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# Organized Chaos: Daily Routines as a Potential Mechanism Linking Household Chaos and Child Behavior Problems

Kristy Larsen

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ORGANIZED CHAOS: DAILY ROUTINES AS A POTENTIAL  
MECHANISM LINKING HOUSEHOLD CHAOS AND  
CHILD BEHAVIOR PROBLEMS

by

Kristy L. Larsen

A Thesis  
Submitted to the Graduate School,  
the College of Education and Human Sciences  
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at The University of Southern Mississippi  
in Partial Fulfillment of the Requirements  
for the Degree of Master of Arts

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## ABSTRACT

Children living in chaotic households exhibit more externalizing behaviors. Child externalizing behavior, exhibited as early as the toddler and preschool years, is a risk factor for later maladjustment. Understanding the mechanisms linking household chaos to early externalizing behaviors is important since those mechanisms could be targeted as a point of intervention. The primary aim of this study was to examine daily routines as a potential mediator of the relation between household chaos and both child externalizing behavior and bedtime resistant behavior. A secondary aim was to examine different levels of routines (family routines, general daily child routines, and specific bedtime routines) in the models to determine which level is more salient in linking chaos to child behavior problems. Using Amazon's Mechanical Turk (Mturk), parents of a child age 2-5 completed questionnaires assessing household chaos, frequency of routines, and child behavior problems. Family routines and general child routines (independently) partially mediated the relationship between household chaos and child behavior problems. Bedtime routines partially mediated the relationship between household chaos and bedtime resistant behavior. Parallel mediation models revealed that the levels of routines were not significantly different from one another in predicting fewer behavior problems. Results from this study suggest that household chaos and routines are distinctive constructs and that routines are a mechanism linking household chaos to early child behavior problems. Further, results provide initial evidence that routines may be a reasonable focus for intervention among families living in chaotic households who have young children exhibiting behavior problems.

*Keywords:* household chaos, routines, child behavior problems, bedtime  
resistance

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## DEDICATION

I would like to dedicate this project to my family. I am forever appreciative of their unwavering love and support.

TABLE OF CONTENTS

ABSTRACT ..... ii

ACKNOWLEDGMENTS ..... iv

DEDICATION ..... v

LIST OF TABLES ..... viii

LIST OF ILLUSTRATIONS ..... ix

CHAPTER I INTRODUCTION..... 1

    Household Chaos ..... 3

    Routines ..... 11

        Family Routines ..... 12

        Child Routines ..... 15

        Bedtime Routines (Specific Child Routine) ..... 18

        Level of Routine and Child Outcome ..... 20

    Present Study ..... 21

CHAPTER II METHOD..... 24

    Participants..... 24

    Materials ..... 25

        Demographic form ..... 25

        Household chaos ..... 25

        Family routines ..... 26



Child routines.....	27
Bedtime routines.....	27
Externalizing behavior.....	28
Bedtime resistance.....	29
Procedure.....	29
CHAPTER III RESULTS.....	32
Preliminary Analyses.....	32
Primary Analyses.....	32
Simple mediation models.....	33
Parallel mediation models.....	35
Post-Hoc Analysis.....	37
CHAPTER IV DISCUSSION.....	38
Future Research.....	42
Limitations.....	45
Conclusion.....	46
APPENDIX A – TABLES & FIGURES.....	47
APPENDIX B – IRB Approval Letter.....	59
REFERENCES.....	60

## LIST OF TABLES

Table 1 Descriptive characteristics of caregivers .....	47
Table 2 Descriptive characteristics of target child.....	51
Table 3 Bivariate correlations and descriptive statistics for study variables .....	52
Table 4 Bivariate correlations between demographic variables and outcome variables ..	53

## LIST OF ILLUSTRATIONS

Figure 1. Simple mediation of household chaos on externalizing behavior through family routines.....	54
Figure 2. Simple mediation of household chaos on externalizing behavior through child routines.....	55
Figure 3. Simple mediation of household chaos on bedtime resistant behavior through bedtime routines.....	56
Figure 4. Parallel mediation model of household chaos on externalizing behavior through family routines and child routines.....	57
Figure 5. Parallel mediation model of household chaos on externalizing behavior through child routines and bedtime routines .....	58

## CHAPTER I INTRODUCTION

Current trends suggest that household chaos is on the rise both in the United States and more globally (Wachs & Evans, 2010). This is disconcerting because children raised in this type of home environment consistently display higher rates of externalizing behavior including anger-aggression, conduct problems, and disruptive behaviors in both home and school settings (Cavanagh & Huston, 2006; Deater-Deckard et al., 2009; Dumas et al., 2005). Given that externalizing behavior in early childhood is a risk factor for later negative outcomes (Liu, 2004), understanding what factors link chaotic households to child externalizing behavior is important. Those linking factors can be targeted as points of intervention in efforts to prevent or reduce child externalizing behavior.

The regular use of daily routines (whether it be family routines, general child routines, or a specific routine such as bedtime routines) has been correlated with lower rates of child externalizing behavior (Bater & Jordan, 2016; Keltner 1990; Koblinsky, Kuvalanka, & Randolph, 2006; Mindell, Li, Sadeh, Kwon, & Goh, 2015; Sytsma, Kelley, & Wymer, 2001). Indeed, several studies have mentioned that fewer daily routines should be a factor to consider in the relationship between chaos and child externalizing behavior (Coldwell, Pike & Dunn, 2006; Deater-Deckard et al., 2009; Dumas et al., 2005; Fiese & Winter, 2010). This suggests that perhaps daily routines are a mechanism through which household chaos relates to child externalizing behavior (Fiese & Winter, 2010). To date, however, no known studies have examined this possibility. If routines are found to serve as a mediator of this relationship, this is particularly promising since routines are viewed as a viable and economical intervention (Harris et al., 2014). The primary aim of this

study was to examine if routines (family, child, and bedtime) mediate the relationship between household chaos and child behavior problems (externalizing behavior and bedtime resistant behavior).

A secondary goal of this study was to examine several different levels of routines (family routines, general child routines, and a specific child routine at bedtime) simultaneously in our models. Meaning, we conceptualized routines as funneling from a broad to a narrow level: broad level family routines (several routines across the whole day for multiple family members, or the “family unit”), the more narrow general child routines (several routines with one specific child in the family), and then the even more narrow, bedtime routines (one specific routine with one specific child in the family). We theorized that the level of routine corresponding most closely to the level of child outcome of interest would be the stronger mediator in the relation between chaos and that outcome. For example, general daily child routines (unique to one child in a family) would more strongly mediate the relationship between chaos and that child’s externalizing behavior (a broad outcome) than family routines (involving multiple family members). As such, the primary aim of this study was to examine if daily routines mediate the relationship between household chaos and early child behavior problems. Secondly, different levels of routines were then compared to one another in hopes of determining which is a stronger mediator of chaos and both child externalizing behavior and bedtime resistant behavior in order to inform the level of routine best suited as the intervention of choice for that particular problem behavior.

## Household Chaos

Household chaos is operationalized as an environment with excessive crowding, instability, confusion, home traffic, ambient background noise, and a lack of temporal or physical structure, with some also specifying a lack of routine (Coldwell et al., 2006; Matheny et al., 1995; Wachs & Evans, 2010). Household chaos is an important construct to study because it is relatively stable across time ( $r = .7$  to  $.8$ ; Deater-Deckard et al., 2009) and is consistently linked with maladjustment (e.g., cognitive, behavioral, and social outcomes). Researchers have examined narrow-band indices such as residential crowding (Evans, Lepore, Shejwal, & Palsane, 1998), residential instability (Ziol-Guest & McKenna, 2014) and ambient noise (Evans, Hygge, & Bullinger, 1995) as proxies for chaos, as well as household chaos as a broad construct after the development of the CHAOS parent self-report measure (Matheny et al., 1995). Regardless of how household chaos has been operationalized across studies, research has consistently shown that chaos is linked with deleterious cognitive, behavioral, and social outcomes in children.

Some have argued that household chaos is merely a “proxy term” for low socioeconomic status (SES; Wachs & Evans, 2010). However, Wachs and Evans (2010) provide two main reasons why chaos and low SES are not identical constructs. First, although household chaos is more endemic in lower SES families (Evans et al., 2005), this is not a problem unique to that population. If household chaos was the same as low SES, a relation between household chaos and negative child outcomes would not exist in middle-class populations; however, chaos is also found in middle-class samples (Evans et al., 2005; Wachs & Evans, 2010). Second, if chaos were just a proxy for low SES, after statistically controlling for SES in analyses, the effect of chaos would become non-

significant; however, even after controlling for SES/income, studies consistently reveal that chaos has unique independent effects on child outcomes (Dumas et al., 2005; Evans et al., 2005; Shamama-tus-Sabah, Gilani, & Wachs, 2011; Wachs & Evans, 2010). Further, while household chaos and SES do covary with one another, the correlations tend to be rather small in magnitude (e.g.,  $r = -.24$ , Matheny et al., 1995;  $r = -.16$ , Supplee, Unikel, & Shaw, 2007; family income  $r = -.09$ , Dumas et al., 2005). If chaos and low SES were identical constructs, the correlations would be more robust.

It is also important to note that chaos is not synonymous with negative parenting practices. Household chaos has been associated with more harsh discipline (Dumas et al., 2005), less parental self-efficacy (Corapci & Wachs, 2002), less parental involvement (Wachs & Evans, 2010) and parental responsiveness (Vernon-Feagans, Willoughby, Garrett-Peters, & The Family Life Project Key Investigators, 2016; Wachs & Evans, 2010), as well as worse coparenting and less emotional availability (Whitesell, Teti, Crosby, & Kim, 2015). While true that household chaos is associated with more negative parenting practices, household chaos has been found to be predictive of child externalizing behavior over and above parenting practices (Coldwell et al., 2006). As such, this has led researchers to conclude that household chaos is a useful construct in and of itself and that chaos has an adverse impact on development over and above the effects of other related variables (Dumas et al., 2005; Wachs & Evans, 2010).

Individual dimensions of chaos such as residential instability, family instability, residential crowding, and chronic noise have been implicated in child behavioral maladjustment. Children who experienced more residential instability, meaning moved three or more times over their first five years of life, exhibited significantly more

attention and externalizing problems than children who had moved once or twice, or had never moved (Ziol-Guest & McKenna, 2014). Studies have also shown that for preschoolers, family instability (operationalized as a z-score aggregate of total number of moves, total number of intimate relationships of the primary caregiver, total number of families the child has lived with, total number of significant illnesses that have had a lasting impact over the first five years of life, and negative life events over the last six months) had a unique effect in predicting concurrent caregiver reports of externalizing behavior and teacher report of total problem behavior as measured by the Child Behavior Checklist (Ackerman, Kogos, Youngstrom, Schoff, & Izard, 1999). Similarly, children who experienced more family instability (quantified as the number of changes in parent's relationships with partners) exhibited more externalizing behavior, negative behavior with peers, and disruptive behavior with teachers (Cavanagh & Huston, 2006; Coley, Lynch & Kull, 2015). Residential crowding, assessed by dividing the number of people living in the home by the number of rooms, was associated with teacher report of behavioral and adjustment problems in a sample of 10 to 12-year-olds in India, even after accounting for household income (Evans et al., 1998). Further, Evans et al. (1998) found that the association between residential crowding and adjustment problems was mediated by child perception of parent-child conflict. Meaning, children who live in a more densely crowded home were more likely to report greater perceived parent-child conflict, and, in turn, those who report more conflict were more likely to have teachers report that they had more behavioral and adjustment issues (Evans et al., 1998). As a dimension related to chronic noise, having the television generally on at age 2 was related to reports of aggression and attentional problems at age 5 (Martin, Razza & Brooks-Gunn, 2012).



Although prior studies indicate relations between various dimensions of household chaos and child externalizing behavior, the current CHAOS measure omits certain dimensions such as excessive crowding, lack of physical order (clutter), and excessive noise. Thus, the present study also aimed to more comprehensively measure household chaos consistent with the broader operational definition of the construct.

Although much of the literature on household chaos has examined the effect of household chaos on cognitive outcomes (Hart, Petrill, Deater-Deckard, & Thompson, 2007; Petrill, Price, Pike, & Plomin, 2004; Vernon-Feagans, Garrett-Peters, Willoughby, Mills-Koonce, & The Family Life Project Key Investigators, 2012) there is a growing body of literature indicating that household chaos is a significant correlate and concurrent predictor of child externalizing behavior (Coldwell et al., 2006; Deater-Deckard et al., 2009; Dumas et al., 2005). For example, household chaos was associated with anger-aggression and attentional-focusing deficits in European American preschoolers (Dumas et al., 2005). With qualitatively different samples, caregiver reports of household chaos amongst African American children age 7 to 11 and a Pakistani sample of children age 8 to 11 were associated with externalizing behavior reported by both parents and teachers (Dumas et al., 2005; Shamama-tus-Sabah et al., 2011). Also, maternal report of household chaos was linked to concurrent adolescent self-report of psychological distress (a combination of internalizing and externalizing symptoms; Evans et al., 2005). Deater-Deckard et al. (2009) extended these findings by using multiple informants across all measures and statistically controlling for six family context variables: parental education/IQ, literacy environment, parental negativity and warmth, stressful life events, and poor housing, all of which are theorized to relate to child behavioral outcomes. Even

after accounting for these additional variables, more chaos in the household independently predicted more child conduct problems (Deater-Deckard et al., 2009). Thus, correlations between household chaos and externalizing behavior hold across different developmental stages including young childhood (Dumas et al., 2005; Supplee et al., 2007) middle childhood (Dumas et al., 2005; Hardaway, Wilson, Shaw, & Dishion, 2012; Shamama-tus-Sabah et al., 2011) and adolescence (Evans et al., 2005) in both minority and nonminority populations.

There is also some evidence of longitudinal links between earlier household chaos and later externalizing behavior. In a twin study, household chaos measured at age 3 predicted behavior problems at age 4 (Pike, Iervolino, Eley, Price & Plomin, 2006). With a high-risk sample of males, after controlling for SES and child ethnicity, chaos at age 3 predicted maternal report of externalizing behavior at age 4 and teacher report at age 5 (Supplee et al., 2007). Similarly, using a composite of maternal and paternal ratings of household chaos, Deater-Deckard et al. (2009) found that household chaos was predictive of children's conduct problems two years later. Further, household chaos at age 9 predicted both conduct problems and hyperactivity-inattention symptoms at age 12, even after accounting for behavioral symptoms at age 9 (Jaffee, Hanscombe, Haworth, Davis, & Plomin, 2012). These studies illustrate that earlier household chaos is linked to externalizing problems, even 2 to 3 years later. Thus, the literature suggests that chaos is consistently associated with young children exhibiting externalizing problems. A more comprehensive measure of household chaos that includes aspects of residential crowding and a lack of physical order (e.g., "clutter") may further strengthen these associations.

#### *Potential Mechanisms*

Besides establishing a link between household chaos and indices of child development, researchers are trying to understand how chaos relates to child externalizing behavior. What exactly is responsible for this link between chaos and child externalizing behavior? Does chaos have a direct impact on child behavior or is it linked indirectly through another variable?

Much of the early research on household chaos was specifically in relation to the effect of ambient noise on development (Wachs & Evans, 2010). This direct effect theory was predicated on the assumption that chronic noise caused children to habituate to auditory stimuli and subsequently filter out unwanted stimulation, even if that stimulation was developmentally advantageous (Coldwell et al., 2006; Wachs & Evans, 2010). However, this theory does not as easily explain how household chaos affects child behavior problems. Indeed, there is equivocal evidence as to whether household chaos has a direct effect on child externalizing problems, or rather, an indirect effect through parent or child-related variables (Hardaway et al., 2012; Mills-Koonce et al., 2016; Vernon-Feagans et al., 2016). In a main effects path analysis, chaos disorganization (a latent variable comprised of household density, how many hours each day the television was on, and observer ratings of household cleanliness, noise, and preparation for the home visit) uniquely predicted both child conduct problems and callous-unemotional behaviors (Mills-Koonce et al., 2016). Meanwhile, Vernon-Feagans et al. (2016) found that neither household disorganization nor household instability had a direct effect on teacher-rated behavior regulation. Similarly, a longitudinal study found that chaos at age 3 did not directly predict externalizing problems at age 5.5, but rather, had an indirect effect through child inhibitory control at age 4 (Hardaway et al. 2012). So, while there is

conflicting evidence regarding direct effects of chaos on child externalizing behavior, more methodologically rigorous studies offer support for an indirect effect.

Thus, more recent research has shifted towards examining indirect effects and complex models that explain how chaos relates to child externalizing behavior through caregiver-related variables such as parenting behavior. Based on household observations, Mills-Koonce et al. (2016) operationalized household chaos with two latent factors: household disorganization (described above) and household instability (number of people who have moved in or out of the household, number of people in the home, number of moves, and the number of changes in primary and secondary caregiver). Mills-Koonce et al. (2016) found that parents from more disorganized households (and in a separate model, more unstable households) also were observed to be less sensitive in a 10-minute coded parent-child interaction, and in turn, those who were observed to be less sensitive reported having children with more conduct problems and callous-unemotional behaviors. And similarly, parents from more disorganized households (and in a separate model, more unstable households) were observed to be using a more harsh-intrusive parenting style, and in turn, those with a more harsh-intrusive parenting style reported having children with more callous-unemotional behaviors, and in the unstable household model only, also more conduct problems (Mills-Koonce et al., 2016). While Vernon-Feagans et al. (2016) did not find direct effects of household chaos on teacher-rated behavior regulation as noted above, they did find that chaos disorganization was indirectly related to teacher-rated behavior regulation through parental responsiveness/acceptance. Meaning, parents from more disorganized households were less likely to be observed exhibiting responsiveness and acceptance towards their children,

which, in turn, was related to teacher reports of more dysregulated child behavior. These studies illustrate that chaos may engender challenging behavior in children by disrupting positive parenting practices or fostering aspects of negative parenting.

Other studies have examined child-specific variables such as self-regulation as a mechanism through which household chaos relates to early child externalizing behavior. In a cross-sectional design using multiple mediators, parents from more chaotic households were less likely to report using positive coping strategies (e.g., problem-solving, emotion-focused coping) when helping their child deal with negative emotions, which in turn was linked with that child having lower effortful control, and subsequently more externalizing behavior (Valiente, Lemery-Chalfant, & Reiser, 2007). Hardaway et al. (2012) corroborated Valiente et al.'s (2007) results in a longitudinal study with an at-risk sample: household chaos at age 3 was related to externalizing behavior at age 5.5 through inhibitory control (an element of self-regulation) at age 4 (Hardaway et al., 2012). These findings suggest that for very young children, household chaos hinders the development of self-regulatory skills over time, and poor self-regulatory skills are linked to more externalizing behavior. Although still correlational in nature, the longitudinal design of Hardaway et al.'s (2012) study is more suggestive of a temporal sequence in that earlier chaos is predictive of later poor self-regulation and even later externalizing behavior.

In sum, the literature consistently indicates that household chaos is related to concurrent and later child behavior problems in young children. Understanding the mechanism(s) linking chaos and child externalizing behavior in youngsters is crucial since previous literature has identified externalizing behavior as a risk factor for later

maladjustment such as juvenile delinquency, crime, and violence (Liu, 2004). If we can understand mechanisms through which household chaos relates to negative behavioral outcomes (i.e., mediators), those variables can subsequently be targeted as a point of intervention. To date, researchers have explored potential mechanisms that are uniquely parent-specific and uniquely child-specific that could account for this relationship. As noted above, aspects of parenting behavior have received some attention, and one construct related to caregiver behavior that has yet to be examined is the use of daily routines. Further, examining routines will be novel in that routines are neither exclusively parent nor exclusively child behavior, but rather a parent-child interaction (Jordan, 2003), and this sort of joint-variable has yet to be explored. Indeed, daily routines have been suggested as a potential mechanism accounting for the association between chaos and externalizing behavior, but this has not been subject to empirical testing (Fiese & Winter, 2010). From a practical stand point, routines are important to investigate because, as Fiese and Winter (2010) note, instituting routines in a chaotic household would be easier to address than broader systems level interventions (e.g., poverty).

### Routines

Parenting-related variables and family-interaction variables such as routines are theorized to be feasible, expedient, and cost-effective ways of altering a child's environment and, as a result, perhaps target behavior problems (Harris et al., 2014; Kliewer & Kung, 1998; Koblinsky et al., 2006; Lanza & Drabick, 2011). Routines are "patterned interactions" (Fiese et al., 2002) that may occur at the same time each day, with the same adult(s), in the same place, in the same sequence, or in any combination of these factors (Sytsma et al., 2001). Routines are thought to be beneficial because they

provide the opportunity for scaffolding, the socialization of appropriate behavior, and a space for children to practice developing skills (Spagnola & Fiese, 2007). There are general routines that pertain to the entire family unit (family routines), general routines that occur with a specific child (child routines), and specific routines that occur with a specific child (e.g., bedtime routines).

### *Family Routines*

Research on family routines was predicated on the theory that routines may protect family members' well-being and health in times of stress by offering stability and continuity (Boyce, Jensen, James & Peacock, 1983). As such, family routines were conceptualized as a form of "social support" and were operationalized as, "observable, repetitive behaviors which involve several family members and which occur with predictable regularity in the ongoing life of the family" (Boyce et al., 1983, p. 198). In light of the fact that routines were viewed as an important element to consider in the relation between stress and health, it stands to reason that routines were subsequently viewed as a potential buffer or protective factor against risk factors more broadly speaking (Boyce, et al., 1977; Kliwer & Kung, 1998; Markson & Fiese, 2000). Since then, other studies have suggested that routines may also function as a mechanism through which risk factors relate to negative outcomes (Brody & Flor, 1997).

Indeed, the research on family routines has moved beyond health-related issues and has considered how family routines relate to child behavioral outcomes. In a sample of African American preschoolers enrolled at Head Start, the use of family routines was linked to the preschoolers exhibiting more interest and participation in the classroom and more cooperative and compliant behavior as reported by teachers (Keltner, 1990).

Keltner (1990) suggested that the inherent structure and expectations of compliance innate in family routines translates well to adhering to the structure and rule-following behavior expected in the classroom. In a similar sample, the use of family routines was related to parent reports of prosocial skills and lower rates of externalizing behavior (Koblinsky et al., 2006). These studies suggest that the use of family routines is consistently associated with positive indices of adjustment in preschoolers.

Family routines have been found to serve as a moderator in several studies, buffering the deleterious effects of certain risk factors on child behavior problems. For example, in a sample of inner-city youth, children who reported lots of daily hassles (daily stressors) exhibited less externalizing behavior if they had more frequent family routines, but more externalizing behavior if they had less frequent family routines (Kliewer & Kung, 1998). For Latino adolescent females, more frequent family routines were protective against exhibiting externalizing behavior for those with high levels of cumulative risk (i.e., single-parent household, maternal psychological distress, perceived financial strain, and neighborhood problems; Loukas & Prelow, 2004). Furthermore, more frequent family routines, as reported by the child, tempered the link between children's hyperactive/impulsive symptoms and teacher report of symptoms of Oppositional Defiant Disorder (ODD; Lanza & Drabick, 2011). Thus, children from families with more frequent routines exhibited fewer ODD symptoms regardless of how many hyperactive/impulsive symptoms they exhibited. The researchers suggested that the use of routines creates home environments where there are fewer novel opportunities in which to engage in disruptive behavior, that households using routines allow for their children to more readily see the connection between behavior and consequence, and that



routines may help children develop coping strategies that may minimize ODD symptoms (Lanza & Drabick, 2011). In sum, these studies indicate that the use of family routines serves as a buffer against children exhibiting externalizing behavior in the face of potential risk factors.

Studies have also examined family routines as a mediator of various familial risk factors and child outcomes. In a sample of African-American single mothers of children ages 6 to 9 from the rural South, fewer financial resources predicted lower maternal self-esteem, lower maternal self-esteem predicted fewer family routines, which in turn predicted more child externalizing behavior through the child exhibiting fewer self-regulatory skills (Brody & Flor, 1997). In another sample of African-American single mothers, family routines mediated the relationship between maternal depressive symptoms and child externalizing behavior: mothers who were more depressed reported using fewer family routines, and fewer family routines were related to more child externalizing behavior (McLoyd, Toyokawa, & Kaplan, 2008). As such, these studies offer support for family routines as a mechanism through which risk factors such as low resources and maternal maladjustment are related to child behavioral problems.

To date, the literature suggests that the use of family routines is linked with indices of child behavioral adjustment. However, it has been argued that routines that pertain to the entire family unit (i.e., family routines) may be qualitatively different than routines that are specific to individual children (i.e., general child routines; Sytsma et al., 2001). Indeed, family routines and general child routines do seem to be distinct constructs in that family routines and general child routines are only moderately correlated ( $r = .54$ ; Sytsma et al., 2001). Since the use of family routines have been linked

to lower rates of externalizing behavior and higher rates of positive social behavior, child routines directly pertaining to an individual child may be even more salient in its relation to indices of that specific child's adjustment.

### *Child Routines*

While child routines are certainly related to family routines, researchers have suggested that routines of a specific child in the family may be a more specific predictor of that child's externalizing behavior than routines of the overall family (Jordan, 2003). In the literature, child routines have been defined as, "observable, repetitive behaviors which directly involve the child and at least one adult acting in an interactive or supervisory role, and which occur with predictable regularity in the daily and/or weekly life of the child" (Sytsma et al., 2001, p. 243). Since the best predictor of child compliance is previous compliance (William & Forehand, 1984), having children complete daily activities in a routine manner (e.g., regular time, place, and in the same sequence) may ensure that those behaviors are completed again at a later time (Sytsma et al., 2001).

Sytsma and colleagues (2001) posed a behavioral theory that explains how child routines foster child compliance. They suggested that child routines function as setting events for child compliance by providing consistent and predictable environmental cues for expected behavior and by fostering the development of rule-governed behavior. Parent directives, or "rules" can be thought of as "contingency-specifying stimuli" (Sytsma et al., 2001) that clearly delineate what behaviors are required to gain access to positive contingencies or avoid negative contingencies (Wittig, 2005). Thus, Wittig (2005) explained that the behaviors comprising routines are maintained by the

consequences (or contingencies accessed) at the completion of the routine. In fact, Stoppelbein, Biasini, Pennick, and Greening (2016) reasoned that externalizing behavior and routinized behavior are incompatible with one another since routines promote compliance and task completion, which are antithetical to externalizing behavior. Therefore, based on the theory of how child routines are thought to operate, the use of child routines should be particularly relevant in regard to fostering low rates of externalizing behavior.

Indeed, research shows that the use of child routines is correlated with indices of behavioral adjustment in typically developing youth. For example, the frequency of child routines is consistently inversely related to externalizing behavior in preschool and school-aged children (Bater & Jordan, 2016; Henderson & Jordan, 2010; Jordan, 2003; Jordan, Stary, & Barry, 2013; Sytsma et al., 2001; Wittig, 2005). Similarly, Henderson, Barry, Bader and Jordan (2011) found that diagnostic status impacted the relationship between frequency of routines and externalizing behaviors: for typically developing children, a high frequency of child routines was associated with lower rates of externalizing behavior and a low frequency of child routines was associated with significantly higher rates of externalizing behavior. Thus, typically developing children demonstrate the expected inverse relationship between routines and externalizing behavior.

Child routines have repeatedly been found to serve as a mediating variable in both simple and complex models in community samples. Child routines mediated the relationship between maternal distress and externalizing behavior: mothers who were more distressed reported using fewer daily child routines, and in turn, the use of fewer

daily child routines was related to higher rates of externalizing behavior (Jordan et al., 2013; Sytsma-Jordan, Roberts, & Kelley, 2003). Also, more specifically, child routines mediated the relationship between maternal negative parenting practices and child externalizing behavior (Jordan et al., 2013) and this finding also held true in a sample of exclusively father informants (Bater, Stary, Jordan, & Gryczkowski, 2015). Mothers (and fathers) who endorsed using more negative parenting practices reported using fewer daily routines, and using fewer daily routines was linked with more externalizing behavior. Jordan et al. (2013) synthesized several of these findings revealing a serial mediation such that greater maternal distress was related to more child externalizing behavior through more negative parenting practices and then fewer child routines. In another serial mediation model using a preschool sample, Bater and Jordan (2016) found that mothers who reported using more negative parenting practices reported using fewer daily child routines, fewer daily routines were linked to less self-regulatory skills, and in turn, less self-regulatory skills were linked to more externalizing behavior. In the same study, those who reported using more positive parenting practices reported using more daily child routines, which were further linked to more self-regulatory skills, followed by fewer externalizing symptoms (Bater & Jordan, 2016). Importantly, it was through fostering self-regulatory skills that the use of child routines in preschoolers was linked to less externalizing behavior (Bater & Jordan, 2016). The researchers further argued that this was because the structure and predictability in routines provide young children with the opportunity to know what to expect, and as such, regulate their behaviors in accordance with those expectations (Bater & Jordan, 2016). Thus, these studies collectively suggest that child routines in preschool and elementary-aged samples function as a mechanism

through which maternal maladjustment and parenting practices relate to child externalizing behavior.

Although the use of typical child routines has been an understudied area (Sytsma et al., 2001), there is now a growing body of literature suggesting that the use of general child routines is linked to behavioral adjustment. However, even less is known about the use of specific routines (e.g., mealtime routines, bedtime routines) and how that relates to child outcomes. Of the specific routines, bedtime routines have generated the most empirical literature.

#### *Bedtime Routines (Specific Child Routine)*

Bedtime resistant behavior (e.g., tantrums, stalling, protesting, crying, clinging, refusing to get in bed, getting out of bed several times, and numerous requests for snacks, drink, or another story) is a common behavioral issue in early childhood (Mindell, Kuhn, Lewis, Metzler & Sadeh, 2006; Ortiz & McCormick, 2007). Prevalence rates estimate approximately 20 to 30% of young children exhibit some form of problematic bedtime behavior (Mindell et al., 2006). Bedtime resistance leads to later sleep onset and shorter sleep durations for children, which in turn are linked to irritability, temper tantrums, and daytime behavior problems (Lavigne et al., 1999; Meltzer, 2010; Ortiz & McCormick, 2007). Bedtime routines are thought to be a promising behavioral intervention for bedtime resistance (Adams & Rickert, 1989; Meltzer, 2010; Milan, Mitchell, Berger, & Pierson, 1981; Mindell et al., 2006; Mindell et al., 2015) in that they teach children acceptable “pre-bedtime behavior” and “sleep onset skills” (Kuhn & Weidinger, 2000). In the literature, bedtime routines have been defined as, “a set of observable, repetitive behaviors, which directly involve the child and at least one adult acting in an interactive

or supervisory role in a consistent environment, and which occur with predictable regularity in the hour preceding bed each night” (Henderson & Jordan, 2010, p. 272).

Bedtime routines were first empirically tested as an alternative to extinction procedures for treating bedtime resistance (Milan et al., 1981). In their study of three severely handicapped children, the use of bedtime routines was associated with cooperative behavior at bedtime and practically eliminated in-bed resistant behavior (i.e., screaming and crying from bed). These improvements held at the one and two year follow up (Milan et al., 1981). Extending these findings, Adams and Rickert (1989) compared the effectiveness of routines, graduated extinction, and a control condition for dealing with aversive bedtime behaviors. Children in the positive routines and graduated extinction conditions both exhibited a decrease in the frequency and duration of bedtime tantrums, but the decrease was more rapid for those in the positive routines condition (Adams & Rickert, 1989).

Given these promising early results, researchers have continued to investigate the use of bedtime routines to deal with bedtime problem behavior. Following a bedtime routines intervention, mothers of both infants and toddlers reported that they perceived sleep to be less of a problem and thought bedtime was less difficult (Mindell, Telofski, Wiegand, & Kurtz, 2009). Mothers of toddlers also reported a reduction in the number of times the toddler called out and the number of times the toddler was climbing out of the crib. This led the researchers to conclude that the implementation of a bedtime routine has multifaceted benefits across several domains related to bedtime resistance (Mindell et al., 2009). In a multinational sample, Mindell et al. (2015) found a dose-dependent relationship between the use of bedtime routines and behavior problems. The younger the

child was when the parent implemented a bedtime routine and the more consistently that bedtime routine was implemented (e.g., more days per week), the better the sleep and behavioral outcomes for that child (Mindell et al., 2015). These studies indicate that the use of consistent bedtime routines is associated with better bedtime behavior in infancy and early childhood.

To date, only a few studies have examined how household chaos relates to child behavior problems at bedtime. Boles et al. (2017) found that preschoolers from chaotic households were more likely to exhibit bedtime resistance and total sleep problems. Further, household chaos mediated the relationship between the child's behavioral/emotional functioning and bedtime resistant behavior (Boles et al., 2017). Another study revealed that household disorganization (as related to household chaos) was related to parental report of sleep problems in a sample of preschool-aged children (Gregory, Eley, O'Connor, Rijdsdijk, & Plomin, 2005). Indeed, they hypothesized that household disorganization may be related to poor sleep hygiene such as too much noise, light, and temperature abnormalities that may make sleep difficult (Gregory et al., 2005). However, potential mechanisms underlying the relationship between chaos and bedtime resistant behavior remain unexamined.

#### *Level of Routine and Child Outcome*

A secondary aim of this study was to examine different levels of routines (i.e., general daily routines of the whole family, general routines of the individual child throughout the day, and bedtime routines [one specific routine of the individual child]), and to consider their potential utility for addressing different child behavior problems for those living in chaotic households. This study may help inform the appropriate level of

routine best suited for addressing a particular level of child behavior (i.e., broad externalizing behavior vs. narrow bedtime resistant behavior). For example, to help with bedtime resistance, is it more useful for parents to use routines throughout the day with their preschool-aged child (child routines) or a specific routine right before bedtime (bedtime routines)? In short, we hope to inform which levels of routines may be best suited to address different levels of problems (i.e., broad vs. narrow) in a preschool-aged sample.

This theory is rooted in previous findings suggesting that different levels of routines differentially correlate with outcomes of interest across studies. For example, general child routines more strongly correlated with child externalizing behavior ( $r = -.35$ ) than family routines did ( $r = -.18$ ; Sytsma et al., 2001). Similarly, general child routines significantly correlated with child externalizing behavior ( $r = -.36$ ), whereas bedtime routines did not significantly correlate ( $r = -.07$ ; Henderson & Jordan, 2010). And, bedtime routines more strongly correlated with sleep quality than did general child routines (Henderson et al., 2011; Henderson & Jordan, 2010). Thus, there is a pattern suggesting that the level of routine (family, general child, and bedtime) may more strongly map on to outcomes at their equivalent level.

#### Present Study

As noted earlier, household chaos is consistently linked to indicators of externalizing behavior such as conduct problems and oppositional behavior, and routines are consistently inversely related with those same indicators. Several researchers have suggested that routines may be a mechanism linking chaos to child outcomes, but this has not been empirically tested. As a corollary of Sytsma et al.'s (2001) behavioral theory,



they argued that stimulus cues occur at random in chaotic households, which may preclude children from discriminating proper response times and feed into their unpredictable behavior commonly found in chaotic households. Thus, the use of routines would foster some predictable stimulus cues, even in a household marred by clutter, crowding, excessive noise, and high rates of home traffic (i.e., chaotic). So, if in a chaotic household parents can establish routines (family, general child, bedtime), perhaps children will exhibit lower rates of externalizing behavior; however, these projected mediations need to be examined empirically.

Secondarily, we also were curious if different levels of routines are more salient in linking chaos and externalizing behavior in preschoolers. To address this limitation in the literature, models uniquely assessing the mediating effects of each level of routines separately, and then simultaneously were conducted to more clearly understand the dynamics at play. It was hypothesized that chaos will inversely relate to routines (family, general child, and bedtime) and positively relate to externalizing behavior and bedtime resistance. We also hypothesized negative correlations between routines (family, general child, and bedtime) and externalizing behavior and bedtime resistance. We expect simple indirect effects of household chaos on externalizing behavior in preschool-aged children through family routines and (in a separate model) through general child routines. We also hypothesize an indirect effect of household chaos on bedtime resistant behavior through specific bedtime routines. In addition, we expect that the level of routine that corresponds most closely to the level of child outcome will result in the strongest indirect effects. Therefore, in parallel mediation models, the indirect effect of household chaos on externalizing behavior through general child routines (accounting for family routines)

will be stronger than the indirect effect through family routines (accounting for child routines). Similarly, the indirect effect of household chaos on bedtime resistance through specific bedtime routines (accounting for child routines) will be stronger than the indirect effect through general child routines (accounting for bedtime routines).

## CHAPTER II METHOD

### Participants

The sample consisted of 120 caregivers of preschool-aged children. This sample size was based on power estimates by Fritz and McKinnon (2007) indicating that a sample size of 116 has sufficient power ( $\beta = 0.8$ ) to detect a mediating effect for a model with a projected medium  $\alpha$  path ( $M = .39$ ) and a medium-small projected  $\beta$  path ( $H = .26$ ). Participants were required to be a primary caregiver of a child between the ages of 2 and 5, be a resident of the United States, and be able to read and write in English because all measures were written in English. The child could not be diagnosed with an autism spectrum disorder or a global developmental delay. There were no other exclusionary criteria.

The caregiver sample was 42.5% male and 57.5% female, and the vast majority of caregivers ( $n = 118$ ; 98.3%) reported being the child's biological parent with the others being adoptive parents. Thus, fathers were well represented in this sample. The majority of participants were married (70.8%) and only 11.7% were single (never married). The median family income was reported to be \$50,000-\$74,000. This sample was rather highly educated in that 53.3% of female and 36.7% of male caregivers had at least a college degree. See Table 1 for comprehensive descriptive information regarding respondents and their households.

The children that were reported on by their caregivers for this study were fairly evenly split between male (51.7%) and female (48.3%), but predominantly were reported to be White (80.0%) and not Hispanic or Latino (89.2%). Only 8.3% were identified as Black, although an additional 10.8% were multiracial. Although children were allowed to

be between the ages of 2 and 5, the average age reported was 3.43 (SD = 1.00). See Table 2 for descriptive statistics about the target child.

## Materials

### *Demographic form*

Participants completed a demographic questionnaire to obtain descriptive information about the sample (see Appendix C). This questionnaire asked descriptive questions about the child and caregiver such as the child's age, sex, and race/ethnicity, as well as the caregiver's marital status, age, race/ethnicity, highest level of education, employment status, and family income. No demographic variables were significantly correlated with the outcome variables, externalizing behavior or bedtime resistant behavior, and as such were not used as covariates in the models.

### *Household chaos*

The Confusion, Hubbub, and Order Scale is a 15-item parent-report measure of household chaos (*CHAOS*; Matheny et al., 1995). Participants rated on a 4-point scale how much each statement describes their home environment from 1 (*very much like your own home*) to 4 (*not at all like your own home*). Sample items include, "It's a real zoo in our home" [reverse scored] and "The atmosphere in our home is calm." The authors reported that the measure demonstrated adequate internal consistency ( $\alpha = .79$ ) and test-retest reliability ( $r = .74$ ; Matheny et al., 1995). This measure has been validated with qualitative observations of home environments and with various sociodemographic populations (Dumas et al., 2005; Matheny et al., 1995; Shamama-tus-Sabah et al., 2011).

Due to discrepancies between the conceptual definition of household chaos (Coldwell et al., 2006; Matheny et al., 1995; Wachs & Evans, 2010) and the questions

delineated on the CHAOS measure (Matheny et al., 1995), 11 additional questions were generated to tap the breadth of the construct (see Appendix D for the additional items). Based on the results from a principal components analysis of all 26 items and evaluation of the communalities, screen plot, component loadings, and corrected-item total correlations, 25 questions were retained with a unitary factor solution. The question that was dropped was question 15 from the original measure created by Matheny et al. (1995): “First thing in the day, we have a regular routine at home.” This item was dropped not only due to statistical reasons (i.e., low corrected-item total correlation and a low communality), but also theoretical and conceptual reasons (i.e., household chaos is theorized to be an independent construct from routines). Fifteen items were reverse scored such that higher scores indicated more chaos (e.g., more disorganization, confusion, and noise) and the average of the 25 items was used as the measure of household chaos in this study. Internal consistency for the 25-item version of the CHAOS measure was  $\alpha = .95$ . Household chaos was the predictor variable in this study.

### *Family routines*

The Family Routines Inventory (*FRI*; Jensen, James, Boyce, & Hartnett, 1983) is a 28-item parent report measure of the extent and importance of routinization within a family unit. This measure has a Frequency subscale and Importance subscale. The Frequency subscale is rated on a 4-point scale ranging from 0 (*almost never*) to 4 (*almost everyday*). Sample items include, “Whole family eats dinner together almost every night” and “Family has certain things they almost always do to greet the working parent at the end of each day.” This measure has demonstrated adequate internal consistency ( $\alpha = .67 - .78$ ; Brody & Flor, 1997; Kliewer & Kung 1998) and test-retest reliability ( $r = .79$ ;

Jensen et al., 1983). In this study, internal consistency was  $\alpha = .88$ . The FRI also demonstrated construct validity by correlating in expected directions with the family cohesion, organization, and control subscales of the Family Environment Scale (*FES*; Moos & Moos, 1981). For this study, the average of the Frequency subscale was used as a measure of family routines, with higher scores indicating a higher frequency of family routines. Family routines was tested as a mediator in this study.

### *Child routines*

The Child Routines Questionnaire-Preschool Version (*CRQ-P*; Wittig, 2005) is a 35-item parent report measure of frequency of daily routines of children ages 1 to 5. Items are rated on a 5-point scale ranging from 0 (*never*) to 4 (*nearly always*) regarding how often the routine occurs “about the same time or in the same way” within the past month. The average of all 35 items was computed to obtain an average Total Frequency scale, which was used as a measure of child routines. Higher scores indicate a greater frequency of routines. Sample items include, “My child has a routine for getting ready in the morning” and “Eats a snack at the same time each day.” The Total Frequency scale for this measure has demonstrated excellent internal consistency ( $\alpha = .89$ ) and test-retest reliability ( $r = .74$ ) as well as construct validity, by correlating in expected directions with measures of family routines, parenting practices, and child behavior problems (Wittig, 2005). With this sample, internal consistency was  $\alpha = .94$ . Child routines was tested as a mediator in this study.

### *Bedtime routines*

The Bedtime Routines Questionnaire (*BRQ*; Henderson & Jordan, 2010) is a 31-item parent report measure of children’s bedtime routines for children ages 2-8. This

measure has three scales: Consistency (routine behavior and routine environment), Reactivity (response to change in routines), and Activities (adaptive or maladaptive activities engaged in before bedtime). The Consistency scale was used as a measure of bedtime routines in this study. The Consistency scale has 10 items and is rated on a 5-point scale ranging from 1 (*almost never*) to 5 (*nearly always*). The items were averaged with greater scores indicating a greater consistency in bedtime routines. Sample items include, “Performs the same activities in the hour before going to bed” and “Sleeps in the same place.” The BRQ has demonstrated good internal consistency ( $\alpha = .88$ ) and in this study was found to be  $\alpha = .91$ . This measure also demonstrated construct validity by correlating in expected directions with child routines, sleep hygiene, and sleep quality (Henderson & Jordan, 2010). Bedtime routines was also tested as a mediator in this study.

### *Externalizing behavior*

The Eyberg Child Behavior Inventory (*ECBI*; Eyberg & Robinson, 1983) is a 36-item parent report measure of externalizing behavior for children ages 2-16. This measure has two subscales: a Problem Scale and an Intensity Scale. The Intensity Scale indicates how often this behavior occurs rated on a scale of 1 (*never*) to 7 (*always*). Sample items include “Acts defiant when told to do something” and “Destroys toys and other objects.” An average of the raw scores on the Intensity Scale was used as a measure of externalizing behavior with higher scores indicating more frequent problem behaviors. The ECBI has demonstrated high internal consistency ( $\alpha = .98$ ) and test-retest reliability ( $r = .86$ ) as well as strong concurrent validity (e.g., Child Behavior Checklist; Boggs, Eyberg, & Reynolds, 1990; Eyberg & Robinson, 1983; Eyberg & Ross, 1978). In this study, internal

consistency was  $\alpha = .95$ . Externalizing behavior was examined as an outcome variable in this study.

### *Bedtime resistance*

The Going to Bed Subscale of the Children's Sleep-Wake Scale (CSWS; LeBourgeois & Harsh, 2016) was used as a measure of bedtime resistance. This is a parent-report measure valid for children ages 2 to 8. The Going to Bed Subscale is comprised of 5 questions rated on a 6-point scale ranging from 1 (*never*) to 6 (*always*). Sample items include, "Your child puts off or delays going to bed" and "Your child makes repeated requests (asks for another drink, hug, etc.) at bedtime." Two items were reverse scored such that higher scores indicate more bedtime resistant behavior. The 5 items were then averaged. Other researchers have used this subscale as an index for bedtime resistant behavior and found good internal consistency ( $\alpha = .88$ ; Wilson, et al., 2015) and in this study was  $\alpha = .83$ . Bedtime resistance was examined as an outcome variable.

### Procedure

Participants were recruited through Amazon's Mechanical Turk (Mturk) data collection website: <https://www.mturk.com/mturk/welcome>. We selected Mturk because it is a cost-effective and efficient data collection platform likely to obtain a geographically broad and diverse sample. Research has suggested that data collected on Mturk is of high quality and is at least as reliable as data collected through more traditional methods (Buhrmester, Kwang & Gosling, 2011). Most importantly for this study, Mturk has been used to collect parent-report data to assess clinically-relevant questions and was found to produce high-quality data, obtain greater participation from



fathers, and parallel findings in the literature (Schleider & Weisz, 2015). Amazon's qualification filters of "parenthood status" and "United States resident" were used to filter specifically for parents from the United States.

Participants interested in participating in the study were presented with a consent form about the study (see Appendix B). If parents had more than one child in this age range, they were asked to select one child at random and answer all the questionnaires specifically in relation to that child. If after reading the consent form participants wanted to continue with the study, they checked a box at the bottom of the page indicating their consent. Participants completed screening questions to confirm eligibility for the study. Participants then completed a demographic questionnaire, the CHAOS, FRI, CRQ-P, BRQ, ECBI, and GTB measures, along with some other measures of parenting practices and parenting stress, which were part of a larger data collection. In accordance with recommendations for survey data internet-based studies, quality assurance checks were explicitly stated in the consent form and implemented (Meade & Craig, 2011). For example, 3 directed items were randomly embedded within questionnaires such as, "For this item, select somewhat like your own home." Participants who failed at least 2 of the 3 quality assurance checks did not receive compensation.

Thus, 164 participants provided informed consent and were enrolled in the study. Thirty-five participants failed the screener questions verifying eligibility for the study (i.e., 8 participants did not have a child between the ages of 2 and 5, 26 participants indicated that they had a child diagnosed with an Autism Spectrum Disorder, and 1 participant indicated that his/her child had an intellectual disability or a global developmental delay). Nine participants failed at least two of the three quality assurance

checks, leaving a final sample of 120 participants (i.e., primary caregivers of a preschool-aged child) with valid data. The questionnaires took about 20 to 30 minutes and participants were compensated \$2.40 after a good-faith effort to complete the study.

## CHAPTER III RESULTS

### Preliminary Analyses

The data were screened for invalid and missing data. Approximately 1.27% of the data for the testing variables was determined to be missing. Participants who answered less than 80% of the items on a given questionnaire were excluded from analyses involving that questionnaire (e.g., a sample of 113 was used for analyses involving the ECBI due to 7 participants answering less than 80% of the questionnaire). No data were missing on the CHAOS, FRI, and GTB measures. One participant skipped one question on the CRQ-P, and several participants omitted questions on the ECBI Intensity subscale (e.g., 15 participants skipped 1 question, 3 participants skipped 2 questions, 3 participants skipped 3 questions, 1 participant skipped 4 questions, 2 participants skipped 5 questions, 1 participant skipped 6 questions). The PROCESS macro does not “integrate” with multiple imputation routines included in SPSS (Hayes, n.d.); therefore, missing data on the ECBI and CRQ-P was imputed using linear trend at point. Composites for the variables of interest were computed by first creating a sum (taking into account reverse scored items) and then obtaining an average. Higher scores indicate more of that construct (e.g., more chaos, more routines, more bedtime resistant behavior).

### Primary Analyses

Descriptive information for the primary variables of interest and the correlations amongst them can be seen in Table 3. Of note, two demographic variables, race and marital status, were converted into dichotomous variables (i.e., White = 1, Non-White = 2; Not Married or Living as Married = 1, Married or Living as Married = 2). Race was dichotomized for statistical analyses due to limited representation among the other racial groups (e.g.,

Multi-Racial = 10.8%, Black or African American = 8.3%, and American Indian/Alaska Native = 0.8%). Marital status was dichotomized to differentiate between single parenting and coparenting, respectively. Bivariate correlations revealed that no demographic variables were significantly correlated with either outcome variables (i.e., externalizing behavior or bedtime resistant behavior) and, as such, were not used as covariates in the subsequent models (see Table 4).

As hypothesized, correlations were in the expected directions. Household chaos was positively correlated with externalizing behavior and bedtime resistance, and negatively correlated with family routines, child routines, and bedtime routines. Similarly, each routines measure was positively correlated with one another and all negatively correlated with externalizing behavior and bedtime resistant behavior. The magnitude of the zero-order correlation between child routines and externalizing problems ( $r = -.39$ ) was similar to those found in other studies (e.g.,  $r = -.29$ , Bater & Jordan, 2016;  $r = -.35$ , Sytsma et al., 2001). The magnitude of the correlation between the levels of routines (family routines and child routines  $r = .71$ ) was similar to a previous study which examined child routines in a preschool sample ( $r = .61$ , Wittig, 2005), but was stronger than the magnitude when measured in an elementary-aged sample ( $r = .54$  family routines and child routines, Sytsma et al., 2001;  $r = .44$  child routines and bedtime routines, Henderson & Jordan, 2010).

#### *Simple mediation models*

The first three hypotheses were tested using ordinary least squares regression in PROCESS (Model 4) with SPSS (v. 24). Five-thousand bootstrap samples were used to estimate 95% bias-corrected confidence intervals to test the significance of direct,

indirect, and total effects for the three simple mediation models (Hayes, 2013). Confidence intervals non-inclusive of zero suggest significant indirect effects. As predicted with the first model, there was a significant indirect effect of household chaos on externalizing behaviors through family routines ( $B = .09, SE = .05, CI [.01, .23]$ ). As shown in Figure 1, parents who reported having more chaotic households reported using fewer family routines, and in turn, reported more externalizing behaviors. The total effect of household chaos on externalizing problems ( $B = .70, SE = .13, p < .001$ ) and the direct effect ( $B = .62, SE = .14, p < .001$ ) were both significant.

The second model examined if there was a significant indirect effect of household chaos on externalizing behaviors through child routines. As hypothesized, there was a significant indirect effect of household chaos on externalizing behaviors through child routines ( $B = .15, SE = .06, CI [.05, .31]$ ). As shown in Figure 2, parents who reported more household chaos reported using fewer daily child routines, and in turn, also reported more externalizing behaviors. Similar to the model evaluating family routines, the total effect of household chaos on externalizing behaviors ( $B = .70, SE = .13, p < .001$ ) and the direct effect were significant ( $B = .55, SE = .14, p < .001$ ).

The third model examined if there was a significant indirect effect of household chaos on bedtime resistant behavior through bedtime routines. As predicted, the indirect effect was significant ( $B = .12, SE = .06, CI [.03, .26]$ ). As modeled in Figure 3, parents who reported having more household chaos reported using fewer bedtime routines, and in turn, reported that their child exhibited more bedtime resistant behavior. The total effect of household chaos on bedtime resistant behavior ( $B = .60, SE = .13, p < .001$ ) and the direct effect remained significant ( $B = .49, SE = .14, p < .001$ ).

### *Parallel mediation models*

To test the two parallel mediation models, PROCESS (Model 4) with 5,000 bootstrap samples was also used to estimate 95% bias-corrected confidence intervals. The total indirect effect assessed if the two mediators collectively (i.e., both together) mediated the effect of household chaos on child behavior problems. Then, specific indirect effects were used to examine the indirect effect of one mediator after controlling for the other mediator in the model. Paired contrasts were used to determine if one indirect effect was significantly different from the other. As with the simple mediation models, confidence intervals non-inclusive of zero suggest significant indirect effects. For the first parallel mediation model (see Figure 4), the total indirect effect of household chaos on externalizing behavior through both family routines and general child routines simultaneously was significant ( $B = .15$ ,  $SE = .07$ ,  $CI [.04, .30]$ ). This suggests that family routines and general child routines collectively (i.e. both together) mediate the relationship between household chaos and externalizing behaviors. However, contrary to hypotheses, each specific indirect effect was not significant. The indirect effect of household chaos on externalizing behaviors through family routines (after controlling for general child routines) was not significant ( $B = .04$ ,  $SE = .07$ ,  $CI [-.06, .21]$ ). Parents who reported more household chaos reported using fewer family routines, but fewer family routines (after controlling for general child routines) was not linked to more externalizing behaviors. Furthermore, the indirect effect of household chaos on externalizing behaviors through general child routines (after controlling for family routines) was also not significant ( $B = .11$ ,  $SE = .09$ ,  $CI [-.04, .34]$ ). Those who reported more household chaos reported using fewer general child routines, but fewer child routines (after taking into

account family routines) was not associated with more externalizing behaviors. The pairwise comparison indicated that the indirect effects were not significantly different from one another ( $B = -.07$ ,  $SE = .15$ ,  $CI [-.39, .20]$ ). Meaning, neither family routines (nor general child routines) account for significantly more of the effect of household chaos on child externalizing behaviors than the other. The total effect of household chaos on child externalizing behaviors was significant ( $B = .70$ ,  $SE = .13$ ,  $p < .001$ ) and the direct effect when considering both family routines and general child routines in the model also remained significant ( $B = .56$ ,  $SE = .14$ ,  $p < .001$ ). Thus, contrary to hypotheses, the indirect effect of household chaos on externalizing problems through child routines (given the proximal level) was not stronger than the indirect effect through family routines (the distal level).

For the second parallel mediation model, the total indirect effect of household chaos on bedtime resistant behavior through both general child routines and bedtime routines simultaneously was significant ( $B = .14$ ,  $SE = .07$ ,  $CI [.04, .30]$ ). Contrary to hypotheses, each specific indirect effect was not significant after taking into account the other type of routine. The indirect effect of household chaos on bedtime resistant behavior through general child routines (after taking into account bedtime routines) was not significant ( $B = .05$ ,  $SE = .06$ ,  $CI [-.07, .18]$ ). Parents who reported more household chaos reported using fewer general child routines, but fewer general child routines (after taking into account bedtime routines) was not linked to more bedtime resistant behavior. Similarly, the indirect effect of household chaos on bedtime resistant behavior through bedtime routines (after taking into account child routines) was not significant ( $B = .09$ ,  $SE = .06$ ,  $CI [-.02, .23]$ ). Parents who reported more household chaos reported using

fewer bedtime routines, but fewer bedtime routines (after taking into account child routines) was not linked to more bedtime resistant behavior. The paired contrast indicated that the two specific indirect effects were not significantly different from one another ( $B = -.05$ ,  $SE = .10$ ,  $CI [-.28, .14]$ ). This indicates that neither bedtime routines (nor general child routines) account for more of the effect of household chaos on bedtime resistant behavior than the other. The total effect of household chaos on bedtime resistant behavior ( $B = .61$ ,  $SE = .13$ ,  $p < .001$ ) and the direct effect ( $B = .47$ ,  $SE = .14$ ,  $p = .001$ ) both were significant. Thus, in contrast to our hypotheses, the indirect effect of household chaos on bedtime resistant behavior through bedtime routines (given its proximal level) was not stronger than the indirect effect through child routines (given its distal level).

#### Post-Hoc Analysis

To better understand levels of household chaos in the present sample relative to that of prior literature, an average of all 15 original CHAOS items was calculated ( $M = 1.95$ ,  $SD = .60$ ). Results suggest that there were lower levels of household chaos in this sample relative to other studies that have examined household chaos, [e.g.,  $M = 2.43$ , Coldwell et al., 2006; and  $M = 2.36$ , Deater-Deckard et al., 2009; respectively].



## CHAPTER IV DISCUSSION

The literature consistently indicates that children from chaotic households exhibit more behavior problems, which holds true in samples ranging from young children to adolescents (Boles et al., 2017; Deater-Deckard et al., 2009; Dumas et al., 2005; Evans et al., 2005). Understanding the mechanism that accounts for the link between household chaos and child behavior problems is important because earlier externalizing behaviors are linked to negative adult outcomes (Liu, 2004). Despite multiple scholars suggesting that routines should be considered in understanding the relationship between household chaos and child behavior problems (Coldwell et al., 2006; Deater-Deckard et al., 2009; Dumas et al., 2005; Fiese & Winter, 2010), to our knowledge this has not been examined empirically until the current study.

In accordance with previous findings, household chaos was positively correlated with more externalizing behaviors and bedtime resistant behaviors (Boles et al., 2017; Dumas et al., 2005). Similarly, more frequent family routines and general child routines were linked with fewer externalizing behaviors (Bater & Jordan, 2016; Sytsma et al., 2001; Wittig, 2005), and more frequent bedtime routines were associated with less bedtime resistant behavior (Henderson & Jordan, 2010). Extending the literature, this study indicates that family routines (and general child routines) independently partially mediated the relationship between household chaos and child externalizing behavior. Bedtime routines also partially mediated the relationship between household chaos and bedtime resistant behavior. Meaning, family routines (and general child routines) are mechanisms through which household chaos is related to externalizing behavior. And, bedtime routines are a mechanism through which household chaos is linked to bedtime

resistant behavior. In short, household chaos leads to less frequent routines, and in turn, less frequent routines are linked to more behavior problems in preschool-aged children. As Fiese and Winter (2010) argued, routines are a mediator linking household chaos and child behavior problems. Collectively, these results suggest that routines may be a viable intervention for preschool-aged children being raised in a chaotic household to prevent the development of concurrent or future externalizing behaviors (Fiese & Winter, 2010).

One of this study's secondary aims was to examine how the levels of routines operate differently in relation to certain outcomes. In alignment with hypotheses, the magnitude of the correlation was strongest for the level of routine that was most proximal with the level of child behavior problems (e.g., bedtime routines was the level of routine that had the strongest correlation with bedtime resistant behavior). However, when subject to statistical testing to determine if one level of routine was a stronger mediator than the other, neither path was significantly stronger than the other. Thus, contrary to hypotheses, there was not a statistically significant difference between the levels of routines in predicting fewer child behavior problems. This is likely attributable to the significant overlap in variance between family routines and child routines ( $r = .71$ ) and overlap between child routines and bedtime routines ( $r = .60$ ) among preschool-aged children. There likely was not enough unique variance for one level of routine (e.g., family routines) in linking household chaos to child behavior problems after taking into account the other level of routine (e.g., child routines). However, given that in both parallel models the two levels of routines collectively (i.e., both together) mediated the relationship between chaos and child behavior problems, this provides further evidence

that routines, broadly speaking, are a mechanism through which household chaos is linked with child behavior problems.

Family routines, child routines, and bedtime routines were highly correlated with one another in this population. Children with bedtime routines were likely to have other routines in general across their day, and to live in a family that has routines. This may be a byproduct of the age of the sample (i.e., two to five year olds). For preschool-aged children, parents are likely to be highly involved across the child's day due to the child needing parental assistance to complete daily living and self-care tasks (i.e., bathing, dressing) as well as higher levels of supervision to maintain safety relative to older children. Indeed, according to national averages in the United States, parents of children under age 6 spend approximately 2.18 hours per day exclusively caring for and helping their child. Conversely, parents spend on average only 1 hour per day when their child is over age 6 (Bureau of Labor Statistics, 2017). Thus, for families with very young children, it may be difficult to disambiguate routines that are specific to the family relative to routines that are specific to the individual child. In sum, given the high degree of correlation between the levels of routines in this sample, results suggest that especially for young children, the levels of routines tend to covary together, meaning young children tend to have either frequent or infrequent routines in general, rather than high frequencies of one level of routines and low frequencies of another level of routines. Thus, a child with frequent bedtime routines is likely to also have frequent general daily routines, and to live in a family with frequent routines.

This study extends the literature by, to our knowledge, being the first to empirically examine household chaos and routines simultaneously. By doing so, we were

able to empirically negate some false assumptions about the relationship between household chaos and routines. For example, some have argued that household chaos and fewer daily routines are similar constructs, or merely the opposite of one another (Fiese & Winter, 2010). However, this study showed empirically that household chaos and general child routines are indeed distinctive entities as evidenced by a small to moderate correlation ( $r = -.37$ ). Further, during the principal component analysis analyzing the revised version of the CHAOS measure, the item pertaining to routines did not statistically load well with the other items, adding further empirical evidence to the notion that routines are distinctive from chaos. This finding is consistent with arguments of proponents who believe that household chaos and routines are distinct. They maintain that the construct of household chaos is much broader than routines and contains several indicators such as excessive crowding, instability, confusion, home traffic, ambient background noise, and a lack of temporal or physical structure (Coldwell et al., 2006; Matheny et al., 1995; Wachs & Evans, 2010), whereas routines are more narrowly defined as children completing the same activities, in the same sequence, at the same time, in the same setting, with the same caregiver (Sytsma et al., 2001). Thus, these findings lend credence to the theory that household chaos and routines are, in fact, distinct constructs.

In addition, this study adds further evidence as to the affordability, feasibility, and accuracy of online data collection to obtain parent report. Our data were collected using Mturk, which allowed us to obtain data from a more geographically diverse and socioeconomically diverse sample than used in previous studies examining child routines (e.g., Bater & Jordan, 2016; Bridley & Jordan, 2012; Sytsma et al., 2001). Correlations

obtained on MTurk between routines and child behavior problems as well as household chaos and child behavior problems were of similar magnitudes to those obtained from previous convenience samples (e.g., Bater & Jordan, 2016; Coldwell et al., 2006; Dumas et al., 2005; Jordan, 2003; Sytsma et al., 2001; Wittig, 2005). Thus, this allows us to more confidently generalize results from online data collection platforms because they correspond well to results obtained from convenience samples.

This study also obtained a high rate of paternal participation, unlike many other studies that have empirically examined routines (e.g., Bater & Jordan, 2016; Jordan et al., 2013). Paternal report is often understudied, and yet paternal factors are also salient regarding child outcomes (Phares, Fields, Kamboukos, & Lopez, 2005). Thus, it is auspicious that nearly one-third of our sample (i.e., 51 respondents) were paternal informants. This indicates that like Schelider and Weisz (2015) concluded, MTurk is an efficient and viable data collection platform to obtain parent report and a way to obtain greater paternal participation in research.

#### Future Research

Given the feasibility of obtaining paternal report on Amazon's Mechanical Turk, future researchers may want to obtain maternal and paternal perceptions of the frequency of routines within the same family and evaluate how they relate to child outcomes. Indeed, parental parenting practices and perceptions of child behavior problems differ for fathers and mothers (Gryczkowski, Jordan & Mercer, 2010). Thus, perhaps the salience of linking routines and child behavior problems may also differ depending upon informant.

As noted above, with the preschool-aged sample obtained, it is evident that preschool-aged children who have routines across their day are also likely to live in families who have routines and they are also likely to have specific individual routines such as bedtime routines. However, previous research has revealed that the correlation between family routines and general daily child routines is much lower in elementary-aged samples (e.g.,  $r = .54$ ; Sytsma et al., 2001). As children become older and more independent, perhaps the levels of routines become more differentiated because the child may not require as much direct help and oversight. Thus, one level of routine may be a stronger mediator than another level of routine in linking household chaos and child behavior problems in older samples such as elementary-aged children and even more so in adolescence. Future researchers may consider examining these same models in older age groups. If it is determined in older samples that a certain level of routine is a stronger mediator, that points to a potential starting point for families living in chaotic households who have children with behavioral issues.

Since routines were determined to be a mediator of the relationship between household chaos and child behavior problems, a next logical step is to determine if routines indeed are an effective intervention for families with high levels of chaos. To begin examining this possibility, potential study designs include a single-case study, a multiple-baseline design, and even a randomized control trial if the first two stages prove to be effective. Harris et al. (2014) stated that routines are theorized to be expedient and cost-effective interventions, and subjecting them to experimental manipulation may provide initial empirical support to corroborate that notion.

Since the levels of routines only partially mediated the relationship between household chaos and child behavior problems, this suggests that there are other mediators also at play that should be examined empirically. One potential mediator could be negative parenting practices. Negative parenting practices (i.e., poor monitoring/supervision, harsh and inconsistent discipline) is linked with more household chaos (Mokrova, O'Brien, Calkins, & Keane, 2010), fewer daily routines (Bater & Jordan, 2016; Jordan et al., 2013), and more externalizing behaviors (Eisenberg et al., 2005; Systma-Jordan & Kelley, 2004), making it a plausible additional mediator. Another potential mediator could be parental distress and depression, both of which have been linked to more household chaos, fewer daily routines, and more child behavior problems (McLoyd et al., 2008; Pike et al., 2006; Sytsma-Jordan & Kelley, 2004; Sytsma- Jordan et al., 2003; Jordan et al., 2013; Larsen, Jordan, & Gryczkowski, 2017). In short, understanding what other mechanisms may be influencing the link between household chaos and externalizing behaviors is important because they may also be targeted for intervention. Future research also should examine how household chaos and routines are linked to more narrowband/proximal outcomes such as prosocial behavior, sibling conflict, etc.

Finally, future research should assess how child temperament fits into the aforementioned models. In the literature, temperament is conceptualized as an individual difference factor in children, which attempts to explain behaviors that are relatively stable over time and across settings (Rothbart, Ahadi, Hersey, & Fisher, 2001). Indeed, a difficult child temperament is linked with more externalizing behaviors (Lanza & Drabick, 2011; Rothbart, et al., 2001), and more inconsistent and punitive parenting

practices as well as fewer positive parenting practices (Evans, Nelson, Porter, Nelson, & Hart, 2012; Koenig, Barry, & Kochanska, 2010). This pattern of associations has led some researchers to theorize that child temperament may influence how readily parents can establish or maintain routines within the home. For example, Churchill and Stoneman (2004) found that female children attending Head Start who had temperaments characterized by higher levels of activity and emotionality were less likely to have family routines in the home. Thus, parents may find it more difficult to initiate or establish household routines among children more difficult temperaments, which may contribute to both household chaos and child externalizing behavior. Alternatively, there may be a positive feedback loop such that the challenge of establishing routines in a home with a “difficult child” elicits chaos in the home followed by more behavioral problems, which in turn exacerbates the difficulty in establishing a routine, thereby promoting further chaos. Thus, children with more difficult temperaments may live in more chaotic households due to their parents having difficulty in instituting or establishing routines. Future studies that assess for child temperament and assess for these constructs in a longitudinal manner may help tease apart the directionality and sequence of these interrelated variables.

#### Limitations

There are certain limitations with this study that should be noted. First, all data were self-report measures from a single informant. Although findings were in alignment with the hypotheses and previous studies, a multi-informant approach would further bolster the results and add converging evidence to the mediation models). Further, this sample exhibited lower levels of household chaos relative to other studies (i.e., Coldwell



et al., 2006; Deater-Deckard et al., 2009) and this sample did not have high levels of externalizing behaviors. This suggests that this study's findings may be more robust if the sample obtained had higher levels of household chaos and had children who exhibited more problematic behavior. Moreover, although we obtained a socioeconomically diverse sample, our sample was still predominantly White that did not identify as Hispanic/Latino, and was well-educated and upper middle class. Thus, generalization of these results to non-White and low income or single-parent populations should be exercised cautiously. In addition, this study was a cross-sectional design, assessing a child's environment, child behavior, and the frequency of different routines at one time point as opposed to over several time points. A longitudinal study design would add additional credence to the notion that earlier chaos predicts later fewer daily routines, and later fewer daily routines predicts even later child behavior problems. A longitudinal design would help corroborate the temporal sequence of the variables.

### Conclusion

Results of this study lend support to the theory that routines are a mechanism through which household chaos relates to child behavior problems (Fiese & Winter, 2010). Given that routines are viewed as an easy, cost-effective intervention for parents (Harris et al., 2014), results from this study are promising in that it reveals that routines may be a potential point of intervention. Routines may give parents living in chaotic households a concrete first step in mitigating the risk that their child will develop behavior problems, which are linked with a host of deleterious outcomes.

APPENDIX A – TABLES & FIGURES

Table 1 *Descriptive characteristics of caregivers*

Caregiver Characteristics	N	%
<b>Respondent Relation to Target Child</b>		
Biological parent	118	98.3
Adoptive parent	2	1.7
<b>Respondent Gender</b>		
Female	69	57.5
Male	51	42.5
<b>Household Highest Education Level</b>		
<i>Female Caregiver Education</i>		
6th grade or less	0	0.0
Junior high school (7th, 8th, 9th grade)	0	0.0
Some high school (10th, 11th grade)	1	0.8
High school graduate	16	13.3
Some College (At least 1 Year) Or Specialized Training	31	25.8
Standard College or University Graduate	54	45.0
Graduate Professional Degree (Master's Doctorate)	10	8.3
No Response	8	6.7
<i>Male Caregiver Education</i>		
6th grade or less	0	0.0
Junior high school (7th, 8th, 9th grade)	2	1.7

Table 1 Continued.

Some high school (10th, 11th grade)	1	0.8
High school graduate	24	20.0
Some College (At least 1 Year) Or Specialized Training	30	25.0
Standard College or University Graduate	38	31.7
Graduate Professional Degree (Master's Doctorate)	6	5.0
No Response	19	15.8
<b>Marital Status</b>		
Single (never married)	14	11.7
Currently married	85	70.8
Currently living together (not married)	15	12.5
Separated	0	0.0
Divorced	6	5.0
Widowed	0	0.0
<b>Household Employment</b>		
<i>Female Caregiver Employment</i>		
None, Unemployed	34	28.3
None, Disabled	1	0.8
Yes, Part-Time	13	10.8
Yes, Full Time	64	53.3
No Response	8	6.7
<i>Male Caregiver Employment</i>		

Table 1 Continued.

None, Unemployed	5	4.2
None, Disabled	0	0.0
Yes, Part-Time	0	0.0
Yes, Full Time	96	80.0
No Response	19	15.8
<b>Family Income</b>		
Earns Less Than \$10,000	2	1.7
\$10,000-\$19,999	5	4.2
\$20,000-29,999	9	7.5
\$30,000- \$ 39,999	15	12.5
\$40,000- \$49,999	22	18.3
\$50,000- \$74,999	31	25.8
\$75,000- \$99,999	17	14.2
\$100,000- 124,999	12	10.0
\$125,000- \$149,999	2	1.7
\$150,000- \$ 199,999	4	3.3
More than \$200,000	1	0.8
<b>Number of Adults in the Home</b>		
1	18	15.0
2	96	80.0
3	4	3.3

Table 1 Continued.

4	1	0.8
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No Response	1	0.8
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**Number of Children in the Home (Including Target Child)**

1	44	36.7
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2	45	37.5
---	----	------

3	20	16.7
---	----	------

4	9	7.5
---	---	-----

5	1	0.8
---	---	-----

No Response	1	0.8
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Table 2 *Descriptive characteristics of target child*

Child Characteristics	N (%)
<b>Child Sex</b>	
Male	62 (51.7%)
Female	58 (48.3%)
<b>Child Age</b>	
2	25 (20.8%)
3	39 (32.5%)
4	36 (30.0%)
5	20 (16.7%)
<b>Child Race</b>	
White	96 (80%)
Black or African American	10 (8.3%)
American Indian or Alaska Native	1 (0.8%)
Asian	0 (0%)
Multiracial	13 (10.8%)
Other	0 (0%)
<b>Child Ethnicity</b>	
Hispanic/Latino	13 (10.8%)
Not Hispanic/Latino	107 (89.2%)

Table 3 *Bivariate correlations and descriptive statistics for study variables*

Variables	1	2	3	4	5	6
1. Household Chaos	--					
2. Family Routines	-.24**	--				
3. Child Routines	-.37***	.71***	--			
4. Bedtime Routines	-.40***	.43***	.59***	--		
5. Externalizing Behavior	.45***	-.31**	-.39***	-.27**	--	
6. Bedtime Resistance	.39***	-.31**	-.28**	-.32***	.60***	--
Mean	1.99	3.1	3.89	3.84	2.51	3.26
SD	0.62	0.43	0.58	0.81	0.98	0.95
Skewness	0.50	-0.19	-0.37	-0.53	0.63	0.27
Kurtosis	-0.01	-0.37	0.23	-0.44	-0.14	-0.35
Actual Range	1.00-3.96	2.07-4.00	1.95-5.00	1.70-5.00	1.00-5.44	1.00-5.80
Potential Range	1-4	1-4	1-5	1-5	1-7	1-6

*Note:* \* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$

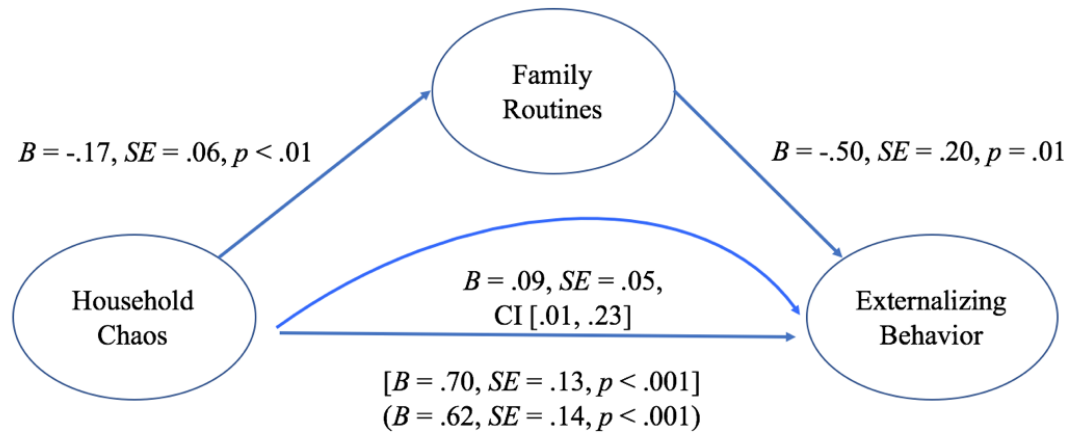
Table 4 *Bivariate correlations between demographic variables and outcome variables*

Variables	Externalizing Behavior	Bedtime Resistance
1. Child Age	-0.004	-0.01
2. Child Gender <sup>a</sup>	-0.08	0.00
3. Child Ethnicity <sup>b</sup>	-0.04	0.02
4. Child Race <sup>c</sup>	-0.02	0.08
5. Marital Status <sup>d</sup>	-0.001	-0.13
6. Family Income	-0.14	0.01
8. Number of Adults in Home	0.01	-0.01
9. Number of Children in Home	0.002	0.13

Note: <sup>a</sup>Child gender was coded Male = 1, and Female = 2. <sup>b</sup>Ethnicity was coded 1 = Hispanic/Latino 2 = Not Hispanic/Latino. <sup>c</sup>Race was dichotomized as White = 1 and Non-White = 2. <sup>d</sup>Marital Status was coded 1 = Not Married or Living as Married 2 = Married or Living as Married. \*  $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .001$ .

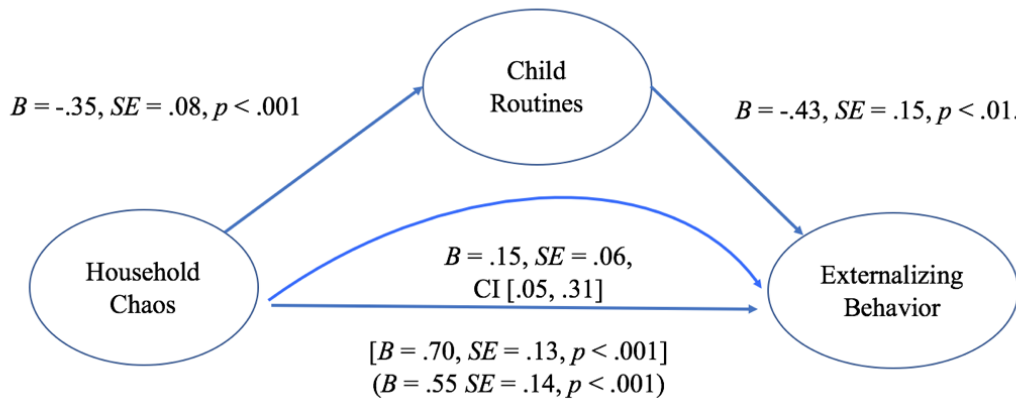


Figure 1. Simple mediation of household chaos on externalizing behavior through family routines



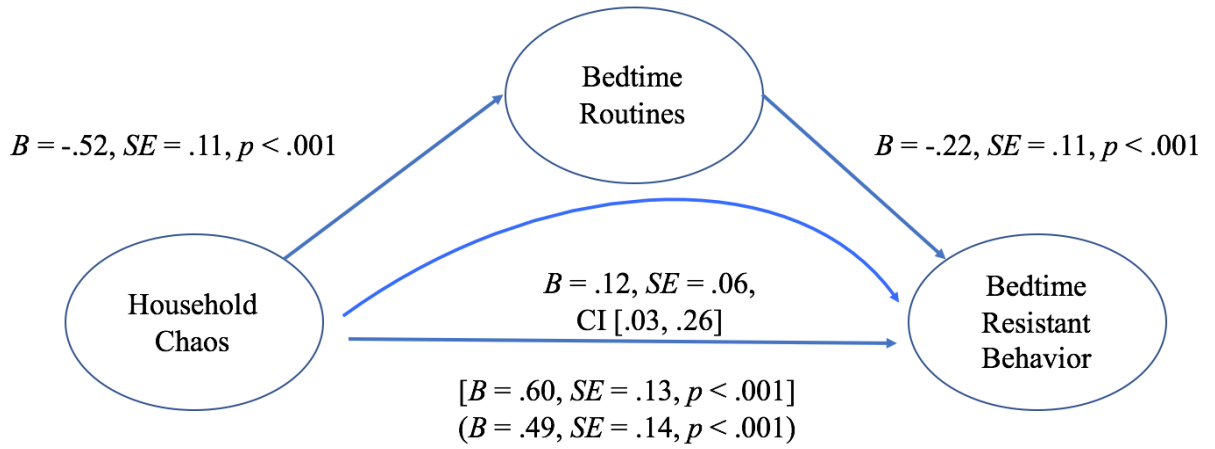
Note. Unstandardized regression coefficients are reported. The statistics in brackets show the total effect of household chaos on externalizing behavior. The statistics in parenthesis show the direct effect of household chaos on externalizing after controlling for the indirect effect of family routines routines. The indirect effect (depicted in blue below the curved arrow) was significant based on an asymmetric 95% confidence interval with 5,000 resamples with replacement (Hayes, 2013).

Figure 2. Simple mediation of household chaos on externalizing behavior through child routines



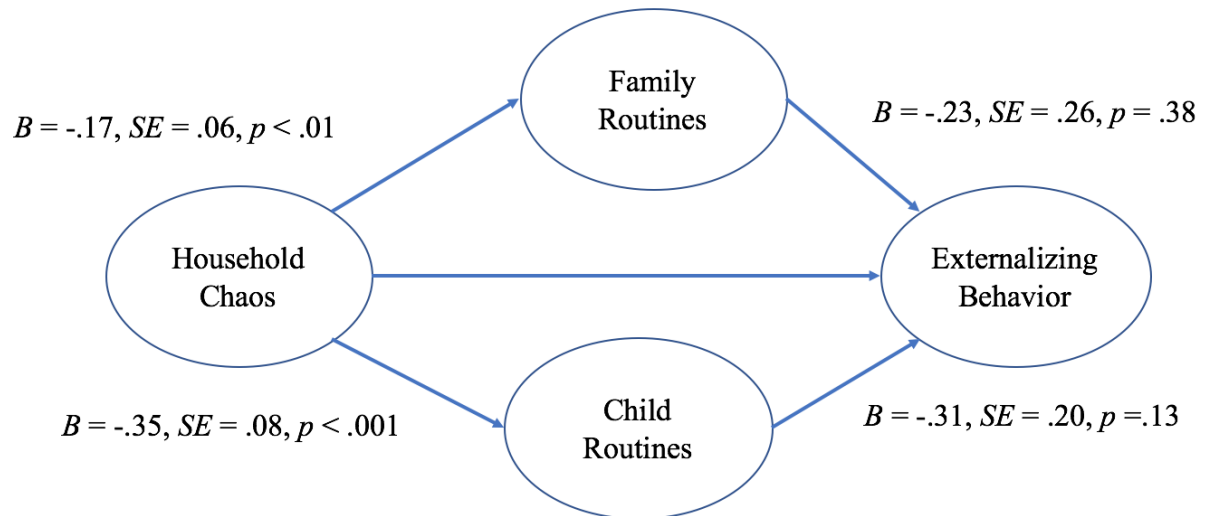
Note. Unstandardized regression coefficients are reported. The statistics in brackets show the total effect of household chaos on externalizing behavior. The statistics in parenthesis show the direct effect of household chaos on externalizing after controlling for the indirect effect of child routines. The indirect effect (depicted in blue below the curved arrow) was significant based on an asymmetric 95% confidence interval with 5,000 resamples with replacement (Hayes, 2013).

Figure 3. Simple mediation of household chaos on bedtime resistant behavior through bedtime routines



Note. Unstandardized regression coefficients are reported. The statistics in brackets show the total effect of household chaos on bedtime resistant behavior. The statistics in parenthesis show the direct effect of household chaos on bedtime resistant behavior after controlling for the indirect effect of bedtime routines. The indirect effect (depicted in blue below the curved arrow) was significant based on an asymmetric 95% confidence interval with 5,000 resamples with replacement (Hayes, 2013).

Figure 4. Parallel mediation model of household chaos on externalizing behavior through family routines and child routines



Note. Unstandardized regression coefficients are reported.

**Specific Indirect Effects**

Family Routines  $B = .04, SE = .07, CI [-.06, .21]$

Child Routines,  $B = .11, SE = .09, CI [-.04, .34]$

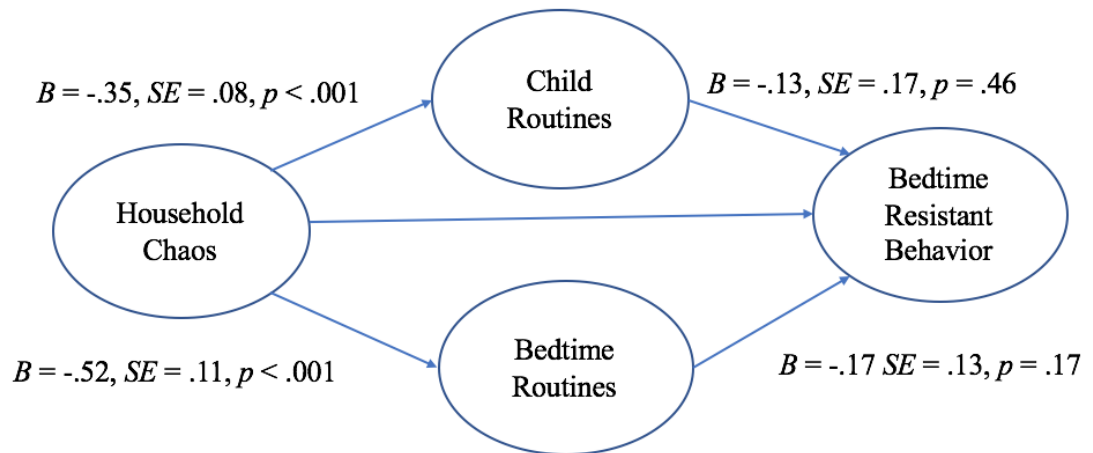
Paired Contrast  $B = -.07, SE = .15, CI [-.39, .20]$

**Total Indirect Effect**  $B = .15, SE = .07, CI [.04, .30]$

**Total Effect**  $B = .70, SE = .13, p < .001$

**Direct Effect**  $B = .56, SE = .14, p < .001$

Figure 5. Parallel mediation model of household chaos on externalizing behavior through child routines and bedtime routines



Note. Unstandardized regression coefficients are reported.

**Specific Indirect Effects**

Child Routines  $B = .05, SE = .06, CI [-.07, .18]$

Bedtime Routines,  $B = .09, SE = .06, CI [-.02, .23]$

Paired Contrast  $B = -.05, SE = .10, CI [-.28, .14]$

**Total Indirect Effect**  $B = .14, SE = .07, CI [.04, .30]$

**Total Effect**  $B = .61, SE = .13, p < .001$

**Direct Effect**  $B = .47, SE = .14, p = .001$

## APPENDIX B – IRB Approval Letter



**INSTITUTIONAL REVIEW BOARD**  
118 College Drive #5147 | Hattiesburg, MS 39406-0001  
Phone: 601.266.5997 | Fax: 601.266.4377 | [www.usm.edu/research/institutional.review.board](http://www.usm.edu/research/institutional.review.board)

### NOTICE OF COMMITTEE ACTION

The project has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Effect Report Form".
- If approved, the maximum period of approval is limited to twelve months.  
Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: CH2-17052302  
PROJECT TITLE: Pilot Study: Home Environment and Child Behavior Study  
PROJECT TYPE: Renewal and Change #2 to a Previously Approved Project  
RESEARCHER(S): Kristy Larsen  
COLLEGE/DIVISION: College of Education and Psychology  
DEPARTMENT: Clinical Psychology  
FUNDING AGENCY/SPONSOR: N/A  
IRB COMMITTEE ACTION: Expedited Review Approval  
PERIOD OF APPROVAL: 06/06/2018 to 06/05/2019  
**Edward L. Goshorn, Ph.D.**  
**Institutional Review Board**

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