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TEACHING KIDS TO SAY “EW!”: PARENT-CHILD DISGUST TRANSMISSION

A Dissertation

presented in partial fulfillment of requirements

for the degree of Doctor of Philosophy

in the Department of Psychology

The University of Mississippi

by

BROOKLEE LIGHTSEY TYNES

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## ABSTRACT

Disgust is one of the six basic emotions, but research suggests it is far more complex. As individuals respond to stimuli in different manners, this suggests the emotion and its development may be shaped through learning principles and cultural practices (Rozin, Lowery, & Ebert, 1994). It is imperative to understand how children's disgust responses are shaped through observation, classical, and operant conditioning demonstrated by their primary caregivers. The current study examined the transmission of the emotion of disgust from primary caregivers to their children. Participants were 17 children (55.6% female) and one of their parents, in Mississippi and Nebraska. The sample was primarily Caucasian (83.3%) with children ranging from 7-12 years of age and their parents ranging from 19-60 years of age. Children and parents were asked to complete several self-report questionnaires before engaging in behavioral approach tasks. Children were asked to observe their parent's interaction with different disgusting stimuli before having a chance to interact with the items a second time.

Results indicated that parents' self-report ratings of disgust were significantly related to and predicted their approach behaviors when presented with disgusting stimuli. While children's self-report ratings of disgust were not significantly related to their approach behaviors, self-report ratings did predict children's initial avoidance of disgusting stimuli on behavioral tasks. The role of covariates in behavioral avoidance is also discussed.

The study was primarily limited by the small sample size but offered unique insight into the behavior of children when presented with disgusting stimuli and given an opportunity to observe their parents' behaviors. Furthermore, this study implemented the use of questionnaires

to examine how self-report measures of disgust related to behavioral avoidance in children.

Future studies may benefit from a larger sample size and access to recruitment in schools, as well as incentives for participation.

## DEDICATION

This dissertation is dedicated to my husband and best friend, Charley. Thank you for encouraging me to persevere during seasons when this degree and research project seemed unattainable and being my greatest champion in my successes and failures. Your willingness to assist in creating PowerPoint presentations, read essays, and complete household chores is a testament to your selflessness and have made this degree possible.

## LIST OF ABBREVIATIONS AND SYMBOLS

|       |   |
|-------|---|
| BAT   | Behavioral Approach Task                        |
| CDS   | Children's Disgust Scale                        |
| DS-R  | Disgust Scale, Revised                          |
| RCADS | Revised Children's Anxiety and Depression Scale |
| PANAS | Positive and Negative Affect Scale              |

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I express my deepest gratitude to my advisor, Dr. Danielle Maack, for her continued guidance throughout my graduate tenure. I have directly benefited from her understanding of when to issue assertive instruction and when to provide compassion and humor.

I would like to specifically thank Dr. John Young for his influence in my career path and decision to pursue a terminal degree in clinical psychology. His willingness to advise a young college freshman and provide a position in his research lab cultivated my interest in the topic of disgust and laid the groundwork for my desire to engage in clinical work with children and families.

I would be remiss not to acknowledge my fellow doctoral students, particularly my cohort. Each provided support, laughter, and intellect that made this journey enjoyable.

Finally, I would like to thank my family for inspiring my love of learning and encouraging me to attain my academic goals even when they seemed impossible.

## TABLE OF CONTENTS

|  |     |
|--|-----|
| ABSTRACT.....                          | ii  |
| DEDICATION.....                        | iv  |
| LIST OF ABBREVIATIONS AND SYMBOLS..... | v   |
| ACKNOWLEDGEMENTS.....                  | vi  |
| LIST OF TABLES.....                    | vii |
| INTRODUCTION.....                      | 1   |
| METHODOLOGY.....                       | 13  |
| RESULTS.....                           | 18  |
| DISCUSSION.....                        | 33  |
| LIST OF REFERENCES.....                | 41  |
| APPENDIX.....                          | 46  |
| VITA.....                              | 47  |

## LIST OF TABLES

1. Correlational Analyses for Self-Reports and BAT Total Scores
2. Summary of Means for Children's Behavior Approach Tasks Completed at Time 1
3. Summary of Means for Parent Behavior Approach Tasks Completed
4. Summary of Means for Children's Behavior Approach Tasks Completed at Time 2
5. Correlations Among Covariates and Predictor Variables of Child Time 1 BATs
6. Summary of Hierarchical Regression Analysis for Variables Predicting Children's Time 1 Behavioral Avoidance
7. Correlations Among Covariates and Predictor Variables of Parental Behavioral Avoidance
8. Summary of Hierarchical Regression Analysis for Variables Predicting Parents' Behavioral Avoidance
9. Correlations Among Children's Time 1 BAT, Time 2 BAT, and Parent BAT
10. Summary of Means for Children's Disgust Ratings on BATs at Time 1
11. Summary of Means for Children's Disgust Ratings on BATs at Time 2
12. Summary of Means for Parents' Disgust Ratings on BATs
13. Correlations Among Children's Disgust Ratings and Parent Disgust Ratings During BATs
14. Summary of Hierarchical Regression Analysis for Variables Predicting Children's Time 2 Disgust Rating

## **I. INTRODUCTION**

### **Learning Theory**

From a traditional behavioral perspective, learning is typically divided into two categories: classically conditioned behavior and operantly conditioned behavior. Initially presented by Ivan Pavlov and then later studied by John Watson, classical conditioning examines reflexive and conditioned behaviors (Pavlov, 1927). A reflexive behavior is that which occurs without training. For example, a puff of air (unconditioned stimulus) directed to the eye, results in an eye blink (unconditioned response). Conditioned behaviors are behaviors that occur only after they have been trained through multiple trials or exposures to a particular stimulus. This can be explained by Pavlov's work with dogs. A dog is presented with food, an unconditioned stimulus, and responds by secreting saliva, an unconditioned response. When a neutral stimulus such as a bell is repeatedly presented in temporal spatial proximity to the unconditioned stimulus, it acquires the stimulus properties of the unconditioned stimulus. In the case with the dog, a bell is sounded seconds before the presentation of the food, therefore, the bell acquires the stimulus properties of the food and the dog salivates. After repeated trials, the bell, once neutral, is now a conditioned stimulus and evokes the conditioned response of salivation from the dog (Pavlov, 1927).

A second type of learning is operant conditioning. Operant learning is described as the presentation of a stimulus, a response to that stimulus, and an applied consequence to the response (Skinner, 1945). Consequences applied to a given behavior either increase the likelihood of the behavior to occur in the future (reinforcement) or decrease said likelihood (punishment). For example, a child wants a candy bar in a store and his mother tells him he cannot have it. He engages in tantrum behavior. His mother then buys him the candy bar in

hopes of eliminating the tantrum. This increases the probability that the child will engage in tantrum behavior next time he is told no. In this scenario, the child being told “no” is the stimulus, his tantrum is the response, and the act of buying the candy bar is the reinforcer. Through application of reinforcement and punishment to various behaviors and across contexts, behavior is shaped (Skinner, 1945).

Understanding how learning occurs is valuable in fully acknowledging and comprehending the way in which children acquire their particular behavioral repertoires. These repertoires, or how children behave and interact with their world, are formed through interactions with their environment. In fact, numerous researchers have posited how children develop cognitively and specifically, how children learn (Bee, 1975; Bijou, 1964; Gagne, 1968; McGuire-Fong, 2015). Most notable is the work of developmental psychologists Lev Vygotsky and Jean Piaget. Piaget and Inhelder (1969) suggested that children follow a course of development which includes four stages: sensorimotor, pre-operational, concrete operational, and formal operational. Within each of these stages children interact with their environment and gain new knowledge about the world in which they live relative to their appropriate stage. It is through cooperation with others and social exchanges that individuals learn to organize their thinking and reach the final stage of development. Similarly, Vygotsky (1978) stated that children learn through “interpersonal interactions” with others as well as components of their environment. As a result, learning is integral to development and development integral to learning.

For example, the necessity of interaction was demonstrated in a study by Phyllis Levenstein (1970) in which the cognitive impact of increased interaction of mothers with preschool aged children was assessed. Low-income mother-child dyads were divided into three groups: an experimental group consisting of verbal stimulation, a comparison group of non-verbal stimulation, and a control group which received no intervention. Preschoolers (ages 2 and 3) were administered either the Cattell or Stanford Binet intelligence tests and Peabody Picture

Vocabulary Test to obtain measures of general and verbal abilities before the intervention, and again after seven months of their assigned intervention. In the experimental group, a social worker visited the home of each dyad approximately 30 times and modeled verbally stimulating play with a collection of toys and books for the mother to use with her child. This instruction emphasized labeling toys, discussing their characteristics, engaging the child in conversation, directing the play, and providing positive reinforcement. Mothers were instructed to continue with this behavior between home visits. For the non-verbal comparison group, the social worker brought toys to the home; however, no direct instruction was provided to the mother and the social worker did not engage the child in play. Results revealed that following the seven month intervention, children in the experimental group gained a mean intelligence score increase of 17 points on the Stanford Binet and Cattell tests and a 12 point increase on the Peabody Picture Vocabulary Test, whereas those in both the non-verbal comparison group and control group (i.e. no intervention) demonstrated negligible increase in abilities (mean increase of 1 and 2 points respectively; Levenstein, 1970). This particular study worked to promote parent-child interaction and demonstrated the direct relationship parental feedback concerning play and behavior has on a child's ability to learn. Furthermore, results from this study suggest that children learn best when taught directly from others (in this study, parents) with a high level of direct engagement. Parental interaction with children contributes significantly to their learned behaviors and cognitive development.

Similarly, social learning theory suggests that learning not only occurs through operant conditioning, but through observation of others' operant learning contingencies (Bandura, 1977). Bandura stated that this vicarious learning allows for large patterns of behavior to develop without multiple trials and can be applied to all experiences, whether through observation of affective arousal or simple task engagement (Bandura, 1977). In fact, Bandura posited that learning simply through operant conditioning would be dangerous and time consuming in the case of teaching skills such as swimming and driving. Furthermore, through observational

learning, children are privy to the desired response and are more likely to behave accordingly, increasing the likelihood of an applied reinforcer to the target behavior. Often times children learn through modeling of behaviors, particularly closely attended behaviors. Modeling is also more likely when the behavior emitted is by an individual perceived to have authority, and with shared characteristics (Bandura, 1977). Bandura also emphasized the relevance of a behavior's function in modeling. If the behavior that is being attended to by the observer is integral to survival or likely to bring about a desired outcome, learning is more likely to occur (Bandura, 1977).

Bandura also suggested that learning can occur without a conscious awareness, though behavior change may be slow and minimal. He posited that this idea applies to all behaviors whether the goal be verbal statements or simple change in physical movements. Hefferline, Keenan, and Harford (1963) aimed to study the claim that learning can occur without conscious awareness by measuring the muscle responses of participants' thumbs when placed under operant conditioning. The small muscle contractions of the thumb were used as they were not visible to the eye and could only be observed through electromyographic amplification available to the researchers. In this study, participants were not told about the contingency prior to the experiment. An unexpected aversive noise was played along with music chosen by the participant. When the twitch of a muscle in a participant's thumb occurred, the participant's behavior was negatively reinforced by the removal of the aversive noise. Within several trials, the muscle contractions increased in response to the loud noise. Results revealed that conscious acknowledgement of the target behavior was not necessary for it to be affected by reinforcement. The researchers concluded that operant conditioning may occur in involuntary actions outside of conscious awareness.

As reviewed, learning occurs through numerous processes. While some behaviors are reflexive and more innate, such as blinking when air is presented to the eye, others are shaped through consequences that follow the behavior. Consequences to behavior may increase their

occurrence in the future (reinforcement) or decrease their occurrence in the future (punishment). In some cases, individuals may learn by watching the behaviors and consequences of others or without conscious awareness. Though there are numerous theories concerning how individuals learn, particularly children, each has a common thread. The commonality to all learning theories is the social component by which learning is facilitated, whether through direct engagement or observation of others. By social interaction and the observation of others' behaviors, learning occurs. In some cases, behaviors are overtly reinforced or punished, but other times behaviors may be observed and integrated into a personal repertoire.

## **Disgust**

Learning may also play a role in the development of emotions, particularly the emotion of disgust. Disgust is one of the six basic emotions, defined as a sense of repulsion or rejection to a stimulus. The disgust response is generally accompanied by a facial grimace and activation of several muscle groups such as the levator labii, which results in a lift of the upper lip and flare of the nostrils (Ekman & Friesen, 1978). This facial expression, referred to as the “gape” response serves to protect against dangerous toxins in two ways: 1) The nose wrinkles to fight against inhalation of disgusting stimuli and 2) The lip elevates to allow any hazardous material to be expelled from the mouth. Evolutionarily, disgust is adaptive, assisting humans with avoidance of harmful or dangerous substances. Although Darwin originally described disgust as a simple distaste (i.e., a baby's reflex when tasting a lemon; Darwin, 1965), research has shown that the emotion of disgust is far more complex (Rozin, Lowery, & Ebert, 1994). Specifically, disgust may originate as a form of distaste, but later be shaped through learning and cultural practices, such as the eating of certain animals or insects or social responses to incidents (i.e. dogfighting) (Rozin, Lowery, & Ebert, 1994).

The emotion of disgust is commonly divided into four subdomains: core, contamination, animal-reminder, and moral. Though elicited by different stimuli, each domain shares a commonality in that individuals reject certain objects or ideals from themselves (Rozin et al.,

1994). Core disgust is characterized as the avoidant responses to feces, garbage or rotting food. This is perhaps the most recognized domain when referencing the emotion of disgust as it may be the response exhibited when seeing a molded orange or cleaning a dirty diaper. Contamination disgust relates to an evocation of disgust through shared body fluids or unwanted physical contact associated with sex, gore, or lack of proper hygiene (McCauley, Rozin, & Markwith, 1997; Olatunji et al., 2008). Contamination disgust is the response evoked when an individual sneezes inside of one's personal space and is related to concerns of illness. The third domain, animal-reminder disgust, describes the disgust response often resulting from the reminder of humans' animal nature and exposure to inevitable death (Rozin et al., 1994). This can be evoked by the sight of exposed body tissues and organs (Sawchuk, Lohr, Tolin, Lee, & Kleinknecht, 2000). The final domain, moral disgust, is often characterized as a response to a violation that may be "sick" or "twisted" or lack a certain set of ideals typically expected based on a particular code of conduct (Olatunji et al., 2012a). This domain is associated with behavior contrary to social norms such as domestic violence or Bible burning.

Research suggests that disgust is a complex emotion. Though each of the domains share a commonality of rejection of ideas or objects from self, not all individuals respond to stimuli in the same manner. This suggests that there is a component to the emotion that is influenced by learning principles. Specifically, understanding the manner in which the emotion of disgust is learned and developed may aid in how the emotion is conceptualized.

### **Child Disgust**

As disgust is a basic emotion experienced by individuals, it is valuable to understand the way in which this response develops in children. Research has shown that heredity does not significantly contribute to disgust sensitivity, and therefore disgust sensitivity is likely to be the result of learning from others (Oaten, Stevenson, Wagland, Case, & Repacholi, 2009; Rozin & Millman, 1987). Additionally, researchers have posited that all domains of disgust do not evolve at the same developmental time (Rozin, Haidt, & McCauley, 2000). Rozin and colleagues (2000)

formally created a developmental model of disgust. In this model, disgust first appears in the form of distaste (e.g., bitterness) such as a baby's refusal for certain foods (i.e., lemon; Peiper, 1963; Steiner, 1979). Following the emergence of distaste, it is theorized that the domains of core and contamination disgust develop and subsequently, animal-reminder disgust (Rozin & Fallon, 1987). The domains of core and contamination disgust may develop after distaste as children initially lack the cognitive understanding of contamination principles, such that certain substances are harmful until approximately age 8 (Rozin & Fallon, 1987). Further, animal-reminder disgust is proposed to develop later as children may lack understanding of their inevitable animal nature. Within their developmental model, Rozin, Haidt, McCauley, did not formally delineate between core and contamination disgust, though conceptually this seems plausible as core and contamination disgust both account for an individual's response to possible sickness by spread of germs or rotten foods (2000). Finally, interpersonal, or moral disgust, is thought to be the last developed domain indicating that it may be the most affected by maturation and context (Rozin, Haidt, & McCauley, 2000). The researchers postulate that though children may reject feces and other disgusting substances prior to age 4, it may simply be from the initial distaste perspective as they have not yet gained knowledge that aids them in understanding the "danger" of ingestion of feces, garbage, and other core disgusting materials. Theoretically, the authors suggest that children must be able to comprehend two concepts in order for disgust to develop as a functional response to stimuli (Rozin et al., 2000). The first necessary concept is that germs are to be associated with illness, and the second is conservation of matter—the idea that even when a substance or object is not visibly seen it can still be present. An example of this conservation principle is the trace of feces on one's hands even after the overt substance has been removed (Stevenson et al., 2010). The age by which these concepts are present is typically at age 4 or 5, following toilet training and guided by cultural and active learning through observation. However, in a study by Stevenson and colleagues (2010), results revealed that children were able to detect and respond to disgust contamination stimuli regardless of whether or not they had acquired these proposed concepts. This finding calls into question whether these particular

concepts are necessary for children to understand the emotion of disgust or if they sense a form of danger as suggested by Rozin, Haidt, and McCauley (2000). Though this particular area of the proposed developmental model was disproven (i.e. having an understanding of germs and conservation of matter), Stevenson et al. (2010) confirmed that the development of disgust appears to follow the developmental trajectory proposed by Rozin and colleagues (2000). This study revealed that core, animal-reminder, and moral disgust all follow different developmental trajectories when tested in a population of children (Stevenson et al., 2010). In this cross-sectional study, parents of children aged 0 to 18 were asked to respond to what extent their child would be disgusted in relation to 22-items of disgust vignettes such as “spitting on the sidewalk.” Parents were also asked to rate their child’s level of disgust related to the vignettes. Results indicated that (from parental report) core disgust emerges first at the age of 3, animal disgust at age 4, and social and moral disgust at age 7. Though these ages are earlier than initially proposed in the literature, the results demonstrate that the emotion of disgust follows the proposed developmental trajectory of core/contamination followed by animal-reminder, and finally social/moral disgust.

Danovitch & Bloom (2009) examined children in kindergarten (age 6), second (age 8) and fourth (age 10) grades to assess if children’s ability to identify and rate scenarios as disgusting changes with age. In the first experiment, children were presented with sixteen questions and asked to respond with “yes” or “no” about whether particular actions could be called disgusting. Items ranged from physical behaviors (e.g., putting hand in slime), non-physical negative behaviors (e.g., being mean to someone), and negative events (e.g., watching a sad movie). Results indicated that children were able to differentially identify events as disgusting regardless of age group. Interestingly, children were more likely to rate the physically disgusting events as such when compared to the moral violations such as lying to a friend. They were also more likely to appropriately label disgusting items when compared to neutral or negative non-disgusting events. These results indicate that from an early age, children are able to classify events as disgusting, particularly events related to physical disgust.

In experiment two, researchers aimed to delineate whether children's ability to rate physical items as disgusting more often than moral items could be associated with the severity of the actions. The children were once again asked to determine if actions were disgusting or not by stating "yes" or "no." However, the procedure differed in that the eight moral behaviors presented varied in their perceived severity (e.g., stealing money from a small child versus stealing candy from a store). Results revealed that children were able to appropriately identify items as disgusting in both physical and moral domains; however, severity of moral transgression did not contribute to children's identification of disgust when examining each age individually. It is also worth noting that there was an increase in labeling moral type scenarios as disgusting as children increased in age.

In an effort to understand why some children labeled immoral acts as disgusting while same-aged peers did not, in experiment three, researchers asked children if the disgust emotion face (Ekman & Friesen, 1975) represented the person's response in the story rather than having the children state responses verbally as in the previous studies. This decision to measure responses non-linguistically was the result of concerns that some children may lack the language skills to appropriately label items. Children were presented with the same sixteen actions and asked if the face in the picture "could go with" the story. Results of this study demonstrated that children could identify both physical and moral items as disgusting, however, they were less likely to apply the face to moral violations when compared to physical events. Overall, children were also more likely to evaluate moral severity when asked to apply the verbal label of "disgusting" as opposed to the facial label (Danovitch & Bloom, 2009). In line with the developmental model previously described (Rozin, Haidt, & McCauley, 2000), children endorsed physical disgust items related to physical events (i.e., core and contamination disgust) more readily than those of the sociomoral domain. Results also demonstrated that the older children (approximately age 10) rated items as disgusting at an increased rate when compared to the younger children (i.e., ages 6-8). Overall, research suggests that children are able to

appropriately apply the label of disgust to both physical and moral items. Furthermore, it appears that as children age, their ability to more appropriately express this emotion increases.

Evidence suggests that disgust follows a developmental trajectory, such that it is more clearly understood and applied to scenarios as an individual increases in age. Therefore, it is important to understand the manner in which the emotion of disgust is cultivated and shaped. Social referencing theory suggests that disgust is taught from parent to child through observational or experiential learning (Rozin et al., 2000; Tomkins 1963). In terms of behavioral principles, this particular repertoire of behaviors (disgust reactions) to particular stimuli (candy on ground) may be shaped through the reinforcement and punishment delivered by caregivers and parents. These theories of differential reinforcement suggest there is a level of social referencing by the child to the parent (Rozin et al., 2000; Stevenson et al., 2010). There is growing evidence that parent-child transmission does occur, particularly in regard to animal disgust elicitors (Stevenson et al., 2010).

Stevenson and colleagues (2010) presented children with eight different disgusting stimuli ranging from ice cream with ketchup to a picture of a park with garbage. Children were asked to rate the items dichotomously as “good” or “bad” or by a 5-point Likert scale of disgust (depending on age). Children were also able to interact with stimuli to the extent they consented. For example, if the child wanted to eat their favorite candy off of the bottom of a toy potty, they were able to do so. Following the completion of tasks by the child, the child’s parent was brought into the room and asked to interact and answer the same questions related to the stimuli while the child observed. The child was asked to rate the stimuli a second time and again was given the option to interact with the stimuli (Stevenson et al., 2010). Researchers found that parents demonstrated more avoidance to disgusting stimuli in the presence of younger children. It may be that this was in an effort to model appropriate behavior for the younger children, but this was not assessed in the study. Results also demonstrated that children's engagement with disgusting stimuli was predicted by parental engagement (or avoidance) with all domains of

disgust (Stevenson et al., 2010). In this study, though children rarely changed their initial response to disgusting items, parent scores on the behavioral tasks significantly predicted children's initial engagement with the same tasks (Stevenson et al., 2010). Interestingly, when parents indicated stronger disgust reactions to core items, children were more likely to similarly apply strong disgust responses to core and sociomoral items (Stevenson et al., 2010). These findings indicate that children do not have to watch parents in "real time" to behave in a manner that they have previously learned to be acceptable.

Similarly, Muris, Mayer, Borth, and Vos (2013) examined how parent communication of disgust to children affected the children's feelings of fear and disgust towards a novel animal. Children were shown a picture of a novel stimulus (picture of an animal) and given no other information related to the animal. In this study, the novel animal was a cuscus, an Australian animal similar to a possum. The mothers of children were divided into an experimental group and a control group. Each group was given a box with items to describe the living environment, food, and life of the novel animal. Those in the experimental group received boxes containing disgust related materials such as mud and dirty water, while the control group boxes contained clean water and leaves. Researchers tested if method of communication played a role in the child's emotional response. Children observed as their mothers inspected the boxes and were asked a series of questions regarding the novel animal. Mothers were asked to communicate information to their children both non-verbally and verbally. Children responded to measures of disgust regarding the novel animal prior to the experiment, after non-verbal communication, and after verbal communication. While non-verbal responses to stimuli from mothers failed to elicit a disgust response to children, when mothers were able to verbally communicate disgusting attributes of a novel animal, children reported higher levels of disgust and fear when compared to a control group of neutral verbal communication (Muris et al., 2013). Research suggests that children learn how to respond to various stimuli based on parental behavior; therefore, understanding the role that parents play in the development of disgust is imperative.

## **Current Study**

While there is growing literature to suggest that disgust emergence and expression follows a particular developmental trajectory, there is still a lack of empirical evidence to suggest at which age parent-child transmission is most salient. In an effort to better understand how the emotion of disgust develops, the current study aimed to explore the effects of contextual factors such as parent-reported disgust on the emergence of disgust sensitivity in children. The study also examined if child ratings of disgust differ in the presence of parents. As children typically have difficulty expressing emotions before the age of 8-9 years of age, a multimodal approach in identifying their disgust sensitivity was necessary to provide a more accurate depiction of this construct (Schniering, Hudson, & Rapee, 2000). Hypotheses for the current study were as follows: 1) children's self-report ratings of disgust will be positively correlated to caregiver's self-report ratings of disgust; 2) self-report ratings of disgust will be positively correlated to behavioral approach tasks for both children and caregivers respectively; 3) children's self-report of disgust will predict Time 1 BAT scores when controlling for any potential covariates (i.e. depression, anxiety, and affective states); 4) parents' self-report of disgust will predict BAT scores when controlling for any potential covariates; 5) children's Time 2 BAT scores will significantly correlate with Time 1 BAT scores; 6) children's BAT scores will be correlated with parent BAT scores; 7) parent BAT scores will moderate the relationship between children's Time 1 and Time 2 BAT scores.

## II. METHODOLOGY

### Participants

Assuming a medium effect size, a power analysis (needed for correlational analyses, hierarchical linear regression, moderation analysis) indicated that for power of .80 and effect size of .20, a total of 77 participants was needed (Faul & Erfelder, 1992). However, recruitment of participants was not as feasible as initially anticipated (review of this is provided in the discussion). Therefore, a total of 18 children ranging from second to sixth grade and their parents completed the study. The current study child group consisted of 55.6% females, 88.9% White, and 11.1% Black children. Ages ranged from 7-12 ( $M = 9.72$ ,  $SD = 1.41$ ). The parent group consisted of 16.7% males, 83.3% females, 83.3% White, 11.1% Black, and 5.6% Other. Ages ranged from 19-60 years with 50% in the 31-40 year age bracket. All children were reported to live with at least one biological parent. Children and caregivers were recruited from local organizations and churches in two cities in Mississippi and one city in Nebraska.

### Measures

A demographic form for both child and parent/guardian was collected (i.e. grade, age, ethnicity, religious affiliation, gender, who the child lives with, etc.).

*Parent Identification Survey* (Sinclair, Dunn, & Lowery, 2004) is used to assess the degree to which children identify with their parents/guardians. The 8-item measure asks about the child's relationship with each parent/guardian. Children are asked to what extent they want to make each parent proud, follow directions from each parent, enjoy spending time with each parent, and want to be like each parent. Item ratings vary in descriptors but range from never/not at all to almost always/exactly alike. Items are scored on a 5-point scale and a mean score is generated where higher scores represent higher identification with parent.

*The Disgust Scale, Revised* (DS-R; Olatunji, Williams, Tolin, Abromowitz, Sawchuck, & Lohr, 2007) is a 25 item self-report measure which measures individual differences in sensitivity to disgust. Participants rate 14 items on how disgusting they may find different experiences. Items are rated on a 5-point Likert type scale ranging from 0 (Not disgusting at all) to 4 (Extremely disgusting). In addition, 11 items assess to what extent the individual agrees with statements about how they would respond to potentially disgusting situations ranging from 0 (Strongly disagree; very untrue about me) to 4 (Strongly agree; very true about me). In the current study, Cronbach's alpha was excellent ( $\alpha = .98$ ) for the total score. The DS-R was used to provide a measure of parental disgust ratings.

*The Childhood Disgust Scale* (CDS; Viar-Paxton et al., 2015) is a 14 item self-report measure, which examines a youth's responses to various statements related to disgust sensitivity ("I would sit next to a sweaty kid at lunch"). Items are rated on a 3-point scale (Always, Sometimes, Never). In the current study, the CDS had an internal consistency reliability of  $\alpha = .77$  which is similar to initial validation studies (Viar-Paxton et al., 2015). The CDS was used to measure children's ratings of disgust.

*Depression Anxiety Stress Scale-21* (DASS-21; Lovibond & Lovibond, 1993) is a 21-item self-report questionnaire, which examines symptoms of anxiety, depression, and stress experienced over the past week. For a non-clinical sample, it has demonstrated good internal consistencies among its three subscales ( $\alpha = .82 - \alpha = .90$ ), adequate convergent and discriminant validity ( $\alpha = .70 - \alpha = .72$ ), and excellent reliability ( $\alpha = .90 - \alpha = .95$ ; Henry & Crawford, 2005). For the current study, the internal consistency was good ( $\alpha = .80$ ). The DASS-21 is short measure used to examine each parent's current level of depression, anxiety, and stress. DASS-21 subscale scores were used as covariates in the current study.

*Revised Child Anxiety and Depression Scale, Child and Parent versions* (RCADS & RCADS-P; Chorpita, Yim, Moffitt, Umenmoto, & Francis, 2000; Spence, 1997). The RCADS is a 47-item measure of anxiety and depression in youth, and the RCADS-P is a parallel version of

the measure completed by the youth's caregiver. Domains assessed by this instrument include separation anxiety, social phobia, obsessive/compulsive disorder, generalized anxiety, panic, and major depression. A 4-point Likert type scale is used with ratings from 0 (never) to 3 (always). In a clinical sample, this measure has demonstrated good internal consistency for each of the subscales: Separation Anxiety ( $\alpha = .78$ ); Social Anxiety ( $\alpha = .87$ ); OCD ( $\alpha = .82$ ); Panic Disorder ( $\alpha = .88$ ); Generalized Anxiety Disorder ( $\alpha = .84$ ); Major Depressive Disorder ( $\alpha = .87$ ), (Chorpita, Moffitt, Gray, 2005). The RCADS-P provides a parental rating of the child's emotional difficulties, while the RCADS allows the child to report his or her own emotional difficulties in self report form. These ratings were scored using national norms and used to assess children's self-reported and parent-reported levels of depression and anxiety and included as covariates.

*Positive and Negative Affect Schedule* (PANAS; Watson, Clark, & Tellegen, 1988) is a 20-item self-report measure that consists of descriptive adjectives of various positive and negative affective states such as enthusiasm and fear, respectively. The participant indicates how much each mood descriptor applies to him or her on a 5-point Likert type scale. The PANAS demonstrates good internal consistency for both Positive Affect ( $\alpha = .89$ ) and Negative Affect ( $\alpha = .85$ ; Crawford & Henry, 2004). In the current study, the PANAS demonstrated acceptable internal consistency for the Positive Affect ( $\alpha = .69$ ) and Negative Affect ( $\alpha = .73$ ) subscales. The PANAS was used to examine each parent's affective state and included as a covariate.

*Positive and Negative Affect Schedule for Children* (PANAS-C; Laurent et al., 1997) is a 27-item self-report measure that assesses temperamental traits underlying emotional reactivity and/or distress. Items are divided into two subdomains (Positive and Negative Affect) and the participant is asked to rate on a 5-point Likert type scale how much each mood descriptor applies to him or her. Internal consistency was good for each subscale, Negative Affect ( $\alpha = .85$ ) and Positive Affect ( $\alpha = .86$ ) at first administration in a psychometric validation study on a non-clinical school aged sample (Crook, Beaver, Bell, 1998). In the current study, internal

consistency was good for Positive Affect ( $\alpha = .85$ ) and acceptable for Negative Affect ( $\alpha = .78$ ). As research has demonstrated that negative affectivity is tied to emotional distress related to anxiety and depression (Ebesutani, et al., 2011), this measure was used to gain more information related to possible temperamental vulnerabilities and was used as a covariate.

*Behavioral Approach Tasks* (BAT; e.g. Muris et al., 2012) Behavioral approach tasks consist of the presentation of various items to the participant and assessment of his or her willingness to approach and engage with the stimuli in different ways. (See Appendix A for the list of BATs for the current). Children were asked to complete behavioral tasks individually in a one-on-one procedural format with the experimenter. Each child was placed approximately 120 inches from the stimulus and asked if they were willing to approach. The tasks consisted of the presentation of a stimulus and three consecutive steps, which increased in levels of disgust (e.g., “Will you approach the earthworm? Will you touch the earthworm? Will you hold it in your hand?”). Willingness to complete each step was scored with a 0 (completed task) and 1 (not completed). Thus, higher scores indicated increased avoidance. Children were asked to rate the level of disgust they experienced following each specific task. Disgust ratings were completed on a 5 point Likert-type scale, 0 (not disgusting) to 4 (extremely disgusting). Younger children were also given the opportunity to rate their disgust level using a visual analog scale of disgust faces. Following the child’s completion of the BATs, the child’s parent engaged in the same set of tasks with the child present and provided disgust ratings for each task. Children were then asked to complete the BATs a second time after watching their parent engage or avoid the tasks with the parent present.

## **Procedure**

Following approval from the Institutional Review Board at the University of Mississippi, parent and child dyads were recruited online and through various church and community organizations. Parents were directed to an online platform to register for research study time slots. Upon presenting for the study, a consent form was given to parents. Once parental consent

and child assent was received, both the child and parent completed paper and pencil measures (Demographics, CDS/DS-R, PANAS-C, R-CADS). Once measures were completed by the child, an experimenter individually administered the behavioral approach tasks to the child without the parent present. Each BAT consisted of 3 steps with each step increasing in interaction with stimulus. Following each step, the participant rated his or her level of disgust on a five point Likert-type scale. To assess the moral domain of disgust, four videos were presented to the participant. Two videos consisted of children engaged in moral transgressions. One video showed children engaged in teasing/bullying of a peer and the other video showed children stealing from a store. The participant was asked to rate the degree of disgust they experienced on the same Likert style scale. Two more videos were used as a manipulation check to assess if children were correctly identifying moral disgust as an emotional response. These videos demonstrated two different children following social/moral standards (i.e., giving food to others; telling the group not to talk about a friend). The children were asked to use the same Likert style rating scale following the videos of others following socio-moral standards. Following the child's completion of all BATs he or she was asked to sit in a chair adjacent to the testing area in the same room as the parent completing the BATs. The caregiver then entered the testing area and the same BATs were administered while the child watched. Upon the parent or guardian's completion of the tasks, the child was asked to complete the behavioral approach tasks a second time, while the parent observed. Each child completed the approach tasks a total of two times, while the parent or caregiver completed the BATs only once. Presentation of BATs was randomized with each presentation. All videos were presented concurrently but the order of presentation varied among participants as well as Time 1 to Time 2 within subjects. Both the parent and child were debriefed concerning any deception used in the study following overall completion of BATs.

### III. RESULTS

Prior to data analysis, missing values were computed using the expectation maximization algorithm in SPSS. One participant was removed prior to analysis due to not completing three of the four self-report questionnaires which resulted in sufficient missing data. Preliminary correlation analyses were run on all variables of interest to determine any potential covariates for subsequent analyses.

Hypothesis one: *Children's self-report ratings of disgust will be positively correlated to caregiver's self-report ratings of disgust.*

A correlational analysis was conducted to assess initial associations between children's self-report disgust ratings as measured by the CDS and parents' self-report disgust ratings as measured by the DS-R. Though not clinically significant, a positive correlation was present ( $r = .47, p = .05$ ).

Hypothesis two: *Self-report ratings of disgust will be positively correlated to behavioral approach tasks for both children and caregivers respectively.*

Using correlational analysis, results suggested that children's self-report ratings of disgust were not significantly related to BAT tasks completed at Time 1 ( $r = -.05, p = .85$ ). However, parent self-report ratings were significantly correlated to total number of behavior approach tasks completed ( $r = .60, p < .05^*$ ). Correlational analyses for hypothesis one and hypothesis two can be found in Table 1. Means and standard deviations for children's behavior approach tasks at Time 1 can be found in Table 2. Means and standard deviations for parents' behavior approach tasks can be found in Table 3. Table 4 provides a summary of mean and standard deviation scores for children's behavior approach tasks at Time 2.

**Table 1**

## Correlational Analyses for Self-Reports and BAT Total Scores

|                  | CDS  | Child Time 1 BAT | DS-R |
|------------------|------|------------------|------|
| CDS              | 1    | -.05             | .47  |
| Child Time 1 BAT | -.05 | 1                | .36  |
| DS-R             | .47  | .36              | 1    |
| Parent BAT       | .29  | -.10             | .60* |

*Note:* CDS = Children's Disgust Scale; BAT = Behavior Approach Task; DS-R = Disgust Scale, Revised;  $p < .01^*$ .

**Table 2**

## Summary of Means for Children's Behavior Approach Tasks Completed at Time 1

| Behavior Approach Task | Mean | Standard Deviation |
|------------------------|------|--------------------|
| Cookie                 | 1.35 | 1.00               |
| Cow Eye                | 1.88 | 1.83               |
| Bullying Video         | 0    | 0                  |
| Stealing Video         | 0    | 0                  |
| Sweaty T-shirt         | .94  | 1.09               |
| Urn                    | 1.05 | .97                |
| Worm                   | .65  | 1.11               |
| Urine                  | 1.82 | .72                |

*Note:* Higher scores indicate higher avoidance of item. Maximum score of 3, minimum score of 0.

**Table 3**

## Summary of Means for Parent Behavior Approach Tasks Completed

| Behavior Approach Task | Mean | Standard Deviation |
|------------------------|------|--------------------|
| Cookie                 | .94  | 1.14               |
| Cow Eye                | .82  | .95                |
| Bullying Video         | 0    | 0                  |
| Stealing Video         | 0    | 0                  |
| Sweaty T-shirt         | .29  | .59                |
| Urn                    | .76  | 1.09               |
| Worm                   | .47  | .87                |
| Urine                  | 1.47 | .94                |

*Note:* Higher scores indicate higher avoidance of item. Maximum score of 3, minimum score of 0.

**Table 4**

## Summary of Means for Children's Behavior Approach Tasks Completed at Time 2

| Behavior Approach Task | Mean | Standard Deviation |
|------------------------|------|--------------------|
| Cookie                 | 1.17 | 1.01               |
| Cow Eye                | 1.12 | 1.05               |
| Bullying Video         | 0    | 0                  |
| Stealing Video         | 0    | 0                  |
| Sweaty T-shirt         | .53  | .87                |
| Urn                    | 1.00 | 1.00               |
| Worm                   | .47  | .71                |
| Urine                  | 1.41 | .87                |

*Note:* Higher scores indicate higher avoidance of item. Maximum score of 3, minimum score of 0.

*Hypothesis 3: Children's self-report of disgust will predict Time 1 BAT scores when controlling for any potential covariates (i.e. depression, anxiety, and affective states).*

A hierarchical regression was conducted to test the assertion that children's self-report of disgust would predict Time 1 BAT scores when controlling for depression, anxiety, and affective states as measured by the RCADS, RCADS-P, and PANAS-C (see Table 6). Due to limited sample size all potential covariates were included in the regression regardless of statistical significance in preliminary analyses. Initial correlations among potential covariates can be found in Table 5. The hierarchical regression consisted of two steps. In the first step, the RCADS, RCADS-P, and PANAS-C scores were entered and, in step two, the CDS ratings of disgust were entered. The hierarchical regression revealed that the RCADS-P scores contributed significantly to the regression model,  $F(6, 10) = 34.75, p < .001$  and accounted for 95.4% of the variance. In

the second step, the independent variable of child disgust ratings, measured by the CDS, was entered into the model. The regression revealed that the CDS scores contributed significantly to the model,  $F(7, 9) = 76.68, p < .001$ , and accounted for an additional 3% of the variance.

**Table 5**

Correlations Among Covariates and Predictor Variables of Child Time 1 BATs

|                        | CDS  | PANAS-C<br>Pos. Affect | PANAS-C<br>Neg. Affect | R-CADS-P<br>Anxiety | R-CADS-P<br>Anx & Dep. | R-CADS<br>Anxiety | R-CADS<br>Anx. &<br>Dep. |
|------------------------|------|------------------------|------------------------|---------------------|------------------------|-------------------|--------------------------|
| PANAS-C<br>Pos. Affect | -.52 | 1                      | -.14                   | -.23                | -.17                   | -.29              | -.38                     |
| PANAS-C<br>Neg. Affect | -.22 | -.14                   | 1                      | .16                 | .11                    | .36               | .43                      |
| R-CADS-P<br>Anxiety    | .27  | -.23                   | .16                    | 1                   | .33                    | .30               | .32                      |
| R-CADS-P<br>Anx & Dep  | .02  | -.17                   | .11                    | .33                 | 1                      | .27               | .24                      |
| R-CADS<br>Anxiety      | .08  | -.30                   | .36                    | .31                 | .27                    | 1                 | .98**                    |

*Note:* (N=17); CDS = Children’s Disgust Scale; PANAS-C Pos. Affect = Positive and Negative Affect Scale for Children, Positive Affect subscale; PANAS-C Neg. Affect = Positive and Negative Affect Scale for Children, Negative Affect subscale; R-CADS-P Anxiety = Children’s Anxiety and Depression Scale, Revised, Parent report, Total Anxiety subscale; RCADS-P Anx & Dep = Children’s Anxiety and Depression Scale, Revised, Parent report, Total Anxiety and Depression subscale; R-CADS-Anxiety = Revised Children’s Anxiety and Depression Scale, child report, Anxiety subscale; R-CADS-Anx & Dep. = Revised Children’s Anxiety and Depression Scale, child report, Anxiety and Depression subscale;  $p < .001^{**}$ ;  $p < .01^{*}$ .

**Table 6**

Summary of Hierarchical Regression Analysis for Variables Predicting  
Children's Time 1 Behavioral Avoidance

| Variable           | B     | SE B | Beta  | Change R <sup>2</sup> | p     |
|--------------------|-------|------|-------|-----------------------|-------|
| Step 1:            |       |      |       |                       |       |
| R-CADS Anx         | 1.15  | .65  | .71   | .95                   | .11   |
| R-CADS Anx & Dep   | -1.16 | .77  | -.63  | .95                   | .16   |
| R-CADS-P Anx       | -1.07 | .08  | -1.01 | .95                   | .00** |
| R-CADS-P Anx & Dep | 1.16  | .18  | .49   | .95                   | .00** |
| PANAS-C-PA         | -.39  | .18  | -.18  | .95                   | .06   |
| PANAS-C-NA         | -.15  | .18  | -.07  | .95                   | .41   |
| Step 2:            |       |      |       |                       |       |
| CDS                | .78   | .20  | .22   | .03                   | .00*  |

*Note:* (N=17); CDS = Children's Disgust Scale; PANAS-C Pos. Affect = Positive and Negative Affect Scale for Children, Positive Affect subscale; PANAS-C Neg. Affect = Positive and Negative Affect Scale for Children, Negative Affect subscale; R-CADS-P Anxiety = Children's Anxiety and Depression Scale, Revised, Parent report, Total Anxiety subscale; RCADS-P Anx & Dep = Children's Anxiety and Depression Scale, Revised, Parent report, Total Anxiety and Depression subscale; R-CADS-Anxiety = Revised Children's Anxiety and Depression Scale, child report, Anxiety subscale; R-CADS-Anx & Dep. = Revised Children's Anxiety and Depression Scale, child report, Anxiety and Depression subscale;  $p < .001^{**}$ ;  $p < .01^{*}$ .

Hypothesis 4: *Parents' self-report of disgust will predict BAT scores when controlling for any potential covariates*

A hierarchical linear regression was conducted to assess if parents' self-report of disgust, measured by the DS-R, would predict avoidance of disgusting stimuli (as measured by BAT scores) when controlling for anxiety, depression, stress, and affective states. Correlations for the variables of interest can be found in Table 7. Due to limited sample size all potential covariates were included in the regression regardless of statistical significance in preliminary analyses. The hierarchical regression consisted of two steps. In the first step, DASS-21 subscale scores for depression, anxiety, and stress, as well as positive affect and negative affect scores from the PANAS were entered into the model, and in step two, disgust ratings measured by the DS-R were entered. The regression revealed that the covariates did not significantly contribute to the model,  $F(5, 11) = 3.29, p = .05$  but accounted for 60% of the variance in behavioral avoidance. When parents' disgust ratings were added to the model, they contributed significantly to the model,  $F(6, 10) = 6.04, p < .01$ , and accounted for 18.4% of the variance. The regression model can be found in Table 8.

**Table 7**

## Correlations Among Covariates and Predictor Variable of Parental Behavioral Avoidance

|                       | PANAS Pos.<br>Affect | PANAS Neg.<br>Affect | DASS-21<br>Depression | DASS-21<br>Anxiety | DASS-21<br>Stress |
|-----------------------|----------------------|----------------------|-----------------------|--------------------|-------------------|
| DS-R                  | -.25                 | .10                  | .40                   | .40                | .30               |
| PANAS<br>Pos. Affect  | 1                    | -.62*                | .03                   | .02                | .02               |
| PANAS<br>Neg. Affect  | -                    | 1                    | -.13                  | -.00               | -.13              |
| DASS-21<br>Depression | -                    | -                    | 1                     | .78**              | .51               |
| DASS-21<br>Anxiety    | -                    | -                    | -                     | 1                  | .49               |
| DASS-21<br>Stress     | -                    | -                    | -                     | -                  | 1                 |

*Note:* (N = 17); DS-R = Disgust Scale, Revised; PANAS = Positive and Negative Affect Scale; DASS-21 = Depression, Anxiety, and Stress Scale-21;  $p < .01^*$ ;  $p < .001^{**}$ .

**Table 8**

Summary of Hierarchical Regression Analysis for Variables  
Predicting Parents' Behavioral Avoidance

| Variable              | B    | SE B | Beta | Change R <sup>2</sup> | p    |
|-----------------------|------|------|------|-----------------------|------|
| Step 1:               |      |      |      |                       |      |
| DASS-21<br>Depression | 1.38 | .65  | .69  | .60                   | .02* |
| DASS-21<br>Anxiety    | .02  | .93  | .01  | .60                   | .98  |
| DASS-21<br>Stress     | -.97 | .51  | -.43 | .60                   | .09  |
| PANAS-PA              | -.65 | .31  | -.52 | .60                   | .06  |
| PANAS-NA              | -.50 | .24  | -.53 | .60                   | .06  |
| Step 2:               |      |      |      |                       |      |
| DS-R                  | .12  | .04  | .50  | .18                   | .02* |

*Note:* (N=17); DASS-21 = Depression, Anxiety, Stress Scale-21; PANAS-PA/NA = Positive and Negative Affect Scale, Positive Affect/Negative Affect; DS-R = Disgust Scale, Revised; p < .05\*.

Hypothesis 5: *Children's Time 2 BAT scores will significantly correlate with Time 1 BAT scores*

To assess if children's Time 2 BAT scores were significantly different from Time 1 BAT scores, a repeated measures, within group ANOVA was conducted. There was not a significant effect of time on the avoidance of disgusting tasks (Wilks' Lambda = .89,  $F(1, 16) = 1.95$ ,  $p = .26$ ).

Hypothesis 6: *Children's BAT scores will be correlated with parent BAT scores.*

A correlation analysis was conducted to assess if children's BAT scores at both Time 1 and Time 2 were positively correlated to parent BAT scores. Children's Time 1 BAT scores were not significantly related to their Time 2 ( $r = .04$ ,  $p = .88$ ) or Parent BAT scores ( $r = -.10$ ,  $p = .71$ ). Additionally, children's Time 2 BAT scores were not significantly correlated to Parent BAT scores ( $r = .42$ ,  $p = .07$ ). Correlations are reported in Table 9.

**Table 9**

Correlations Among Children's Time 1 BAT, Time 2 BAT, and Parent BAT

|                  | Child Time 1 BAT | Child Time 2 BAT | Parent BAT |
|------------------|------------------|------------------|------------|
| Child Time 1 BAT | 1                | .04              | -.10       |
| Child Time 2 BAT | --               | 1                | .42        |

Note: (N=17); BAT = Behavioral Approach Tasks.

Hypothesis 7: *Parent BAT scores will moderate the relationship between children's Time 1 and Time 2 BAT scores.*

Due to correlations between children's Time 1 and Time 2 BAT scores and parent BAT scores being statistically non-significant, a moderation analysis to test the hypothesis that parent BAT scores would influence the relationship between Time 1 and Time 2 BAT scores was not warranted.

## Post Hoc Analyses

Due to the lack of relation between the children's BAT scores at Time 1 and Time 2, post hoc analyses were conducted to examine the relationship among children's verbal ratings of disgust during BATs at Time 1 and Time 2, particularly as related to parental ratings of disgust. Mean and standard deviation scores for child and parent BAT disgust ratings can be found in Tables 10, 11, and 12 respectively. Findings suggested that when compared to parent disgust ratings during BATs, children's Time 1 ( $r = .01$ ;  $p = .96$ ) and Time 2 ( $r = .38$ ,  $p = .14$ ) disgust ratings were not significantly correlated. However, children's Time 1 and Time 2 BAT disgust ratings were significantly correlated ( $r = .68$ ,  $p < .01^*$ ). The correlational matrix with all of the BAT disgust ratings is presented in Table 13.

**Table 10**

Summary of Means for Children's Disgust Ratings BATs at Time 1

| Behavior Approach Task | Mean | Standard Deviation |
|------------------------|------|--------------------|
| Cookie                 | 5.17 | 3.34               |
| Cow Eye                | 7.35 | 4.34               |
| Bullying Video         | 1.00 | 1.41               |
| Stealing Video         | .65  | 1.27               |
| Sweaty T-shirt         | 3.59 | 3.83               |
| Urn                    | 5.00 | 3.91               |
| Worm                   | 2.76 | 3.70               |
| Urine                  | 8.82 | 3.26               |

*Note:* Higher scores indicate higher levels of disgust reported. Minimum score = 0, Maximum score = 12.

**Table 11**

## Summary of Means for Children's Disgust Ratings on BATs at Time 2

| Behavior Approach Task | Mean | Standard Deviation |
|------------------------|------|--------------------|
| Cookie                 | 3.88 | 3.87               |
| Cow Eye                | 5.23 | 4.96               |
| Bullying Video         | 1.65 | 1.62               |
| Stealing Video         | 1.29 | 1.40               |
| Sweaty T-shirt         | 3.59 | 3.83               |
| Urn                    | 3.05 | 3.13               |
| Worm                   | 2.00 | 3.70               |
| Urine                  | 8.58 | 4.84               |

*Note:* Higher scores indicate higher levels of disgust reported. Minimum score = 0, Maximum score = 12.

**Table 12**

Summary of Means for Parents' Disgust Ratings on BATs

| Behavior Approach Task | Mean  | Standard Deviation |
|------------------------|-------|--------------------|
| Cookie                 | 10.76 | 11.26              |
| Cow Eye                | 12.24 | 11.20              |
| Bullying Video         | 7.35  | 3.00               |
| Stealing Video         | 8.00  | 2.00               |
| Sweaty T-shirt         | 8.23  | 7.18               |
| Urn                    | 8.35  | 8.62               |
| Worm                   | 7.76  | 12.18              |
| Urine                  | 20.18 | 7.74               |

*Note:* Higher scores indicate higher levels of disgust reported. Minimum score = 0, Maximum score = 30.

**Table 13**

Correlations Among Children's Disgust Ratings and Parent Disgust Ratings during BATs

|  | Child Time 2 BAT<br>Disgust Rating Total | Parent BAT<br>Disgust Rating Total |
|--|--|------------------------------------|
| Child Time 1 BAT<br>Disgust Rating Total | .68*                                     | .01                                |
| Child Time 2 BAT<br>Disgust Rating Total | 1  | .38                                |
| Parent BAT<br>Disgust Rating Total       | --                                       | 1                                  |

*Note:* (N=17); BAT = Behavioral Approach Task;  $p < .01^*$ .

Following initial correlations, a hierarchical linear regression was conducted to assess if parental ratings of disgust during behavioral approach tasks predicted children’s Time 2 disgust ratings during BATs while controlling for their ratings at Time 1. The regression consisted of two steps in which children’s BAT disgust ratings at Time 1 were entered into the model first and significantly predicted for Time 2 ratings,  $F(1, 15) = 12.54, p < .01^*$  while accounting for 45.5% of the variance. Parental BAT disgust ratings were entered into the model second and significantly predicted children’s Time 2 disgust ratings,  $F(2, 14) = 11.88, p < .001^*$ , while uniquely accounting for 17.4% of the variance (see Table 14).

**Table 14**

Summary of Hierarchical Regression Analysis for Variables  
Predicting Children’s Time 2 Disgust Ratings

| Variable  | B   | SE B | Beta | Change R <sup>2</sup> | p     |
|---|-----|------|------|-----------------------|-------|
| Step 1:<br>Children’s Time 1 BAT<br>Disgust Ratings | .76 | .21  | .68  | .50                   | .00** |
| Step 2:<br>Parent BAT Disgust Ratings               | .75 | .18  | .41  | .17                   | .00*  |

*Note:* (N=17); BAT = Behavioral Approach Tasks,  $p > .01^*$ ;  $p > .001^{**}$ .

### Parental Identification

As the goal of the study was to determine how children’s behavior is influenced by parental behavior, children were asked to complete a survey to determine if they preferred one parent to another. Previous findings in the literature suggest that mother-child agreement on self-report measures related to disgust is higher than that of father-child (Muris et al., 2014). For this

reason, it was valuable to include a measure which helped determine if children's behavior was also influenced by the degree to which they liked and desired to emulate their parents. Results revealed that children identified with each parent equally on average (mothers:  $M = 16.65$ ,  $SD = 2.18$ ; fathers:  $M = 16.41$ ,  $SD = 2.34$ ). Both parents received the same minimum and maximum scores, 12 and 18 respectively. For this study, these results indicate that which parent was present for the study did not necessarily affect children's responding to tasks as they valued each parent's behaviors equally on average.

#### IV. DISCUSSION

The current study aimed to gain understanding in the development of disgust in children and the potential influence of parental behaviors on the emergence of disgust avoidance. More specifically, it was hypothesized that children's self-report ratings of disgust would be related to parents' self-report ratings of disgust, which although not supported significantly, this was likely due to the study being sorely underpowered. However, the correlation demonstrated a medium effect size ( $r = .47$ ) even though non-significant. This suggests that with appropriate power, the effect would be significant, thus supporting dyad's relation with disgust. This relation would be expected from learning theory such that children learn from previously observed encounters with disgusting objects by their parents and subsequently respond in the same manner. This further supports previous theories that disgust responses are acquired through conditioned or learning experiences (Rozin and Fallon, 1987; Tompkins, 1963).

Additionally, children's self-report ratings of disgust were predicted to be related to their behavioral approach behaviors when presented with disgust tasks. However, there was not a significant relationship between their self-report of disgust and the total number of behavioral tasks they completed. This may be due to the nature of the tasks as a few of the disgusting stimuli presented were novel to most children (e.g., cow eye, urn with ashes) when compared to more typically observed disgusting objects presented in the Child Disgust Scale (e.g., sitting next to a sweaty kid, feeling disgusted by blood in meat). The lack of correlation could also be because the sample size was small and unable to detect a relationship. However, as hypothesized, parents' self-report ratings of disgust were significantly correlated to their total number of behavior tasks completed when presented with disgusting stimuli. This further expounds on previous research and suggests that parents are able to adequately identify their emotional responses to stimuli during in-vivo or imaginative situations (Deacon & Olatunji 2007). Parents'

similarity in patterns of behavior between imaginal scenarios and actual behavioral tasks may also be due to extensive and more well-developed learning histories in which they have been presented with a wider range of disgusting stimuli across their lifespans. Perhaps the positive relationship between disgust ratings and behavioral approach tasks is the result of parents' ability to recall and report their responses based on previous learning experiences.

To better understand the potential variables that contributed to children's behaviors during disgust tasks, self-report ratings of disgust, positive affect, negative affect, and anxiety and depression, as well as parent reported anxiety and depression of each child were examined. Parent reports of children's anxiety and depression significantly predicted children's approach behaviors when presented with disgusting behavioral tasks. Heightened anxiety and depression are known to lead to behavioral avoidance, which was the primary purpose of controlling for these covariates in an effort to understand the unique role of disgust in children's approach and avoidance behaviors (Lebowtiz, Shic, Campbell, Basile, & Silverman, 2015). As predicted, children's report of disgust on the CDS self-report measure also uniquely predicted number of interactions with the disgusting stimuli. This expands on previous findings that children's self-report ratings of disgust are significantly correlated to overall avoidance of varying disgust related tasks and that behavior approach tasks are appropriate in measurement of children's sensitivity to disgust (Muris et al., 2014). This finding also further supports that disgust is a unique emotion which contributes to changes in behaviors.

A similar analysis was conducted to determine if self-reported disgust, anxiety, stress, depression, and affective states contributed to parent's behavioral approach and avoidance of disgusting stimuli. Parent self-reports of depression played a role in parental avoidance ( $r = .53$ , large effect size). This was to be expected as depression has been cited as related to a decrease in behavioral approach and activation towards stimuli (Trew, 2011). However, parent self-report ratings of disgust uniquely predicted behavioral approach and avoidance of disgusting stimuli. This further supports previous literature that disgust plays a unique role in behavioral avoidance

(Nicholson & Barnes-Holmes, 2012). Furthermore, disgust is identified as a basic emotion which subsequently informs behavior patterns and it is these behavior patterns which in turn can contribute to negative mood and symptoms of depression.

It was hypothesized that children's behaviors at Time 1 would be significantly correlated to both their Time 2 scores and parents' behaviors; however, there was not a significant relationship between the variables. This was surprising, as past behavior is often the best predictor of future behavior. However, the lack of significant relationship among children's Time 1 and Time 2 scores may be due the small sample size. It is important to note, that children's Time 2 BAT scores were positively correlated with parent BAT scores with a medium effect size ( $r = .42$ ) despite not reaching clinical significance. This supports the multiple learning theories posited previously which state that children's behaviors are shaped through observational learning and direct instruction from parents. This is further demonstrated here as children's behaviors after watching their parents interact with disgusting stimuli were more closely related to parental behavior rather than initial interactions with the stimuli.

As previous research has demonstrated that parental behaviors and language of disgust influence children's actions when presented with objects described as disgusting (Stevenson et al., 2010; Muris, Mayer, Borth, and Vos 2013), a hierarchical regression was conducted to assess if parental ratings of disgust would predict for children's ratings of disgust at Time 2 after observing parents when controlling for initial ratings at Time 1. Findings support previous literature as children's disgust ratings of the stimuli at Time 1 predicted their Time 2 ratings of disgust and parental ratings of disgust uniquely contributed to the changes in ratings at Time 2. This indicates that children are directly affected, and their behaviors are shaped, through direct observation of parental behaviors. Additionally, this supports the theory that disgust is a complex emotion, developed from an early age, primarily through learning principles. Most importantly, these findings provide further evidence that parents play a primary role in emotional

development which subsequently allows for inquisition into how to best cultivate the emotion without excessive disgust sensitivity or propensity.

### **Qualitative data**

Findings that parental ratings of disgust uniquely predicted children's disgust ratings at Time 2 were also supported by observational data that occurred during the procedure of the study. Children were observed to refuse to participate in certain BATs until watching their parents engage with them (i.e., placing their hands in urine, touching ashes). Furthermore, children were observed to rate items as not disgusting until watching their parents label them as disgusting. Of particular interest is the perceived pattern of behaviors during engagement in the moral disgust video tasks. Children most commonly would watch videos of stealing and bullying and when asked to rate the behavior as disgusting on a scale of 0-4, would consistently state it was "not disgusting," subsequently assigning a disgust rating of 0. Upon parental examination of the moral disgust videos, parents would reliably label the videos as disgusting, often with the highest parental rating of a 10. In several instances, children would become perplexed and ask parents in the moment why they labeled the videos in that manner. Parents were encouraged to engage with their children in a typical fashion and several instructed their children on the characteristics which contributed to the video being labeled as "disgusting." Most interestingly, the younger children were observed to have the most difficulty in identifying non-physical items of disgust as disgusting even when directly taught or able to observe parental interactions where moral items were labeled as such. This further supports the developmental model posited by Rozin et al., 2000 which states that moral disgust is the last domain to develop in children. However, the effects reported by Danovitch & Bloom (2009) and Stevenson et al., (2010), with identification of moral disgust by age 7 were not observed in this study based on observational data.

## **Limitations**

Although the findings of this project are unique and contribute to the paucity of literature on the development of child disgust, it is important that these results be considered in light of the limitations present. First, the study sample is small and therefore insufficiently powered. For this reason, Type II error is at increased probability and certainly impacted the study results.

Second, the ability to appropriately present items to evoke moral disgust was difficult. Due to concerns that the videos would not be approved by institutional review board for the population in which the study was conducted, more severe and previously used videos of moral disgust such as domestic violence images, Bible burning, and dog fighting which have been used in other laboratory studies of moral disgust were not used. This may have affected children's ability to identify these items as morally disgusting. In some cases, children were unable to fully comprehend the transgressions that were occurring in each video. For example, the stealing video consisted of two siblings stealing a computer from a store. While some children were able to identify that the computer was being stolen, other asked for clarification as to what was occurring in the video.

## **Feasibility of lab study with parent/child dyads**

Following dissertation proposal, difficulties with the study began. As the current research questions pertained to children who are categorized as a vulnerable population, more stringent regulation for this research proposal was required. The application to the institutional review board at the university was submitted in March of 2018 after numerous revisions and obstacles regarding concerns by the department chair related to the ethics of engaging children in research without a parent or another adult present with the examiner. There was limited response from the review board until repeated prompting from the principal investigator about the status of review. Upon review, this study met considerable resistance with the institutional review board due to unsubstantiated concerns of the potential for negative effects of presenting children with disgusting stimuli for behavioral approach tasks. More specifically, several members of the

board voiced concerns that exposing children to disgusting objects would result in distress and possible negative psychological effects, and argued presenting objects without parental knowledge of the determined objects was unethical. The principal investigator was asked to attend the full board review of the protocol and engaged in discussion and defense of the integrity and value of the project while providing both empirical support from published articles and anecdotal reports of fellow researchers (R. Stevenson, personal communication, May 1, 2018) who have conducted similar projects. This resistance cost the researcher significant time in recruitment and required continued adjustments to consent forms and defense of methodology. Due to the difficulty in acquiring IRB approval, the decision was made to recruit outside of schools as this required further documentation and lengthening of the review process.

Once approved, recruitment of parent/child dyads could finally begin. As research has suggested children have difficulty verbalizing emotions, the opportunity to use BATs to observe their approach and avoidance behaviors was a key aspect of the study methodology to understand the experience of disgust. However, recruitment for the dyads to participate in laboratory research, requiring physical presence, proved considerably difficult. Recruitment began within a week of gaining IRB approval on May 3, 2018. Individuals were recruited through posting of research posters online and through social media as well as posting of posters in local businesses. The first site for recruitment was Hattiesburg, MS less than two weeks from approval. Due to the travel required and lease of space for data collection, only one day of recruitment was completed in Hattiesburg. Recruitment continued in Oxford, MS from May to the latter part of June. Study times spanned from morning to evening in an effort to provide working parents convenient scheduling opportunities. Due to relocation of the principal investigator, time slots were unavailable late June to September. Once IRB approval was gained for the amendment of recruitment in Nebraska and a space for data collection was secured, recruitment for participation began. Participants were recruited once again through social media and online posting of a research flyer. Due to children's attendance in school at the time of collection, time slots were

made available after school into the evenings and all day on Saturdays. Sunday afternoon time slots were also offered when interested parties were unable to meet at the scheduled times posted. Of the 116 research time slots that were posted online across sites, only 18 participants participated in the study. A total of three participants failed to present for their research time slot and two participants were rescheduled due to weather.

While there appeared to be general interest during recruitment in various organizations, scheduling became an apparent obstacle as the study required the presence of both the child and adult. A lack of participation occurred despite the research time slots occurring on weekends, afternoons, evenings, and during summer break. Overall, it appears there were numerous possible barriers to recruitment and collection of data which are relevant for discussion.

It is worth noting that two of the three sites for recruitment (Oxford, MS and Norfolk, NE) are considered rural areas. Lim, Follansbee-Junger, Crawford, & Janicke identified several obstacles for recruitment in rural areas such as researchers not being identified as members of the community, mistrust of the intentions of researchers, transportation difficulty, and smaller population density (2011). Another possible reason for limited participation is limited dissemination concerning the presence of the current study. While the study was promoted using social media and various church and extracurricular organizations, these methods limited the scope of dissemination to children and parents that may have otherwise participated in the research. In a recent study aiming to understand the most effective recruiting method for recruiting parents with obesity, the use of posters in public areas such as grocery stores and parks and speaking with children's teachers to share the study with parents were found to yield the greatest participation from families (Bergmann et al., 2017). Therefore, the addition of posters in various town locations as well as access to recruitment in schools may have produced higher rates of interest in participation. Additionally, the principal investigator was solely responsible for collection of data which limited availability for time slots and affected recruitment from late

June to October due to relocation. The project may have also yielded more participation had participants been directly compensated for their participation in the research project.

## **Conclusion**

The current project aimed to replicate previous research and contribute new findings to the literature related to the development of the emotion of disgust and how the emotion is expressed by children. Despite a limited sample size, the current project found that self-report ratings of disgust are related to behavioral approach and avoidance in children and their parents. Furthermore, data suggested that children's behaviors are directly influenced and shaped through learning either by direct instruction or observation of parents' engagement or avoidance of disgusting stimuli. Understanding that parental behaviors affect children's labeling of disgust as well as influence their behaviors, allows for future research to study the best manner in which parents can teach children harm reduction through the emotion of disgust, without cultivating pathologically high levels of disgust sensitivity. For example, it is valuable to understand how parents can teach their children not to consume rotten food without teaching a heightened sense of disgust or fear to the rotten food. Since research has demonstrated that increased disgust sensitivity is related to psychopathology such as various anxiety disorders, these findings provide information which may lend itself to understanding and creating guidelines for methods of emotion development. By understanding how children learn and are shaped by their experiences, an opportunity to teach protective factors and limit exposure to adverse events which may impact their emotional development and lives is created.

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## APPENDIX

### Behavior Approach Tasks

|   |   |
|---|---|
| <p>Cookie with Mayo:</p> <ol style="list-style-type: none"> <li>1) Take a bite of the cookie on the side without mayonnaise.</li> <li>2) Lick some of the mayo.</li> <li>3) Take a bite of the cookie with the mayo.</li> </ol>   | <p>Cow eye:</p> <ol style="list-style-type: none"> <li>1) Approach cow eye.</li> <li>2) Touch cow eye ball.</li> <li>3) Hold cow eye ball in hand.</li> </ol>   |
| <p>*Bedpan filled with urine:</p> <ol style="list-style-type: none"> <li>1) Put on a projective glove and touch the side of the bedpan</li> <li>2) Submerge hand in the urine with a glove on</li> <li>3) Completely submerge hand in the urine without a glove.</li> </ol> | <p>Video of kids stealing from store:</p> <ol style="list-style-type: none"> <li>1) How disgusting is this video?</li> </ol> <p>**Video showing kid giving away snacks to others.</p> <ol style="list-style-type: none"> <li>2) How disgusting is this video?</li> </ol>  |
| <p>Earthworms:</p> <ol style="list-style-type: none"> <li>1) Approach the earthworm.</li> <li>2) Touch the earthworm with one finger.</li> <li>3) Pick up the earthworm and let it crawl in hand.</li> </ol>  | <p>Sweaty t-shirt:</p> <ol style="list-style-type: none"> <li>1) Approach shirt.</li> <li>2) Pick up shirt with hand.</li> <li>3) Touch shirt to face.</li> </ol>   |
| <p>*Urn of human remain ashes:</p> <ol style="list-style-type: none"> <li>1) Approach the urn.</li> <li>2) Touch the inside of the urn.</li> <li>3) Touch some of the ashes.</li> </ol>   | <p>Video of kids bullying about another kid:</p> <ol style="list-style-type: none"> <li>1) How disgusting is this video?</li> </ol> <p>**Video of kid defending kid being bullied.</p> <ol style="list-style-type: none"> <li>2) How disgusting is this video?</li> </ol> |

Note: \* denotes use of deception in BAT (urine is apple juice with deer urine scent, wood ashes instead of human remains);\*\* denotes manipulation check.

VITA

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**EDUCATION**

- 2015 - Present    **Doctor of Philosophy**  
**University of Mississippi**  
Clinical Psychology  
(Anticipated August 2019)  
Dissertation: *Teaching Kids to Say Ew!: Parent-Child Disgust Transmission*  
Advisor: Danielle Maack, Ph.D.
- Predoctoral Internship**  
**Munroe-Meyer Institute**  
Rural Integrated Care Program  
July 2018-June 2019  
Supervisor: Joshua Turek, Ph.D.
- 2013 - 2015    **Master of Arts**  
**University of Mississippi**  
Clinical Psychology  
M.A. May, 2015  
Master's thesis (2015): *Scrupulosity Trauma and Disgust, Oh My!: Assessing the potential relation between disgust and trauma symptoms*  
Advisor: Danielle Maack, Ph.D.
- 2009 – 2013    **Bachelor of Arts, Psychology**  
**University of Mississippi**  
Graduated *Magna Cum Laude*  
Minor: English

Honors Thesis: *Socio-economic status as a contributing factor in loneliness in school aged youth.*

Honors Advisor: John Young, Ph.D.

## **CERTIFICATIONS & ACHIEVEMENTS**

- October 2018            **National Clinical Mental Health Clinician Examination (NCMHCE)**  
Passed in state of Nebraska
- August 2017            **Examination for Professional Practice in Psychology (EPPP)**  
Passed at Doctoral Level for all states
- July 2016                **Provisionally Certified Mental Health Therapist (PCMHT)**  
Mississippi Department of Mental Health

## **CLINICAL EXPERIENCE**

- 05/2014-05/2019        Graduate Therapist**  
**Psychological Services Center, University of Mississippi**  
**Supervisors: Danielle Maack, Ph.D., John Young, Ph.D., Scott Gustafson, Ph.D., ABPP, Alan Gross, Ph.D., Kelly Wilson, Ph.D.**
- Provide individual therapy and assessment services through the university's Psychological Services Center
  - Attend weekly supervision meetings regarding current cases and professional development
  - Participate in didactics related to case conceptualization, treatment planning and implementation of Cognitive-Behavioral Therapy, behavioral interventions, parent training, and Acceptance and Commitment Therapy
- 08/2016 – 05/2019     Graduate Psychological Examiner**  
**Psychological Assessment Clinic, University of Mississippi**  
**Supervisor: Scott Gustafson, Ph.D., ABPP**
- Provide comprehensive psychological evaluations to assess for learning disabilities, Attention-Deficit/Hyperactivity Disorder, differential diagnoses of psychopathology
  - Participate in weekly supervision meetings focused on conceptualization and report writing
- 07/2016-05/2017        Intern Therapist**  
**CommuniCare Community Mental Health Facility, Pittsboro, MS**  
**Supervisors: Alan Gross, Ph.D. & Dixie Church, M.S.**
- Provided clinical interventions to a diverse group of low income individuals in community mental health setting
  - Worked with nursing staff, case managers, school administrators, teachers, and physicians to provide comprehensive and integrated care
  - Duties included conducting intake assessments, completing and updating annual paperwork, and creating treatment plans

- Participated in didactics related to case conceptualization, treatment planning and implementation of Cognitive-Behavioral interventions

**08/2015-04/2016      Mental Health Consultant for Headstart Centers  
Supervisor: Alan Gross, Ph.D.**

- Observed teachers' use of behavioral management techniques in classroom
- Provided functional analysis for individual children's problematic behaviors
- Provided classroom behavior management tools and techniques to teachers
- Held parent conferences in an effort to provide helpful behavioral management tools to be implemented at home
- Provided appropriate assessment referrals for developmental and cognitive testing

**RESEARCH INTERESTS**

Individual differences and vulnerabilities to psychopathology  
Behavioral transmission of vulnerabilities and learned characteristics between parents and children

**PROFESSIONAL PUBLICATIONS**

Avent, Y., Walker, B.S., Lowe, M.S., Tynes, B.L., Crabtree, V.M., Mandrell, B.N. (in press). In home salivary melatonin collection: Methodology for children and adolescents. *Developmental Psychobiology*.

Allen, J.M., Graef, D.M., Ehrentraut, JH., Tynes, B.L., Crabtree, V.M. (2016). Sleep and pain in pediatric illness: A conceptual review. *CNS Neuroscience Therapy*, 22(11), 880-893.

**MANUSCRIPTS IN PREPARATION**

Zhao, M., Maack, D., Tynes, B.L. (under review). Who's got the power? Examining individual difference factors related to fear of vomiting.

Tynes, B.L., Mandrell, B.N., Russell, K.M., Hammarback, T., Lowe, M., Crabtree, V.M. (under review). Changes in sleep hygiene and sleep patterns in newly diagnosed pediatric oncology patients.

Tynes, B.L., Maack, D.J., Scott, S.M. (in preparation). Scrupulosity, Trauma, and Disgust, Oh My!: Assessing the potential relation between disgust and trauma symptoms.

Hebert, E.R., Tynes, B.L., Kellum, K.K., & Wilson, K.G. (in preparation). The things you can teach when they seem out of reach: Using adapted ABA techniques in a limited resource setting.

**PROFESSIONAL PRESENTATIONS**

## **RESEARCH TALKS**

- Tynes, B.L., Mandrell, B.N., Russell, K.M., Hammarback, T., Lowe, M., Crabtree, V.M. (2017, April). *Changes in sleep hygiene and sleep patterns in newly diagnosed pediatric oncology patients*. Presentation at 4th Annual UM Conference on Psychological Science, Oxford, MS.
- Tynes, B.L. & Crabtree, V.M. (2016, June). *RESFATIGUE: A quality improvement project assessing fatigue in residents*. Presentation at St. Jude Children's Research Hospital Department of Psychology Grand Rounds, Memphis, TN.
- Tynes, B.L., Vandenbrink, T., Miller, S., Young, J. (2016, April). *Teaching Kids to Say Ew!: An examination of contextual factors on child disgust*. Presentation at 3rd Annual UM Conference on Psychological Science, Oxford, MS.
- Tynes, B.L. & Crabtree, V.M. (2015, June). *LITE: Light Therapy to Increase Energy*. Presentation at St. Jude Children's Research Hospital Department of Psychology Grand Rounds, Memphis, TN.

## **POSTER PRESENTATIONS**

- Tynes, B.L., Crabtree, V.M., Russell, K.M., Hammarback, T., Mandrell, B. (2016, April). *Changes in sleep hygiene in newly diagnosed pediatric oncology patients: The role of gender*. Poster submitted for presentation at the annual convention of the Society of Pediatric Psychology, Atlanta, GA.
- Scott, S.M., Tynes, B.L., Zhao, M.S., Pineau, D. & Maack, D.J. (2016, April). *Bible Burning, Dog Fighting, and Partner Violence: Understanding the concept of moral disgust through the use of video clips*. Paper presented at the Third Annual UM Conference on Psychological Science, Oxford, MS.
- Scott, S.M., Tynes, B.L., Zhao, M.S., Pineau, D., Wickenhauser, M., Sapp, B., & Maack, D.J. (2016, October). *Bible Burning, Dog Fighting, and Partner Violence: Is moral disgust a real construct? Piloting a Multi-Method Assessment of Moral Disgust*. Poster accepted for presentation at the 50th annual convention of the Association for Behavioral and Cognitive Therapies, New York, NY.
- Scott, S.M., Maack, D.J., Tynes, B.L., Zhao, M., Pineau, D., & Young, J. (2015, November). *That's disgusting! Understanding the concept of moral disgust through the use of video clips*. Poster submitted for presentation at the 49th annual convention of the Association for Behavioral and Cognitive Therapies, Chicago, IL.
- Tynes, B. L., Maack, D. J., Zhao, M., Scott, S., & Young, J. (2015, November). *Scrupulosity, Trauma, and Disgust, Oh my! Assessing the potential relation between trauma symptoms, religiosity, and moral disgust*. Poster submitted for presentation at the 49th annual convention of the Association for Behavioral and Cognitive Therapies, Chicago, IL.

Zhao, M., Scott, S., Tynes, B.L., Pineau, D., Young, J., & Maack, D. (2015, November). *Individual differences in emetophobic symptoms: Anxiety sensitivity predicts emetophobic symptoms above and beyond difficulties with emotion regulation*. Poster presented at the 49th annual convention of the Association for Behavioral and Cognitive Therapies, Chicago, IL.

Zhao, M., Maack, D., Lightsey, B., & Young, J. (2014, April). *Nonacceptance of Emotions Potentiating in Effect of Contamination Fear on Behavioral Avoidance*. Presentation at the 1st annual UM Conference on Psychological Science, Oxford, MS.

Lightsey, B. & Young, J. (2013, November). *Socioeconomic status as a contributing factor in loneliness in school aged youth*. Poster presented at 42nd annual Association for Behavioral and Cognitive Therapies, Nashville, TN.

### ***SYMPOSIA***

Scott, S.M., Wickenhauser, M., Zhao, M., Tynes, B.L., Maack, D.J. (Chair) (2017, April). *Ew, Gross, and Yuck!* Symposium at the 4th Annual UM Conference on Psychological Science, Oxford, MS.

Jacobson, E., Auzenne, J., Cretu, J. B., Tynes, B.L. (Chair) (2015, March). *Exploring the Connection Between Self-Compassion and Interpersonal Relations: Data, Methodology, and Application*, Symposium at the 1st Southeastern Chapter of Association of Contextual Behavioral Science Conference, Lafayette, LA.

### ***PANELS***

Green, K.L., Kleiman, E.M., Klinebiel, C., Pemberton, J.R., Tynes, B.L., Maack, D.J. (moderator) (November, 2015). *Hooray! I Got into Graduate School...Now What?!* Panel at the 49th annual convention of the Association for Behavioral and Cognitive Therapies, Chicago, IL.

## **RESEARCH EXPERIENCE**

### **08/2013-present      ADEPT Lab**

- Prepared literature reviews
- Assisted in protocol and study development
- Conducted statistical analyses
- Mentored undergraduate research assistants

### **09/2014 - 08/2016      Graduate Clinical Research Assistant for Valerie Crabtree, Ph. D., St. Jude Children's Research Hospital**

- Assisted in protocol and grant development
- Peer reviewed articles for journal publication

- Assisted with assessment scoring and interpretation
- Manuscript preparation

**01/2016 - 06/2016**      **Graduate Clinical Research Assistant for John Young, Ph.D., Instrument Validation Protocol, University of Mississippi Medical Center, Pediatric Emergency Department, Jackson, MS**

- Administered the Mini International Neuropsychiatric Interview for Children and Adolescents (MINI-KID) to youth ages 12-18
- Scored and reported outcomes to personnel including physicians to assist with improvements for suicide risk assessment within the emergency department

**05/2012- 08/2015**      **Lead Research Assistant for Disgust and Anxiety Collaborative directed by Danielle Maack, Ph.D. and John Young, Ph.D.**

- Assisted in training new research assistants on the ADIS and study protocol
- Conducted study protocol for research participants (structured interview, behavioral tasks and self report questionnaires)
- Created participant packets
- Coordinated research assistants' schedules, fidelity checks, CITI trainings, etc.

**01/2013 - 05/2013**      **Research Assistant for Laura Johnson, Ph.D.**

- Assisted in administration of self-report instruments in Tanzania for a pilot study
- Collaborated with Tanzanian researchers to develop Swahili version of instruments
- Completed Data entry

**10/2010-05/2012**      **Undergraduate Research Assistant for John Young, Ph.D.**

- Administered structured interview (ADIS)
- Became familiar with common self-report instruments and self-report instruments (e.g. DASS-21; UCLA Loneliness Scale; GHQ, ASI-3, OCI-R, SIAS, PCL-C, etc)
- Ran participants through lab study protocols including administration of behavioral-avoidance tasks

## **TEACHING EXPERIENCE**

**Fall 2017**      **Graduate Instructor, General Psychology 201**  
*Department of Psychology, University of Mississippi*

**2015 - Present**      **Guest Lecturer, Abnormal Psychology and Industrial and Organizational Psychology**  
*Department of Psychology, University of Mississippi*

## **CERTIFICATION AND SPECIALIZED TRAINING**

**Spring 2017**      **The Child and Adolescent Functional Assessment Scale (CAFAS) Training**  
**Communicare, Oxford, MS**

**Supervisor: Dixie Church, M.S.,**

Received training for assessment of emotional, behavioral, psychiatric, or substance use problems in youth

Fall 2018

**Autism Diagnostic Observation Schedule  
(ADOS) Training**

**Munroe-Meyer Institute, Omaha, NE**

**Supervisor: Joshua Turek, Ph.D.**

Received training for assessment of developmental disorder of autism

## **PROFESSIONAL MEMBERSHIPS AND COMMITTEES**

Student Membership Committee; Association of Cognitive Behavioral Therapies (November 2013 – Spring 2017)

Student Representative to the Clinical Faculty, University of Mississippi Department of Psychology (August 2015 – August 2016)

Association for Behavioral and Cognitive Therapies (2013-2015)

Society of Pediatric Psychology, Division 54 of American Psychological Association (2016)

Psi Chi, The International Honor Society in Psychology (2012-present)  
Vice President (2012-2013)

Association for Behavior Analysis International (2019-present)

## **PROFESSIONAL REFERENCES**

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