Development and Psychopathology (2025), **37**, 107–124
doi:10.1017/S0954579423001451

CAMBRIDGE UNIVERSITY PRESS

Regular Article

Economic hardship and adolescent behavioral outcomes: Within- and between-family associations

Portia Miller[1], Lorraine Blatt[2], Daniesha Hunter-Rue[2], Kelly R. Barry[3], Nabila Jamal-Orozco[2], Jamie L. Hanson[2] and Elizabeth Votruba-Drzal[2]

[1]Learning Research and Development Center, University of Pittsburgh, Pittsburgh, PA, USA, [2]Department of Psychology and the Learning Research and Development Center, University of Pittsburgh, Pittsburgh, PA, USA and [3]Department of Psychology, University of Houston, Huston, TX, USA

Abstract

Understanding how youth perceive household economic hardship and how it relates to their behavior is vital given associations between hardship and behavioral development. Yet, most studies ignore youth's own perceptions of economic hardship, instead relying solely on caregiver reports. Moreover, the literature has tended to treat economic hardship as a stable force over time, rather than a volatile one that varies month-to-month. This study addressed extant limitations by collecting monthly measures of economic hardship, specifically caregiver- and youth-reported material deprivation and youth-reported financial stress, and youth internalizing and externalizing problems from 104 youth–caregiver dyads (youth: 14–16 years, 55% female, 37% Black, 43% White) over nine months. We examined month-to-month variability of these constructs and how youth-reports of material deprivation and financial stress predicted their behavior problems, controlling for caregiver-reports of material deprivation. We found that hardship measures varied month-to-month (ICCs = 0.69–0.73), and youth-reported material deprivation positively predicted internalizing when examining both within- and between-individual variability ($\beta = .19–.47$). Youth-reported financial stress positively predicted within-individual variation in externalizing ($\beta = .18$), while youth reports of material deprivation predicted externalizing when looking between families ($\beta = .41$). Caregiver-reported material deprivation was unrelated to youth behavior when accounting for youth perceptions of economic hardship.

Keywords: Material deprivation; financial stress; externalizing; internalizing; adolescence

(Received 18 February 2023; revised 3 October 2023; accepted 11 November 2023; First Published online 5 January 2024)

Over the past 50 years, families in the U.S. have faced diverging economic fates. Wealth inequality has exploded, with the gap between the richest and poorest Americans more than doubling since the late 1980s (Schaeffer, 2020). Income inequality too is on the rise, with upper-income households bringing in increasingly larger shares of the country's total income (Schaeffer, 2020). Moreover, the percentage of American's experiencing income volatility has grown (Dynan et al., 2012; Menasce Horowitz et al., 2020; Moffitt & Zhang, 2018; Weller, 2018). Low- and middle-income families face substantial swings in monthly income; one report found that these families, on average, experienced five months of income volatility (i.e., monthly income change of ±25%) within a single year (Hannagan & Morduch, 2015). These trends have led to a rise in the prevalence of families experiencing economic hardship (Morduch & Schneider, 2017; Schaeffer, 2020). Economic hardship, as we define it, encompasses both material deprivation, which encapsulates the extent to which families lack necessary or important materials or experiences, and subjective feelings of financial stress, which represents the psychological distress individuals experience as a result of not having enough money to meet needs (Schenck-Fontaine & Panico, 2019). In 2018, nearly 40% of all families reported having trouble paying for housing, utilities, food, and/or medical care, and among low-income families this number was 60% (Karpman et al., 2020). Moreover, the COVID-19 pandemic intensified the breadth and depth of economic hardship experienced by American families (Menasce Horowitz et al., 2020). For example, food insecurity rose by 25% and financial instability grew by 20% during the latter part of 2020 (Cooney & Shaefer, 2021; Hardy & Logan, 2020), and experiences of economic hardship crept into the middle class (Menasce Horowitz et al., 2020). With upper-income families pulling further away financially from middle- and lower-income families, financial pressure is increasingly common in all but the wealthiest of households (Menasce Horowitz et al., 2020; Schaeffer, 2020).

At the same time, there has been an unprecedented rise in mental health problems among American youth (CDC, 2021; Murthy, 2022). Given documented links between income inequality, economic hardship, and children's behavioral functioning (Edmunds & Alcaraz, 2021; Gershoff et al., 2007; Odgers, 2015; Piera Pi-Sunyer et al., 2023; Schenck-Fontaine & Ryan, 2022), the exacerbation of economic inequality and hardship may be a

Corresponding author: Portia Miller; Email: plm11@pitt.edu

Cite this article: Miller, P., Blatt, L., Hunter-Rue, D., Barry, K. R., Jamal-Orozco, N., Hanson, J. L., & Votruba-Drzal, E. (2025). Economic hardship and adolescent behavioral outcomes: Within- and between-family associations. *Development and Psychopathology* **37**: 107–124, https://doi.org/10.1017/S0954579423001451

contributing factor to the increase in these problems. Recent evidence indeed suggests that low-income children and children living in families experiencing economic precarity and food insecurity were one of several subgroups disproportionately impacted by the recent increase in adolescent mental health issues (CDC, 2021; Murthy, 2022; Osgood et al., 2021). Additional research probing the associations between hardship and behavior problems during adolescence is crucial for two reasons. First, major social cognitive and sociocultural changes occur in adolescence, including improvements in perspective-taking and metacognition, elevated emotion reactivity, and increased understanding of societal structures around socioeconomic status (Crone & Dahl, 2012; Kraus et al., 2012; Stephens et al., 2014; Weimer et al., 2021). Second, adolescence is a time of high vulnerability for mood and emotional issues, substance abuse, and psychiatric disorders. Indeed, half of all lifetime mental health issues manifest by 14 years of age (Costello et al., 2011; Kessler et al., 2005), and the prevalence of mental health issues in adolescents is currently on the rise (Murthy, 2022). As such, adolescents' understanding of their economic circumstances may be keenly relevant to their experiences of hardship and their mental health (McLoyd et al., 2009; McLoyd, 1990, 2011). Yet, much of the research only considers caregiver reports of hardship despite that youth's own perceptions of hardship may directly relate to their behavior above and beyond their caregivers' perceptions (Delgado et al., 2013; Mistry et al., 2009; Wadsworth & Berger, 2006). This may be an especially important oversight in the literature because by adolescence, youth have gained better understanding of family finances and financial stress, as well as socioeconomic status.

Furthermore, there are two methodological limitations in extant studies that further limit our understanding of links between hardship and youth behavioral functioning. First, many of the studies have failed to get multiple measures hardship and behavioral outcomes, which ignores instability in these constructs. Moreover, longitudinal studies have generally used hardship measures that predated measures of youth behavioral outcomes by several years, which is problematic if these constructs are not stable (Gard et al., 2020; Simons et al., 2016). Recent research shows that month-to-month variability in economic resources, including economic hardship, is common in U.S. households (Hannagan & Morduch, 2015; Liu et al., 2022) – variation that prior studies have largely ignored. While extant studies strived to establish clear temporal precedence, if the underlying processes are unfolding on shorter durations than the assessment interval, prioritizing temporal precedence may be problematic. In particular, if the lag structure does not reflect the underlying dynamic processes that are at play in the lives of families and youth, this approach may obfuscate associations. Indeed, when constructs vary substantially over time, it is important to measure and model the pace of change over the proper time scale instead of prioritizing lagged associations (Granger, 1969).

Using an intensive longitudinal, repeated measures design, this study samples 104 adolescent–caregiver dyads and collects monthly measures of caregiver and youth reports of hardship, including parent reports of material deprivation (e.g., utilities cutoff for nonpayment, eviction, housing inadequacies) and youth reports of material deprivation relevant to their lives (e.g., unable to participate in school activities because of lack of money) and financial stress (e.g., worry about caregiver because money is limited), and youth behavior problems (externalizing and internalizing) over a period of nine months to advance the current literature by addressing two aims. First, we examine the month-to-month variability of reports of both caregiver and youth perceptions of hardship and youth behavior problems. Second, we estimate associations between variation in monthly measures of caregiver- and youth-reported hardship and youth internalizing and externalizing behavior problems. The results provide novel information about a critical process driving changes in problem behaviors during adolescence.

Economic hardship predicts youth behavioral functioning

Economic hardship includes material deprivation, which denotes the households lack of vital goods and experiences, like food, adequate housing, and medical care (Gershoff et al., 2007; Schenck-Fontaine & Ryan, 2022; Thomas & Waldfogel, 2022), as well as subjective feelings of financial stress, which encompass the psychological distress caregivers and adolescents may feel upon evaluating their economic circumstances (Schenck-Fontaine & Panico, 2019). Both material deprivation and feelings of financial stress pose risks to adolescents' wellbeing. While studies have documented the indirect effects that financial stress may have on children through parents and the family system (Conger et al., 1994), both material deprivation and financial stress can have direct effects, such as when lack of medical care or worry about caregivers' lack of money compromises children's mental health (Thomas et al., 2019). Indeed, research shows that material deprivation and financial stress are highly stressful for adolescents (Ennis et al., 2000; Wadsworth et al., 2005). When it comes to their behavioral functioning, this stress is a source of anxiety, frustration, and demoralization and can also manifest in increased conflict between youth and parents, other family members, and/or peers, all of which can lead to internalizing and externalizing problems (Wadsworth et al., 2005). Moreover, stress triggers a physiological response, including the release of catecholamines and glutocorticoids (Gunnar & Quevedo, 2007; Steeger et al., 2017). Frequent activations of the stress response could result in dysregulated stress responses, that is, hyper- or hypo-reactivity or arousal, which in turn place adolescents at increased risk for behavioral problems (Gunnar & Quevedo, 2007; Steeger et al., 2017). Indeed, a study by Steeger et al. (2017), which explored adolescent physiological stress responses, illustrated that hardships are associated with increased adolescent problems behaviors via physiological responses to stress.

The empirical literature has consistently linked family economic hardship to child and adolescent adjustment (Delgado et al., 2013; Gershoff et al., 2007; Schenck-Fontaine & Panico, 2019; Simons & Steele, 2020). In particular, youth experiencing higher than average levels of family economic hardship tend to display elevations in internalizing and externalizing problems (Delgado et al., 2013; Schenck-Fontaine & Panico, 2019; Zilanawala & Pilkauskas, 2012). These links have been identified using measures of hardship that assess material deprivation (Schenck-Fontaine & Ryan, 2022) and measures that tap financial stress (Delgado et al., 2013), as well as measures of hardship that incorporate elements of both material deprivation and financial stress into a single predictor (Ponnet et al., 2016). In their seminal work illustrating the importance of hardship when looking at links between economic circumstances and child development, Gershoff et al. (2007) found that hardship, conceptualized as material deprivation, contemporaneously predicted worse socioemotional competence even when controlling for family income. In a more recent study focused specifically on adolescents, Delgado et al. (2013)

https://doi.org/10.1017/S0954579423001451 Published online by Cambridge University Press

found that parental reports of material deprivation predicted adolescent reports of financial stress and their behavioral functioning measured two years later. Given this growing literature, it is critical to consider family economic hardship as a key predictor of adolescent behavioral development.

The importance of youth's own perceptions of hardship in predicting behavior

During adolescence, a multitude of complex social cognitive and affective processes mature and become refined. These processes include: (a) understanding the mental states of other individuals (theory of mind); (b) thinking about thinking (metacognition); and (c) emotion reactivity. Growth in these capacities enables adolescents to understand, explain, and predict the actions and cognitions of others (Crone & Dahl, 2012; Keating, 2004; Weimer et al., 2021). Several studies have documented adolescents' rapid development in perspective-taking processes, resulting in greater accuracy compared to children in their ability to assess the mental states of others (Bosco et al., 2009; Choudhury et al., 2006; Dumontheil et al., 2010; Lonigro et al., 2017). From a metacognitive standpoint, adolescents gain greater abilities to recognize their own thoughts and emotions, to relate them to relevant interpersonal events, and to understand the mental states of other people and keep them distinct from their mental states (Demetriou & Bakracevic, 2009; Weil et al., 2013). Not only do these competencies suggest youth may have unique perspectives of economic hardship, these processes are also linked to adolescents' self-regulation and executive control, which is particularly important in shaping behavioral development, including internalizing and externalizing behaviors (Fernandez-Duque et al., 2000; Fleming et al., 2012; Shimamura, 2002).

Additionally, studies have documented that family members can have unique perceptions of family economic circumstances despite living in the same household (Delgado et al., 2013; McLoyd et al., 1994; Mistry & Elenbaas, 2021; Rivenbark et al., 2020). In fact, caregiver and youth reports of hardship only correlate modestly – around $r = .25$ (Delgado et al., 2013; McLoyd et al., 1994; Mistry & Elenbaas, 2021). This could be due to caregivers' attempts to shield youth from economic hardship, which could result in differing perceptions of hardship between caregivers and their children (Mistry & Lowe, 2006). Alternatively, there may be individual differences between caregivers and youth when it comes to how distressing or impactful shared hardships are based on personality or utilization of coping mechanisms (Wadsworth & Berger, 2006).

Emotionally, data suggest that adolescents may be uniquely vigilant toward and more likely than adults to react to certain cues of threat (Dreyfuss et al., 2014). Compared to adults, adolescents are less able to accurately discern different expressions of negative emotions (Thomas et al., 2007), have greater difficulty suppressing attention toward cues of threat (Cohen-Gilbert & Thomas, 2013), and are worse at discriminating threat cues from safety cues (Grasser & Jovanovic, 2021; Lau & Waters, 2017). Put differently, adolescents may sometimes be perceiving more negative affect in their environment, believing environments to be potentially threatening or hostile. In their homes, youth could potentially be seeing certain aspects of hardship as more negative or adverse, giving youth a perspective of hardship that is unique from that of their adult caregivers.

Externally, adolescents are reorienting from parents to peers, beginning to face the external world, and contemplating facets of their future personal and professional identities (Brown & Larson, 2009; Flanagan & Gallay, 2014; Hagquist, 2007; Schoon & Heckhausen, 2019). During this time period, social networks significantly expand, and peers may have a greater influence on youth behavior and self-evaluations, as adolescents more frequently engage in social comparisons and deeply internalize the views of others (Albert et al., 2013; Jacobs, 2003; O'Brien & Bierman, 1988; Rivenbark et al., 2020; Wrzus et al., 2013). Moreover, adolescents begin to interface with different social structures and institutions. Social roles and norms become particularly salient for youth, and at the same time adolescents are gaining more knowledge of their own economic circumstances (Blakemore & Mills, 2014; McLoyd et al., 2009; McLoyd, 1998, 2011). As youth gain this knowledge and become more attune to evaluations by peers and others, this could increase stigma and heighten concerns about unfavorable appearances of their family's economic position and lack/quality of material goods (i.e., clothing, housing conditions), which can cascade into increased problem behavior (Silbereisen et al., 1990). Indeed, studies have documented that adolescents' perception of their social status was a unique predictor of their internalizing and externalizing problems at age 14 (Rivenbark et al., 2020, 2020; Russell & Odgers, 2020). Examining these elements collectively, perceptions of economic hardship could be a major driver of psychological distress and behavioral adjustment during adolescence. Given the host of changes occurring during adolescence, youth may be uniquely sensitive to information or cues that convey their socioeconomic standing, like economic hardship (Somerville, 2013). Moreover, as adolescents take more active roles in their development and make gains in cognitive abilities–for example, more advanced planning, problem solving, and perspective taking–their own views of life experiences play an increasingly important role in predicting their behavior (Crone & Dahl, 2012; Keating, 2004; Weimer et al., 2021). Importantly, adolescence is also the time when youth begin to assess and plan for their own economic futures (e.g., making educational and career choices) and, thus, may pay closer attention to their families' economic circumstances (Brown & Larson, 2009; Flanagan & Gallay, 2014; Hagquist, 2007; Schoon & Heckhausen, 2019). Centering adolescents' awareness or perceived understanding of life events may be necessary to fully understand the effects of stressful events on them (Compas, 1987; Keating, 2004; Rutter, 1983).

Research has generally focused on caregivers' perceptions of hardship when looking at how economic hardship relates to youth adjustment, but there are a few notable studies that have looked at how youth reports of hardship relate to their own behavior, including the work by Delgado et al. (2013) described above. Prior to the Delgado et al. (2013) study, Lempers et al. (1989) found that youth reports of economic hardship predicted their levels of distress. Seminal work by McLoyd et al. (1994) found that African American adolescents' perceptions of economic hardship predicted their concurrent depressive symptomology, anxiety levels, and self-esteem. While these studies included reports of youth perceptions of hardship, they relied on cross sectional data to test associations between adolescent perceptions of hardship and behavior. More recently, longitudinal work has found that adolescent-reported hardship predicted increases in anxiety and depression at later time points, even when controlling for prior hardship and behavior problems (Mistry et al., 2009; Wadsworth & Berger, 2006; Wadsworth & Compas, 2002). For example, Wadsworth and Compas (2002) found that youth reports of hardship were positively related to anxiety/depression and

https://doi.org/10.1017/S0954579423001451 Published online by Cambridge University Press

aggressive behavior in a sample of rural adolescents. These studies did not focus on the variability and changes in these constructs, instead using measures from a single timepoint. This overlooks potential intra-year variability in both hardship and behavior problems. Moreover, it is unclear whether youth perceptions relate to behavior over and above caregivers' experiences of hardship since these studies did not consider youth and caregiver reports simultaneously.

Limitations in the current literature

While the literature demonstrates robust links between hardship and youth behavior problems, past studies have three notable limitations. First, much of the research on economic hardship has conceptualized its effects on youth as operating through parents. Specifically, studies argue that economic hardship is distressing to parents, and this distress compromises their relationships and parenting practices, leading to conflictual interactions with their children and harsh and/or detached parenting behaviors and, ultimately, increased child behavior problems (Gard et al., 2020; Landers-Potts et al., 2015; Neppl et al., 2016; Raver et al., 2007; Simons et al., 2016; Zilanawala & Pilkauskas, 2012). Yet, material deprivation and financial stress may impact adolescents directly. For example, youth may get stressed or upset when they are unable to go out with friends or participate in school extracurricular activities because of limited economic resources. Importantly, most studies exploring links between hardship and development (Gard et al., 2020; Landers-Potts et al., 2015; Neppl et al., 2016; Raver et al., 2007; Simons et al., 2016) do not include youth reports of economic hardship, instead relying solely on caregiver reports. Even studies that do ask adolescents about hardship assume that economic hardship primarily affects youth through caregivers and caregiving practices, thereby ignoring developmental changes occurring in social and cognitive processes that make adolescents' own understanding and perceptions of the world increasingly important in shaping their behavior. This study investigates youths' own experiences of economic hardship, including asking them questions about material deprivation and financial stress that are directly relevant to adolescents (e.g. skipping going out with friends because of a lack of money, worrying because caregivers do not have enough money to pay for things), as critical correlates of their behavior. Our youth-report measures of material deprivation and financial stress aim to capture experiences and feelings that are proximal to youth, on which they can report accurately, and, in turn, that may have strong ties to their behavioral functioning.

Next, insufficient attention has been given to the time scale at which hardship and youth behavioral functioning are measured. Studies often use measures of hardship drawn from a single point in time, capturing a snapshot rather than a more comprehensive representation of families' financial experiences (Devenish et al., 2017; Hostinar & Miller, 2019). This is a serious issue given results from the U.S. Financial Diaries project, which tracked the finances of low- and moderate-income households continuously over a year (Hannagan & Morduch, 2015). These households faced substantial swings in month-to-month income. Further, data from the U.S. Financial Diaries also showed that expenditures varied from month-to-month, and expense spikes did not align with income spikes (Morduch & Schneider, 2017). For these reasons, economic hardship is likely to exhibit major intra-year variability. Indeed, a recent post-pandemic study testing this presupposition showed that caregivers' reports of hardship varied considerably month-to-month (Liu et al., 2022). Yet, prior research most often relies on a point-in-time snapshot of hardship, which may underestimate links between economic hardship and youth mental health if the snapshot is not an accurate representation of a family's true experiences of hardship over time.

Lastly, the temporal spacing of measures of hardship and problem behavior varies widely across studies, which raises concerns about whether they capture the experiences of youth and families at the time around which hardship is felt (Granger, 1969). Measures of economic hardship often predate reports of behavior by as many as eight years (Gard et al., 2020; Simons et al., 2016). As an example, Gard et al. (2020) used parent-reports of economic hardship when children were 1 year old to predict externalizing problems at age 9. These large time lags, while helpful in establishing temporal precedence, may downwardly bias the relations among these variables because they are so distally measured. Nor do they account for the fact that more than one third of U.S. households experience substantial intra-year income change (Dynan et al., 2012; Gottschalk & Moffitt, 2009), and economic hardship is volatile (Liu et al., 2022). Thus, the large temporal windows in prior studies may not capture the acute psychological distress experienced in months where economic hardship is high. Financial resources are often received monthly, and bills and other financial obligations come due weekly or monthly; therefore, experiences of hardship are likely to be felt at or around that time. Thus, it may be important to characterize relations between economic hardship and behavior with month-to-month assessments, since there are intra-year fluctuations in income, earnings, bills, and hardship resulting from the inability to pay bills or purchase necessities. Thus, we hypothesize that changes in material deprivation and financial stress will give rise to rapid changes in adolescent behavior, and our intensive repeated measures design allows us to test contemporaneous associations (see Granger, 1969). We believe that this temporal design will provide better metrics for examining the relations among hardship and youth behavior problems (Collins & Steinberg, 2006).

The current study

Motivated by limitations in the current literature, our study investigated associations between youths' and caregivers' feelings of hardship as they relate to youth reports of externalizing and internalizing behaviors. Importantly, given rising volatility in household economic circumstances, it considers these associations on a shorter time scale, leveraging monthly intensive repeated measures of caregiver and youth reported hardship and behavioral outcomes to explore within- and between-youth–caregiver dyad associations among variables. With this powerful design, we addressed two aims. First, given the lack of research exploring fluctuations in hardship and behavior problems on a sub-annual time scale, we calculated month-to-month variability of caregiver-reported material deprivation, youth-reported material deprivation and financial distress, and youth externalizing and internalizing outcomes over a nine-month period. Second, we tested whether variations in monthly caregiver perceptions of material deprivation and youth perceptions of material deprivation and financial stress were associated with youths' reports of their externalizing and internalizing symptoms. As a notable contribution to the literature, we tested this aim using a multilevel modeling framework that allowed us to examine associations within- and between-dyads. In doing so, within-dyad associations reduce omitted variable bias by isolating the variance in behavior problems explained by change in hardship over time within-dyads, with each dyad serving as its own

https://doi.org/10.1017/S0954579423001451 Published online by Cambridge University Press

counterfactual. With respect to the first aim, we expected significant monthly variability in these variables of interest, though we predicted that caregivers' reports of material deprivation would be more stable. For the second aim, we hypothesized that youth perceptions of hardship, both material deprivation and feelings of financial stress, would predict internalizing and externalizing behaviors, with more perceived hardship predicting increased problem behaviors. Many developmental psychopathology scholars argue that specific aspects of economic disadvantage are not likely to be uniquely associated with psychopathology; rather, the mechanistic pathways through which a unique dimension of disadvantage impact psychopathology may be different (e.g., Miller et al., 2018; Smith & Pollak, 2021). Accordingly, we had no specific hypotheses regarding unique associations between material deprivation or financial stress and behavior problems. Lastly, we predicted that youth reports of hardship would have stronger links to their behavior than caregiver reports.

Method

Participants

The current study draws data from the Family Income Dynamics Study (FInD). FInD is a nine-month longitudinal study designed to densely sample economic circumstances and family processes in a racially and economically diverse sample of youth and caregivers in the greater metropolitan area of Pittsburgh, PA. The sample included 104 youth (55% female) and caregiver (85% biological mother) dyads. Youth were 14–16 years old ($M = 14.8$, $SD = 0.83$) at the time of the initial survey, and 4% reported their race as Asian, 37% Black, 6% Latinx, 10% multiracial, and 43% White. Based on caregivers' reports of prior year's income and household size during the screening process, 51% of the dyads were considered low-income (<2xs the federal poverty threshold) and 49% were middle-income (generally between 2xs and 5xs the federal poverty threshold). Among the low-income sample, approximately 27% qualified as poor, that is, had annual incomes below the federal poverty threshold. Highest level of caregiver education varied as well: 10% of caregivers had a high school degree, 36% had taken some college courses or possessed an associate's degree or professional/trade certification, and 54% had a bachelor's or graduate degree. Almost half of the caregivers were married and living with their spouse (46%). Of the caregivers who were not married and cohabiting, approximately 10% were cohabiting with a partner, while 20% reported being single. Full descriptive statistics are reported in Table 1 (these reflect the full stacked data set over the nine-month period).

Procedures

Families were recruited into the study from participant registries, community organizations, schools, advertisements, and referrals. Recruitment began in November of 2019 and the final cohort was recruited in December of 2020; data collection spanned November, 2019 through August, 2021. Initial interviews were conducted in person, but in March 2020, we began conducting them over the phone after widespread shutdowns due to COVID-19. After the initial interview, caregivers and youth completed monthly surveys electronically via computer or smart phone for the next eight consecutive months. The surveys included questions tapping a

Table 1. Descriptive statistics for sample

Observation *N* (Level 1) = 934					
Dyad *N* (Level 2) = 104					
Variable	Mean	SD	Min	Max	ICC
Youth externalizing	5.39	3.36	0	17	0.78
Youth internalizing	6.11	3.27	0	16	0.74
Caregiver material deprivation	0.28	0.18	0	0.86	0.69
Youth material deprivation	1.59	0.59	1	4.17	0.72
Youth financial stress	1.65	0.69	1	4.20	0.73
Caregiver age	44.26	7.01	31	70	
Youth age	15.14	0.97	14	17	
Household size	4.19	1.50	1	10	
Monthly income	$4,205	$3,095	$0	$20,192	
Monthly income (natural log transformed)	8.03	1.1	0	9.91	
	Percent				
Caregiver employment					
Employed	56%				
Unemployed	10%				
Other (e.g., stay at home caregiver, medical leave, full time student, etc.)	33%				
Sex assigned at birth					
Caregiver sex (female)	92%				
Youth sex (female)	55%				
Caregiver race/ethnicity					
Asian	2%				
Black	33%				
Latinx	2%				
Multiracial	2%				
White	61%				
Youth race/ethnicity					
Asian	4%				
Black	37%				
Latinx	6%				
Multiracial	10%				
White	43%				
Highest level of caregiver education					
High School Diploma/GED	10%				
Some college	12%				
Associates degree or Trade certification	24%				
Bachelor's degree	17%				
Graduate degree	37%				
Caregiver marital status					
Married	46%				

https://doi.org/10.1017/S0954579423001451 Published online by Cambridge University Press

range of sociodemographic, psychological, financial, caregiving, and family functioning measures. Participants were asked to complete the surveys between the first and fifth of the month. A few days prior to the follow up surveys and during the five-day window if necessary, caregivers and youth were reminded to complete their surveys via email and text. This led to a very high retention rate; no participant missed more than three waves of data, and the majority missed no waves. The total percentage of missing responses across waves for all variables of interest totaled six percent. To adjust for missing data in our analyses, we relied on Mplus' default approach of maximum likelihood using missing-at-random assumptions (Muthén et al., 2017). Analyses of missing data patterns supported this assumption, that is, missingness was not predicted by our variables of interest.

Measures

Youth Externalizing and Internalizing Behavior Outcomes

Every month, youth reported on their externalizing and internalizing problem behaviors by completing the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997). The SDQ is comprised of 25 items assessing emotional problems, conduct problems, hyperactivity, peer problems, and prosocial behaviors. The youth were presented with questions such as "I get very angry and often lose my temper," "I am often accused of lying or cheating," "I am often unhappy, depressed or tearful" and responded on a 3-point scale ("not true" to "certainly true"). Consistent with prior approaches, we created internalizing and externalizing composite variables based on validated subscales from the SDQ (Goodman, 1997). The externalizing composite reflects the sum of conduct problems and hyperactivity subscales (10 items, $\overline{\alpha}$ = .72−.81), and the internalizing composite reflects the sum of emotional and peer problems subscales (10 items, $\overline{\alpha}$ = .66−.74). Higher scores indicate more externalizing and internalizing behaviors.

Economic hardship

Both caregivers and youth reported on economic hardship monthly. While caregivers' questionnaire tapped primarily material deprivation, the youth questionnaire included questions tapping both material deprivation and feelings of financial stress. The scoring and distribution of the economic hardship measures used in the present study are consistent with other studies including families from economically diverse backgrounds (Barrera et al., 2001; Zilanawala & Pilkauskas, 2012). The full list of items included in all hardship measures is listed in Table 2.

Caregiver Material Deprivation. Each month, caregivers completed a 12-item questionnaire assessing material deprivation adapted from Gershoff et al. (2007) and Sullivan et al. (2008). Eight dichotomous items (*1 = Yes, 0 = No*) asked caregivers if hardships occurred in the past month. Items included questions like "Did you have utilities cut off for non-payment?" "Did someone need to go to the doctor/hospital, but did not go?" and "Did you have a toilet, bath/shower, hot water heater, or other plumbing that did not work?" Three items were answered on Likert scales (0 = *not at all difficult* to 3 = *very difficult* or *0 = never* to *5 = all the time*). These items asked, "How difficult was it to pay bills (e.g., utilities, rent/mortgage)?," "Did you put off buying something you need -such as food, clothing, medical care, or housing- because you don't have money?," "How often can your household afford to do things for fun like going to the movies or eating out?" A final item asked about participants' food situation ("1 = *We can always afford to eat good nutritious meals*; 2 = *We can always afford to eat but not always the kinds of food we should be eating*; 3 = *Sometimes we cannot afford to eat enough*; 4 = *Often we cannot afford to enough to eat"*). The latter four items were dichotomized for consistency by coding responses of "somewhat difficult" or "occasionally" or "not always" and higher as "1" (Gershoff et al., 2007; Sullivan et al., 2008). We created a caregiver material deprivation measure ranging from 0-1 by averaging across all 12 dichotomous items ($\overline{\alpha}$ = .75−.78), where higher values indicate more hardship.

Youth Material Deprivation. The youth material deprivation measure is a composite of 12 items adapted from Sullivan et al. (2008). These items asked how often youth experienced hardships that may be especially relevant to adolescents like skipping going out with friends because of a lack of money, not asking for something they wanted/needed because caregiver(s) couldn't afford it, missing out on something because of a lack of transportation money, and inability to participate in a school-sponsored activity because of lack of money. All items were answered based on the past month using a 5-point scale (*1 = No problem at all; 2 = 2; 3 = 3; 4 = 4; 5 = A very serious problem* or *1 = Never; 2 = 2; 3 = 3; 4 = 4; 5 = Always*). Items were reverse coded and averaged so that a higher value on the composite reflects more material deprivation ($\overline{\alpha}$ = .88−.91).

Youth Financial Stress. This was measured using five items drawn from Conger et al. (1999). The items included questions such as "How often do(es) your caregiver(s) argue about not having enough money?" and "How upset or worried are your caregiver(s) because they do not have enough money to pay for things?" These were answered on a 1–5 scale, with higher scores signaling more distress. Scores on the five items were averaged to create the financial stress composite measure ($\overline{\alpha}$ = .80−.91).

Sociodemographic covariates

We controlled for income based on caregivers' monthly reports of total income received in the prior month. Specifically, they were given a 17-item list of sources of income and asked to report the after-tax amount received from each source. Sources included income from formal employment, income from informal work arrangements (e.g., "gig" work like ride share, food delivery), alimony and child support, income from benefits/assistance programs like unemployment compensation, social security benefits, or government assistance programs (e.g., Temporary Assistance for Needy Families), and income from other sources like lottery winnings, pawning goods, and gifts and loans (Fox & Burns, 2021). The sum of all sources of income was tabulated for caregivers and they were asked if the total looked correct (they could make edits if they indicated total was incorrect). We controlled for the natural log of this sum to capture nonlinearities in income's associaitons with development (Dearing et al., 2006; Duncan et al., 2006; Mayer, 2002; Votruba-Drzal, 2006). Specifically, the natural log transformed income measure adjusts for the well-documented trend that the wellbeing of children whose families are at the lower end of the income distribution tends to be more responsive to income changes than that of children in higher income families (Duncan et al., 2017; Votruba-Drzal, 2006).

We also controlled for three important youth and family characteristics that are known to covary with youth behavioral outcomes (Merikangas et al., 2010). These included youth mean age and household size over the course of their nine-month participation. We also controlled for caregivers' marital status,

https://doi.org/10.1017/S0954579423001451 Published online by Cambridge University Press

Table 2. Hardship measures

Youth perceptions of financial stress		
1	How much of a problem does your family have because your caregiver(s) do not have enough money to buy things your family needs or wants	1 = No problem at all; 2 = 2; 3 = 3; 4 = 4; 5 = A very serious problem
2	How often do your caregiver(s) argue about not having enough money?	1 = Never; 2 = 2; 3 = 3; 4 = 4; 5 = Always
3	How upset or worried are your caregiver(s) because they do not have enough money to pay for things?	1 = Not at all upset or worried; 2 = 2; 3 = 3; 4 = 4; 5 = Very upset or worried
4	How often do you argue with your caregiver(s) about not having enough money?	1 = Never; 2 = 2; 3 = 3; 4 = 4; 5 = Always
5	How often do you and your caregiver(s) disagree or get upset about money?	1 = Never; 2 = 2; 3 = 3; 4 = 4; 5 = Always
Youth perceptions of material deprivation		
1	How often did you skip going out with friends/boyfriend/girlfriend because you did not have enough money to pay for the activity or event (e.g., going out to eat or to the movies)?	1 = Never; 2 = 2; 3 = 3; 4 = 4; 5 = Always
2	How often were you unable to buy something that you needed for school (e.g., study guide, calculator, supplies) because you did not have the money to buy it?	1 = Never; 2 = 2; 3 = 3; 4 = 4; 5 = Always
3	How often were you unable to participate in a school-sponsored activity or event (e.g., fieldtrip, extracurricular activities like clubs or athletics) because you did not have enough money?	1 = Never; 2 = 2; 3 = 3; 4 = 4; 5 = Always
4	How often did you want to sign up for classes, lessons, or activities outside of school, but could not because you could not pay for them?	1 = Never; 2 = 2; 3 = 3; 4 = 4; 5 = Always
5	How often did you need to go to the doctor or other health professional but did not because you could not pay?	1 = Never; 2 = 2; 3 = 3; 4 = 4; 5 = Always
6	How often were you unable to buy something for yourself that you really wanted (e.g., clothing, shoes, electronics), because you didn't have the money?	1 = Never; 2 = 2; 3 = 3; 4 = 4; 5 = Always
7	How often did lack of transportation or money for transportation cause you to miss out on something you wanted or needed to do?	1 = Never; 2 = 2; 3 = 3; 4 = 4; 5 = Always
8	How often did you skip something you wanted or needed to do (e.g., school work, playing sports) because you had to work for pay?	1 = Never; 2 = 2; 3 = 3; 4 = 4; 5 = Always
9	How often did you not ask your parents for something you wanted or needed because you knew they couldn't afford it?	1= Never; 2 = 2; 3 = 3; 4 = 4; 5 = Always
10	How often did your friends pay for something because you couldn't afford it?	1 = Never; 2 = 2; 3 = 3; 4 = 4; 5 = Always
11	How often did you feel like you didn't enough space or privacy in your home?	1 = Never; 2 = 2; 3 = 3; 4 = 4; 5 = Always
12	How often do you worry about your personal items being taken by other people in your house?	1 = Never; 2 = 2; 3 = 3; 4 = 4; 5 = Always
Caregiver perceptions of material deprivation		
1	How difficult was it to pay bills (e.g., utilities, rent/mortgage)?	0 = Not at all difficult; 1 = Somewhat difficult; 1 = Very difficult
2	Did you decide not to buy something you really needed for you or your children because you couldn't afford it?	1 = Yes; 0 = No
3	Did you run out of money over the last month?	1 = Yes; 0 = No
4	Did you have utilities cutoff for nonpayment?	1 = Yes; 0 = No
5	Did you or someone in your household need to go to the doctor/hospital but did not go?	1 = Yes; 0 = No
6	Were you evicted, had to move in with others, or live in a shelter because of lack of a place to live?	1 = Yes; 0 = No
7	Did you have exposed electrical wires, broken windows, pests, or leaking roof in areas of your home?	1 = Yes; 0 = No
8	Did you have a toilet, bath/shower, hot water heater, or other plumbing that doesn't work?	1 = Yes; 0 = No
9	Were you dissatisfied with the condition of your housing?	1 = Yes; 0 = No
10	We would like you to think about the food available in your household. Which of the following best describes your situation?	0 = We can always afford to eat good nutritious meals; 1 = We can always afford to eat but not always the kinds of food we should be eating; 1 = Sometimes we cannot afford to eat enough; 1 = Often we cannot afford to enough to eat
11	How often do you put off buying something you need, such as food, clothing, medical care, or housing- because you don't have money?	0 = Never; 0 = Rarely; 1 = Occasionally; 1 = Frequently; 1 = All the time
12	How often can your household afford to do things just for fun like going to the movies or eating out? Would you say . . .	1 = Never; 1 = Rarely; 0 = Occasionally; 0 = Frequently; 0 = All the time

https://doi.org/10.1017/S0954579423001451 Published online by Cambridge University Press

adolescent's sex assigned at birth (0 = male, 1 = female), and whether the child identified their race as non-White (youth were able to select from multiple racial/ethnic categories or self-identify, but given limited sample size, we used a dichotomous indicator where 1 = non-White race/ethnicity), all of which were assessed at baseline. Lastly, an indicator for the wave of data collection (ranging from 0 through 8) was included in models to control for any unobservable variables that affect behavioral functioning and are highly correlated with time in study.

Analytic approach

All analyses were conducted in Mplus version 8.6. For the first aim, we examined the monthly variability in caregiver reports of material deprivation, youth reports of material deprivation and financial stress, and youth behavior outcomes. To do this, we examined intraclass correlation coefficients (ICCs) to assess the level of variation that caregiver and youth dyads experienced from month to month over the nine months of data collection. ICCs assess the strength of the correlation between a variable reported by a rater over time. As the size of ICCs increases, this indicates decreasing variability, with an ICC of one indicating no change over time.

We examined aim two in a multilevel structural equation modeling (MSEM) framework using a maximum likelihood estimator with robust standard errors (Muthén et al., 2017; Preacher et al., 2010). This specification allowed us to simultaneously examine associations within (level one) and between (level two) caregiver and youth dyads across the nine months. One strength of this approach is that it addresses omitted variable bias by isolating the variance explained by change within dyads over time, since each dyad serves as its own counterfactual at level one. Specifically, contemporaneous associations in the within portion of the model reflect fluctuations in variables from month to month as they rise and fall from the participant's average responses. These estimates are stronger than traditional cross-sectional models when it comes to drawing causal inferences because threats to internal validity posed by time-invariant omitted variables is greatly reduced. Further, by estimating associations at level two, we were also able to examine differences between dyads' means over time, which provided valuable information on the unique contributions of caregiver perceptions of material deprivation versus youth perceptions of material deprivation and financial distress in predicting youth behavior outcomes.

One MSEM modeled direct associations of caregiver and youth hardship on youth externalizing, and the other modeled these associations on youth internalizing. Both models control for income and wave at level one, and control for income, youth mean age, youth sex, and caregiver marital status, race/ethnicity, and household size at level two. Both models also control for the correlations between income and youth perceptions of material deprivation and financial stress, income and caregiver perceptions of material deprivation, and caregiver material deprivation and youth material deprivation and financial stress at levels one and two. These models provided insight on the unique relations between the different measures of hardship and behavior outcomes as well as how much variance the caregiver and youth hardship measures shared.

We ran three alternate models as sensitivity checks to our main models. First, we two ran models to address concerns about the potentially confounding effect of the COVID-19 pandemic on hardship and youth behavior. The first one controlled for a categorical indicator for whether the data collection occurred after March 1, 2020 (which corresponds to the date when things started shutting down locally). The second included a continuous control variable reflecting the number of months since March 2020 that had passed at the time of the data collection. Second, in an effort to test the best temporal timescale at which to model associations between hardship and behavior problems, we ran iterations of models with a one-month time lag where youth and caregiver hardship predicted behavior problems in the following month. Finally, to help rule out simultaneity bias, we ran a similar lagged model, but with youth behavior problems predicting their reports of hardship one month later to address concerns that adolescents' internalizing and externalizing behaviors may be causing teens to report higher levels of hardship, and not vice versa as our theoretical model hypothesizes.

Results

Month-to-month variability of constructs

The first aim examined the monthly variability of youth and caregiver hardship and youth behavior outcomes by looking at ICCs (Table 2). The ICCs are as follows: caregiver-reported material deprivation (0.69), youth-reported material deprivation (0.72), youth-reported financial stress (0.73), externalizing (0.78), and internalizing (0.73). These values demonstrate that the constructs in our study are relatively stable, but do have some month-to-month variability.

Associations between hardship and behavior outcomes

The second aim used MSEM to examine associations between variation in caregiver and youth hardship and youth reported behavior outcomes. The externalizing results are presented in Table 3 and the internalizing results in Table 4. Since youth and caregiver hardship are measured on different scales, we present fully standardized results for ease of interpretation and comparing effect sizes between variables.

Externalizing

Our results show a positive association between youth reports of financial stress and externalizing within individuals over time (Table 3). A one standard deviation (SD) increase in youth financial stress is associated with a 0.18 SD increase in youth externalizing within individuals ($p < .001$). In other words, when youth reports are being compared to their own averages over time, more financial stress predicted higher externalizing problems. When comparing across dyads, youth reports of material deprivation positively related to between-individual variation in externalizing problems. Specifically, a one SD increase in material hardship was linked to a 0.41 SD increase in youth externalizing when looking between individuals ($p = .015$). Notably, neither income nor caregiver reports of material deprivation predicted externalizing within or between dyads. Moreover, within-youth variation in material deprivation and between-youth variation in financial distress was unrelated to externalizing. Similarly, none of the covariates were related to youth externalizing with the exception of a marginally significant relation between sex and externalizing, with female youth reporting 0.17 SD lower externalizing problems than males ($p = .072$).

In terms of the estimated correlations between income and hardship, income and youth reports of financial stress were

https://doi.org/10.1017/S0954579423001451 Published online by Cambridge University Press

Table 3. Two-level model of associations between hardship and youth externalizing behaviors

					95% CI	
	Standardized coefficient (β)		S.E.	Two tailed *P*-value	Lower	Upper
Level 1 (within dyads)						
Youth externalizing						
Monthly income	−.02		0.03	.579	−0.06	0.03
Youth financial stress	.18	***	0.04	.000	0.12	0.25
Youth material deprivation	.06		0.06	.323	−0.04	0.17
Caregiver deprivation	.01		0.04	.734	−0.05	0.07
Wave	−.02		0.05	.629	−0.10	0.06
Correlations						
Monthly income and youth financial stress	−.15	**	0.07	.028	−0.26	−0.04
Monthly income and youth material deprivation	−.03		0.04	.446	−0.09	0.03
Monthly income and caregiver material deprivation	−.05		0.03	.137	−0.10	0.01
Youth financial stress and youth material deprivation	.47	***	0.07	.000	0.36	0.58
Youth financial stress and caregiver material deprivation	.11	**	0.04	.004	0.05	0.17
Youth material deprivation and caregiver material deprivation	.04		0.04	.370	−0.03	0.11
Residual variance						
Youth externalizing	.95	***	0.03	.000	0.91	1.00
Level 2 (between dyads)						
Youth externalizing						
Monthly income	.01		0.14	.919	−0.22	0.25
Youth financial stress	−.12		0.19	.532	−0.44	0.20
Youth material deprivation	.41	*	0.17	.015	0.13	0.69
Caregiver material deprivation	−.24		0.15	.103	−0.48	0.00
Youth age	−.07		0.10	.505	−0.23	0.10
Household size	.04		0.13	.739	−0.17	0.25
Marital status	−.12		0.12	.300	−0.31	0.07
Youth race non-white	.10		0.09	.273	−0.05	0.25
Youth sex-female	−.17		0.10	.072	−0.33	−0.02
Correlations						
Monthly income and youth financial stress	−.20	*	0.10	.044	−0.36	−0.04
Monthly income and youth material deprivation	−.24	**	0.09	.008	−0.39	−0.09
Monthly income and caregiver material deprivation	−.58	***	0.08	.000	−0.71	−0.44
Youth financial stress and youth material deprivation	.78	***	0.06	.000	0.67	0.88
Youth financial stress and caregiver material deprivation	.45	***	0.09	.000	0.31	0.60
Youth material deprivation and caregiver material deprivation	.47	***	0.09	.000	0.33	0.61
Intercept						
Youth externalizing	2.28		2.67	.392	−2.11	6.68
Residual variance						
Youth externalizing	.83		0.09	.000	0.69	0.97

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

negatively correlated within dyads ($r = -.15$, $p = .028$). Between dyads, income was negatively correlated with all hardship measures. The correlation was strongest between income and caregiver reports of material deprivation ($r = -.58$, $p < .000$), with between-individual negative correlations between income and youth reports of financial stress and material deprivation being more than half that size ($r = -.20$, $p = .044$ and $r = -.24$, $p < .008$, respectively). The two youth reports of hardship were significantly and positively correlated within-dyads ($r = .47$, $p = .000$), while interestingly only the youth reports of financial stress (and not

https://doi.org/10.1017/S0954579423001451 Published online by Cambridge University Press

Table 4. Two-level structural equation model of associations between caregiver and youth hardship and youth internalizing behaviors

	Standardized coefficient (β)		S.E.	Two tailed *P*-value	95% CI Lower	95% CI Upper
Level 1 (within dyads)						
Youth internalizing						
Monthly income	.00		0.04	.954	−0.06	0.07
Youth financial stress	.04		0.05	.364	−0.03	0.12
Youth material deprivation	.19	**	0.06	.002	0.09	0.29
Caregiver material deprivation	−.04		0.04	.225	−0.10	0.02
Wave	.05		0.05	.287	−0.03	0.13
Correlations						
Monthly income and youth financial stress	−.15	*	0.07	.027	−0.26	−0.04
Monthly income and youth material deprivation	−.03		0.04	.440	−0.09	0.03
Monthly income and caregiver material deprivation	−.05		0.03	.137	−0.10	0.01
Youth financial stress and youth material deprivation	.47	***	0.07	.000	0.36	0.58
Youth financial stress and caregiver material deprivation	.11	*	0.04	.004	0.05	0.17
Youth material deprivation and caregiver material deprivation	.039		0.04	.378	−0.034	0.112
Residual variance						
Youth internalizing	.953	***	0.031	.000	0.902	1.003
Level 2 (between dyads)						
Youth internalizing						
Monthly income	−.02		0.15	.903	−0.27	0.23
Youth financial stress	−.19		0.18	.280	−0.48	0.10
Youth material deprivation	.40	*	0.17	.018	0.12	0.68
Caregiver material deprivation	.04		0.17	.827	−0.24	0.31
Youth age	.09		0.10	.354	−0.07	0.25
Household size	−.06		0.10	.573	−0.21	0.11
Marital status	.10		0.13	.411	−0.10	0.31
Youth race non-white	−.06		0.10	.535	−0.23	0.11
Youth sex-female	.07		0.11	.486	−0.10	0.25
Correlations						
Monthly income and youth financial stress	−.20	*	0.10	.044	−0.36	−0.04
Monthly income and youth material deprivation	−.24	**	0.09	.009	−0.39	−0.09
Monthly income and caregiver material deprivation	−.58	***	0.08	.000	−0.71	−0.44
Youth financial stress and youth material deprivation	.78	***	0.06	.000	0.67	0.88
Youth financial stress and caregiver material deprivation	.45	***	0.09	.000	0.31	0.60
Youth material deprivation and caregiver material deprivation	.47	***	0.09	.000	0.33	0.61
Intercept						
Youth internalizing	.04		2.57	.986	−4.19	4.27
Residual variance						
Youth internalizing	.87	***	0.08	.000	0.75	1.00

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

material deprivation) correlated with caregiver reported material deprivation at the within-level ($r = .11$, $p = .004$). All hardship measures were significantly and positively correlated between dyads ($r = .45$-$.78$, $p < .000$).

Internalizing

The results for internalizing (Table 4) differed from externalizing in that it was youth reported material deprivation that predicted within-individual variability in behavior problems. A one SD

https://doi.org/10.1017/S0954579423001451 Published online by Cambridge University Press

increase in youth reported material deprivation was associated with a 0.19 SD increase in youth internalizing within individuals ($p = .002$). Youth reported material deprivation was also positively related to internalizing when looking at between-individual variability ($\beta = .40$, $p = .018$). Thus, when youth reports of material deprivation are compared to their own average over time as well as when comparing between adolescents, more material deprivation predicted higher reports of internalizing. Youth reported financial stress did not predict internalizing at either the within- or between-levels. Similar to externalizing, neither income nor caregiver reported material deprivation were related to internalizing within or between dyads. Additionally, none of the covariates significantly predicted internalizing. The correlations between hardship measures are the same as the correlations in the externalizing model reported above.

Sensitivity analyses

The results of the sensitivity analyses are available in the online appendix. To summarize, first, all observed associations were robust in the two model specifications that controlled for the timing of data collection during the COVID-19 pandemic (Table A of appendix). Second, the within-individual associations between youth-reports of hardship and behavior problems were no longer significant when we lagged the measures of hardship by one month (Table B of appendix), which we believe is strong evidence that behavior problems occur contemporaneously to when youth hardship is experienced. Indeed, methodological and theoretical work (Granger, 1969) suggests that when variables in an intensive longitudinal design fluctuate substantially over the time scale they are assessed, it is crucial for the time scale of associations in the models to map on to the pace of change. Between-individual associations remained significant when lagging reports of hardship by a month, and parent-reported material deprivation was positively related to youth externalizing when looking within-dyads, but this association was not replicated when looking between-dyads or when predicting internalizing. Finally, adolescents' behavior problems did not predict their reports of hardship reported in the following month (Table C of appendix). This helps bolster our argument that variability in adolescents' experiences of hardship predict their behavioral functioning, and not vice versa.

Discussion

By examining longitudinal data on perceptions of household economic hardship and youth behavioral outcomes collected monthly over a period of nine months, this study advances the current literature in two major ways. First, in a diverse sample of caregivers and youth, it documented the month-to-month variability of caregiver- and youth-reported hardship and behavior. Second, this study provided evidence that youth-reported perceptions of material deprivation were related to both externalizing and internalizing behaviors and youth reports of financial stress were linked to externalizing, over and above their caregivers' reports of material deprivation. Indeed, accounting for youths' own perceptions of material deprivation and financial stress (which could function as a pathway by which economic hardship might impact youth), caregiver-reported hardship did not predict youth behavior. These findings provide valuable information to researchers interested in the role of economic hardship in adolescent development, and in particular how youth perceptions of hardship influence their behavioral development.

Hardship and behavior vary month-to-month

The present study is the first to test whether caregiver and youth feelings of hardship, as well as behavior problems, vary significantly on a monthly basis. Our study confirmed that there was month-to-month variability observed in our measures of hardship, externalizing, and internalizing (as seen with the ICCs in the analyses for Aim 1). While the ICCs for the three hardship measures would certainly be considered large, indicating stability within dyads over the nine-month period, none of the values exceed 0.75 and thus would only be considered moderately stable (Koo & Li, 2016). This is further evidence that experiences of hardship are somewhat volatile, just as income has been shown to be volatile (Hannagan & Morduch, 2015; Liu et al., 2022). Indeed, we ran post hoc analyses of the income reports to compare within-year variability of our hardship measures with income; monthly income showed similar stability in this sample (ICCs = 0.75). Variability in youth and caregivers' perceptions of economic hardship observed in this study is consistent with broader trends in increasing economic volatility for U.S. families (i.e., month-to-month, or year-to-year fluctuations in family income), particularly low-income families (Dynan et al., 2012; Gottschalk & Moffitt, 2009). Our study illustrates that hardship and behavior exhibit enough variation to estimate intra-individual changes from month-to-month, and albeit small, within-individual deviations in hardship did predict variation in behavioral functioning, which makes them meaningful and weakens presumptions of stability for these constructs that are a hallmark of many prior studies exploring links between hardship and child development (Gard et al., 2020; Simons et al., 2016).

Youth perceptions of financial stress and material deprivation are unique from caregiver perceptions of material deprivation

Additionally, this study highlights the importance of measuring both caregiver and youth perceptions of economic hardship, including financial stress and material deprivation. Indeed, within dyads, variation in caregiver reported material deprivation and youth reports of financial stress and material deprivation were barely correlated ($r = .04–.11$), and across families, there were modest correlations among the hardship measures ($r = .45–.47$). This is relatively consistent with prior literature showing average correlations around $r = .25$ (Delgado et al., 2013; McLoyd et al., 1994; Mistry & Elenbaas, 2021); notably, these prior studies did not disaggregate within-dyad and between-dyad correlations. Of course, our measures of hardship differed across caregivers and youth. High scores on the caregiver-reported material deprivation measure reflect arguably more grave living conditions, like food insecurity and going without utilities and/or adequate medical care. On the other hand, our youth measures of hardship were intended to capture hardships particularly relevant in adolescence, like impediments to their social lives or status. In this way, it is not surprising that the reports are not highly correlated. Nonetheless, the significant variance in youth reports of financial stress and material deprivation that is unique from caregiver reports of material deprivation (and the fact that youth reports predict youth behavior) indicates that these are important constructs to take into account when studying economic contexts and adolescent development.

Besides asking about different hardships, another reason youth and caregiver reports were disparate may be due to caregivers shielding their children from the economic hardships that come

https://doi.org/10.1017/S0954579423001451 Published online by Cambridge University Press

with financial struggles (Mistry & Lowe, 2006; Quint et al., 2018). Past research suggests that caregivers' decisions to disclose financial information to their children involve a careful balancing between the rewards and risks of such disclosure (e.g., being honest versus causing burden or worry for their adolescents), as well as cultural norms of sharing financial information (Romo, 2011, 2014). This is consistent with general findings of variability in the depth of financial information caregivers share with their children (LeBaron et al., 2020; Quint et al., 2018). At the outset of this project, we held preliminary focus groups to hone our research questions and measures. During these conversations with families, caregivers often discussed thoughtfully choosing which household financial information to share with their adolescents. Specifically, caregivers disclosed information to help youth think about their futures or explain family financial situations, while sometimes withholding information to lessen worry and anxiety. This is also supported by our finding of a stronger correlation between caregiver reports of material deprivation and monthly income ($r = -.58$) than youth reported hardships and monthly income ($r = -.20 - -.24$) between dyads, which shows that caregivers' perceptions of economic hardship more closely map on to the actual income coming into the household. Another reason for the small correlation between caregiver and youth hardship may relate to differences in personality or coping mechanisms (Wadsworth & Berger, 2006) or reflect adolescents' developing ability to identify and distinguish their own perceptions from the mental states of others (Demetriou & Bakracevic, 2009; Weil et al., 2013). Future research should aim to understand the mechanisms leading to disparate perceptions of hardship between caregivers and their adolescents (like, for instance, shielding), and the sequalae of these differential perceptions.

Pioneering work on hardship by Gershoff et al. (2007) in a younger cohort (~6 years of age) found that hardship worked through caregivers, with those experiencing material hardship reporting stress related to making ends meet. While seminal, the sample did not include adolescents, so investigators could not examine youth perceptions of material deprivation or financial stress. It may be that hardship felt by parents and hardship experienced by youth operate through different pathways in shaping development and/or act as different intermediate mechanisms bridging documented associations between economic disadvantage to heightened problem behavior (Costello et al., 2011; D'Onofrio et al., 2009; Larsson et al., 2014; McLoyd et al., 2009). Longitudinal work connecting these two sets of findings would be critical, but it is clear from our study that valuable information is lost without including youth-reported measures.

Interestingly, while few studies have incorporated youth reports in considering the effects of hardship on development, youth perceptions of contextual factors have been considered in other fields of study. In fact, emerging work suggests that self-perceptions of experiences (rather than more objective measures, or measures derived from other reporters) are potentially more powerful predictors of outcomes. For example, there is an abundance of research showing that youths' feelings of discrimination relate to their socioemotional wellbeing (Bogart et al., 2013; Brody et al., 2006; Seaton et al., 2013). Similar patterns have been found for peer victimization and neighborhood violence (Bouman et al., 2012; Goldman-Mellor et al., 2016; Gromann et al., 2013). Related to economic circumstances, the journal *Developmental Psychology*, devoted a special issue to highlight the importance of youth perceptions of economic inequality in relation to developmental outcomes (Ruck et al., 2019). Yet, when it comes to experiences of economic hardship, the vast majority of studies only used parent reports of the material hardships and financial stress that economic disadvantage places on families. Thus, research needs to acknowledge that the occurrences of hardship and strain related to economic disadvantage are not experienced identically across individuals within a family. Indeed, our work illustrates that it is necessary to include youth perceptions in studies of their development.

Associations between hardship and youth behavior

Perhaps the most striking takeaway from this study is that youth reports of material deprivation and, to a lesser extent, financial stress are associated with their externalizing and internalizing behaviors, while caregiver reports of material deprivation are not. Specifically, consistent with prior research (Delgado et al., 2013; Schenck-Fontaine & Panico, 2019; Wadsworth & Compas, 2002; Zilanawala & Pilkauskas, 2012), our results show that lower reported levels of youth hardship, particularly material deprivation, are associated with fewer behavior problems. This is true both when looking at youth compared to their own reports over time (within-associations) and youth compared to peers' reports (between-associations). This finding solidifies the case for interviewing youth themselves about economic hardship (and specifically hardships that are most impactful to their daily lives), as well as other important processes, when conducting research on adolescent development.

Notably, looking within-individuals, adolescents' reports of experiences of material deprivation, like missing out on school trips or outings with friends due to lack of funds, being unable to get necessary supplies for school because they/their family did not have money, lack of space for privacy at home, and failure to see a medical or mental health professional because they could not afford it, predicts their internalizing, while their financial stress, like fighting with caregivers about money and worrying about caregivers inability to pay for things, predicts externalizing behaviors (material deprivation, but not financial stress, predicted both types of behavior problems across youth). Perhaps during adolescence, when youth are increasingly focused on peer acceptance and social comparisons and more frequently internalize the views of others (Albert et al., 2013; Jacobs, 2003; O'Brien & Bierman, 1988; Rivenbark et al., 2020; Wrzus et al., 2013), the lack of these material goods and experiences, which are outwardly apparent to others, affects youths' image and self-concept and, in turn, leads to internalizing symptoms. On the other hand, our measure of financial stress includes interactions with caregivers that may be conflictual (e.g., arguing about money). These conflicts may prime adolescents to be confrontational or aggressive in other areas of their lives, which may manifest as externalizing behaviors. This supports developmental psychopathologists' theories that the mechanisms through which different aspects of adversity or economic disadvantage affect psychopathology vary (e.g., Miller et al., 2018; Smith & Pollak, 2021).

Overall, looking at both within- and between-variability in hardship, adolescents' feelings of material deprivation were more predictive of their behavior problems than feelings of financial stress were, which is contrary to our hypothesis that both measures would predict internalizing and externalizing. This is important information for researchers moving forward; in a literature that tends to overlook adolescents' own experiences and, even when studies do ask youth to report on hardship, they do not focus on material needs and wants that may be acutely triggering for

https://doi.org/10.1017/S0954579423001451 Published online by Cambridge University Press

adolescents, instead focusing on more "adult" hardships like arguing about money, being stressed about finances, having plumbing or electrical problems, and bill payment. In the future, studies should include some of these "adolescent" issues in measures of hardship when trying to understand adolescent mental and behavioral health.

While teens' behavior problems were robustly predicted by their perceptions of hardship, and particularly their perceptions of material deprivation, remarkably caregivers' reports of material deprivation were unrelated to youth behavior problems. This is notable since actual household income was more closely correlated with caregiver-reports of hardship than with youth-reports, and household income is more connected to "actual" family finances. Moreover, compared to youth reports of material deprivation, the parent material deprivation measure captures experiences that seem more dire and potentially harmful to children's well-being, like food insecurity and going without utilities and/or adequate medical care. However, our study suggests caregivers' experiences of hardship (like plumbing problems, food insecurity, or inability to pay bills) may not be as impactful for youths' behavior as their own experiences of hardship that affect their daily lives, like interactions with friends, their personal space and things, and school experiences. Indeed, these are likely to be more salient to adolescents.

Of course, it is important to recognize that, since youths' perceptions of hardship and behavioral functioning were both reported on by youth themsleves, associations between youth reported material deprivation and financial stress and behavior problems could be artificially inflated by single-reporter bias. Future research could use third party reports, like administrative records of school discipline, teacher reports of behavior, interactions with the juvenile justice system, and mental health diagnoses to more thoroughly substantiate these findings (De Los Reyes & Ohannessian, 2016). However, those metrics also have considerable biases (Auguste et al., 2023; Skiba et al., 2011, 2014). Additionally, it is unlikely that single-reporter bias is the sole explanation for the predictiveness of youth reports of hardship. Adolescence reflects a period of social cognitive development when thoughts become more complex and the links between thoughts about experiences and behaviors become stronger (Crone & Dahl, 2012; Keating, 2004; Weimer et al., 2021). Hence, associations between youth perceptions of hardship and their externalizing and internalizing behavior likely reflect the general strengthening of associations between thoughts and behavior that occur during adolescence. Further, as children age, they become more attuned to their economic circumstances (Brown & Larson, 2009; Flanagan & Gallay, 2014; Hagquist, 2007; Schoon & Heckhausen, 2019).

Of note, despite findings between youth perceptions of hardship and externalizing and internalizing, we did not find significant associations between monthly income and behavior outcomes. This is contrary to the robust literature on direct associations between income and youth behavior outcomes (Akee et al., 2010; Blau, 1999; D'Onofrio et al., 2009; DeSilvey, 2021; Dearing et al., 2006; Duncan et al., 2017; Hao & Matsueda, 2006; Woods-Jaeger et al., 2022). However, it is consistent with other research that finds more modest correlations between hardship and other characteristics of socioeconomic status, like income (Gershoff et al., 2007). Nor did we find links between caregiver reported material deprivation and youth behavioral outcomes in contrast to much of the literature on hardship and behavior problems using a similar deprivation measure (Gershoff et al., 2007; Schenck-Fontaine & Ryan, 2022). Since it could be argued that youth perceptions of hardship act as a pathway through which family income or caregiver perceptions of hardship impact children, we ran post hoc analyses dropping both measures of youth perceptions of hardship from the models to assess whether income or caregiver perceptions of material deprivation predicted youth behavior without controlling for youth perceptions. Neither predicted even when youth perceptions of hardship were dropped from the model. Thus, our study supports that adolescents' experiences with their income level and economic context, as measured through material and financial hardship, can be just as or more consequential than actual income (McLoyd et al., 2009; McLoyd, 1990, 2011; Schenck-Fontaine & Panico, 2019). This further emphasizes the importance of measuring both income and feelings of hardship when examining the role of economic disadvantage in youths' development (Boushey et al., 2000; Gershoff et al., 2007; Sullivan et al., 2008).

Limitations and future directions

Our work leveraged an intensive, repeated measures design which importantly allowed us to look at within-dyad associations on a temporally valid timescale. However, elements of our study had some limitations that are critical to highlight. First, we followed 104 youth–caregiver dyads, which is a relatively small sample size compared to some other studies of financial contexts and youth behavior using very large, nationally representative samples like the National Longitudinal Survey of Youth or the Early Childhood Longitudinal Studies (Gershoff et al., 2007; Miller et al., 2021; Miller & Votruba-Drzal, 2017). Nor was this sample representative of any particular population of interest. Additionally, we were only able to follow dyads for a period of nine months. This leaves us unable to look at long-term implications of youth perceptions of hardship. This will be an important next step to more deeply understand relations between hardship and behavior development.

Next, our caregiver- and youth-reported material deprivation questionnaires were not identical, and we did not have a parallel measure of caregivers' perceptions of financial stress. With respect to the material deprivation measures, we decided to use questionnaires that were validated in the particular age ranges we were sampling in order to ensure strong measures of hardship. In doing so, however, we selected measures of material deprivation comprised of different items (and we did not have caregiver items assessing financial stress). Thus, while we believe the caregiver and youth measure of material deprivation capture similar underlying constructs, some of the variation in hardship scores across reporter may certainly be due to the use of different items. Additionally, items for the caregiver reports of hardship included a mix of dichotomized indicators and Likert-type indicators, which we dichotomized for consistency, which may have influenced reliability in the measure ($\alpha = .75-.78$). Relatedly, the reliability of our measure of internalizing symptomology was relatively low ($\alpha = .66-.74$). Inclusion of alternative assessments of internalizing psychopathology may better capture potential relations and could be an important next step.

Additionally, some of our reported effects (particularly the within-individual effects) are very modest in magnitude. It will be critical for additional work to estimate associations between youth perceptions of hardship and their behavioral functioning to contextualize these findings. Given the sampling design of the study, we believe it is still notable that there is reasonable variability on a sub-annual basis for many critical constructs, and this variability significantly influences adolescent outcomes.

https://doi.org/10.1017/S0954579423001451 Published online by Cambridge University Press

Furthermore, there may be some reason to believe that the observed effect sizes were, in part, a function of our sample and method. First, despite our purposive sampling to ensure at least half of the sample was low-income, our resulting caregivers may be a relatively socioeconomically privileged group (e.g., 37% had an advanced degree and a third were not in the labor force). This may have resulted in less experiences or lower intensity of hardship, which could have deflated effect sizes. However, we must note that many people with advanced degrees or who are not in the labor force (which include students and people unable to work for health reasons) still struggle financially (Baum, 2014; Carnevale et al., 2021; Schofield et al., 2011). And importantly, many middle-class families are currently experiencing economic hardship; for example, 20% of middle-income families reported receiving unemployment benefits in 2020 (Kochhar & Sechopoulos, 2022; Krause & Sawhill, 2018). Also, our measures of hardship were assessed near the start of the month – which is when most public benefits are disbursed in the state where participants lived. Perhaps we would have observed higher levels of and more variability in our hardship measures if we assessed it near the end of the month. To the extent that perceptions of hardship were lower and less variable in our sample due to the assessment timeframe, this could have led to reduced effect sizes. It is also important to think about the impact of our effects at scale and over time (Götz et al., 2022; Prentice & Miller, 2016). Associations between hardship and behavior problems may be stronger depending on the persistence and chronicity of lower income and greater hardship. Greater cumulative exposure to hardship would likely relate to greater behavioral problems. While modest in our reported results, accumulation of different negative effects could significantly shape outcomes over time.

Furthermore, this study was correlational, as opposed to experimental, in design. Thus, our results should not be interpreted as causal. Economic hardship is not randomly assigned across families. Caregivers' economic conditions are actively shaped by larger social contexts and caregiver choices that affect their earnings, education, and employment, and factors influencing their selections also shape the proximal contexts in which their children develop (Davis-Kean, 2005). However, using a multilevel structural equation modeling framework reduced omitted variable bias (Angrist & Krueger, 1999; Duncan et al., 2004). In particular, by estimating both the within- and between- dyad associations, this study addressed omitted variable bias stemming from time invariant characteristics of dyads, which are held constant in the within-dyad component of the model. To our knowledge, this is the first study considering links between hardship and adolescent development that has utilized this type of estimation. In this regard, this study helps to move the literature forward. At the same time, we recognize that our findings may still be biased by the influence of unobserved time varying characteristics of parents or youth that are correlated with hardship and youth externalizing or internalizing.

Finally, data collection for this study overlapped significantly with the start of the COVID-19 pandemic. The pandemic introduced unique conditions that influenced families' circumstances and experiences related to our study (Browne et al., 2021; Donker et al., 2021; Patel et al., 2020). For example, family income may have been negatively affected by factors such as job loss, but hardship may have been lessened by COVID-19 safety-net policies, like more comprehensive unemployment benefits, government stimulus payments, pauses on student loan payments, etc. But families' perceptions of hardship were almost certainly shaped by factors such as stressful in-person working/school conditions, increases in remote work/school, lack of childcare, and less in-person social interaction. Thus, it is possible that findings from our study would differ if data collection did not overlap with the COVID-19 pandemic. However, by analyzing monthly longitudinal data, our study was able to measure and control for variation in our key constructs before and during the height of the pandemic. Nonetheless, it is important to contextualize our findings in the current economic climate (i.e., post-the height of the pandemic). While the economy has largely rebounded, there are still groups of workers that have not recovered pandemic losses (Center for Budget and Policy Priorities, 2023). For instance, employment rates for workers with lower levels of education still have not reached pre-pandemic levels (Center for Budget and Policy Priorities, 2023). Coupling that with the fact that inflation peaked a couple years after the pandemic and is currently much higher than it was during data collection, we conjecture that many of the hardships experienced by families in this study that may have been precipitated by the pandemic are continuing to impact the lives of low- and middle-income families.

Conclusion

Economic instability and hardship are on the rise (Schaeffer, 2020); so too are youth mental health problems (Murthy, 2022). Yet, the role of youth perceptions of hardship in shaping their behavioral development has garnered little research attention. This study addresses this gap by estimating associations between variation in monthly measures of caregiver reports of material deprivation and youth reports of material deprivation and financial stress, and then linking variability in reports of hardship to youth behavior problems. We found significant variability in youth- and caregiver-reports of hardship and found that youth perceptions of hardship (but not caregiver reports) predicted youth externalizing and internalizing. Results illustrate the importance of accounting for youths' own experiences of material deprivation and financial stress when thinking about the ways in which families' economic conditions relate to youth behavior. Understanding the mechanisms driving youth problem behaviors is vital in efforts to fight any negative consequences of growing economic inequality and hardship on youth and families.

Supplementary material. The supplementary material for this article can be found at https://doi.org/10.1017/S0954579423001451.

Funding statement. Work was funded by a grant from the Eunice Kennedy Shriver National Institute of Child Health and Human Development (R01HD110423) and also an internal grant from the Learning Research and Development Center, University of Pittsburgh.

Competing interests. No authors report conflicts of interest.

References

Akee, R. K. Q., Copeland, W. E., Keeler, G., Angold, A., & Costello, E. J. (2010). Parents' incomes and children's outcomes: A quasi-experiment using transfer payments from casino profits. *American Economic Journal: Applied Economics*, *2*(1), 86–115. https://doi.org/10.1257/app.2.1.86

Albert, D., Chein, J., & Steinberg, L. (2013). The teenage brain: Peer influences on adolescent decision making. *Current Directions in Psychological Science*, *22*(2), 114–120. https://doi.org/10.1177/0963721412471347

Angrist, J. D., & Krueger, A. B. (1999). Chapter 23—Empirical strategies in labor economics. In O. C. Ashenfelter & D. Card (Eds.), *Handbook of labor economics* (Vol. *3*, pp. 1277–1366). Elsevier. https://doi.org/10.1016/S1573-4463(99)03004-7

Auguste, E., Bowdring, M., Kasparek, S. W., McPhee, J., Tabachnick, A. R., Tung, I., & Galán, C. A. (2023). Psychology's contributions to anti-blackness in the united states within psychological research, criminal justice, and mental health. In *Perspectives on psychological science*. https://doi.org/10.1177/17456916221141374

Barrera, M., Caples, H., & Tein, J.-Y. (2001). The psychological sense of economic hardship: Measurement models, validity, and cross-ethnic equivalence for urban families. *American Journal of Community Psychology*, *29*(3), 493–517. https://doi.org/10.1023/A:1010328115110

Baum, S. (2014). *Higher education earnings premium: Value, variation, and trends*. Urban Institute.

Blakemore, S.-J., & Mills, K. L. (2014). Is adolescence a sensitive period for sociocultural processing? *Annual Review of Psychology*, *65*(1), 187–207. https://doi.org/10.1146/annurev-psych-010213-115202

Blau, D. M. (1999). The effect of income on child development. *The Review of Economics and Statistics*, *81*(2), 261–276. https://doi.org/10.1162/003465399558067

Bogart, L. M., Elliott, M. N., Kanouse, D. E., Klein, D. J., Davies, S. L., Cuccaro, P. M., Banspach, S. W., Peskin, M. F., & Schuster, M. A. (2013). Association between perceived discrimination and racial/ethnic disparities in problem behaviors among preadolescent youths. *American Journal of Public Health*, *103*(6), 1074–1081. https://doi.org/10.2105/AJPH.2012.301073

Bosco, F. M., Colle, L., & Tirassa, M. (2009). The complexity of theory of mind. *Consciousness and Cognition*, *18*(1), 323–324. https://doi.org/10.1016/j.concog.2008.12.007

Bouman, T., van der Meulen, M., Goossens, F. A., Olthof, T., Vermande, M. M., & Aleva, E. A. (2012). Peer and self-reports of victimization and bullying: Their differential association with internalizing problems and social adjustment. *Journal of School Psychology*, *50*(6), 759–774. https://doi.org/10.1016/j.jsp.2012.08.004

Boushey, H., Brocht, C., Gundersen, B., & Bernstein, J. (2000). Hardships in America: The real story of working families. *Economic Policy Institute*, *11*.

Brody, G. H., Chen, Y.-F., Murry, V. M., Ge, X., Simons, R. L., Gibbons, F. X., Gerrard, M., & Cutrona, C. E. (2006). Perceived discrimination and the adjustment of african american youths: A five-year longitudinal analysis with contextual moderation effects. *Child Development*, *77*(5), 1170–1189. https://doi.org/10.1111/j.1467-8624.2006.00927.x

Brown, B. B., & Larson, J. (2009). Peer relationships in adolescence. In *Handbook of adolescent psychology*. John Wiley & Sons, Ltd. https://doi.org/10.1002/9780470479193.adlpsy002004

Browne, D. T., Wade, M., May, S. S., Jenkins, J. M., & Prime, H. (2021). COVID-19 disruption gets inside the family: A two-month multilevel study of family stress during the pandemic. *Developmental Psychology*, *57*(10), 1681–1692. https://doi.org/10.1037/dev0001237

Carnevale, A. P., Cheah, B., & Wenzinger, E. (2021). The college payoff: More education doesn't always mean more earnings. In *Georgetown university center on education and the workforce*. Georgetown University Center on Education and the Workforce. https://eric.ed.gov/?id=ED615605

CDC. (2021). Youth risk behavior survey data summary & trends report: 2009-2019. Center for Disease Control and Prevention, 108.

Center for Budget and Policy Priorities. (2023). *Chart Book: Tracking the Recovery From the Pandemic Recession | Center on Budget and Policy Priorities*. https://www.cbpp.org/research/economy/tracking-the-recovery-from-the-pandemic-recession

Choudhury, S., Blakemore, S.-J., & Charman, T. (2006). Social cognitive development during adolescence. *Social Cognitive and Affective Neuroscience*, *1*(3), 165–174. https://doi.org/10.1093/scan/nsl024

Cohen-Gilbert, J. E., & Thomas, K. M. (2013). Inhibitory control during emotional distraction across adolescence and early adulthood. *Child Development*, *84*(6), 1954–1966. https://doi.org/10.1111/cdev.12085

Collins, W. A., & Steinberg, L. (2006). Adolescent development in interpersonal context. In *Handbook of child psychology: Social, emotional, and personality development* (Vol. 3, 6th ed., pp. 1003–1067). John Wiley & Sons, Inc.

Compas, B. E. (1987). Coping with stress during childhood and adolescence. *Psychological Bulletin*, *101*(3), 393–403. https://doi.org/10.1037/0033-2909.101.3.393

Conger, R. D., Conger, K. J., Matthews, L. S., & Elder, G. H.Jr (1999). Pathways of economic influence on adolescent adjustment. *American Journal of Community Psychology*, *27*(4), 519–541.

Conger, R. D., Ge, X., Elder Jr, G. H., Lorenz, F. O., & Simons, R. L. (1994). Economic stress, coercive family process, and developmental problems of adolescents. *Child Development*, *65*(2), 541–561.

Cooney, P., & Shaefer, H. L. (2021). *Material hardship and mental health following the COVID-19 relief bill and American rescue plan act*. Poverty Solutions, University of Michigan.

Costello, E. J., Copeland, W., & Angold, A. (2011). Trends in psychopathology across the adolescent years: What changes when children become adolescents, and when adolescents become adults? *Journal of Child Psychology and Psychiatry, and Allied Disciplines*, *52*(10), 1015–1025. https://doi.org/10.1111/j.1469-7610.2011.02446.x

Crone, E. A., & Dahl, R. E. (2012). Understanding adolescence as a period of social-affective engagement and goal flexibility. *Nature Reviews Neuroscience*, *13*(9), Article–9. https://doi.org/10.1038/nrn3313

D'Onofrio, B. M., Goodnight, J. A., Van Hulle, C. A., Rodgers, J. L., Rathouz, P. J., Waldman, I. D., & Lahey, B. B. (2009). A quasi-experimental analysis of the association between family income and offspring conduct problems. *Journal of Abnormal Child Psychology*, *37*(3), 415–429. https://doi.org/10.1007/s10802-008-9280-2

Davis-Kean, P. E. (2005). The influence of parent education and family income on child achievement: The indirect role of parental expectations and the home environment. *Journal of Family Psychology*, *19*(2), 294–304. https://doi.org/10.1037/0893-3200.19.2.294

De Los Reyes, A., & Ohannessian, C. M. (2016). Introduction to the special issue: Discrepancies in adolescent-parent perceptions of the family and adolescent adjustment. *Journal of Youth and Adolescence*, *45*(10), 1957–1972. https://doi.org/10.1007/s10964-016-0533-z

Dearing, E., McCartney, K., & Taylor, B. A. (2006). Within-child associations between family income and externalizing and internalizing problems. *Developmental Psychology*, *42*(2), 237–252. https://doi.org/10.1037/0012-1649.42.2.237

Delgado, M. Y., Killoren, S. E., & Updegraff, K. A. (2013). Economic hardship and mexican-origin adolescents' adjustment: Examining adolescents' perceptions of hardship and parent-adolescent relationship quality. *Journal of Family Psychology*, *27*(5), 827–837. https://doi.org/10.1037/a0033737

Demetriou, A., & Bakracevic, K. (2009). Reasoning and self-awareness from adolescence to middle age: Organization and development as a function of education. *Learning and Individual Differences*, *19*(2), 181–194. https://doi.org/10.1016/j.lindif.2008.10.007

DeSilvey, S. C. (2021). *Bold expansions to the EITC will alleviate financial hardship and help families get ahead*. https://policycommons.net/artifacts/2271580/bold-expansions-to-the-eitc-will-alleviate-financial-hardship-and-help-families-get-ahead/3031393/

Devenish, B., Hooley, M., & Mellor, D. (2017). The pathways between socioeconomic status and adolescent outcomes: A systematic review. *American Journal of Community Psychology*, *59*(1-2), 219–238. https://doi.org/10.1002/ajcp.12115

Dodge, K. A. (2018). Dimensions of deprivation and threat, psychopathology, and potential mediators: A multi-year longitudinal analysis. *Journal of Abnormal Psychology*, *127*(2), 160–170. https://doi.org/10.1037/abn0000331

Donker, M. H., Mastrotheodoros, S., & Branje, S. (2021). Development of parent-adolescent relationships during the COVID-19 pandemic: The role of stress and coping. *Developmental Psychology*, *57*(10), 1611–1622. https://doi.org/10.1037/dev0001212

Dreyfuss, M., Caudle, K., Drysdale, A. T., Johnston, N. E., Cohen, A. O., Somerville, L. H., Galván, A., Tottenham, N., Hare, T. A., & Casey, B. J. (2014). Teens impulsively react rather than retreat from threat. *Developmental Neuroscience*, *36*(3-4), 220–227. https://doi.org/10.1159/000357755

Dumontheil, I., Apperly, I. A., & Blakemore, S.-J. (2010). Online usage of theory of mind continues to develop in late adolescence. *Developmental Science*, *13*(2), 331–338. https://doi.org/10.1111/j.1467-7687.2009.00888.x

Duncan, G. J., Kalil, A., & Ziol-Guest, K. M. (2017). Increasing inequality in parent incomes and children's schooling. *Demography*, *54*(5), 1603–1626. https://doi.org/10.1007/s13524-017-0600-4

Duncan, G. J., Magnuson, K. A., & Ludwig, J. (2004). The endogeneity problem in developmental studies. *Research in Human Development*, *1*(2), 59–80. https://doi.org/10.1080/15427609.2004.9683330

Duncan, S. C., Duncan, T. E., & Strycker, L. A. (2006). Alcohol use from ages 9 to 16: A cohort-sequential latent growth model. *Drug and Alcohol Dependence*, *81*(1), 71–81. https://doi.org/10.1016/j.drugalcdep.2005.06.001

Dynan, K., Elmendorf, D., & Sichel, D. (2012). The evolution of household income volatility. *The B.E. Journal of Economic Analysis & Policy*, *12*(2). https://doi.org/10.1515/1935-1682.3347

Edmunds, C., & Alcaraz, M. (2021). Childhood material hardship and adolescent mental health. *Youth & Society*, *53*(7), 1231–1254. https://doi.org/10.1177/0044118X211001896

Ennis, N. E., Hobfoll, S. E., & Schröder, K. E. E. (2000). Money doesn't talk, it swears: How economic stress and resistance resources impact inner-city women's depressive mood. *American Journal of Community Psychology*, *28*(2), 149–173. https://doi.org/10.1023/A:1005183100610

Fernandez-Duque, D., Baird, J. A., & Posner, M. I. (2000). Executive attention and metacognitive regulation. *Consciousness and Cognition*, *9*(2), 288–307. https://doi.org/10.1006/ccog.2000.0447

Flanagan, C., & Gallay, E. (2014). Chapter two—Adolescents' theories of the commons. In J. B. Benson (Ed.), *Advances in child development and behavior* (Vol. *46*, pp. 33–55). JAI. https://doi.org/10.1016/B978-0-12-800285-8.00002-9

Fleming, S. M., Dolan, R. J., & Frith, C. D. (2012). Metacognition: Computation, biology and function. *Philosophical Transactions of the Royal Society B: Biological Sciences*, *367*(1594), 1280–1286. https://doi.org/10.1098/rstb.2012.0021

Fox, L. E., & Burns, K. (2021). The Supplemental Poverty Measure: 2020. Current Population Reports. The U. S. Census Bureau. https://www.census.gov/content/dam/Census/library/publications/2021/demo/p60-275.pdf

Gard, A. M., McLoyd, V. C., Mitchell, C., & Hyde, L. W. (2020). Evaluation of a longitudinal family stress model in a population-based cohort. *Social Development*, *29*(4), 1155–1175. https://doi.org/10.1111/sode.12446

Gershoff (2003). *Low income and the development of America's kindergartners (living at the edge)* (p. 10). Columbia University.

Gershoff, E. T., Aber, J. L., Raver, C. C., & Lennon, M. C. (2007). Income is not enough: Incorporating material hardship into models of income associations with parenting and child development. *Child Development*, *78*(1), 70–95. https://doi.org/10.1111/j.1467-8624.2007.00986.x

Goldman-Mellor, S., Margerison-Zilko, C., Allen, K., & Cerda, M. (2016). Perceived and objectively-measured neighborhood violence and adolescent psychological distress. *Journal of Urban Health: Bulletin of the New York Academy of Medicine*, *93*(5), 758–769. https://doi.org/10.1007/s11524-016-0079-0

Goodman, R. (1997). The strengths and difficulties questionnaire: A research note. *Journal of Child Psychology and Psychiatry*, *38*(5), 581–586. https://doi.org/10.1111/j.1469-7610.1997.tb01545.x

Gottschalk, P., & Moffitt, R. (2009). The rising instability of U.S. earnings. *Journal of Economic Perspectives*, *23*(4), 3–24. https://doi.org/10.1257/jep.23.4.3

Götz, F. M., Gosling, S. D., & Rentfrow, P. J. (2022). Small effects: The indispensable foundation for a cumulative psychological science. *Perspectives on Psychological Science*, *17*(1), 205–215. https://doi.org/10.1177/1745691620984483

Granger, C. W. J. (1969). Investigating causal relations by econometric models and cross-spectral methods. *Econometrica*, *37*(3), 424–438. https://doi.org/10.2307/1912791

Grasser, L. R., & Jovanovic, T. (2021). Safety learning during development: Implications for development of psychopathology. *Behavioural Brain Research*, *408*, 113297. https://doi.org/10.1016/j.bbr.2021.113297

Gromann, P. M., Goossens, F. A., Olthof, T., Pronk, J., & Krabbendam, L. (2013). Self-perception but not peer reputation of bullying victimization is associated with non-clinical psychotic experiences in adolescents. *Psychological Medicine*, *43*(4), 781–787. https://doi.org/10.1017/S003329171200178X

Gunnar, M., & Quevedo, K. (2007). The neurobiology of stress and development. *Annual Review of Psychology*, *58*(1), 145–173. https://doi.org/10.1146/annurev.psych.58.110405.085605

Hagquist, C. E. I. (2007). Health inequalities among adolescents—The impact of academic orientation and parents' education. *European Journal of Public Health*, *17*(1), 21–26. https://doi.org/10.1093/eurpub/ckl087

Hannagan, A., & Morduch, J. (2015). Income Gains and Month-to-Month Income Volatility: Household Evidence from the US Financial Diaries (SSRN Scholarly Paper No. 2659883). https://doi.org/10.2139/ssrn.2659883

Hao, L., & Matsueda, R. L. (2006). Family dynamics through childhood: A sibling model of behavior problems. *Social Science Research*, *35*(2), 500–524. https://doi.org/10.1016/j.ssresearch.2004.10.003

Hardy, B. L., & Logan, T. D. (2020). Racial economic inequality amid the COVID-19 crisis. *The Hamilton Project*, *1*(1-10). https://www.brookings.edu/wp-content/uploads/2020/08/EA_HardyLogan_LO_8.12.pdf

Hostinar, C. E., & Miller, G. E. (2019). Protective factors for youth confronting economic hardship: Current challenges and future avenues in resilience research. *American Psychologist*, *74*(6), 641–652. https://doi.org/10.1037/amp0000520

Jacobs, G. (2003). Cooperative learning to promote human rights. *Human Rights in Asian Schools*, *6*, 119–129.

Karpman, M., Gonzalez, D., & Kenney, G. M. (2020). Parents are struggling to provide for their families during the pandemic: Material hardships greatest among low-income, Black, and Hispanic parents. *Urban Institute*, 15.

Keating, D. P. (2004). Cognitive and brain development. In *Handbook of adolescent psychology* (2nd ed., pp. 45–84). John Wiley & Sons Inc.

Kessler, R. C., Berglund, P., Demler, O., Jin, R., Merikangas, K. R., & Walters, E. E. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the national comorbidity survey replication. *Archives of General Psychiatry*, *62*(6), 593–602. https://doi.org/10.1001/archpsyc.62.6.593

Kochhar, R., & Sechopoulos, S. (2022). COVID-19 pandemic pinches finances of america's lower- and middle-income families. Pew Research Center's Social & Demographic Trends Project. https://www.pewresearch.org/social-trends/2022/04/20/covid-19-pandemic-pinches-finances-of-americas-lower-and-middle-income-families/

Koo, T. K., & Li, M. Y. (2016). A guideline of selecting and reporting intraclass correlation coefficients for reliability research. *Journal of Chiropractic Medicine*, *15*(2), 155–163. https://doi.org/10.1016/j.jcm.2016.02.012

Kraus, M. W., Piff, P. K., Mendoza-Denton, R., Rheinschmidt, M. L., & Keltner, D. (2012). Social class, solipsism, and contextualism: How the rich are different from the poor. *Psychological Review*, *119*(3), 546–572. https://doi.org/10.1037/a0028756

Krause, E., & Sawhill, I. (2018). Seven reasons to worry about the American middle class. *Brookings.*, https://www.brookings.edu/blog/social-mobility-memos/2018/06/05/seven-reasons-to-worry-about-the-american-middle-class/.

Landers-Potts, M. A., Wickrama, K. a. S., Simons, L. G., Cutrona, C., Gibbons, F. X., Simons, R. L., & Conger, R. (2015). An extension and moderational analysis of the family stress model focusing on African American adolescents. *Family Relations*, *64*(2), 233–248. https://doi.org/10.1111/fare.12117

Larsson, H., Sariaslan, A., Långström, N., D'Onofrio, B., & Lichtenstein, P. (2014). Family income in early childhood and subsequent attention deficit/hyperactivity disorder: A quasi-experimental study. *Journal of Child Psychology and Psychiatry*, *55*(5), 428–435. https://doi.org/10.1111/jcpp.12140

Lau, J. Y. F., & Waters, A. M. (2017). Annual research review: An expanded account of information-processing mechanisms in risk for child and adolescent anxiety and depression. *Journal of Child Psychology and Psychiatry*, *58*(4), 387–407. https://doi.org/10.1111/jcpp.12653

LeBaron, A. B., Marks, L. D., Rosa, C. M., & Hill, E. J. (2020). Can we talk about money? financial socialization through parent-child financial discussion. *Emerging Adulthood*, *8*(6), 453–463. https://doi.org/10.1177/2167696820902673

Lempers, J. D., Clark-Lempers, D., & Simons, R. L. (1989). Economic hardship, parenting, and distress in adolescence. *Child Development*, *60*(1), 25–39. https://doi.org/10.2307/1131068

Liu, S., Zalewski, M., Lengua, L., Gunnar, M. R., Giuliani, N., & Fisher, P. A. (2022). Material hardship level and unpredictability in relation to U.S. households' family interactions and emotional well-being: Insights from the COVID-19 pandemic. *Social Science & Medicine*, *307*, 115173. https://doi.org/10.1016/j.socscimed.2022.115173

Lonigro, A., Baiocco, R., Baumgartner, E., & Laghi, F. (2017). Theory of mind, affective empathy, and persuasive strategies in school-aged children. *Infant & Child Development*, *26*(6). https://doi.org/10.1002/icd.2022

Mayer, S. E. (2002). The influence of parental income on children's outcomes. *Ministry of Social Development*. https://www.msd.govt.nz/documents/about-msd-and-our-work/publications-resources/research/influence-parental-income/influence-of-parental-income.pdf.

McLoyd, V. C. (1990). The impact of economic hardship on black families and children: Psychological distress, parenting, and socioemotional development. *Child Development*, *61*(2), 311–346.

McLoyd, V. C. (1998). Socioeconomic disadvantage and child development. *American Psychologist*, *53*(2), 185–204. https://doi.org/10.1037/0003-066X.53.2.185

McLoyd, V. C. (2011). How money matters for children's socioemotional adjustment: Family processes and parental investment. In G. Carlo, L. J. Crockett & M. A. Carranza (Eds.), *Health disparities in youth and families* (Vol. *57*, pp. 33–72). Springer New York. https://doi.org/10.1007/978-1-4419-7092-3_3

McLoyd, V. C., Jayaratne, T. E., Ceballo, R., & Borquez, J. (1994). Unemployment and work interruption among African American single mothers: Effects on parenting and adolescent socioemotional functioning. *Child Development*, *65*(2), 562–589. https://doi.org/10.2307/1131402

McLoyd, V. C., Kaplan, R., Purtell, K. M., Bagley, E., Hardaway, C. R., & Smalls, C. (2009). Poverty and socioeconomic disadvantage in adolescence. *Handbook of Adolescent Psychology: Contextual Influences on Adolescent Development*, *2*(3), 444–491. https://doi.org/10.1002/9780470479193.adlpsy002014

Menasce Horowitz, J., Igielnik, R., & Kochhar, R. (2020). Trends in U.S. income and wealth inequality. *Pew Research Center's Social & Demographic Trends Project*. https://www.pewresearch.org/social-trends/2020/01/09/trends-in-income-and-wealth-inequality/

Merikangas, K. R., He, J., Burstein, M., Swanson, S. A., Avenevoli, S., Cui, L., Benjet, C., Georgiades, K., & Swendsen, J. (2010). Lifetime prevalence of mental disorders in u.s. adolescents: Results from the national comorbidity survey replication-adolescent supplement (NCS-A). *Journal of the American Academy of Child & Adolescent Psychiatry*, *49*(10), 980–989. https://doi.org/10.1016/j.jaac.2010.05.017

Miller, A. B., Sheridan, M. A., Hanson, J. L., McLaughlin, K. A., Bates, J. E., & Lansford, J. E. Dimensions of deprivation and threat, psychopathology, and potential mediators: A multi-year longitudinal analysis. *Journal of Abnormal Psychology*, *127*(2), p.160. doi:10.1037/abn0000331.

Miller, P., Betancur, L., Whitfield, K., & Votruba-Drzal, E. (2021). Examining income dynamics and externalizing and internalizing trajectories through a developmental psychopathology lens: A nationally representative study. *Development and Psychopathology*, *33*(1), 1–17.

Miller, P., & Votruba-Drzal, E. (2017). The role of family income dynamics in predicting trajectories of internalizing and externalizing problems. *Journal of Abnormal Child Psychology*, *45*(3), 543–556.

Mistry, R. S., Benner, A. D., Tan, C. S., & Kim, S. Y. (2009). Family economic stress and academic well-being among Chinese-American youth: The influence of adolescents' perceptions of economic strain. *Journal of Family Psychology*, *23*(3), 279–290. https://doi.org/10.1037/a0015403

Mistry, R. S., & Elenbaas, L. (2021). It's all in the family: Parents' economic worries and youth's perceptions of financial stress and educational outcomes. *Journal of Youth and Adolescence*, *50*(4), 724–738. https://doi.org/10.1007/s10964-021-01393-4

Mistry, R. S., & Lowe, E. (2006). What earnings and income buy: The "basics" plus "a little extra": Implications for family and child well-being. In L. owe (Ed.), *Making it work: Low-wage employment, family life, and child development* (pp. 173–205).

Moffitt, R., & Zhang, S. (2018). Income volatility and the PSID: Past research and new results. *AEA Papers and Proceedings*, *108*, 277–280. https://doi.org/10.1257/pandp.20181048

Morduch, J., & Schneider, R. (2017). *The financial diaries: How American families cope in a world of uncertainty*. Princeton University Press.

Murthy, V. H. (2022). *The* mental health of minority and marginalized young people: An opportunity for action. *Public Health Reports*, *137*(4), 613–616. https://doi.org/10.1177/00333549221102390

Muthén, B., Muthén, L., & Asparouhov, T. (2017). *Regression and mediation analysis using Mplus*. Muthén & Muthén.

Neppl, T. K., Senia, J. M., & Donnellan, M. B. (2016). Effects of economic hardship: Testing the family stress model over time. *Journal of Family Psychology*, *30*(1), 12–21. https://doi.org/10.1037/fam0000168

O'Brien, S. F., & Bierman, K. L. (1988). Conceptions and perceived influence of peer groups: Interviews with preadolescents and adolescents. *Child Development*, *59*(5), 1360–1365. https://doi.org/10.2307/1130498

Odgers, C. L. (2015). Income inequality and the developing child: Is it all relative? *American Psychologist*, *70*(8), 722–731. https://doi.org/10.1037/a0039836

Osgood, K., Sheldon-Dean, H., & Kimball, H. (2021). *2021 Children's mental health report: What we know about the COVID-19 pandemic's impact on children's mental health –– and what we don't know*. Child Mind Institute.

Patel, J. A., Nielsen, F. B. H., Badiani, A. A., Assi, S., Unadkat, V. A., Patel, B., Ravindrane, R., & Wardle, H. (2020). Poverty, inequality and COVID-19: The forgotten vulnerable. *Public Health*, *183*, 110–111. https://doi.org/10.1016/j.puhe.2020.05.006

Piera Pi-Sunyer, B., Andrews, J. L., Orben, A., Speyer, L. G., & Blakemore, S.-J. (2023). The relationship between perceived income inequality, adverse mental health and interpersonal difficulties in UK adolescents. *Journal of Child Psychology and Psychiatry*, *64*(3), 417–425. https://doi.org/10.1111/jcpp.13719

Ponnet, K., Wouters, E., Goedemé, T., & Mortelmans, D. (2016). Family financial stress, parenting and problem behavior in adolescents: An actor-partner interdependence approach. *Journal of Family Issues*, *37*(4), 574–597. https://doi.org/10.1177/0192513X13514409

Preacher, K. J., Zyphur, M. J., & Zhang, Z. (2010). A general multilevel SEM framework for assessing multilevel mediation. *Psychological Methods*, *15*(3), 209–233. https://doi.org/10.1037/a0020141

Prentice, D. A., & Miller, D. T. (2016). *When small effects are impressive*. American Psychological Association. https://doi.org/10.1037/14805-006

Quint, J., Griffin, K. M., Kaufman, J., Landers, P., & Utterback, A. (2018). Experiences of parents and children living in poverty a review of the qualitative literature. OPRE Report, 2018-30, 80.

Raver, C. C., Gershoff, E. T., & Aber, J. L. (2007). Testing equivalence of mediating models of income, parenting, and school readiness for white, black, and hispanic children in a national sample. *Child Development*, *78*(1), 96–115. https://doi.org/10.1111/j.1467-8624.2007.00987.x

Rivenbark, J., Arseneault, L., Caspi, A., Danese, A., Fisher, H. L., Moffitt, T. E., Rasmussen, L. J. H., Russell, M. A., & Odgers, C. L. (2020). Adolescents' perceptions of family social status correlate with health and life chances: A twin difference longitudinal cohort study. *Proceedings of The National Academy of Sciences of The United States of America*, *117*(38), 23323–23328. https://doi.org/10.1073/pnas.1820845116

Romo, L. K. (2011). Money talks: Revealing and concealing financial information in families. *Journal of Family Communication*, *11*(4), 264–281. https://doi.org/10.1080/15267431.2010.544634

Romo, L. K. (2014). Much ado about money: Parent-child perceptions of financial disclosure. *Communication Reports*, *27*(2), 91–101. https://doi.org/10.1080/08934215.2013.859283

Ruck, M. D., Mistry, R. S., & Flanagan, C. A. (2019). Children's and adolescents' understanding and experiences of economic inequality: An introduction to the special section. *Developmental Psychology*, *55*(3), 449–456. https://doi.org/10.1037/dev0000694

Russell, M. A., & Odgers, C. L. (2020). Adolescents' subjective social status predicts day-to-day mental health and future substance use. *Journal of Research on Adolescence*, *30*(S2), 532–544. https://doi.org/10.1111/jora.12496

Rutter, M. (1983). *Stress, coping, and development: Some issues and some questions*. Johns Hopkins University Press.

Schaeffer, K. (2020). 6 facts about economic inequality in the U.S. Pew Research Center. https://www.pewresearch.org/fact-tank/2020/02/07/6-facts-about-economic-inequality-in-the-u-s/

Schenck-Fontaine, A., & Panico, L. (2019). Many kinds of poverty: Three dimensions of economic hardship, their combinations, and children's behavior problems. *Demography*, *56*(6), 2279–2305. https://doi.org/10.1007/s13524-019-00833-y

Schenck-Fontaine, A., & Ryan, R. M. (2022). Poverty, material hardship, and children's outcomes: A nuanced understanding of material hardship in

childhood. *Children*, *9*(7), 981. https://doi.org/10.3390/children9070981 Article 7.

Schofield, D. J., Shrestha, R. N., Percival, R., Passey, M. E., Kelly, S. J., & Callander, E. J. (2011). Economic impacts of illness in older workers: Quantifying the impact of illness on income, tax revenue and government spending. *BMC Public Health*, *11*(1), 418. https://doi.org/10.1186/1471-2458-11-418

Schoon, I., & Heckhausen, J. (2019). Conceptualizing individual agency in the transition from school to work: A social-ecological developmental perspective. *Adolescent Research Review*, *4*(2), 135–148. https://doi.org/10.1007/s40894-019-00111-3

Seaton, E. K., Neblett, E. W., Cole, D. J., & Prinstein, M. J. (2013). Perceived discrimination and peer victimization among African American and Latino youth. *Journal of Youth and Adolescence*, *42*(3), 342–350. https://doi.org/10.1007/s10964-012-9848-6

Shimamura, A. (2002). Memory retrieval and executive control processes. In D. T. Stuss & R. T. Knight (Eds.), *Principles of frontal lobe function*. Oxford University Press, Incorporated, http://ebookcentral.proquest.com/lib/pitt-ebooks/detail.action?docID=281470

Silbereisen, R. K., Walper, S., & Albrecht, H. T. (1990). Family income loss and economic hardship: Antecedents of adolescents' problem behavior. *New Directions for Child Development*, *46*(46), 27–47. https://doi.org/10.1002/cd.23219904604

Simons, L., & Steele, M. (2020). The negative impact of economic hardship on adolescent academic engagement: An examination parental investment and family stress processes. *Journal of Youth and Adolescence*, *49*(5), 973–990. https://doi.org/10.1007/s10964-020-01210-4

Simons, R. L., Lei, M. K., Beach, S. R. H., Philibert, R. A., Cutrona, C. E., Gibbons, F. X., & Barr, A. (2016). Economic hardship and biological weathering: The epigenetics of aging in a U.S. sample of black women. *Social Science & Medicine*, *150*, 192–200. https://doi.org/10.1016/j.socscimed.2015.12.001

Skiba, R. J., Chung, C.-G., Trachok, M., Baker, T. L., Sheya, A., & Hughes, R. L. (2014). Parsing disciplinary disproportionality: Contributions of infraction, student, and school characteristics to out-of-school suspension and expulsion. *American Educational Research Journal*, *51*(4), 640–670.

Skiba, R. J., Horner, R. H., Chung, C.-G., Rausch, M. K., May, S. L., & Tobin, T. (2011). Race is not neutral: A national investigation of African American and Latino disproportionality in school discipline. *School Psychology Review*, *40*(1), 85–107. https://doi.org/10.1080/02796015.2011.12087730

Smith, K. E., & Pollak, S. D. (2021). Rethinking concepts and categories for understanding the neurodevelopmental effects of childhood adversity. *Perspectives on Psychological Science*, *16*(1), 67–93. https://doi.org/10.1177/1745691620920725

Somerville, L. H. (2013). The teenage brain: Sensitivity to social evaluation. *Current Directions in Psychological Science*, *22*(2), 121–127. https://doi.org/10.1177/0963721413476512

Steeger, C. M., Cook, E. C., & Connell, C. M. (2017). The interactive effects of stressful family life events and cortisol reactivity on adolescent externalizing and internalizing behaviors. *Child Psychiatry and Human Development*, *48*(2), 225–234. https://doi.org/10.1007/s10578-016-0635-6

Stephens, N. M., Markus, H. R., & Phillips, L. T. (2014). Social class culture cycles: How three gateway contexts shape selves and fuel inequality. *Annual Review of Psychology*, *65*(1), 611–634. https://doi.org/10.1146/annurev-psych-010213-115143

Sullivan, J. X., Turner, L., & Danziger, S. (2008). The relationship between income and material hardship. *Journal of Policy Analysis and Management*, *27*(1), 63–81.

Thomas, L., De Bellis, M. D., Graham, R., & LaBar, K. S. (2007). Development of emotional facial recognition in late childhood and adolescence. *Developmental Science*, *10*(5), 547–558. https://doi.org/10.1111/j.1467-7687.2007.00614.x

Thomas, M. M. C., Miller, D. P., & Morrissey, T. W. (2019). Food insecurity and child health. *Pediatrics*, *144*(4), e20190397. https://doi.org/10.1542/peds.2019-0397

Thomas, M. M. C., & Waldfogel, J. (2022). What kind of "poverty" predicts CPS contact: Income, material hardship, and differences among racialized groups. *Children and Youth Services Review*, *136*, 106400. https://doi.org/10.1016/j.childyouth.2022.106400

Votruba-Drzal, E. (2006). Economic disparities in middle childhood development: Does income matter? *Developmental Psychology*, *42*(6), 1154–1167. https://doi.org/10.1037/0012-1649.42.6.1154

Wadsworth, M. E., & Berger, L. E. (2006). Adolescents coping with poverty-related family stress: Prospective predictors of coping and psychological symptoms. *Journal of Youth and Adolescence*, *35*(1), 54–67. https://doi.org/10.1007/s10964-005-9022-5

Wadsworth, M. E., & Compas, B. E. (2002). Coping with family conflict and economic strain: The adolescent perspective. *Journal of Research on Adolescence*, *12*(2), 243–274. https://doi.org/10.1111/1532-7795.00033

Wadsworth, M. E., Raviv, T., Compas, B. E., & Connor-Smith, J. K. (2005). Parent and adolescent responses to poverty related stress: Tests of mediated and moderated coping models. *Journal of Child and Family Studies*, *14*(2), 283–298. https://doi.org/10.1007/s10826-005-5056-2

Weil, L. G., Fleming, S. M., Dumontheil, I., Kilford, E. J., Weil, R. S., Rees, G., Dolan, R. J., & Blakemore, S.-J. (2013). The development of metacognitive ability in adolescence. *Consciousness and Cognition*, *22*(1), 264–271. https://doi.org/10.1016/j.concog.2013.01.004

Weimer, A. A., Warnell, K. R., Ettekal, I., Cartwright, K. B., Guajardo, N. R., & Liew, J. (2021). Correlates and antecedents of theory of mind development during middle childhood and adolescence: An integrated model. *Developmental Review*, *59*, 100945. https://doi.org/10.1016/j.dr.2020.100945

Weller, C. E. (2018). Working-class families are getting hit from all sides. Center for American Progress. https://www.americanprogress.org/article/working-class-families-getting-hit-sides/

Woods-Jaeger, B. A., Hampton-Anderson, J., Christensen, K., Miller, T., O'Connor, P., & Berkley-Patton, J. (2022). School-based racial micro-aggressions: A barrier to resilience among African American adolescents exposed to trauma. *Psychological Trauma: Theory, Research, Practice, and Policy*, *14*(S1), S23–S31. https://doi.org/10.1037/tra0001091

Wrzus, C., Hänel, M., Wagner, J., & Neyer, F. J. (2013). Social network changes and life events across the life span: A meta-analysis. *Psychological Bulletin*, *139*(1), 53–80. https://doi.org/10.1037/a0028601

Zilanawala, A., & Pilkauskas, N. V. (2012). Material hardship and child socioemotional behaviors: Differences by types of hardship, timing, and duration. *Children and Youth Services Review*, *34*(4), 814–825. https://doi.org/10.1016/j.childyouth.2012.01.008