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Helping the Noncompliant Child and Child Behavior Outcomes: An Exploratory Examination of Financial Strain

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Abstract

Theoretical models and empirical research have highlighted the impact of economic disadvantage on children's psychosocial development broadly and the onset, maintenance, and treatment of early-onset (3–8 years) behavior disorders (BDs) more specifically. In the context of intervention, evidence suggests that economic disadvantage may pose risk for diminished parent-mediated treatment efficacy (e.g., Behavioral Parent Training [BPT]) given its impact on salient factors in the family system. Though, studies have shown significant variability in BPT outcomes within families experiencing economic disadvantage, suggesting that additional influences may further contribute to disparities in the trajectory of treatment and maintenance of treatment gains for this population. To address this gap in existing knowledge, financial strain, or the inability to meet financial needs, was examined in families ($N = 54$) of young children (3–8 years old) with low-income and clinically elevated behavior problems participating in one BPT program, Helping the Noncompliant Child (HNC). Results demonstrated that families who experienced greater levels of financial strain prior to engaging in HNC exhibited diminished maintenance of parent reported child behavior gains following treatment. Financial strain did not significantly influence rate of change or maintenance of treatment gains for HNC clinician-coded child compliance. Clinical implications and directions for future research are discussed. ClinicalTrials.gov Identifier: NCT02191956, registered on 6/18/2014.

Keywords Helping the noncompliant child · Early childhood · Low-income · Financial strain · Behavior disorders

Introduction

General behavior problems (e.g., noncompliance) and specific behavior disorders (BDs), including Oppositional Defiant Disorder (ODD) and Conduct Disorder (CD) that often co-occur with Attention Deficit-Hyperactivity Disorder (ADHD), are among the most common concerns in young children presenting for mental health treatment (Hosokawa & Katsura, 2018; McMahon, 1994; Polanczyk et al., 2015). Early-onset (i.e., beginning between ages 3–8 years) BDs that are maintained into adolescence and adulthood are associated with negative outcomes including depression, delinquency, and school dropout and can incur societal costs estimated at up to 2.3 million dollars in the United States alone (Cyr et al., 2022; Dedousis-Wallace et al., 2021; Petitclerc & Tremblay, 2009). To mitigate long-term consequences, research has increasingly focused on identifying early vulnerability factors related to the development, maintenance, and treatment of BDs with studies highlighting various individual (e.g., genetics), family (e.g., coercive patterns), and socioecological (e.g., income) influences (Loeber et al., 2009; Peverill et al., 2021). Guided by socioecological models, much of this literature frames child development as occurring in the context of transactional processes between the child and distal (e.g., SES) and proximal (e.g., parent-child interactions) factors in their environment (Bronfenbrenner & Morris, 2007; Coll et al., 1996).

Patterson's (1982) coercion theory describes a proximal process in which coercive or hostile behaviors are

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inadvertently reinforced and maintained through negative patterns of parent-child interactions. As the pattern persists, children experience heightened vulnerability for the development and exacerbation of behavior problems and early-onset BDs in particular (Patterson, 1982; Smith et al., 2014, 2018). Given the dyadic nature of this process, children's vulnerability may be amplified in environments that increase a family's level of distress and reduce their ability to function resiliently (Conger et al., 1994; Masarik & Conger, 2017). Low socioeconomic status (SES) or economic disadvantage is a commonly studied sociodemographic factor related to family functioning and children's psychosocial outcomes across the lifespan (Conger et al., 2010; Granero et al., 2015; Piotrowska et al., 2015). Indeed, exposure to low-SES and inequality has been linked to academic underachievement, substance abuse, and a variety of mental health disorders including externalizing symptoms (Conger & Conger, 2008; Korous et al., 2022). Though, the impact of SES on both the presentation and treatment of early-onset behavior problems is inconsistent across studies with some demonstrating that low SES serves to mediate, moderate, or confer risk while others indicate no significant relationship between SES and outcomes (e.g., Dedousis-Wallace et al., 2021; Korous et al., 2018; Leijten et al., 2013). Furthermore, some studies suggest that families experiencing greater risk may fare the same or better than other families receiving treatment for child externalizing symptoms (Dedousis-Wallace et al., 2021; Deković et al., 2011; Shaw et al., 2006). Consequently, the current body of literature suggests that SES *alone* does not predict outcomes of treatment for BDs, though the demonstrated associations and variability across studies and populations suggests more is needed to understand the complex dynamics of risk and resilience in families experiencing marginalization. In line with this approach, theoretical models and empirical research have focused on elucidating family-based pathways relating SES to risk and resilience (Bronfenbrenner & Morris, 2007; Dedousis-Wallace et al., 2021; Tudge et al., 2009).

Socioecological models like the Family Stress Model (FSM) highlight economic disadvantage as a salient factor that impacts the family context broadly and heightens one's vulnerability for diminished psychosocial outcomes (Conger et al., 1994; Conger & Conger, 2002). Specifically, the FSM suggests that a family's experience of financial hardship (i.e., low income), influences their experiences of financial strain (i.e., having unmet needs), increasing their vulnerability to emotional distress, family conflict, and disruptions in child psychosocial development (Conger & Conger, 2008). Thus, the FSM situates family functioning and child development in the context of both the environmental and psychological outcomes related to economic stress (Gard et al., 2020). Financial strain, or the daily experiences of financial stressors like having difficulty meeting basic needs and cutting back on expenses, is proposed to give psychological meaning to the broader experience of economic disadvantage (Conger & Conger, 2008; Masarik & Conger, 2017; Mistry et al., 2008). Evidence suggests that financial strain varies individually and is influenced by factors like cultural beliefs, social support, and coping strategies (Barnett, 2008; Parke et al., 2004; Wadsworth & Santiago, 2008; White et al., 2015). Furthermore, studies suggest that financial strain can deplete parents' coping abilities, leading to depression and distress (Newland et al., 2013; Shaw & Shelleby, 2014; Simons et al., 2016). This distress can affect their parenting, resulting in less warmth and more harsh practices, which, in turn, is related to children's risk for behavior problems (Kotchick et al., 2005; Mistry et al., 2002). The cascading effects of economic disadvantage on family functioning and well- being have been observed across stages of youth development and longitudinally (Evans & De France, 2021; Kotchick et al., 2005; Neppl et al., 2016). Given that economically disadvantaged families are overrepresented in statistics on children with BDs and findings regarding the mechanisms of this association are inconsistent, elucidating the influence of more nuanced factors, like financial strain, is imperative (Piotrowska et al., 2015; Shaw & Shelleby, 2014). This is particularly important in the context of parent-mediated interventions for child behavior problems like Behavioral Parent Training (BPT). Financial strain has been associated with parents' psychological well-being and parenting behaviors, both of which significantly impact children's BPT outcomes (White et al., 2015; Shelleby & Shaw, 2014). Thus, investigating the impact of financial strain on intervention outcomes in economically disadvantaged families *specifically* may provide further insight into nuanced socioecological contexts that may connote greater risk and require additional consideration when implementing and disseminating treatments to vulnerable families.

Helping the Noncompliant Child was developed by Drs. McMahon and Forehand (HNC; McMahon & Forehand, 2003) and is part of a family of evidence-based treatment approaches (i.e., Hanf Model BPT Programs) that use a common theory and structure to improve functioning in parents and their young children (3–8 years old) with problem behaviors (Kaehler et al., 2016; McMahon & Forehand, 2003; Reitmen & McMahon, 2013). Guided by Constance Hanf's primarily clinical work and training and early research on childhood externalizing symptoms as well as family systems theory, social learning theory, and operant conditioning, Drs. McMahon and Forehand designed HNC to disrupt coercive patterns of parent-child interactions, improve parenting skills to reinforce desired child behaviors, and decrease children's problem behaviors and noncompliance (McMahon et al., 2011). It is a standard of care approach for early-onset problem behaviors and BDs (Leijten et al., 2013; Reyno & McGrath, 2006), among

the first line of treatments for children with ADHD (Dale et al., 2021), and is particularly effective for children at-risk of developing more severe problem behaviors (McMahon et al., 2011). HNC is criterion based (i.e., families progress in treatment as they meet standard, predetermined "mastery" criteria of specific skills taught by clinicians) and includes individually delivered treatment that focuses on both the parent (e.g., mastery of skills) and child (e.g., targeting behavior change). Each session includes the clinician, parent, and child, and focuses on in vivo practice and clinician coaching of specific skills to improve generalizability across contexts. Skills-based and practice focused (i.e., parent uses skills with child during intervention sessions) parenting programs like HNC have demonstrated the greatest effects in improving children's behaviors (Leijten et al., 2022; Wyatt Kaminski et al., 2008). Furthermore, HNC is uniquely situated to target economically disadvantaged families given that it is an individually delivered program which may have additional benefits relative to group-based programs (Lundahl et al., 2006; Mortensen & Mastergeorge, 2014). While some evidence suggests that if families with low-income complete BPT programs including HNC, they benefit as much or more than relatively higher income families, others suggest they may experience diminished outcomes or slower rates of change given the impact of additional stressors on treatment engagement (Deković et al., 2011; Jones et al., 2016; Reyno & McGrath, 2006). Adapted programs (e.g., digitally delivered) have shown some success in improving engagement and outcomes for low-income families though challenges persist (Brager et al., 2021; Ghaderi et al., 2018; Parent et al., 2022). Furthermore, it is unclear if and how variability in family factors (i.e., financial strain) *within* populations of economically disadvantaged families may further impact their ability to progress through and maintain gains of HNC, necessitating a closer look at underlying mechanisms affecting treatment outcomes for families with low-income.

This study applies an FSM approach to preliminarily explore variability in HNC outcomes *within* families with low-income. This is novel as the bulk of studies using the FSM include community-based, typically developing, or behaviorally elevated samples of children and adolescents or include a broad range of socioeconomic status and income, limiting the ability to consider variability in treatment *within* an economically disadvantaged sample (Conger et al., 2010; Gard et al., 2020; Smith et al., 2018). This study focuses on HNC as it is one example of a family-focused (i.e., parent and child participate) BPT program, is designed to improve child behavior across a spectrum of concerns (e.g., noncompliance, aggression), and is criterion based, allowing for the examination of treatment related behaviorally coded child outcomes across time. Given the exploratory nature of this investigation and the clinical importance of child outcomes in treatment seeking families, we limit our investigation to parent-reported and behaviorally observed child behaviors. Further, this study aims to enhance our understanding of the *trajectory* and *maintenance* of child outcomes in the context of economic stress specifically to better understand if and how economic stressors may impact the magnitude of intervention success experienced by families with low-income.

To our knowledge this is the first effort to apply an FSM framework to child HNC outcomes, although it is expected that the FSM offers clues to potential treatment disparities *within* this vulnerable population given that HNC operates via the parent-child context which is central to the FSM (Conger & Conger, 2008; McMahon & Forehand, 2003). Specifically, it is expected that higher levels of family financial strain will be associated with a slower rate of parent-reported behavior change and observed child compliance throughout treatment and lower levels of behavior change and compliance at 3- and 6-months following treatment termination.

Method

Participants

This study employed secondary data analysis from a randomized controlled trial (with two parallel arms) of 101 families (see Jones et al., 2021; Parent et al., 2022 for a more detailed description) of young children (3–8 years old) with clinically significant problem behaviors (i.e., Eyberg Child Behavior Inventory Intensity scale score > 131 or Problem scale score > 15). All families were identified as having low-income based on the income cut-off of < 250% of the Federal Poverty Level (FPL) during the year of 2013, when the original study launched. The United States FPL is calculated by dividing household annual income by guidelines based on the number of family members in the household and is used to determine eligibility for federal aid programs such as Medicaid and the Children's Health Insurance Program (≤ 210% for families of children 3- to 5-years-old in 2013 in the state of North Carolina, where the study was conducted) and eligibility for tax premium credits to lower marketplace health insurance (100–400% FPL) and cost-sharing subsidies (< 250% FPL). Families were excluded if the parent demonstrated *current* severe depression, bipolar disorder, psychotic symptoms, and/or substance use disorder or had pending and/or prior *substantiated* child abuse/neglect case or if the child had significant developmental or physical impairments. Families meeting any of these criteria were excluded given that these presentations typically require adaptations to the treatment approach, precluding participation in standard HNC treatment protocols which is the focus of the study. Participants were recruited via advertisements

and flyers targeted to parents with low-income that were disseminated through nonprofit organizations, word-of-mouth, local schools, and local agencies serving families with low-income.

The current study aims to elucidate the influence of financial strain on child treatment outcomes in the context of HNC generally, thus, only participants who received standard HNC ($N = 54$) in the original study are included in analyses (see Fig. 1). Parents (M age = 32.5, $SD = 6.1$) were mostly mothers (98.1%) of the participating children (M age = 4.28, $SD = 1.2$; 57.4% boys) and more than half (59.3%) of them reported they were married or living with a partner. Parents largely identified as White (63.0%) and Black/African American (27.8%). An additional 7.4% identified as multi-racial, 7.4% as Latinx, and 1.9% did not report their race. Parents reported on their children in the sample with most being identified as White (57.4%), Black/African American (25.9%), and multi-racial (14.8%), with 14.8% identified as Latinx and an additional 1.9% not reported. Reflecting the diversity within families, 16.6% of the sample consisted of children and parents with differing races and ethnicities with 77.7% of parents identifying as White, non-Latinx and 88.8% of children identifying as multi-racial and/or Latinx. Incomes ranged from $12,000-$60,000 (M = $36,971; SD = $12,580).

Procedure

Interested families contacted study staff who conducted a brief phone screen to determine initial eligibility (e.g., 3- to 8-year-old child, low-income, clinically significant child behavior problems). Families who were determined eligible at initial screening then received a more extensive baseline assessment at a community-based clinic. During this assessment, parent consent for self and child was obtained, study eligibility was confirmed, and more detailed demographic and psychosocial information was gathered. All participating families received $50 compensation for their time and baseline-eligible families were randomized to treatment and considered enrolled upon their first intervention session. Post-treatment assessment, 3-, and 6- month follow-up assessment procedures were similar.

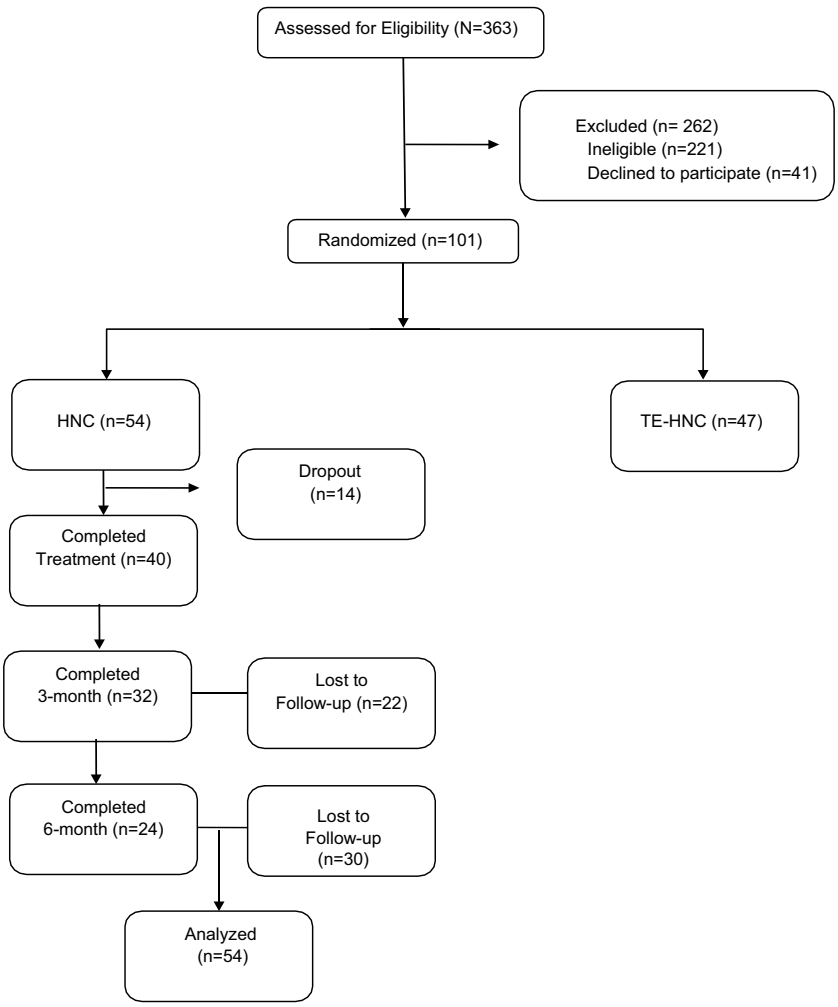

Fig. 1 CONSORT Diagram Diagram depicts randomization procedure for larger study and final sample size for secondary data analysis. HNC, Helping the Noncompliant Child. TE-HNC, Technology-Enhanced Helping the Noncompliant Child

Intervention

Enrolled families received HNC (McMahon & Forehand, 2003), a two-phase, criterion-based (i.e., therapist observation and coding of parental skill use determines progression through treatment), empirically supported BPT program that includes weekly skill practice and brief midweek telephone check-ins where therapists assess families progress and aid in problem solving barriers to home-based skill usage. Sessions are conducted in a didactic manner with a parent, child, and clinician and consist of the teaching and modeling of skills, parental practice of skills with children guided by clinician coaching, and clinician observation and coding of parent's skill mastery and child behavior (i.e., ability to implement a prespecified number of skills in a certain period and child response to those skills). During sessions, parent's practice implementing skills with coaching from a therapist in the context of child- directed play (i.e., Child's Game) or compliance practice (i.e., Parent's Game) and are encouraged to continue practicing the skills daily at home. Phase I of treatment, Differential Attention, focuses on "Child's Game", which provides a context for increasing positive interactions between parents and children using the skills of Attends (commentary on the child's behaviors, [e.g., "You are stacking the blocks."]) and Rewards (positive praise specific to a child's behavior, [e.g., "Great job picking up the toys!"]) and limiting the use of Instructions (commanding the child to engage in a behavior), Questions (an interrogation to which the child is expected to respond verbally), criticisms, and attention to minor inappropriate behaviors. Once mastery of Phase I skills is achieved (e.g., average 4 Attends plus Rewards per minute, at least 2 of those Rewards, 0.4 or fewer questions and instructions), parents and children continue to Phase II, Compliance Training, which uses "Parent's Game" or "Clean-up Task" as a context for teaching the Clear Instruction sequence and Time-Out procedure to address children's noncompliance and more severe problem behavior. The sequence includes the use of a Clear Instruction, typically related to increasing a desired behavior (e.g., issuing the instruction "Sit down on the floor" to a child who is climbing on furniture), and a warning statement (e.g., "If you do not sit down on the floor, you will go to Time-Out"), that are given before implementing the nonphysical consequence of Time-Out. The Time-Out procedure consists of a 3-minute removal of attention (i.e., Ignoring) where the child is instructed to sit on a Time-Out chair or stay in a designated Time-Out space in the room. If the child exhibits aggression or noncompliance to Time-Out, appropriate back-up procedures are implemented as needed (e.g., additional time spent in Time-Out, back-ups to Time-Out), and then after the Time-Out, the reintroduction of the Clear Instruction Sequence is given until the child exhibits compliance (e.g., "Sit down on the floor"). Mastery of Phase II skills (e.g., child compliance with at least 75% of Clear Instructions) is required for completion of HNC, which typically requires 8 to 12 sessions but varies as progression in treatment is based on individual mastery of skills (McMahon & Forehand, 2003). Master's-level therapists trained in HNC provided services, received ongoing supervision, and were observed regularly to assess their fidelity to the treatment protocol and competency in implementing HNC. Approximately one-quarter (24%) of total sessions were coded for fidelity (97% fidelity) and 72% of those were double-coded for reliability between two coders (90% reliability). Additionally, 35% of the sessions were coded for competence by at least one coder and of those, 22% were coded by a second coder, yielding an average competence rating of 97%.

Measures

Financial Strain

The Economic Hardship Questionnaire (Lempers et al., 1989) was employed to assess family's experiences of financial strain over the past year. The EHQ is a 15-item self-report questionnaire that assesses a change in lifestyle because of their financial situation. Parents were asked to indicate (*yes*, *no*) whether they had engaged in certain behaviors due to financial strain (e.g., reducing social activities, forgoing major household or clothing purchases). Composite scores were computed with higher scores reflecting greater financial strain ($\alpha = 0.78$). Based on the temporal reference of the assessment (i.e., one-year) and low occurrence of participants time in treatment exceeding one year, only composite scores measured at baseline are included in analyses.

Child Problem Behavior

Children's problem behaviors were measured at each assessment point (i.e., baseline, post-treatment, and 3-, and 6-month follow-ups) by the Eyberg Child Behavior Inventory (Eyberg & Pincus, 1999), a validated, 36-item parent-report measure used to assess behaviors in children ages 2–16 years. The Intensity scale is a Likert-type scale where parents rate the frequency a child exhibits a specific behavior (e.g., "Acts defiant when told to do something"; 1 = *never occurs*, 7 = *always occurs*). The Problem scale references the same behaviors and parents are asked to report if they believe the specific behavior is a problem (*yes* or *no*), representing the impact of children's behavior problems on parents. Previous studies have demonstrated good psychometric properties for both scales of the ECBI (Eyberg & Pincus, 1999). Both the intensity ($\alpha = 0.87$–0.93) and problem ($\alpha = 0.80$–0.91) scales demonstrated good reliability.

Child Compliance

Video observations of parent-child interactions during Parent's Game were conducted at baseline, post-treatment, and 3-, and 6-month follow-ups to assess child compliance. Observations were coded using the Behavioral Observation Coding System (McMahon & Forehand, 2003), the standard coding system used to assess skill mastery and progress in HNC. Coders received approximately 50 hours of training in the coding system and needed to reach at least 80% agreement with expert coders on a series of training videos. 51% of the videos were double coded for fidelity. When two coders failed to reach 80% agreement in these videos, they met in person to jointly code the observation and resolve discrepancies resulting in intraclass correlation coefficients for agreement across raters ranging from 0.95 to 0.96 across codes. Children's compliance was measured as the percentage of all parent Clear Instructions the child complied with after a command was issued in a given observation. To demonstrate mastery of Phase II skills, a child must comply with at least 75% of a parent's Clear Instructions.

Results

Data Analytic Strategy

Prior to conducting analyses, the full data was assessed for patterns of missingness which did not significantly differ by child age, sex, race/ ethnicity; caregiver age, race/ethnicity; or family economic stress (all p-values > 0.05), supporting the assumption that data are missing at random and maximum likelihood is an appropriate method to address missing data in analyses (Lee & Shi, 2021; Mazza et al., 2015). We conducted spline growth curve analyses using Mplus version 8.4 (Muthén & Muthén, 2017) and Maximum Likelihood estimation with Robust Standard Errors (MLR), to model the impact of financial strain on the trajectory of children's behaviors using a treatment slope (pre-post treatment), a maintenance slope (post through 3- and 6-months follow-ups), and intercept coded as the mean level of the outcome variable at the 6-month follow-up (Maydeu-Olivares, 2017; Shi et al., 2021). Full Information Maximum Likelihood (FIML) techniques were employed to include all available data based on intent-to-treat guidelines (Enders & Bandalos, 2001). Given the sample size and exploratory nature of analyses, no covariates were included. Model fit was assessed using Chi-square (χ^2; ratio χ^2/df between 1 and 3), Comparative Fit Index (CFI; ≥ 0.95), Root Mean Square Error of Approximation (RMSEA; < 0.06 to 0.08) and the Standardized Root Mean Square Residual (SRMR; ≤ 0.08; Schreiber et al., 2006).

Financial Strain and Child Behavior Outcomes

Descriptive statistics of the main study variables are found in Table 1. Parameter estimates of each growth curve model are found in Table 2. Financial strain was analyzed as a continuous variable in the growth curve models though for visual purposes, model-implied means were estimated for High strain (families with EHQ scores 1 standard deviation above the mean) and Low strain (families with EHQ scores 1 standard deviation below the mean) in the models with significant results (see Fig. 2). Negative residual variances were present in the initial fitted models for several of the outcomes thus, the residual variance of the maintenance slope was fixed to zero and the models were re-fitted without errors.

Model fit for parental report of the intensity of children's behavior problems (i.e., ECBI intensity), χ^2 (5) = 4.73, $p = .45$; CFI = 1.00; RMSEA = 0.00, 90% CI [0.00 − 0.18]; SRMR = 0.10, and parental perceptions of children's problem behaviors (i.e., ECBI problem), χ^2 (7) = 5.08, $p = .65$; CFI = 1.00; RMSEA = 0.00, 90% CI [0.00 − 0.14]; SRMR = 0.08, demonstrated adequate to excellent fit with the data. Results indicated that across levels of financial strain, families experienced similar rates of change in their ECBI intensity scores across time. However, a statistically significant difference emerged at the 6-month follow-up indicating that families with higher levels of financial strain experienced diminished maintenance in behavior change. Results of the ECBI problem scale demonstrated that financial strain significantly impacted both families rate of change and maintenance of change across treatment. Specifically, higher levels of financial strain were associated with a slower rate of change in ECBI problem scale scores across

Table 1 Descriptive Statistics of Study Variables at Each Measurement Period

Variable	Baseline *M (SD)*	Post *M (SD)*	3-Month *M (SD)*	6-Month *M (SD)*
1. Financial Strain	5.13 (3.22)	-	-	-
2. ECBI Intensity	155.43 (27.61)	110.36 (21.51)	115.00 (22.60)	116.74 (26.94)
3. ECBI Problem	23.52 (6.41)	13.75 (5.84)	13.33 (8.00)	13.06 (7.67)
4. Observed Compliance	0.33 (0.21)	0.52 (0.20)	0.49 (0.18)	0.42 (0.20)

ECBI, Eyberg Child Behavior Inventory

Table 2 Model Results for Child Behavior Outcomes

Models	ECBI Intensity *b* (SE)	*p*	ECBI Problem *b* (SE)	*p*	Child Compliance *b* (SE)	*p*
Strain◊6-month follow-up	2.67 (1.16)	0.02	1.06 (0.34)	0.00	−0.00 (0.01)	0.68
Strain◊Treatment slope	− 2.16 (1.44)	0.14	−0.68 (0.29)	0.02	0.01 (0.02)	0.67
Strain◊Maintenance slope	0.99 (0.59)	0.10	0.39 (0.14)	0.01	−0.01 (0.01)	0.51
Means						
6-month follow-up	117.28 (4.45)	0.00	12.92 (1.21)	0.00	0.43 (0.04)	0.00
Treatment slope	− 47.39 (4.99)	0.00	− 9.37 (1.31)	0.00	0.24 (0.07)	0.00
Maintenance slope	3.08 (2.13)	0.15	−0.41 (0.58)	0.48	−0.05 (0.03)	0.10

ECBI, Eyberg Child Behavior Inventory. Treatment slope includes outcomes measured from baseline to post treatment. Maintenance slope includes outcomes measured from post-treatment to 3-month, to 6-month follow-ups

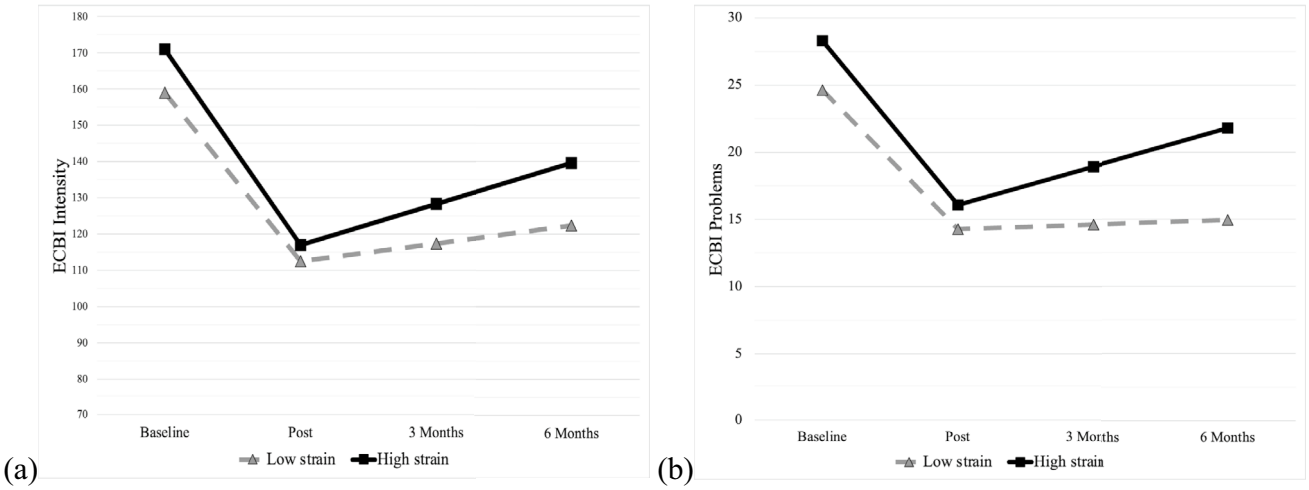

Fig. 2 Mean Plots from Growth Curve Model Results of Parent-Reported Child Behavior
Model-implied means were estimated for high and low strain. The Low strain marker represents the trajectory of families with an Economic Hardship Questionnaire (EHQ) score 1 standard deviation below the mean and the High strain marker represents families with an EHQ score 1 standard deviation above the mean. ECBI, Eyberg Child Behavior Inventory

treatment and diminished maintenance of change across follow-ups.

The model fit for clinician observed child compliance, χ^2 (7) = 6.10, p = .53; CFI = 1.00; RMSEA = 0.00, 90% CI [0.00 −0.16]; SRMR = 0.10, was adequate although financial strain did not significantly impact compliance related treatment gains or maintenance of gains.

Discussion

Guided by the FSM, this study aimed to advance current knowledge on the impact of family-level risk factors in the treatment of early-onset behavior problems. Building on Dr. McMahon's (McMahon, 1994; McMahon et al., 2006; McMahon & Forehand, 2003) formative work regarding the prevention and treatment of early-onset externalizing problems, this study extended knowledge on the impact of SES and explored the role of financial strain on children's treatment gains and maintenance of gains across HNC treatment and follow-up periods in families with low-income. Parents who experienced higher levels of financial strain prior to beginning treatment reported diminished maintenance of gains in both the intensity and perceptions of problem behavior 6-months following treatment. Additionally, higher levels of financial strain were associated with a slower rate of change in parent's perceptions of their children's behavior problems across treatment. No significant associations were found for children's observed compliance. Overall, findings suggest that financial strain may have a greater impact on parent reported treatment gains and maintenance of those gains than observed changes in children's behavior. These

findings are in line with previous research indicating that self-report measures may demonstrate greater associations with child behavior trajectory in BPT than observational measures (Smith et al., 2014; Hartman et al., 2003).

While there is a dearth in the literature associating the FSM in general and financial strain in particular with children's BPT treatment outcomes, studies have explored the impact of related constructs including SES and family stress (Dale et al., 2021; Leijten et al., 2013). Results of the current study largely support previous findings indicating that greater economic disadvantage is associated with diminished outcomes of parent training interventions at *follow-up* periods specifically (DeGarmo et al., 2004; Leijten et al., 2013). For example, Leijten and colleagues (2013) demonstrated that parent training programs were equally effective for families with and without economic disadvantages, though economic disadvantage was associated with diminished maintenance of treatment gains during long-term follow-ups (i.e., approximately 1-year). As the current study only included families experiencing economic disadvantage, more nuanced relationships are considered. While families across levels of financial strain demonstrated similar improvements in the intensity of child behavior problems across time, those with higher levels of strain experienced less maintenance of change. Conversely, parents who reported higher levels of financial strain experienced a slower rate of change *and* diminished maintenance of change in their report of their subjective perceptions of children's behaviors across HNC. Prior theory and research have demonstrated the impact of stress, including economic stress, on parent's dynamic (e.g., attributions) and stable cognitions (e.g., expectations regarding behavior) about children and their behavior (Johnston et al., 2018; Weeland et al., 2021). Furthermore, previous studies have suggested that cognitively enhanced BPT (e.g., learning skills to challenge maladaptive cognitions about self and child) may outperform standard BPT when considering families ability to retain treatment gains over time (Mah & Johnston, 2008). Thus, parental cognitions measured in the context of the FSM (e.g., attention to income and strain) may provide some insight into additional variability experienced by families with low-income when participating in HNC. Furthermore, the consistent finding of diminished outcomes at the distal follow-up period (i.e., 6 months following treatment) may suggest that in the absence of active practice and problem- solving in the context of treatment, financial strain may increase families stress, negatively impacting their ability to retain improvements in child behavior (Furlong & McGilloway, 2015).

This study used a combination of subjective and objective assessments of child behavior across time including immediately after HNC treatment and 3- and 6-months following. This is important as previous studies suggest that salient family factors such as SES may contribute to discrepancies in parent- and other-report (e.g., teacher-report) of children's behaviors (Stone et al., 2013). Contrary to hypotheses and results of the self-report measures, financial strain did not significantly impact observed child compliance. Several theories are considered to contextualize these results. First, it may be the case that variability in financial strain does not significantly impact families' interactions specific to the HNC context (e.g., Parent's Game), which is promising as it may suggest that financial strain does not introduce additional variability in the treatment processes underlying HNC. However, it is important to note that HNC characterizes skill usage during parent-child interactions in pre-determined and structured ways (i.e., mastery criteria) such that it may be difficult to elucidate their association with factors outside the treatment context. In other words, a family's demonstrated use of HNC skills in sessions may be directly related to the onset of treatment and learning and may not demonstrate strong associations with family level processes in daily contexts. Continued research is needed to further clarify associations between HNC treatment targets (e.g., compliance during Parent's Game) and their generalization to broader family-level processes at home and in the course of the daily life of families with low income (Lindhiem et al., 2014). Furthermore, given the individual and skills-based focus of HNC, it is important to consider how the present findings may compare across different BPT treatment modalities. For example, a study investigating various models of the Triple-P parenting program (e.g., self-directed, standard, enhanced) demonstrated maintenance of change in observed child behavior across long-term follow-up periods with no significant differences across conditions (Sanders et al., 2007). Though, financial strain was not investigated as a contributing factor so it is unclear if families experiencing economic disadvantage and strain may differentially benefit from different models of BPT programs. Prior findings do suggest that intervening on parent's *responses* to financial strain (e.g., cognitive restructuring, problem solving) or experiences of related *environmental* constraints (e.g., utilizing technology delivered programs) may prove promising in attempting to optimize BPT approaches for low-income families (Brager et al., 2021; Jones et al., 2021; Perzow et al., 2018). Given inconsistencies in the self- and observer-report measures and prior research demonstrating the influence of parent and family influences, and barriers and protective factors related to BPT outcomes, future research may consider the simultaneous investigation of such factors *and* financial strain across time (Chacko et al., 2016; Dale et al., 2021; Lundahl et al., 2006; Reyno & McGrath, 2006). While the current study investigated the relationship between financial strain and child outcomes in HNC specifically, it is hypothesized that observed patterns may apply to BPT programs generally given their common theory and elements (Kaehler et al., 2016).

Limitations and Future Research

Informed by the FSM, the current study investigated the influence of financial strain on children's HNC treatment targets as a first step in elucidating variability in treatment outcomes among families experiencing economic disadvantage. While this study advances understanding of HNC variability in families with low-income, it is not without limitations. First, while previous research has demonstrated associations between children's chronic exposure to environmental stressors (e.g., family financial strain) and their psychosocial well-being, the parent study did not include measures of chronicity, which have been linked to stress and adversity more broadly (Evans & Kim, 2013; Snyder et al., 2019). Furthermore, this study did not include covariates or explore potential moderators of the observed outcomes, given its exploratory nature and limited sample. It is important that future work examining the FSM in HNC treatment in particular or with other BPT programs more generally considers additional stressors (e.g., daily parental stress, psychopathology), resiliency factors (e.g., emotion regulation, social support), and treatment related elements (e.g., engagement, number of sessions received, attrition) that may impact outcomes for economically disadvantaged families (Dedousis-Wallace et al., 2021; Taylor & Conger, 2017). It is also noted that certain at-risk populations (e.g., parents with current severe symptomatology) were excluded from the original study to improve consistency of treatment across families, though this may reduce the study's generalizability to families in certain practice settings. Future research may consider investigating the role of financial strain and the FSM in relation to a diversity of parent-child presenting concerns. In addition, although this sample included diversity with regard to parent and child race and ethnicity, it was too small to explore the intersection of those aspects of identity with family's financial strain, which will be important in future work. Lastly, several approaches have been proposed to aid in sample selection and analysis of structural equation models (SEM) including empirically supported rule-of thumb measures and estimation techniques (Kline, 1998; Shi et al., 2021). Studies suggest that SEM procedures can be appropriate for small sample sizes ($N < 100$). Yet, the sample size of the current study may have impacted results and findings should be interpreted as preliminary until replicated with larger samples (Wolf et al., 2013).

In summary, findings indicate that the experience of financial strain may minimally influence the trajectory of clinician observed (i.e., child compliance) treatment outcomes in HNC. This is promising as it suggests that in the context of economic disadvantage, experiences of financial strain may not significantly impact the underlying processes of BPT or further exacerbate families' vulnerability for poor treatment outcomes related to their skill use in controlled settings. However, parent reported treatment outcomes (i.e., intensity and perception of child behavior problems) were significantly influenced by financial strain. As indicated in previous work, these results suggest that parent-reported measures may reflect parental perceptions and attitudes that are not necessarily objectively observed or measured in the specific context of treatment (Hartman et al., 2003). This is clinically relevant as it suggests that the identification of family level factors prior to intervention may provide clinicians with some insight into potential targets of or barriers to treatment (Weeland et al., 2021). As theory and data suggest a complex relationship between family and parent level factors and children's presentation of symptoms, greater attention to these factors may result in faster or more sustained change in symptoms. For example, while clinicians cannot change a family's experience of economic disadvantage or financial strain, they may consider discussing its potential impact on treatment and providing families with appropriate support. This may include targeting parental factors (e.g., offering parent-focused treatment to address stress, discussing parental perceptions and attitudes towards treatment targets and outcomes) and providing opportunities to support maintenance of parent-reported outcomes across time (e.g., booster sessions, discussions contextualizing child behavior change and maintenance of change; Furlong & McGilloway, 2015; Weisenmuller & Hilton, 2020). The results of the current study emphasize the potential utility of highlighting parental attributions in economically disadvantaged families as findings indicated that experiences of financial strain significantly impacted parent's *perceptions* (but not intensity) of their children's behavior problems across treatment. As previous research has demonstrated some associations with parental attributions and BPT engagement and outcomes, clinicians working with economically disadvantaged *and* financially strained families may benefit from discussing the environmental (e.g., reduced time with children) and social (e.g., attributions about stressful parenting situations) factors that may hinder a family's progress or maintenance of treatment gains. Indeed, past studies have demonstrated some success employing strategies like including cognitive restructuring components (e.g., cognitive reframing of parenting difficulties) as well as delivering programs technologically (e.g., app-based) and utilizing motivational enhancement techniques (e.g., identifying barriers to engagement and motivation for change throughout treatment) to reduce barriers to participation for certain families and better target and improve specific outcomes of interest (Brager et al., 2021; Mah & Johnston, 2008; Nock & Kazdin, 2005). Future studies can continue to expand our knowledge of HNC and Dr. McMahon's extensive body of research elucidating the developmental course and treatment of externalizing symptoms by continuing to critically evaluate the socioecological (e.g., systemic racism, family financial strain) contexts of

early-onset BDs toward refining best practices in supporting a diversity of children and families.

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Declarations

Conflicts of Interest/Competing Interests The authors have no other relevant financial or non-financial interests to disclose.

Ethics Approval All procedures performed in this study involving human participants were in accordance with the ethical standards of the University of North Carolina at Chapel Hill Institutional Review board and with the 1964 Helsinki declaration and its later amendments.

Consent to Participate Informed written consent was obtained from the parents and assent was obtained from children.

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