as behavioral management interventions (e.g., behavioral parent training), may require higher levels of caregiver participation in behavioral health sessions, whereas interventions for older youth (e.g., cognitive-behavioral therapy) may potentially require less caregiver involvement during behavioral health sessions. In addition, caregiver factors (e.g.,

perceptions and beliefs about the efficacy of treatment, incompatible beliefs about treatment with discipline strategies, stigmatized attitudes and beliefs about their child's behaviors *and/or* mental health, caregiver stress, caregiver education level, possibility of meeting times during caregiver work hours) may have been barriers to treatment engagement (e.g., frequent and/or regular attendance to sessions, cancellations, premature termination) for child-age IPPC youth. It was also noteworthy that age was not associated with behavioral health service use among "Predominantly Internalizing" IPPC youth. Despite previous studies that demonstrate increased mental health service use among adolescent youth, it is possible that youth within the "Predominantly Internalizing" subgroup were equally impacted by their levels of internal distress and associated impairment, and sought treatment through IPPC despite their respective ages.

The present study found that gender was a significant predictor of behavioral health service utilization within the "Predominantly Internalizing" subgroup, such that female IPPC youth were associated with higher levels of behavioral health service use compared to male IPPC youth. These findings are consistent with previous adult and youth studies which identified factors associated with increased mental health service use among females. For instance, several studies found that adolescent females were more likely to receive mental health treatment across settings (e.g., specialty outpatient clinics/programs, school-based services, medical settings) for common internalizing problems (e.g., depression, anxiety, suicidal ideation, emotional distress) (Lipari, Hedden, Blau, & Rubenstein, 2016; Mojtabai & Olfson, 2020). Furthermore, previous studies have suggested that increased mental health service use in adolescent females were mostly associated with sociodemographic factors (e.g., non-Hispanic white, higher income, private insurance) (Mojabai & Olfson, 2020). The findings from the present study were noteworthy in that they demonstrated that higher rates of behavioral health service utilization in

the “Predominantly Internalizing” subgroup of IPPC youth were associated with being female in an IPPC sample of youth that was mostly Black/African American and had public insurance (e.g., Medicaid). The higher rates of behavioral health service use among female IPPC youth in the “Predominantly Internalizing” subgroup may be related to several factors. Not only are female youth more likely to access mental health services in specialty, school, *and/or* general medical settings to treat internalizing problems than male youth, but it is possible that behavioral health services in IPPC may be an optimal setting for addressing mild internalizing symptoms, as sessions are likely to consist of brief, problem-focused interventions (e.g., CBT, supportive counseling, problem-solving). In fact, studies have suggested that the combination of brief interventions consisting of CBT, supportive counseling, problem-solving, and nonspecific psychotherapy are effective in reducing internalizing problems (e.g., depressive symptoms) in adolescent youth (Lewandowski et al., 2013). Other studies have found that brief interventions (e.g., CBT) conducted in a pediatric setting were effective in decreasing internalizing problems (e.g., depression, anxiety) in youth (Borschuk, Jones, Parker, & Crewe, 2015; Weersing et al., 2008).

Another possible explanation for gender differences in behavioral health service use among “Predominantly Internalizing” IPPC youth is that studies have suggested that mental problems may be stigmatized in youth, particularly among males. Such stigma may lead to lower service use among males. Chandra and Minkovitz (2006) found that adolescent males were less willing to use mental health services compared to females, and identified factors such as perceived caregiver disapproval of the use of mental health services, having less experience seeking help for emotional concerns, and socialization (e.g., the perceived weakness of emotional expression) as possible barriers to treatment-seeking among adolescent males.

Additionally, Rickwood and colleagues (2005) suggested that adolescent and young adult males may demonstrate less emotional competence (e.g., emotional awareness, identifying, describing, and managing emotions) than adolescent and young adult females, which may decrease their likelihood to seek treatment for internalizing problems. While gender was associated with behavioral health service use among “Predominantly Internalizing” IPPC youth, it was somewhat surprising that similar findings were not demonstrated among “Significant Comorbid Problems” youth. It is possible that IPPC youth in the “Significant Comorbid Problems” subgroup were negatively impacted by the severity of co-occurring attention, externalizing, and internalizing problems the psychosocial impairment associated with these problems, and the decision to seek treatment through IPPC regardless of gender. Taken together, these findings suggest that female youth with elevated internalizing problems are likely to recognize and identify these problems and associated impairment, seek mental health treatment to address the internalizing problems, and experience fewer barriers to treatment for internalizing problems compared to male youth in IPPC.

It is also important to consider the lack of significant findings of both race/ethnicity and insurance type in relation to predictors of class membership and behavioral health service utilization. IPPC youth in the present study were mostly Black/African American (73.0%) and publically-insured (76.2%). Given that greater amounts of IPPC youth were reported in these groups compared to other race/ethnic groups (e.g., White, Latinx/Hispanic) and insurance-type (e.g., private/self-pay), the low variability may have made it difficult to demonstrate significant findings associated with the outcomes of interest (i.e., distinct latent class membership, predictors of behavioral health service use).

Implications and Future Directions

The results of this study address an important gap in the literature regarding behavioral health service use among predominantly urban, racial/ethnic minoritized youth within an IPPC setting. Guided by the Behavioral Model of Health Service Utilization, behavioral health services within IPPC were found to be closely associated with individual determinants (i.e., *predisposing*, *enabling*, and *need* factors) among two distinct subgroups of youth with either elevated co-occurring attention, externalizing, and attention problems (i.e., “Significant Comorbid Problems”), or elevated internalizing problems (i.e., “Predominantly Internalizing”). The significant findings related to age and gender as predictors of latent class membership in both “Significant Comorbid Problems” and “Predominantly Internalizing” subgroups and behavioral health service use are noteworthy as they were demonstrated in a sample of mostly underserved, Black/African American youth in IPPC.

Studies have found that REM youth with attention, externalizing, and internalizing problems access mental health services at lower rates than White youth (Alegría et al, 2012). Studies indicate that sociodemographic factors (e.g., race/ethnicity, socioeconomic status) may impact the expression of behavioral health symptoms, and are associated with socio-cultural norms and values that may influence behavioral health service utilization (Huey & Polo, 2008, Eiraldi et al., 2006; Power, Eiraldi, Clarke, & Mazzuca, 2005). It is possible that central aspects of IPPC (e.g., colocation and integration of behavioral health services within a medical setting, reduced cost of behavioral health services) were effective in increasing behavioral health care access and engagement in services among underserved, publically-insured REM IPPC youth and families. It is also possible that the underutilization of IPPC behavioral health services by other REM groups (e.g., Latinx/Hispanic) was such that these families may have preferred more informal sources of support (e.g., support groups, family or friends, religious leaders) for

addressing behavioral health needs in youth (Vazquez et al., 2021). Further, although the IPPC setting is believed to reduce barriers to behavioral health care, formal behavioral health settings may still be viewed as stigmatizing and therefore impeded behavioral health service utilization (e.g., help-seeking, treatment engagement) among these families (Vazquez et al., 2021). The present study underscores the need to understand the degree to which youth and families experience behavioral and emotional difficulties in IPPC, as well as the individual characteristics that may be associated with these behavioral and emotional difficulties in youth. This more nuanced approach can inform the tailoring of assessments and interventions for youth at risk for behavioral and emotional difficulties and impairment who may present to providers within IPPC (e.g., pediatricians, nurses, social workers, behavioral health clinicians, psychiatrists, psychologists).

Limitations

The results of the present study should be considered in light of several conceptual and methodological limitations. First, the present study included a retrospective clinical database review of cross-sectional data, and thus temporal relationships or causality of associations could not be established. The use of cross-sectional data thus precludes examination of the direction of effects, transitions in class membership over time (e.g., changes in problem behaviors at different time points), and potential confounding effects over time (e.g., psychosocial functioning and impairment). In particular, the present study both used an artificial cut-off that was determined by the researcher, as well as examined a broad range of child-aged (i.e., youth under the age of 10 years) versus adolescent-aged IPPC youth (i.e., youth over the age of 10 years), which may not have accounted for the variability of symptoms within these age cohorts.

Second, the scope of the study was limited to the *need*, *predisposing*, and *enabling* variables available in the clinical database. As such, additional *need* (e.g., formal mental health diagnoses, functional impairment), *predisposing* (e.g., education, family size, religion, values, knowledge, and beliefs about illness and health services), and *enabling* (e.g., family income, urbanicity) variables that were not included in the present study may provide a greater understanding of the influence of individual determinants on behavioral health service utilization of youth and families in IPPC.

Third, the use of latent class analyses in the present study assigned IPPC youth to classes based on their probability of being in classes given the pattern of scores on indicator variables (Weller, Bowen, & Faubert, 2020). Therefore, the exact number or percentage of youth within each class, as well as the proper assignment to the class, cannot be determined. Additionally, the naming of classes in the present study (i.e., “Significant Comorbid Problems,” “Predominantly Internalizing”) may not fully capture the complexity of classes or accurately reflect the class membership (Weller et al., 2020).

Fourth, these findings are likely to be limited to the services provided in the context of urban, behavioral health services in pediatric primary care practices, as well as to areas with similar racial/ethnic diversity. Youth in the present study were mostly publically insured and Black/African American. Thus, these findings may not be generalizable to other clinical, school, or community settings, as well as to areas with less racial/ethnic diversity or higher socioeconomic status (e.g., higher family income, private insurance). Data about family income were not available in the youth’s electronic medical records, thus insurance type was used as a proxy of socioeconomic status, which may have obscured income differences that would have clarified the role of income in the findings of the study.

Fifth, caregiver-reported symptoms of IPPC youth on the PSC-17 were used as the primary measure of youth symptomatology (i.e., presence of symptoms) and severity (i.e., subthreshold, elevated/at-risk symptoms) in the present study. Conversely, youth self-reported symptoms were not used in the present study, which may present potential challenges related to the agreement between caregiver- and youth-reported symptoms (e.g., identification of emotional/behavioral problems, formulating a treatment strategy to address the youth's psychosocial needs) (Duke, Ireland, & Borowsky, 2005). Additionally, the majority of PSC-17 screening measures were completed by mothers (81.1%) and therefore represented an oversampling of caregivers relative to other adult caregivers (e.g., fathers, aunts/uncles, grandparents, siblings). Studies have suggested that maternal caregivers may report youth symptoms more severely, particularly attention and externalizing problems (Langberg et al., 2010), thus it is possible that other caregivers may have provided different ratings of youth symptoms. As such, future studies should include measures from additional informants (e.g., youth, teachers/school officials, other caregivers) to assess behavioral health problems, which may identify additional IPPC youth who might benefit from brief interventions and ongoing monitoring by clinicians, as well as address potential rater bias (Brauner & Stephens, 2006).

Sixth, while the PSC-17 has been widely accepted as a validated screening measure of behavioral health symptoms in youth, it may not fully capture symptoms of anxiety compared to other mood problems (e.g., depression) in relation to its internalizing problems subscale (Blucker, Jackson, & Gillaspay, Hale, Wolraich, & Gillaspay, 2014). Thus, a number of youth who presented to behavioral health services in IPPC with anxiety symptoms in the absence of mood symptoms may not have met the cutoff score for internalizing problems in the current study. Given the prevalence of anxiety in IPPC youth, the inclusion of additional items reflecting more

anxious symptoms should be considered. Lastly, behavioral health service utilization (i.e., the number of behavioral health visits) was within the timeframe of January 2017 and December 2019, prior to the start of the coronavirus pandemic and the subsequent shelter-in-place ordinances. Thus, the utilization of behavioral health services by IPPC youth and families may have been widely impacted by the coronavirus pandemic and challenges associated with the transition to telehealth behavioral health services. Further research is needed to determine whether IPPC youth in the present study continued to utilize behavioral health services within the context of telehealth visits during the pandemic.

Conclusion

The findings of the present study provide support for behavioral health service utilization in IPPC by predominantly urban, racial/ethnic minoritized youth. Based on Andersen's Behavioral Model of Health Service Utilization, the utilization of behavioral health services in IPPC was associated with *need* factors, such that IPPC youth were classified in either 1) "Significant Comorbid Problems" or 2) "Predominantly Internalizing" subgroups based on their elevated attention, externalizing, and internalizing problems. Additionally, behavioral health service use was associated with both *need* and *predisposing* factors, such that elevated symptoms, age, and gender were associated with both class membership and behavioral health service use. These findings provide the foundation for exploring sociocultural and socioeconomic factors in marginalized youth and families that may impact behavioral health treatment in IPPC. Future research efforts should explore how these subgroups and/or domains of youth attention, behavioral, and emotional problems related to other aspects of development, as well as additional individual and societal determinants that may buffer and/or exacerbate psychosocial development, treatment-seeking, and service utilization in IPPC.

Figure 1

Andersen's Behavioral Model of Health Services Utilization (Aday & Andersen, 1974; Andersen, 1995; Andersen & Newman, 1973). Note. This model has been adapted to represent variables to be used in the proposed study.

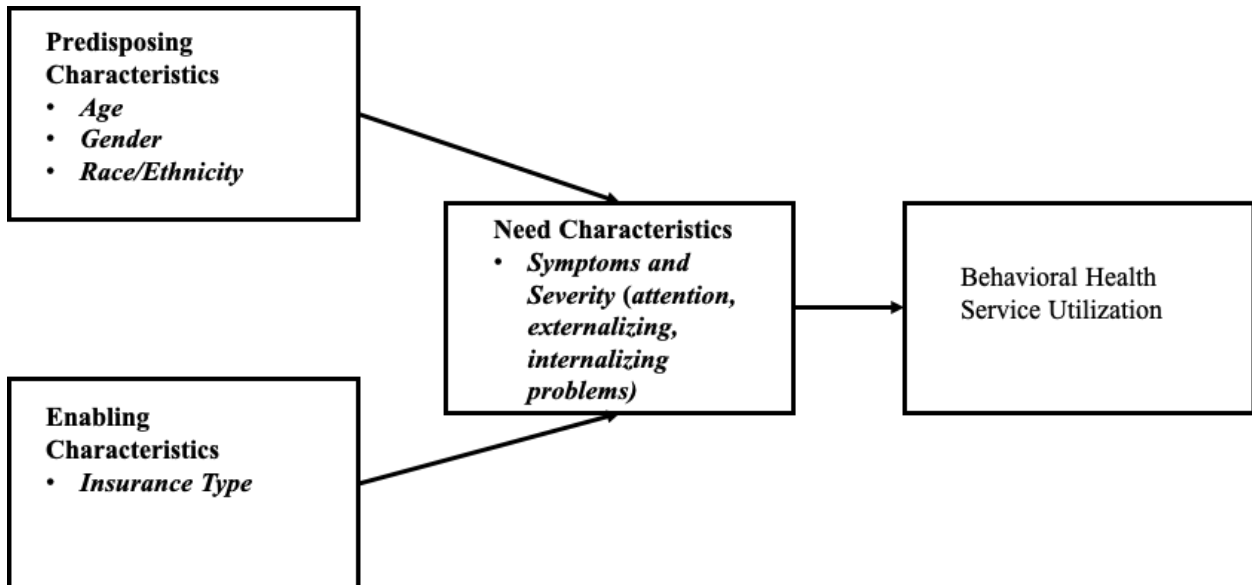


Figure 2

Model diagram of two-class LCA model with need (attention, externalizing, internalizing problems) latent variables, predisposing (age, gender, race/ethnicity) and enabling (insurance type) covariates, and distal outcome (behavioral health service use).

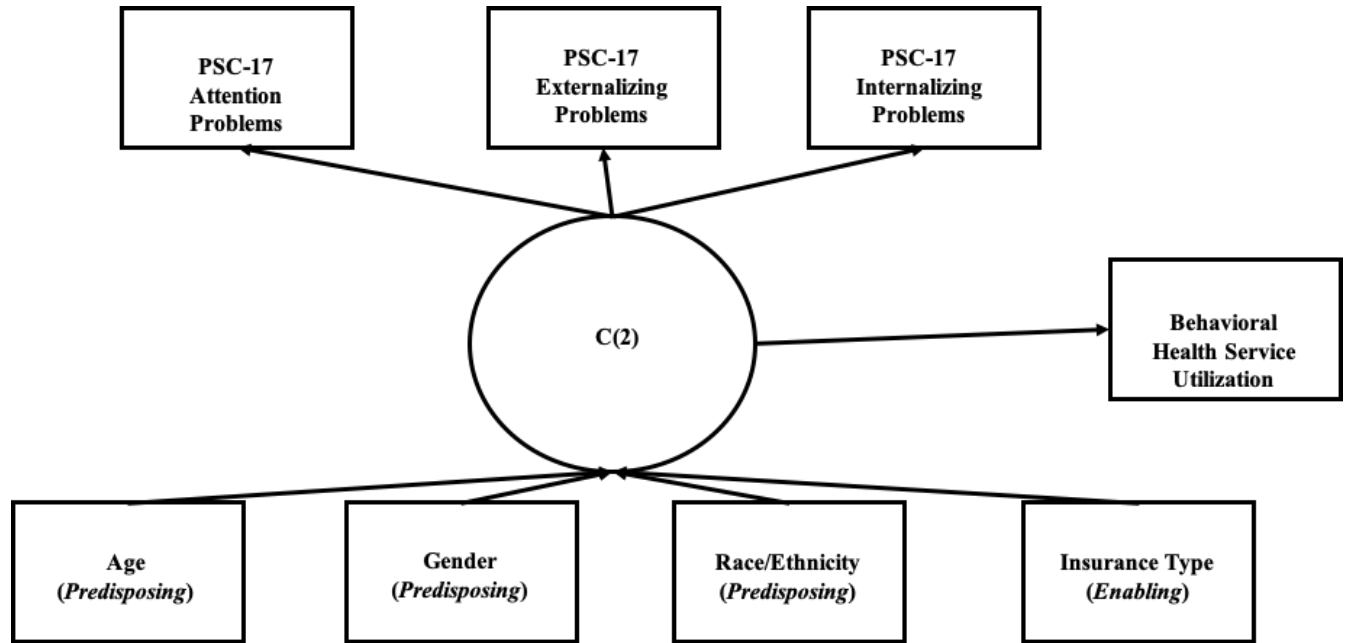


Figure 3

Item response probability plots for the two-class unconstrained LCA plot.

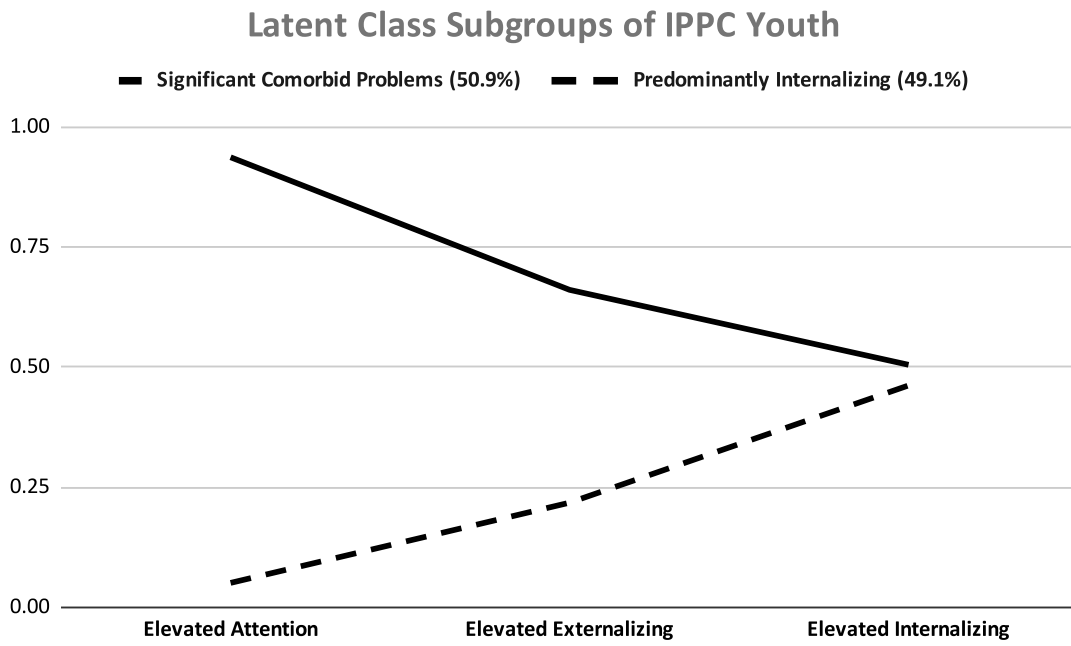


Table 1. *Summary of Data Analyses, Research Aims, and Purpose of Data Analyses for Aims 1-3.*

Aims	Data Analytic Method	Purpose of Analysis
1. Identify and describe underlying subgroups of IPPC youth presenting with attention, externalizing, and internalizing problems based on the Pediatric Symptom Checklist 17 (PSC-17).	Latent Class Analysis (Unconstrained Models)	Exploratory analysis to identify and describe groups of IPPC youth presenting with attention, externalizing, and internalizing problems
2. Examine individual determinant (predisposing and enabling factors) covariates of mental health service utilization of IPPC youth presenting with attention, externalizing, and internalizing problems	Latent Class Analysis (Three-Step BCH Method)	Identify groups or clusters representing different levels of internalizing, externalizing, and attention problems based on individual determinants of mental health service utilization
3. Examine group differences in behavioral health service utilization among latent class groups of IPPC patients with attention, externalizing, and internalizing problems and predictors of behavioral health service use within latent class groups	General Linear Model (GLM)	Assess whether latent class groups differ in behavioral service utilization and covariate predictors of behavioral health service utilization by class

Table 2. *Demographic and Individual Determinants of IPPC Behavioral Health Youth (N = 403).*

	n (%) or M ± SD
Child's/Adolescent's age at initial behavioral health visit (years), M ± SD	10.74 (3.67)
Child (Youth under the age of 10 years), n (%)	190 (47.1)
Adolescent (Youth over the age of 10 years), n (%)	213 (52.9)
Child's/Adolescent's Gender, n (%)	
Male	199 (49.4)
Female	204 (50.6)
Child's/Adolescent's Race/Ethnicity, n (%)	
African American/Black	294 (73.0)
White	78 (19.4)
Latinx/Hispanic	31 (7.6)
Child's/Adolescent's Language, n (%)	
Primarily English-speaking	375 (93.1)
Primarily Non-English-speaking	28 (6.9)
Child's Adolescent's Insurance Type, n (%)	
Medicaid	307 (76.2)
Private/Self-pay	96 (23.8)
Primary Caregiver, n (%)	
Mother	327 (81.1)
Father	25 (6.2)
Aunt/uncle	15 (3.7)
Sibling	2 (<1.0)
Grandparent	28 (7.0)
Other	6 (1.4)
Behavioral Health Visits, M ± SD	2.68 (2.15)
2-4 behavioral health visits	161 (40.0)
Low behavioral health use (1 behavioral health visit)	170 (42.2)
Moderate behavioral health use (1 Standard Deviation above mean; 5-6 visits)	40 (9.9)
High behavioral health use (2 Standard Deviations above mean; +7 visits)	32 (7.9)
PSC-17 Total Problems, M ± SD	16.28 (6.04)
Attention Problems	205 (50.9)
Externalizing Problems	180 (44.7)
Internalizing Problems	195 (48.4)
Latent class membership	
"Significant Comorbid Problems" (Class 1)	205 (50.9)
"Predominantly Internalizing"(Class 2)	198 (49.1)

Table 3. *Summary of intercorrelations of individual determinants of IPPC youth (N = 403).*

	1	2	3	4	5	6	7	8	9
1. Attention Problems									
2. Externalizing Problems	.38**								
3. Internalizing Problems	.05	.01							
4. Age	-.28**	-.22**	.23**						
5. Insurance Type	-.10*	-.15**	.08	.09					
6. Gender	.19**	.20**	-.26**	-.28**	-.08				
7. Race/ethnicity: Black	.09	.21**	-.01	.02	-.19**	-.02			
8. Race/ethnicity: White	-.07	-.12*	.02	-.03	-.24**	.01	-.70**		
9. Race/ethnicity: Latinx	-.05	-.12*	-.04	.01	-.05	.03	-.41**	-.13**	

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 4. *Fit indices for unconstrained latent class models for the full sample of IPPC youth*

No. of classes	df	LL	BIC	aBIC	LMR-LRT sig.	BLRT sig.	Entropy	Smallest class <i>n</i> (%)	Condition number
1	3	-835.446	1688.90	1679.37	-	-	-	-	4.33E-01
2	7	-802.969	1647.93	1625.72	<.001	<.001	.72	198 (49.1%)	3.52E-05
3	11	-802.969	1671.93	1637.00	.97	.97	.49	131 (32.5%)	3.59E-05
4	15	-802.969	1695.92	1648.33	.50	.50	.54	0 (0.00%)	2.81E-04
5	19	-802.969	1719.92	1659.63	.85	.085	.36	0 (0.00%)	1.98E-03
6	23	-802.969	1743.91	1670.93	.17	.17	.38	0 (0.00%)	1.07E-03
7	27	-802.969	1767.91	1682.24	.75	.75	.76	0 (0.00%)	2.46E-05
8	31	-802.969	1791.91	1693.54	1.00	1.00	.49	0 (0.00%)	4.81E-06

Note. *N* = 403; *df*, degrees of freedom; *LL*, log-likelihood; *BIC*, Bayesian information criterion; *aBIC*, adjusted Bayesian information criterion; *LMR-LRT*, Vuong-Lo-Mendell-Rubin likelihood ratio test. The two-class solution was selected as the best fit to the data

Table 5. *Results of predictors of latent class subgroup membership of IPPC youth*

Predictor	"Significant Comorbid Problems" (1)			"Predominantly Internalizing" (2)		
	<i>b</i> [95% CI]	OR	<i>p</i> -value	<i>b</i> [95% CI]	OR	<i>p</i> -value
Age	-1.25 [-1.74 to -.75]	.29	.001	1.25 [.75 to 1.74]	3.45	.001
Gender	.71 [.22 to 1.21]	2.04	.01	-.71 [-1.21 to -.22]	.49	.01
Insurance type	-.20 [-.80 to .40]	.82	.50	.20 [.40 to -.80]	1.23	.50
White	-.54 [-1.20 to .13]	.59	.11	.54 [-.13 to 1.20]	1.71	.11
Latinx/Hispanic	-.65 [-1.55 to .25]	.52	.15	.65 [-.25 to 1.55]	1.92	.15

Note. *N* = 403. Race/ethnicity was dummy coded so that black/African American IPPC youth served as the reference group. All *p*-values are two-tailed.

Table 6. Results from model for class membership predicting IPPC behavioral health service use.

Predictor	“Significant Comorbid Problems” (1)		“Predominantly Internalizing” (2)	
	<i>b</i> [95% CI]	<i>p</i> -value	<i>b</i> [95% CI]	<i>p</i> -value
Age	.96 [.25 to 1.66]	.01	.19 [-.45 to .88]	.58
Gender	-.16 [-.81 to .51]	.64	-1.00 [-1.58 to -.42]	.001
Insurance type	-.50 [-1.21 to .20]	.16	.51 [-.29 to 1.30]	.21
White	-.06 [-.83 to .70]	.87	.08 [-.78 to .94]	.85
Latinx/Hispanic	.52 [-.54 to 1.52]	.34	-.09 [-.95 to .78]	.84

Note. $N = 403$. Race/ethnicity was dummy coded so that black/African American IPPC youth served as the reference group. All *p*-values are two-tailed. A Wald test revealed that class membership did not differ in total behavioral health service use ($w = .10$, $df = 1$, $p = .75$)

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Appendix A

Pediatric Symptom Checklist – 17 (PSC-17)

Emotional and physical health go together in children. Because parents are often the first to notice a problem with their child's behavior, emotions, or learning, you may help your child get the best care possible by answering these questions. Please indicate which statement best describes your child.

Please mark under the heading that best describes your child	Never	Sometimes	Often
(A) Fidgety, unable to sit still	0	1	2
(I) Feels sad, unhappy	0	1	2
(A) Daydreams too much	0	1	2
(E) Refuses to share	0	1	2
(E) Does not understand other people's feelings	0	1	2
(I) Feels hopeless	0	1	2
(A) Has trouble concentrating	0	1	2
(E) Fights with other children	0	1	2
(I) Is down on him or herself	0	1	2
(E) Blames others for his or her troubles	0	1	2
(I) Seems to have less fun	0	1	2
(E) Does not listen to rules	0	1	2
(A) Acts as if driven by a motor	0	1	2
(E) Teases others	0	1	2
(I) Worries a lot	0	1	2

(E) Takes things that do not belong to him or her	0	1	2
(A) Distracted easily	0	1	2

Total Problems Score =

(A) Attention =

(E) Externalizing =

(I) Internalizing =