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ORIGINAL PAPER

Parenting Stress, Parenting, and Adolescent Externalizing Problems

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Abstract

Although the association between parenting stress and child behavioral outcomes is well established, there is limited research with families of adolescents. Due to multiple transitions occurring and adolescents seeking independence, this developmental period may be especially difficult for families compared to earlier stages of child development. Exploring the influence of parenting stress on adolescent externalizing problems and how parenting can explain this link can inform parenting of adolescents, reduce the risk of adolescent deviant behaviors, and promote a smoother transition into adulthood. Thus, this study examined associations between parenting stress and externalizing problems (i.e., oppositional behaviors, proactive aggression, and reactive aggression), considering whether parenting behaviors (i.e., acceptance, psychological control, and lax control) served as mediators among 282 biological mothers (ages 28–61; $M = 40.29$; $SD = 6.6$) with 12- to 17-year-old adolescents ($M = 14.19$; $SD = 1.84$; 50.7% males). As expected, parenting stress was positively associated with all forms of adolescent externalizing problems. Additionally, parental acceptance mediated the association between parenting stress and all adolescent outcomes. Psychological control only mediated the association between parenting stress and oppositional behaviors and reactive aggression. Lax control only mediated the link between parenting stress and proactive aggression. The findings suggest that examining parenting dimensions and adolescent externalizing problems separately provided specificity that can inform future research and clinical interventions. Clinicians may benefit from assessing for and treating parenting stress among families with adolescents and targeting increasing parental acceptance and decreasing parental lax and psychological control during parenting interventions.

Keywords Parenting Stress · Parenting · Adolescent Externalizing Problems

Highlights

- This study examined the links between parenting stress, parenting behaviors, and adolescent externalizing problems.
- Parenting stress was positively linked to all examined adolescent externalizing problems.
- Parenting behaviors explain the associations between parenting stress and specific aspects of externalizing behaviors.
- Compared to the other parenting constructs, the indirect pathways through acceptance were the strongest.
- Examining specific parenting dimensions and externalizing problems may help target family interventions.

Parenting stress has been studied for more than four decades and is posited to influence parenting behaviors and child socioemotional outcomes (Abidin, 1992). It is defined as a type of stress parents experience in raising children that can lead to physiological and psychological reactions emerging from attempts to meet the challenges of parenting (Deater-Deckard, 2004). These challenges can include balancing parenthood and work, adapting to their child's characteristics (e.g., behavioral problems), and meeting the child's basic needs (i.e., physical and emotional; Deater-Deckard, 2004). Parenting stress can be measured in multiple ways, including as parenting daily hassles, stressful life events, and subjective parenting stress in response to parenting. The parenting stress in response to parenting method is widely used with parents of children and adolescents, is consistent with the Parent-Child-Relationship (P-C-R) conceptualization (Abidin, 1990; Deater-Deckard, 2004), and is the primary focus of this study. According to the

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P-C-R theory, parenting stress arises due to a combination of parental factors (e.g., age, personality, psychopathology, relationship problems), child factors (e.g., temperament, developmental delays, socioemotional problems), and dysfunctional parent-child interactions (e.g., conflict, negative parenting practices). It is typical for all parents to experience parenting stress at one point or another, especially as a response to the demands of parenting (Crnic & Greenberg, 1990). However, chronic parenting stress levels have been associated with unfavorable outcomes for both parents and children. Specifically, higher parenting stress negatively influences parental psychological well-being, which in turn can influence the quality of parenting, damage the parent-child relationship, and affect children's development (Crnic & Low, 2002; Deater-Deckard, 1998; Deater-Deckard, 2004). Further, Abidin's (1992) determinants of parenting behavior model theorized that parenting stress motivates parents to access available resources (e.g., social support, material resources, cognitive coping) to support their parenting. When parents lack the resources and effective coping strategies, their parenting stress leads to ineffective and dysfunctional parenting (e.g., psychological and lax control; Abidin, 1992), which has been supported by several studies (e.g., Barry et al., 2009; Putnick et al., 2008).

Although the influence of parenting stress has been extensively researched with parents of young children (e.g., Creasey & Jarvis, 1994; Gerstein & Poehlmann-Tynan, 2015), only a few studies have focused on families with adolescents. During adolescence, families need to adapt to adolescents striving for more individuation and autonomy, sometimes resulting in increased day-to-day parent-adolescent conflict (Larson et al., 1996; Steinberg, 2001). The period of adolescence can be difficult, with some families reporting worsening of parent-child relationships (Crnic & Low, 2002), rising levels of parenting stress (Anderson, 2008), and negative adolescent outcomes (Deković, 1999). Thus, this study focused on exploring the associations between parenting stress and adolescent externalizing problems and whether parenting behaviors mediate this link.

Parenting Stress and Externalizing Problems

While parenting stress has been associated with multiple child outcomes (e.g., internalizing behaviors, temperament), the link between parenting stress and child externalizing problems is most often examined, especially among families of young children, with higher levels of parenting stress being associated with more behavioral problems (Crnic & Low, 2002; Deater-Deckard, 2004). For example, higher parenting stress among families with toddlers and preschoolers (between ages 1.5 to 4) was positively associated with children's externalizing problems (e.g., aggression, noncompliance; Creasey & Jarvis, 1994; Hart & Kelley, 2006). Guajardo et al. (2009) reported a similar pattern in a sample of parents of 3- to 5-year-old children. In addition, the association between parenting stress and child externalizing problems has been supported in longitudinal studies. For example, parenting stress when the child was 4 months was positively associated with externalizing problems when the child was 36 months, suggesting that parental stress influenced child externalizing problems over time (Bagner et al., 2009). Similarly, positive associations between earlier parenting stress and later child externalizing behaviors have been found examining child aggression from toddlerhood to the preschool period (Tharner et al., 2012) and oppositional behaviors from age 3 to 6 years (Gerstein & Poehlmann-Tynan, 2015). While there are fewer studies, a positive association between parenting stress and externalizing problems, measured broadly, also has been supported among families with older children and adolescents (e.g., Verkleij et al., 2015; ages 7 to 18). Additionally, Wiener et al. (2016) found that parenting stress was positively associated with aggression and oppositional behaviors among families with adolescents who were 13 to 18 years old. While the association between parenting stress and externalizing problems seems to be similar as those found at younger ages, exploration of specific types of externalizing problems has been rare.

The majority of research on parenting stress has examined youth externalizing problems as a broad construct (e.g., Creasey & Jarvis, 1994; Verkleij et al., 2015). However, adolescent externalizing problems can include a variety of difficult behaviors. Some of these behaviors like hyperactivity and impulsivity have strong genetic and neurobiological causes (e.g., Nikolas & Burt, 2010) that lead them to be less influenced by the environment. Further, during adolescence, the more classic hyperactive symptoms are less evident and more likely to be experienced as inner feelings of restlessness or fidgeting (American Psychiatric Association [APA], 2013), which is not as consistent with an externalizing disorder. However, the family environment, including parenting, is more likely to influence the development of other externalizing behaviors, such as oppositional behaviors, proactive aggression, and reactive aggression (Maccoby, 2000). Additionally, while symptoms of hyperactivity and impulsivity decline during adolescents (Larsson et al., 2011), oppositional and aggressive behaviors increase in frequency during this developmental period (Beauchaine & Hinshaw, 2013). Oppositional behaviors (e.g., feeling angry, arguing with authority figures, blaming others for their mistakes) are linked to an increased risk for oppositional defiant disorder, antisocial behavior, substance use, and internalizing problems (e.g., depression) in adulthood (APA, 2013).

Parenting stress has been cross-sectionally linked with adolescent oppositional behaviors (Wiener et al., 2016). In addition to oppositional behaviors, other common externalizing behaviors in the general population include two different types of aggressive behaviors, proactive and reactive aggression (Dodge & Coie, 1987). Proactive aggression refers to aggressive behaviors characterized by direct intention towards a goal (e.g., bullying) that happen without being provoked by others in order to dominate others, while reactive aggression refers to aggressive reactions due to a perceived threat or anger from an earlier event (Dodge & Coie, 1987). These three specific types of externalizing behaviors vary in the typical target. Specifically, oppositional behaviors are usually directed towards adults (Taylor et al., 2006), while proactive and reactive aggression are more often directed towards peers (Dodge & Coie, 1987). Thus, measuring oppositional behaviors and proactive and reactive aggression separately may provide a more nuanced understanding of how parenting stress is linked to adolescents' externalizing problems.

Parenting as a Mediator

Deater-Deckard (1998) proposed an indirect association of parenting stress on youth outcomes through parenting behaviors, although few have empirically tested it. While Deater-Deckard did not specify which parenting constructs would serve as mediators between parenting stress and youth outcomes, psychological control, acceptance, and lax control are good candidates as each have been linked to child externalizing problems (e.g., Maccoby, 2000). Psychological control encompasses parenting behaviors that inhibit youth autonomy (e.g., guilt induction, shaming, criticism) and limit the child's ability to develop as an individual (e.g., allowing expression of thoughts, interests, and ideas; Lansford et al., 2014; Schaefer, 1965a). Research has found that psychological control is positively associated with youth externalizing problems (e.g., delinquency, aggression; Finkenauer et al., 2005; Lansford et al., 2014). In addition, parenting stress has been found to be positively associated with parental psychological control among families with early adolescents (Putnick et al., 2008). When indirect pathways have been examined explicitly though, findings have been inconsistent. Among families of young children, parental psychological control mediated the association between parenting stress and children's behavioral problems (e.g., aggression, delinquency; Liu & Wang, 2015). However, in another study with families of 4- to 12-year-old children, the indirect association was not supported (Huth-Bocks & Hughes, 2008). Thus, it is unclear whether parental psychological control mediates the association between parenting stress and children's externalizing behaviors.

Acceptance, which refers to parental support, warmth, affection, positive evaluation, and involvement (Schaefer, 1965a), may be another explanatory mechanism by which parenting stress influences their children's externalizing behaviors. Parental acceptance produces an emotionally supportive environment that can facilitate adolescents responding positively to their parents' socialization efforts and, thus, foster the development of their cognitive, social competence, and self-regulatory skills (Deater-Deckard, 2004; Steinberg, 2001). Greater parental acceptance has also been found to be associated with fewer externalizing behaviors (e.g., conduct disorder) among adolescents (Dumka et al., 1997). In addition to these links to child outcomes, parental acceptance has been negatively associated with parenting stress among families with 9- to 12-year-old children (Barry et al., 2009). Among families of young children, maternal rejection (i.e., the opposite of acceptance) mediated the association between parenting stress, measured by parenting daily hassles, and broad child behavioral outcomes (Gerstein & Poehlmann-Tynan, 2015). However, Anthony et al. (2005) found acceptance did not mediate the association between parenting stress and externalizing problems (i.e., broad externalizing subscale, which included aggression and oppositional behavior). Thus, more research is needed to determine whether parental acceptance mediates the links between parenting stress and children's externalizing symptoms.

Lax control is another aspect of parenting that may serve to explain found associations between parenting stress and adolescents' externalizing problem behaviors. Lax control involves being permissive and not providing rules, limitations, and regulations of their child's behavior (Schaefer, 1965a). During adolescence, developmentally appropriate parental expectations and regulations provide structure, which discourages adolescents from engaging in risky behaviors (e.g., substance use) and promotes them acting responsibly (Steinberg, 2001). Parental lax control has been found to be positively associated with adolescent externalizing problems (e.g., delinquency, aggression; Fauber et al., 1990; Finkenauer et al., 2005) as well as parenting stress among families of 9- to 12-year-old children (Barry et al., 2009). In addition, one study with families of young children found that firm control (i.e., the reverse of lax control) mediated the association between parenting stress and broad child externalizing problems (Deater-Deckard and Scarr 1996). In contrast, other studies (e.g., Crnic et al., 2005; Huth-Bocks & Hughes, 2008) have found that lax control did not mediate the association between parenting stress and broad child externalizing problems (ages 4–12). Therefore, whether lax control serves as a mediator is unclear given the inconsistent findings to date.

The Present Study

Given the established links between parenting stress and externalizing behaviors among children (e.g., Creasey & Jarvis, 1994), the current study extends this research to examine families with adolescents. While adolescence is a period of transition for both parents and adolescents (e.g., Steinberg, 2001), similar positive links between parenting stress and adolescents' externalizing problems are expected. Further, while parenting behaviors have theoretically been suggested as an explanatory link between parenting stress and child externalizing problems (Deater-Deckard, 1998), empirical findings have been inconsistent in studies focused on younger children (e.g., Anthony et al., 2005; Liu & Wang, 2015) and no research has focused on these links among families with adolescents. Thus, the current study explores whether the associations between parenting stress and adolescents' externalizing problems are mediated by three specific parenting behaviors (i.e., psychological control, acceptance, and lax control) among families with adolescent children. Further this study examines three specific dimensions of adolescent externalizing behaviors (i.e., oppositional behaviors, and proactive and reactive aggression) to provide a more nuanced understanding of how parenting stress is linked to adolescents' externalizing problems. In addition, the study controlled for many child, maternal and family characteristics that are known to be linked to adolescents' externalizing problems (e.g., child gender and age, family cumulative risk) to allow for more certainty the findings are not explained by confounding variables. Thus, it was hypothesized that parenting stress would be positively associated with adolescents' oppositional behaviors, reactive aggression, and proactive aggression, and that these associations would be mediated by the three parenting behaviors examined (i.e., psychological control, lax control, and acceptance).

Method

Participants

This study's sample included 282 biological mothers (ages 28–61; $M = 40.29$; $SD = 6.6$) of 12- to 17-year-old adolescents ($M = 14.19$; $SD = 1.84$; 50.7% males). The majority of mothers were White (77.3%), with the remaining sample identifying as being Black (8.2%), multiethnic (5.3%), Asian (4.6%), and Hispanic/Latinx (3.5%). Most mothers were married and living with a partner (67%) and resided in suburban areas (55.3%; 23.8% rural, 20.9% urban). As an indicator of family income, 28% of mothers reported their 12- to 17-year-old adolescent qualified for free lunch. Additionally, the majority of mothers were employed (54.6% full-time, 17.7% part-time; $M_{income} =$ \$65,736.23, $SD_{income} =$ \$44,964.30) and had earned a Bachelor's degree (37.9%; 34% partial college, 16% graduate degree, and 12.1% high school degree). A minority of participants reported having a disability (e.g., autoimmune disease, lupus; 6.8%) and their adolescents having a disability (e.g., attention deficit/hyperactivity disorder, cerebral palsy; 10.2%).

Procedure

Participants were recruited through Amazon's Mechanical Turk (MTurk), an online crowdsourcing survey platform that is a reliable and valid tool for collecting data from individuals (e.g., Buhrmester et al., 2011) as well as specifically from parents' reports on family and youth outcomes (Schleider & Weisz, 2015). In the current study, only biological mothers who resided in the United States and had an MTurk rating of at least 95% were able to see the study's MTurk description. An MTurk rating of at least 95% has been found to be an appropriate participation restriction, with these participants providing more high-quality data than low reputation participants (i.e., approval rating below 95%; Peer et al., 2014). Participants completed a prescreening questionnaire through MTurk that determined if they were eligible for the study (i.e., a biological mother residing in the United States living with their 12- to 17-year-old adolescent). Eligible participants then completed questionnaires through Qualtrics assessing demographic information, maternal depression, parenting stress, parenting behaviors, and child behaviors. Mothers who had more than one 12- to 17-year-old adolescent were randomly assigned by the Qualtrics' survey programming to complete the measures for one of their children in this age range (i.e., youngest, second oldest, and oldest). Completion of all the measures took approximately 45–60 min.

To ensure participants were attentive, a unique Instructional Manipulation Check (IMC) question (i.e., trick questions assessing participants' attention) was administered before each measure. Participants who did not pass the initial IMC question were reminded to pay attention, read carefully, and were given another attempt on the same IMC question. After they answered the IMCs, participants were able to continue answering the rest of the questions. The use of IMC questions can help detect and reduce participants responding randomly and not reading instructions, and can subsequently improve reliability of the collected data (Oppenheimer et al., 2009). Once the participants completed the battery of measures, they were paid \$1.50 through MTurk's payment system for their participation, which is suggested to be an appropriate compensations rate that does not affect data quality among samples collected on MTurk (Buhrmester et al., 2011). The study's

procedures were approved by the university's Institutional Review Board.

Measures

Demographic and family risk information

Participants completed a demographic questionnaire that asked their age (i.e., current and at birth of first child), marital status, education, ethnicity, disability status, and number of children in the household. This form also contained questions regarding the adolescents' age, gender, disability status, and whether the child received or is eligible for free school lunch as a proxy for the family being at or below the poverty level. In addition, mothers reported on their current depressive symptoms using the 20-item Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977). Items were rated on a 4-point frequency scale (i.e., 0 = *Rarely or none of the time [less than 1 day]*, 1 = *Some or little of the time [1–2 days]*, 2 = *Occasionally or a moderate amount of the time [3–4 days]*, and 3 = *Most or all of the time [5–7 days]*) based on the depressive symptoms that had been experienced in the past week (e.g., "I felt lonely," "My sleep was restless"; Radloff, 1977). The responses were summed to yield a total score that ranged from 0 to 60, with higher scores indicating more depressive symptoms (Radloff, 1977). The CES-D has good internal consistency (i.e., ranged from 0.84 to 0.87 for the general community samples; Radloff, 1977; Radloff, 1991). In the current study, the CES-D Total Scale demonstrated good internal consistency ($\alpha = 0.84$). Based on the suggested cutoff score for clinical depression of 16 (Radloff, 1977), participants' scores were dichotomized to indicate the presence or absence of clinical depression.

Information on several risk factors known to be associated with parenting stress and externalizing behaviors were collected in this study. Specifically, because of their known links to higher parenting stress and/or youth behavioral problems, participants reported on the following information: single motherhood (i.e., not married and not cohabitating with a partner; e.g., Bachman et al., 2012); teen motherhood (i.e., mothers below 20 years old; Huang et al., 2014); previous and/or current symptoms of maternal depression (e.g., Huang et al., 2014); income at or below poverty (based on child being eligible for free school lunch; e.g., Pinderhughes et al., 2001); low maternal education (i.e., less than high school; e.g., Harding, 2015); and ethnic minority status (i.e., not non-Hispanic White; e.g., Nam et al., 2015). Previous research has shown the use of a cumulative risk index, calculated by taking the sum of the presence of multiple risk factors, has greater prediction of child outcomes than considering single risk factors individually, with a higher number of risks leading to more severe and negative child outcomes (Sameroff et al., 1997). While the specific risk factors on a cumulative risk index vary from study to study, the more risks present are linked to worse outcomes. Thus, a cumulative risk index was calculated by taking the sum of the six risk factors with values ranging from 0 (i.e., no risk factors present) to 6 (i.e., all risk factors present).

Parenting stress

Parenting stress was measured using the 18-item Parental Stress Scale (PSS; Berry & Jones, 1995), which assesses both negative (e.g., "Having children leaves little time and flexibility in my life," "I feel overwhelmed by the responsibility of being a parent") and positive (e.g., "I am happy in my role as a parent," "Having children gives me a more certain and optimistic view for the future") components of stress related to parenting (Berry & Jones, 1995). Each item is rated on a 5-point Likert scale (i.e., 1 = *strongly disagree* to 5 = *strongly agree*). The responses for positively phrased items were reverse-coded and all items were summed, with higher scores indicating higher parenting stress (Berry & Jones, 1995). Past research with samples of families with adolescents has demonstrated the PSS has good internal consistency, test-retest reliability, construct validity between clinical and non-clinical groups, and convergent validity with other parenting stress measures (Berry & Jones, 1995). In the current study, the PSS demonstrated excellent internal consistency ($\alpha = 0.90$).

Parenting

Maternal parenting behaviors were measured using the Parent Report of Parent Behavior Inventory (PRPBI; Margolies & Weintraub, 1977; Schaefer, 1965b). The PRPBI is a 56-item questionnaire that measures parenting behaviors from the perspective of the parent. Each item is rated on a scale that ranges from 1 (i.e., *Not at all like you*) to 3 (i.e., *Just like you*). Items are summed to create three subscales: psychological control, acceptance, and lax control. Higher scores on the acceptance scale indicate parents are more involved, warm, and supportive (e.g., "I give my child a lot of care and attention"; Schaefer, 1965a). Higher scores on the lax control scale indicate parents are more permissive with fewer expectations and rules used to control their child's behavior (e.g., "I do not bother to enforce rules"; Schaefer, 1965a). Higher scores on the psychological control scale indicate parents using more behaviors like guilt and shame that inhibit their child's independence and expression of thoughts, interests, and ideas (e.g., "I don't let my child decide things for him/herself"; Schaefer, 1965a). In the current study, the PRPBI demonstrated good to excellent internal consistency (i.e., $\alpha = 0.93$, 0.86, and 0.85,

Table 1 *Descriptive statistics of independent and dependent variables for participants*

Variable	M (SD)	Range	Skewness	Kurtosis
Parenting Stress	36.59 (10.95)	18 to 85	0.76	0.92
Maternal Psychological Control	24.31 (5.73)	16 to 47	1.04	1.12
Maternal Acceptance	62.20 (8.90)	25 to 72	−1.49	2.46
Maternal Lax Control	23.16 (5.25)	16 to 41	1.03	0.78
Child Oppositional Behaviors	8.39 (8.33)	0 to 39	1.36	1.42
Child Proactive Aggression	1.26 (0.68)	1 to 5	3.37	11.55
Transformed Child Proactive Aggression	−0.90 (0.21)	−1 to −0.20	1.99	2.80
Child Reactive Aggression	1.93 (0.96)	1 to 5	1.15	0.65
Cumulative Risk	1.62 (1.15)	0 to 5	0.54	−0.45
Number of children in household	2.07 (1.10)	1 to 7	1.22	1.92

Table 2 *Bivariate correlations* ($N = 282$)

Variables	Correlations										
	1	2	3	4	5	6	7	8	9	10	11
1. PS^{+}	–										
2. AC^{+}	−0.60***	–									
3. LC^{+}	0.17*	−0.05	–								
4. PC^{+}	0.44***	−0.28***	0.40***	–							
5. OB^{+}	0.49***	−0.41***	0.15*	0.40***	–						
6. PA^{+}	0.48***	−0.53***	0.24***	0.38***	0.69***	–					
7. RA^{+}	0.41***	−0.36***	0.11	0.36***	0.77***	0.67***	–				
8. Cumulative Risk	0.27***	−0.12*	0.01	0.23***	0.29***	0.20**	0.28***	–			
9. Mother Age	−0.19**	0.13*	0.20**	−0.18***	−0.19**	−0.19**	−0.19**	−0.25***	–		
10. Child Age	−0.02	−0.05	0.24***	0.01	−0.02	0.02	−0.03	0.03	0.46***	–	
11. # of Children^{+}	0.17**	−0.11	−0.05	0.12*	0.30***	0.24***	0.24***	0.17**	−0.28***	−0.10	–

Note. $^{+}$PS = Parenting Stress, AC = Acceptance, LC = Lax Control, PC = Psychological Control, OB = Oppositional Behaviors, PA = Proactive Aggression, RA = Reactive Aggression, # of Children = Number of Children in Household

*$p < 0.05$; ** $p < 0.01$; ***$p < 0.001$

for the acceptance, lax control, and psychological control subscales, respectively).

Adolescent externalizing behaviors

Externalizing problems were operationalized as including oppositional behaviors and aggression. The maternal report of adolescent oppositional behaviors was measured using the 8—item ODD subscale of the Child and Adolescent Behavior Inventory (CABI; Burns et al., 2015), which is a newly revised version of the Child and Adolescent Disruptive Behavior Inventory (CADBI; Burns et al., 2001). Mothers rated their child's behavior towards others in the home and community in the past month (e.g., "Argues with adults," "Annoys others on purpose") using a 6-point frequency scale (i.e., 1 = *Almost Never [Never or about once per month]* to 6 = *Almost Always [many times per day]*; Burns et al., 2015). The responses were summed to calculate the ODD subscale. The ODD subscales of the original form of the measure (i.e., CADBI) demonstrated good internal consistency (Servera et al., 2015) and acceptable test-retest reliability (Lee et al., 2014). In the current study, the ODD subscale of the CABI showed excellent internal consistency ($\alpha = 0.93$).

Adolescent aggression was measured using the Proactive and Reactive Aggression Measure (PRAM; Dodge & Coie, 1987), which asks mothers to rate the frequency of adolescent aggressive behaviors on a scale from 1 (i.e., *Never*) to 5 (i.e., *Almost Always*). The questionnaire yields two subscales, which are Proactive Aggression (3 items; e.g., "My child uses physical force in order to dominate other kids") and Reactive Aggression (3 items; e.g., "My [youngest, second oldest, or oldest] 12- to 17-year-old child always claims children are to blame in a fight and

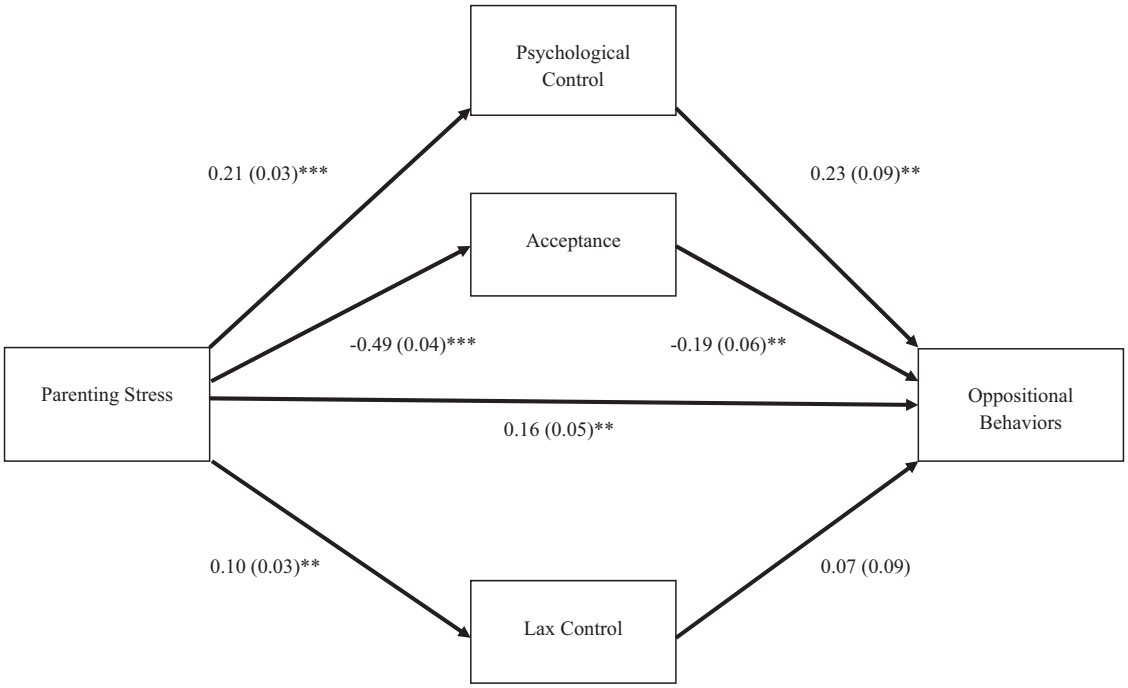

Fig. 1 *Diagram of Model Predicting Oppositional Behaviors through Parenting Behaviors.* Unstandardized coefficients and standard errors shown. $*p < 0.05$; $**p < 0.01$; $***p < 0.001$

feels that they started the trouble"). The scores were calculated by taking the mean of the responses for each subscale (Fite et al., 2016). The PRAM has demonstrated internal consistency in the acceptable to excellent range, as well as adequate test test-retest reliability (Fite et al., 2016). In the current study, the PRAM demonstrated good internal consistency for the Proactive Aggression and Reactive Aggression subscales ($\alpha = 0.93$ and 0.84, respectively).

Results

Preliminary Analyses

Descriptive statistics are presented in Table 1. In this sample, 13.21% of adolescents were reported to have four or more oppositional/defiant symptoms, which would meet the diagnosis of opposition defiant disorder (ODD; APA, 2013). This percent is consistent with the prevalence rate of ODD in nationally representative samples (e.g., American Academy of Child & Adolescent Psychiatry, 2019). Because of excessive skewness and kurtosis, proactive aggression was transformed using reciprocal transformation, followed by multiplying by -1 in order to maintain the variable's direction. This transformation resolved significant skew. Although significant kurtosis was still present, it decreased. Due to the use of bias-corrected bootstrap method in PROCESS, the effects of non-normality are reduced in the primary analyses (i.e., mediation analyses) by providing more accurate estimates of standard errors (Hayes, 2013).

Analyses were run to determine if any demographic variables were related to parenting or externalizing behaviors. As shown in Table 2, maternal age was negatively correlated with all adolescent externalizing problems and psychological control as well as positively correlated with acceptance and lax control. Child age was only positively correlated with lax control. The number of children in the household was positively correlated with psychological control and all adolescent externalizing problems variables. Cumulative risk was positively correlated with psychological control and all adolescent externalizing problems variables and negatively correlated with acceptance. To determine which dichotomous demographic variables were linked to parenting or externalizing behaviors, *t*-tests were conducted. Having children with more oppositional behaviors was associated with the child being male ($t = 2.02$, $p = 0.044$), the child having a disability ($t = 3.12$, $p = 0.002$), and the parent having a disability ($t = 2.67$, $p = 0.008$). Additionally, having higher levels of reactive aggression was associated with being male ($t = 3.15$, $p = 0.002$) and having a child disability ($t = 2.07$, $p = 0.039$). No demographic characteristics were associated with proactive aggression. Based on these findings, cumulative risk, child age, gender, and disability status as well as

Table 3 *Indirect associations between parenting stress and adolescent externalizing problems through parenting behaviors*

Independent variable	Indirect variable/mediator	Dependent variable	Standardized indirect effect	95% Confidence interval
Parenting Stress	Psychological Control	Oppositional Behaviors	0.07*	[0.01, 0.13]
Parenting Stress	Acceptance	Oppositional Behaviors	0.13*	[0.04, 0.23]
Parenting Stress	Lax Control	Oppositional Behaviors	0.01	[−0.01, 0.04]
Parenting Stress	Total Indirect	Oppositional Behaviors	0.21*	[0.11, 0.32]
Parenting Stress	Psychological Control	Proactive Aggression	0.04	[−0.01, 0.11]
Parenting Stress	Acceptance	Proactive Aggression	0.24*	[0.14, 0.36]
Parenting Stress	Lax Control	Proactive Aggression	0.04*	[0.01, 0.08]
Parenting Stress	Total Indirect	Proactive Aggression	0.32	[0.21, 0.45]
Parenting Stress	Psychological Control	Reactive Aggression	0.07*	[0.02, 0.14]
Parenting Stress	Acceptance	Reactive Aggression	0.12*	[0.03, 0.23]
Parenting Stress	Lax Control	Reactive Aggression	0.00	[−0.03, 0.03]
Parenting Stress	Total Indirect	Reactive Aggression	0.20	[0.09, 0.32]

Notes. *Significant indirect effect indicated by the confidence interval not including zero. All models controlled for cumulative risk, child age, gender, and disability status, as well as maternal age, number of children in the household, and parent disability

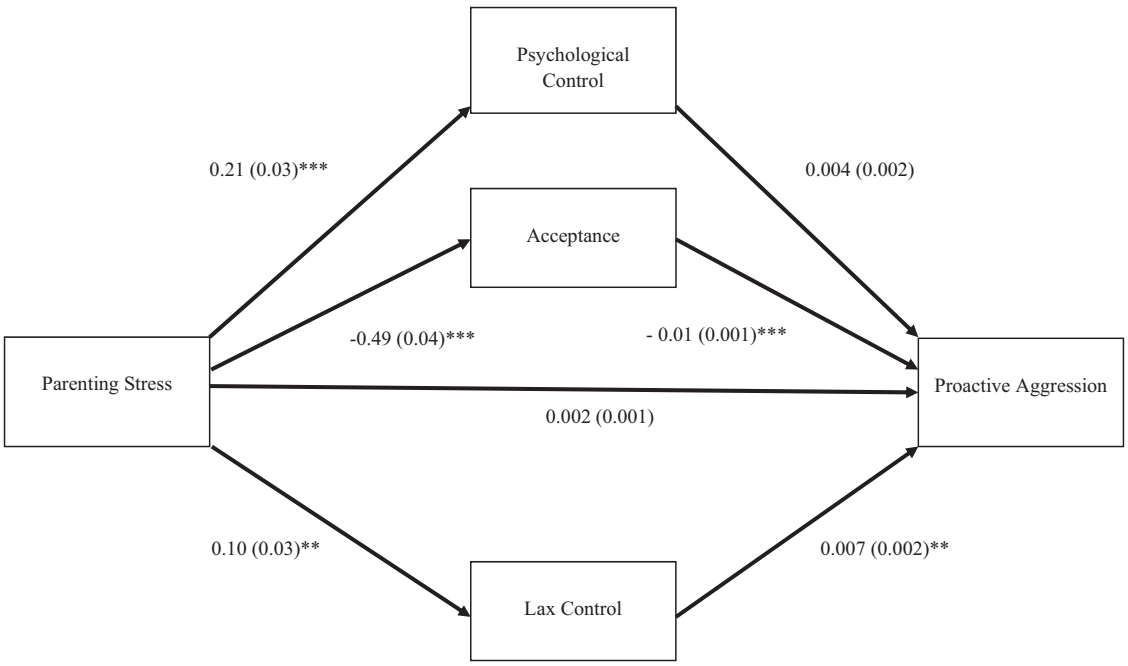

Fig. 2 *Diagram of Model Predicting Proactive Aggression through Parenting Behaviors.* Unstandardized coefficients and standard errors shown. *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

maternal age, number of children in the household, and parent disability were controlled for in the primary analyses.

Bivariate correlations were run between all independent and dependent variables (see Table 2). As expected, parenting stress was positively correlated with each of the adolescent externalizing problems examined as well as psychological and lax control; it also was negatively correlated with acceptance. Similarly, negative parental behaviors (i.e., psychological and lax control) were positively correlated with adolescent externalizing problems with the exception of the correlation between lax control and reactive aggression, which was not significant. Acceptance was negatively correlated with all three externalizing problems.

Primary Analyses

To explore the indirect pathways from parenting stress to adolescents' externalizing behaviors through parenting behaviors, three parallel multiple mediator models (i.e., one for each externalizing behavior) were run using the PROCESS macro in SPSS (Hayes, 2013). Specifically, all three

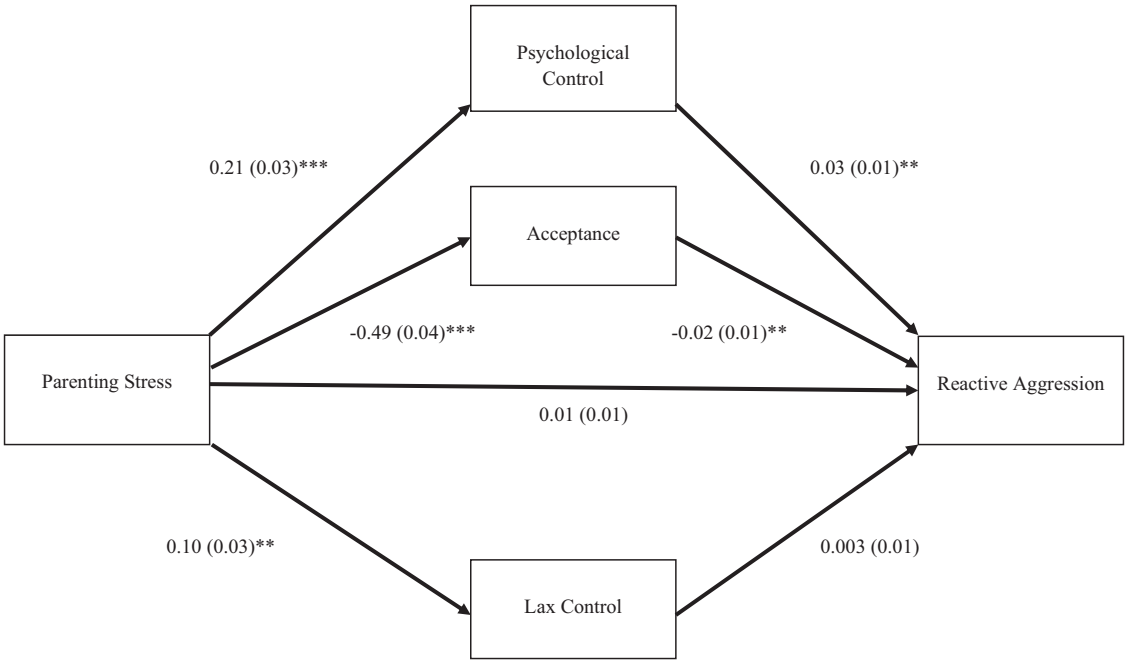

Fig. 3 *Diagram of Model Predicting Reactive Aggression through Parenting Behaviors*. Unstandardized coefficients and standard errors shown. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

parenting variables (i.e., psychological control, acceptance, and lax control) were entered into the model simultaneously. Thus, this model examined the unique variance predicted by each parenting behavior and allowed for comparisons of the strength between each indirect pathway. In addition, cumulative risk, mother and child age, child gender, number of children in household, and child and parent disability were included as covariates in each model. These models were repeated for each of the externalizing behaviors assessed (i.e., oppositional behaviors, proactive aggression, and reactive aggression).

As shown in Fig. 1, significant indirect pathways through psychological control and acceptance, but not lax control, were found for the association between parental stress and oppositional behaviors. Specifically, while the pathway between parenting stress and lax control was significant, the association between lax control and oppositional behaviors was not. Table 3 provides the standardized coefficients and confidence intervals for each indirect pathway. Post-hoc comparisons found that the indirect pathway through acceptance was significantly stronger than the pathway through lax control (effect = 0.09, SE = 0.04, 95% CI [0.023, 0.162]), but the other pathways were not significantly different from each other. The direct pathway from parenting stress to oppositional behaviors remained significant (direct association = 0.16, SE = 0.05, $p = 0.001$, 95% CI [0.064, 0.262]).

As shown in Fig. 2, significant indirect pathways through acceptance and lax control, but not psychological control, were found for the association between parental stress and proactive aggression (see Table 3 for the standardized coefficients for the indirect pathway as well as their confidence intervals). Specifically, while the association between parenting stress and psychological control was significant, the association between psychological control and proactive aggression was not. Post-hoc comparisons found that the indirect pathway through acceptance was significantly stronger than the pathways through psychological control (effect = −0.004, SE = 0.001, 95% CI [−0.01, −0.001]) and lax control (effect = 0.004, SE = 0.001, 95% CI [0.002, 0.01]), but the difference between psychological control and lax control was not significant (effect = 0.0001, SE = 0.007, 95% CI [−0.0013, 0.0014]). The direct pathway from parenting stress to proactive aggression was no longer significant (direct association = 0.002, SE = 0.001, $p = 0.102$, 95% CI [−0.0004, 0.005]).

Finally, similar to the pattern found with oppositional behaviors, significant indirect pathways through psychological control and acceptance, but not lax control, were found for the association between parental stress and reactive aggression (see Fig. 3 and Table 3). Post-hoc comparisons found that the indirect pathway through acceptance was significantly stronger than the pathway through lax control (effect = 0.01, SE = 0.004, 95% CI [0.002, 0.02]), but other comparisons were not significant. The direct pathway from parenting stress to reactive aggression was no longer significant (direct association = 0.01, SE = 0.001, $p = 0.05$, 95% CI [0.000, 0.024]).

Discussion

Overall, associations between parenting stress and externalizing problems found in previous research among families with young children (e.g., Tharner et al., 2012) were replicated in this sample of mothers with adolescent children. Specifically, while controlling for numerous demographic characteristics, parenting stress was positively associated with the three examined adolescent externalizing problems. Further, the strength of these associations did not seem to vary based on the type of externalizing problems examined. This suggests that parenting stress is negatively associated with multiple forms of externalizing behaviors. Overall, these findings indicate that among families with adolescents, similar to families with younger children, parenting stress likely disrupts the family system in a way that is linked to adolescents exhibiting higher levels of externalizing behaviors.

The present study also considered whether the pathways through acceptance, psychological control, and lax control explained the associations between parenting stress and adolescent externalizing problems (i.e., oppositional behaviors, proactive aggression, and reactive aggression). Findings partially supported Deater-Deckard's (1998) model, which proposed indirect associations of parenting stress on youth outcomes through parenting behaviors. Acceptance mediated the associations between parenting stress and all three adolescent externalizing outcomes. That is, parents with higher parenting stress reported lower levels of acceptance and, in turn, higher levels of adolescent externalizing outcomes. Compared to the other parenting constructs, the indirect pathways through acceptance were the strongest. This can be explained by acceptance meeting our biologically based needs to be loved and emotionally supported, and to have positive responses from people most important to us (e.g., parents; Rohner, 2004). As such, acceptance can serve as the foundation for all other parenting behaviors. Due to psychological pain, lack of acceptance can lead to anger, poor self-esteem, negative worldviews, and poor coping, and can manifest externalizing problems (Rohner, 2004). The results from this study suggest that parents who focus on showing their adolescent acceptance could potentially counter the negative influence of parenting stress on adolescents' externalizing problems (i.e., oppositional behaviors, proactive aggression, and reactive aggression). Thus, in families that report high levels of parenting stress, the use of parent training treatments that incorporate increasing parental acceptance (e.g., praise, attending to positive behaviors) may be effective in reducing youth externalizing problems (e.g., aggressive behavior; Kazdin & Whitley, 2003). However, given this study's cross-sectional design, the findings may also be explained as adolescents who have more externalizing behaviors (e.g., oppositionality, aggression) influence parents to be less accepting of them, which contributes to their parenting stress. Future research using a longitudinal design would help address the direction of the associations.

In contrast to acceptance, psychological control mediated the pathways from parenting stress to oppositional behaviors and reactive aggression, but not proactive aggression. Exploring models for specific forms of externalizing behaviors seems to help explain inconsistent findings in previous research. Specifically, in research examining externalizing behaviors broadly, parental psychological control has sometimes been found to be a significant mediator of the associations with parenting stress (e.g., Liu & Wang, 2015), but has not been found to be significant mediator in other studies (Huth-Bocks & Hughes, 2008). Breaking externalizing symptoms into specific types of behaviors allows for a better understanding of when psychological control serves as a mediator between parenting stress and children's problem behaviors. It may be that psychological control is particularly linked to oppositional behaviors and reactive aggression because the increased guilt and shame induced by parental psychological control may increase adolescents' reactivity to others as well as their defiance toward their parents. In contrast, proactive aggression may be influenced more by external factors in the environment related to contingencies to their behaviors (e.g., consequences, rules, consistency of responses; Dodge & Coie, 1987).

Finally, lax control mediated the links between parenting stress and proactive aggression, but did not mediate the link between parenting stress and oppositional behaviors and reactive aggression. Like with psychological control, examining specific aspects of externalizing behaviors may help explain inconsistent findings in previous studies. Specifically, consistent with the lack of significant findings related to oppositional behaviors and reactive aggression, Huth-Bocks and Hughes (2008) did not find support for lax control mediating the association between parenting stress and broad externalizing symptoms. However, the finding that lax control mediated the association between parenting stress and reactive aggression aligns with previous research examining this link predicting externalizing behaviors, broadly, among young children (Deater-Deckard & Scarr, 1996). Although oppositional behaviors, proactive aggression, and reactive aggression are highly intercorrelated, these findings support that these constructs are separate as they are linked to different processes and factors. For example, proactive aggression is positively associated with disruption, leadership, and humor, while reactive aggression is positively associated with negative affect and negative peer status (Dodge & Coie, 1987). Perhaps lack of rules and structure (i.e., lax control) may not matter as much for an adolescent that is hitting others or expressing anger in response to provocation (i.e., reactive aggression) because youth with reactive aggression tend to have a more difficult

temperament (e.g., negative emotionality) and more difficulties with emotional regulation (Vitaro et al., 2006). Adolescents with a difficult temperament and poor emotional regulation who have a tendency to exhibit reactive aggression may need additional supports (e.g., emotional regulation training, social skills training) besides rules and structure to learn effective ways to cope with anger and control reactive impulses.

Overall, this study supports that parenting behaviors explain the associations between parenting stress and specific aspects of externalizing behaviors. By using path models with all three parenting behaviors included in the same model, unique influences were evident. While acceptance universally contributed to the explanation for the association between parenting stress and each of the three externalizing outcomes, psychological control and lax control had more specific links. This study suggests that psychological control explains the link between parenting stress and reactive aggression while lax control explains the link between parenting stress and proactive aggression. Thus, the findings only partially support Abidin's (1992) model, which proposed parenting stress exerts its influence through parenting behaviors. Examining specific aspects of externalizing behaviors may help explain inconsistent findings in previous studies. Additionally, examining parenting behaviors as a mediator with a sample of families with adolescents, instead of young children, adds to the literature. That is, adolescents tend to strive for more autonomy and individuation than younger children, which for some families can increase conflict and potentially lead to worsening of parent-child relationships, parenting stress, and adolescent externalizing problems (Anderson, 2008; Crnic & Low, 2002; Steinberg, 2001). As such, additional studies with families of adolescents are needed to further differentiate how parenting behaviors explain the link between parenting stress and adolescent externalizing behaviors compared to families of younger children. Lastly, since the direct association between parenting stress and oppositional behaviors remained significant in the model, there are likely other mechanisms contributing to how parenting stress is linked to adolescent oppositional behaviors. For instance, it has been postulated that direct exposure to a highly stressed parent may heighten or dysregulate children's own stress response, which can then be manifested in youth behavioral problems (Crnic et al., 2005). Further investigation of whether emotional regulation and other constructs may play a role in how parental stress is associated with oppositional behaviors is needed.

Limitations and Future Research

Although the current study has several strengths (e.g., sample of parents of adolescents), there are some limitations that should be considered when interpreting its findings. First, the current study's cross-sectional design does not allow for causal interpretations and determination of the direction between constructs of interest. While this study establishes associations among families with adolescents that have not been examined previously, future studies should use longitudinal designs to determine the direction of the effect or if the associations are bidirectional (e.g., Crnic & Low, 2002; Deater-Deckard, 2004). Additionally, using only maternal reports is a limitation because distressed parents may inflate their reports of adolescent behavioral problems (Deater-Deckard, 2004). Some studies have found that when parents reported more parenting stress, they also perceived their children more negatively (e.g., Hart & Kelley, 2006). This suggests that parenting stress can lead to parents perceiving their children in a less favorable way. Future studies would be strengthened by using multiple informants (e.g., child, parent) and methods (e.g., observations, questionnaires) when collecting data to provide a more valid test of interrelations between parenting stress, parenting behaviors, and adolescent behavioral problems (Deater-Deckard, 2004). Further, the current study focused on more common externalizing behaviors in the general population (i.e., oppositional behaviors, proactive aggression, and reactive aggression) and did not examine symptoms associated with attention-deficit/hyperactivity disorder and conduct disorder. Due to this, the current findings cannot be generalized to links between parenting stress and other externalizing behaviors and clinical externalizing disorders. Given the specificity in findings related to the behaviors in this study, further research is needed to consider other types of behavioral problems. Further, consideration of how parenting stress influences adolescent internalizing symptoms would be of interest. Finally, the current sample was primarily White, more affluent, and limited to only biological mothers, limiting its generalizability. Because families with lower SES and minority caregivers tend to have higher parental stress (Nam et al., 2015) and there are cultural differences in how parenting influences children (e.g., Pezzella et al., 2016), the links between parenting stress, parenting, and youth outcomes may vary. Future research in this area should include different types of caregivers, clinical externalizing disorders (e.g., conduct disorder), and participants from diverse economic and cultural backgrounds.

Implications and Conclusions

Despite the limitations of this study, there are still important implications for mothers of 12- to 17-year-old adolescents. Parenting stress may be contributing to adolescent externalizing behaviors and clinicians should consider it when

thinking about the family system. It may be helpful for clinicians to assess parenting stress at intake and consider including interventions to decrease parenting stress (e.g., increasing social support for parents, links to programs that may help with family financial needs), even when the focus is on the children's externalizing behaviors. In addition, the use of parenting interventions targeting increasing parental acceptance and decreasing parental lax and psychological control may be helpful, especially when parents are stressed (e.g., Kazdin & Whitley, 2003). Future research could examine the effectiveness of such interventions in families that are reporting high levels of parenting stress.

In summary, the links between parenting stress, parenting behaviors, and externalizing problems were generally found among families with adolescents, similar to in families with young children. However, patterns of indirect associations varied by the type of adolescent externalizing problems considered. While parental acceptance was an explanatory mechanism for all three types of externalizing behaviors, psychological control and lax control did not help explain the associations between parenting stress and all three outcomes. Psychological control was not a mediator in models of proactive aggression and lax control was not a mediator in models of reactive aggression. This suggests examining parenting dimensions and adolescent externalizing problems separately allowed for specificity of the associations that may be useful in both future research and in clinical settings. Further exploring these associations during adolescence, including how parenting behaviors serve as mediators, is important for future research.

Compliance with Ethical Standards

Conflict of Interest The authors declare no competing interests.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee (Northern Illinois University's Institutional Review Board; HS17-0024) and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. This article does not contain any studies with animals performed by any of the authors.

Informed Consent Informed consent was obtained from all of the participants.

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