THE DELIVERY OF PRAISE IMPACTING
MOTIVATION AND ELICITING ANXIETY AFTER FAILURE

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Previous research has established that praise focused on ability decreases children’s motivation after failure in comparison to praise focused on effort (e.g., Kamins & Dweck, 1999). It has been suggested that children who receive ability praise are more likely to employ self-protective behaviors, such as avoiding the task, to alleviate the anxiety of failing again (Cimpian, 2010). The goal of this study is to investigate the role of anxiety as a link between praise and motivation. Electrodermal data was collected to examine the effects of praise on children’s anxiety levels through measurements of the stress response. Children were told pretend stories about their drawings while wearing a wristband that collected electrodermal activity (EDA). The children were given either ability or effort praise with four successful drawing stories and then heard two “failure” drawing stories. Motivation was measured using a series of self-evaluation and persistence questions, pre and post failure to compare motivation to patterns of EDA responses. EDA data were analyzed independently and the relation between the EDA data and questionnaire responses were also evaluated. It was found that children
receiving ability praise presented with significantly higher EDA responses during praise and questioning of failure in comparison to effort praise. The analysis of the combined EDA responses and questionnaire demonstrated a negative correlation between number of EDA responses and persistence scores post failure. These findings reinforce the negative effect ability praise has on motivation and demonstrate how emotional arousal and anxiety could be the mechanistic link between praise and motivation.
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CHAPTER I
INTRODUCTION

Intrinsic motivation is a key predictor of children’s academic success (Lepper, Corpus & Iyengar, 2005). It is essential to cultivate children’s motivation in the face of failure and promote strategies to maintain motivation throughout life. Henderlong and Leper (2002) defined intrinsic motivation with two components: “internally driven engagement” and “perseverance in the face of setbacks”: (p. 775). Maintaining intrinsic motivation is shown to promote higher academic performance (Lepper, Corpus & Iyengar, 2005). It has been found that children that had higher intrinsic motivation also held the belief that intelligence is malleable through effort (Haimovitz, Wormington, & Corpus, 2011).

Although these beliefs of intelligence have been shown to be fairly stable over time (Haimovitz et al., 2011), they are found to be malleable and a child’s environment can influence a child’s mindset. A mindset geared towards effort and process is known as a growth mindset (also described as an incremental framework; Yeager & Dweck, 2012). A growth mindset is an implicit theory that encourages the child to employ additional effort, new and more effective strategies after facing a failure. Within this mindset, intelligence functions as an attribute that can be molded and changes over time. Intelligence is seen as the byproduct of effort and expands with challenges throughout the learning process. A growth mindset provides a view of failure as an area of improvement and indicates where to put more effort and attention next time.
The counterpart to a growth mindset is a fixed mindset (Yeager & Dweck, 2012; also described as an entity framework). A child with a fixed mindset will prioritize the perception of competency over learning new strategies and exerting further effort (e.g., “I should be a natural at this”). A fixed mindset focuses on intelligence being derived from traits and abilities being fixed and unchangeable. Exerting additional effort is evidence of lacking that ability to complete the task efficiently. This would be discouraging for children with a fixed mindset as they see intelligence as a stable quality that cannot change. With this mindset, there would be no gain with continued effort. A failure will threaten that self-concept of intelligence and will cause children to be reluctant to persist because trying again risks failing again. This mindset results in ineffective strategies, negative affect after a failure and reluctance to seek out further challenge (Cimpian, 2010).

Yeager and Dweck (2012) explained growth and fixed mindsets as implicit theories: “core assumptions about the malleability of personal qualities” (p. 303). Mindsets are established by making connections and attributing meaning to one’s experiences and environment, whether defining qualities as stable or malleable (fixed mindset or growth mindset). An environmental factor would be when a child consistently receives praise that highlights growth and effort, which will encourage connections of trying harder with increased learning and intelligence. That child will start defining intelligence as a quality that is malleable, establishing a growth mindset.
The research suggests that a growth mindset is beneficial across contexts for child development. Praise carries through those contexts, whether school, at home or in a social context. The delivery of praise can be framed to embody with the principles of implicit theory. Praise that is focused on effort promotes perseverance for improvement after a failure, fostering a growth mindset. In the face of failure, effort praise suggests that persistence after failure can result in improvement (e.g., "If I try harder next time, I can do better"). Whereas, praise directed towards ability inhibits perseverance after failure by suggesting that abilities are fixed and competency will not be attained regardless of the effort exerted, consistent with a fixed mindset. Ability praise focuses on the individual having or not having a trait (e.g. failure means “I'm not smart”).

Previous research has suggested that children receiving ability praise find failure more threatening to their identity (e.g., competency) than children receiving effort praise (Cimpian, 2010). Children receiving ability praise employ self-protective behaviors to preserve their identity (Cimpian, Arce, Markman & Dweck, 2007; Zentall & Morris, 2012). Self protective behaviors are strategies to avoid the negative feelings of failure, either avoiding the task or attributing blame to external factors. These findings suggest that the mechanistic link between praise and associated behaviors might be anxiety. The aim of this current research is to further examine the influence of praise on motivation and how the link between praise and motivation influences children’s anxiety levels. The assumption is that that there will be a different physiological response as well as a behavioral response to ability praise in comparison to effort praise, specifically,
anxiety as a physiological stress response. This study will measure anxiety using electrodermal activity (EDA), which will be explained later in further detail. I predict that children receiving ability praise will exhibit higher levels of anxiety after failure compared to the children receiving effort praise. Ability praise encourages self-protective behaviors to alleviate anxiety. So, a higher level of EDA (indicating anxiety) is expected when children who receive ability praise experience failure compared to children who receive effort praise.

The goal of these experiments is to determine how praise influences anxiety, measured as physiological arousal levels, and if these levels are associated with different motivational outcomes. Specifically, physiological markers that demonstrate high levels of anxiety should be associated with fixed motivational outcomes (e.g., lower persistence) and markers associated with low levels of anxiety should be associated with growth motivational outcomes (e.g., higher persistence).

Understanding the role of anxiety on motivation will shed light in ways of effectively encouraging persistence and engagement after failure. The anxiety originating from a fixed mindset view of failure may be causing more detriments to overall achievement. This study will provide a foundation for understanding anxiety as it relates to praise and the implications of praise beyond self report, through physiological measures.
CHAPTER II
LITERATURE REVIEW

There is a clear connection between praise and motivation in the literature and how it can promote a particular mindset. This next section will cover the connection of praise and motivation in detail. First, the topics of mindsets and motivation will be discussed, looking further into the development of mindsets and their trajectories. Second, mindsets have shown to be impacted in several ways, specifically looking at how praise impacts mindsets. Third, anxiety has been suggested in the literature as a link between praise and motivation; the discussion will explore anxiety and stress response as having a potential role in the connection of praise and motivation. Finally, the importance of stress responses measures within this study and the current study’s hypotheses will be covered.

Mindsets have a vital impact on the perception of achievement. A fixed mindset consists of the belief that intelligence is a stable and unchangeable attribute versus growth mindset which views intelligence as malleable by effort and developing over time. Mindsets can determine whether children persevere after setbacks and maintain motivation. Weiner (1994) investigated how certain attributions affect motivation. Attributions are personal explanations of outcomes, whether it was internal or external causes that impacted the outcome. An individual that finds a failure to be attributed to a lack of effort will increase performance; whereas attributions focused on the deficits in ability will decrease performance (Weiner, 1994).
**Trajectories: Development of Mindsets**

Children establish their mindsets at an early age. As children develop, they are forming clearer implicit theories about fixed and growth mindsets. The development of these mindsets is evident in children as young as kindergarteners, at the beginning of their school years (Eccle, Wigfield, Harold, & Blumenfeld, 1993; Harter, 1982). Evidence shows that children in this age range reported having theories of competency and these theories are context specific in a domain. As they develop, their theories of competency become more realistic and accurate. The school environment is the catalyst for this transformation for theories of competency. School provides an area of opportunities to adjust theories through the consistent activities resulting in success or failure and the feedback about those attempts. Through the school years, theories on competency decrease to a more realistic level (Eccle et al, 1993); but evidence has shown that intrinsic motivation also decreases through school years (Haimovitz, Wormington, & Corpus, 2011).

Intrinsic motivation progressively declines through a child’s academic years and Haimovitz et al. (2011) explored the influence that children’s mindsets have on that decline. A fixed mindset was found to reduce intrinsic motivation (Haimovitz et al, 2011). Haimovitz et al. (2011) examined the different mindsets for children that maintained or declined in intrinsic motivation over two years. Students from third to eighth grade were evaluated throughout the academic year to either maintain or decline in intrinsic motivation. They found that the students that lost intrinsic motivation were
more likely to identify with a fixed mindset whereas the students that maintained across the academic year endorsed a growth mindset. These findings provide evidence that implicit theories maintain over time and are associated with intrinsic motivation. This study also provides support for fostering a growth mindset as a way of curbing the decline of intrinsic motivation.

**Impacts on Mindsets**

The environment throughout children’s development will have an impact on their motivation; even a subtle remark can alter a child’s perspective or self-concept. One aspect of an environmental effect on motivation is through implicit messages about the cause of success and failure. Children’s motivation has been directly impacted by their teachers’ messages and underlying beliefs, even with the specific word choice when presenting a task and type of praise.

Rattan, Good, and Dweck (2012) found that students reported lower motivation and lower expectation for their math performance if they had a teacher of a fixed mindset. In Rattan et al., (2012), teachers with a fixed mindset were more apt to label students as having an attribute (e.g., “low math ability”). These teachers had a tendency to address students they labeled with attributes differently, for example, not assigning as much homework for those students. Teachers are promoting a fixed mindset by viewing their student’s ability as unchangeable, in which case homework would have little influence. These approaches were found to lower student’s motivation and they expected less from
themselves. A teacher’s underlying beliefs of fixed intelligence were detrimental to their student’s motivation and academic achievement.

A child will approach a task differently depending on the specific wording used about other children’s performance. A study done by Cimpian (2010) investigated the social expectation originating from other children’s ability in a novel task and the impact it has on children’s motivation for that task. The children were presented with a task and told either that (1) children overall were typically good at the task (generic language) or that (2) one child in particular was good at the task (nongeneric language). Generic language describes a consistent generalization about someone or something and nongeneric language specifies a description of a single event. In this study, the children were then exposed to successful trials and trials in which they made mistakes. Six and seven year olds in the generic condition had lower motivation from the start of the task, being cognizant of the social pressure by the presentation immediately. On the other hand, four and five year olds in the generic condition had lower motivation, but not until they were exposed to the mistake trials. The study shows that subtle word choice can have a large impact motivation, even at very young ages.

Implicit theories of motivation are found to be stable over time; however, interventions can influence those mindsets. Blackwell, Trzesniewski, and Dweck (2007) conducted two studies. Study 1 found that middle-school children who identified with a growth mindset had a positive trajectory in mathematical achievement over a two year span of time; whereas a fixed mindset had a flat line with no increase in mathematical
achievement. Study 2 investigated the malleability of mindsets; specifically whether an intervention could foster a growth mindset. The study was focused on promoting a growth mindset through an 8-week intervention. Both the experimental and control groups participated in a workshop with similar agendas about neurology and brain networks. The only difference in the intervention was a lecture with the experimental group that included brain plasticity and how the neurology of the brain can develop. When evaluating the results, the control group’s math scores decreased from pre to post intervention. The experimental group, on the other hand, did not decrease but improved their math scores post intervention.

**Praise Influence on Mindsets**

Another environmental influence on mindsets would be the praise a child receives. Praise has been defined as “positive evaluations made by a person of another’s products, performances, or attributes, where the evaluator presumes the validity of the standards on which the evaluation is based” (Kanouse, Gumpert, & Canavan-Gumpert, 1981, p. 98). Henderlong and Lepper (2002) stressed the complexity of praise as an interaction between both evaluator and recipient and that praise is not easily considered an independent construct because of the complexity.

The dichotomous framework of ability and effort praise builds off of Dweck’s implicit theories. There are many different types of praise, the most frequently investigated forms are ability praise and effort praise. Ability praise focuses on a child's traits or
abilities (e.g., "You are smart"). Ability praise highlights stable factors (e.g., intelligence) that are seen as out of the child's control, facilitating a fixed mindset; whereas with effort praise highlights factors that can be controlled and changed (Henderlong & Lepper, 2002). Effort praise directs the link between a changeable factor, such as effort, and outcomes ("You worked really hard at that"). The more effort exerted, the better the outcome will be, grounding from a growth mindset.

Kamins and Dweck (1999) investigated the impact of effort, ability and outcome feedback, on self-worth and motivation, exploring both praise and criticism. Study 1 specifically looked at three forms of criticism (effort, ability, and outcome) and the responses to self-assessments, affect, persistence and beliefs of goodness. In addition to the two mentioned forms of praise, this study looked at outcome feedback. Outcome feedback is the objective result to the act of doing the task the right way. Study 2 was set up similarly but the three conditions were praise feedback instead of criticism. Kamins and Dweck (1999) found that there was no significant difference between criticism and praise; however, those who received effort-oriented feedback had higher motivation and self worth in comparison to those who received ability-oriented feedback, who were more likely to have helpless responses and harsher self-evaluations. A self evaluation asked the children to evaluate themselves, their feelings and their final product from the task.

Children, who were exposed to ability praise, lacked the confidence to employ new and more effective strategies in the future and avoided that task to reduce the risk of failing (Cimpian et al., 2007). Those mistakes and failures are seen as a threat of a child’s
competency who receives ability praise. After failure, ability praise increased the likelihood that an individual engaged in self-protective behaviors, such as not continuing with the task (Diener & Dweck, 1978; Dweck & Leggett, 1988). Cimpian et al. (2007) explored praise in terms of generic and nongeneric language, consistent with social expectation study mentioned before (Cimpian, 2010). Effort and ability praise were categorized as generic and nongeneric language. Generic (ability) praise was directed to a child’s overall ability and identity, generalizing as being good in a certain domain (“You’re a good drawer”). Nongeneric (effort) praise was focused on a specific event or trial (“You did a good job drawing”) looking at the particular effort given to that trial. Cimpian et al. (2007) focused the praise of the children’s pretend drawing, using “You’re a good drawer” for ability praise and “You did a good job drawing” for effort praise. The findings provided evidence that children who received ability praise had lower persistence and lower self-evaluations after a failure.

When praising a child for their intelligence and ability, their goals will be focused on performance where as praise for effort will foster the importance of learning goals (Mueller & Dweck, 1998). Mueller and Dweck (1998) conducted six studies exploring praise and motivation orientation after a failure. Children reported lower self-evaluations after a failure when originally receiving ability praise in comparison to effort praise. Ability praise highlights the importance of peers and others’ opinions for the children and they were more likely to alter their scores to promote a positive skew of themselves to
others. In addition, children who received ability praise were less likely to enjoy the task, and had lower performance and lower persistence (Mueller & Dweck, 1998).

**Perspectives of Objective Feedback**

Another perspective of praise is whether it is necessary at all. Skipper and Douglas (2012) identified similar findings that ability praise can be detrimental after failure but argued that effort praise may not be overtly beneficial to motivation. The evidence from Skipper and Douglas (2012) suggests that no praise, just objective feedback, may be the most optimal approach to encourage children’s further motivation after failure. Skipper and Douglas (2012) provided no praise to a control group and found that there was no significant difference between effort praise and objective feedback, when evaluating perceived performance, persistence and self-evaluations. This finding was presented across two age groups (Experiment 1 being M= 9 years and 6 months and Experiment 2 being M=21 years and 8 months). These effects maintained across both children and adults. This evidence presents that the effects of ability praise is detrimental and suggests that praise overall many not be necessary for children’s motivation.

As Henderlong and Lepper (2002) mentioned in their review, the research on praise does not provide many instances of a no praise control group to compare no praise and any praise at all. Henderlong and Lepper’s review (2002) addresses that praise has been found to be ineffective and detrimental at times. A quote provided by Henderlong and Lepper (2002), derived from Brophy (1981) stated “Students do not actually need
praise in order to master the curriculum, to acquire acceptable student role behaviors, or even to develop healthy self concepts” (p. 21) which is consistent with the findings from Skipper and Douglas (2012).

Another avenue that suggests this perspective of objective feedback is a study investigating ambiguous verbal praise and nonverbal gestural praise through the work of Morris and Zentall (2014). The significant finding is that gestures for praise (high fives and thumbs up) result with the highest self-evaluations post failure in comparison to all other versions of praise. Ambiguous verbal praise was associated with the same attributions as explicit effort praise and had similar effects as effort praise. Examples of ambiguous verbal praise would be “Awesome!” “Yea!,” which were interpreted by the children as an evaluation of their performance and not their abilities. In other words, children found ambiguous praise to be similar to the effects of effort praise. Similar to outcome feedback, there is no explicit attribution, but there are attributions being made. The gestural praise presented with more effective findings than effort praise. The findings highlight the perspective that effort praise may not be the optimal form of praise but ability praise has a clear negative effect on motivation.

**Parental Praise**

Parents tend to have misconceptions of ability praise, stressing the importance of abilities when praising their children. A survey done by Mueller & Dweck (1998) showed 85% of parents saw ability praise as essential when encouraging children’s
achievement. This misconception has appears to stem from a belief that abilities (e.g., intelligence) are innate and resistant to change and is an important misconception to resolve. Mueller and Dweck (1998) explained the inconsistency in this social belief, it has been common parenting practice to not criticize the child but the behavior and the choice of the child. Beliefs about praise, on the other hand, suggest the opposite that “The more we label children as smart, the greater will be their enjoyment of and motivation for achievement” (p. 33).

Gunderson et al. (2013) presented evidence that the parental praise received in children’s early years has an impact on the development of their mindsets. Specifically, this longitudinal study examined the parental praise that children were exposed to within a naturalistic setting, looking at 14-38 months of age. There were four and half hour video tapes that were coded to identify the parental praise into effort, ability and other. Those same children were asked to complete questionnaires regarding their implicit theories of motivation and intelligence at the age of 7-8 years. There was an association between effort praise from parents during the first few years of a child’s life and a growth mindset later on.

Cimpian et al. (2007) stated although the language between effort and ability praise may seem relatively interchangeable, word choices may present inconsistent expectations to children. Zentall and Morris (2010) looked at those inconsistencies and how the different forms of praise are weighted with respect to children’s persistence and self-evaluations after a failure. The conditions were divided into five levels of praise with
various percentages of effort and ability praise (0-100, 25-75, 50-50, 75-25, 100-0). The findings showed that even small percentages of effort praise could encourage positive self-evaluations yet small percentages of ability praise could negatively impact persistence. Those subtle inconsistencies of praise have an impact on children’s motivation, both positively and negatively. This evidence suggests the importance of being conscientious about the subtle messages children may be receiving from the phrasing of praise.

**Demographic Caveats**

**Gender**

Gunderson et al. (2013) found that there were clear gender differences in delivery of praise. Effort praise was significantly more often directed towards boys whereas girls were receiving more ability praise. This finding also concluded that both girls and boys were receiving the same amount of praise; the praise was clearly weighted to opposite directions. Previous research found similar findings regarding gender differences, girls were found to be more likely to report failures as a deficit in ability in comparison to boys (Dweck & Bush, 1976; Mok, Kennedy, & Moore, 2011). Also, Deci and Ryan (1980, 1985) found that girls depend on praise and the approval of evaluators whereas boys focused on their own evaluations of achievement throughout the task.

Identifying these disparities, Gunderson et al. (2013) expressed an apprehension with the stark gender differences within praise delivery. Girls receiving ability praise at significantly higher levels may promote a fixed mindset, which is shown to maintain across time (Blackwell et al., 2007) and decrease intrinsic motivation impacting academic
achievement (Haimovitz et al., 2011). Whereas, from Gunderson et al. (2013), consistent with the weighted amount of effort praise boys received, boys identified with a growth mindset. This difference in praise may impact the development of mindsets for boys and girls differently.

**Age and Development**

The effects and perceptions of praise will change over a developmental span whether through age or mastery of a domain. Responses to praise will differ drastically depending on development level. One factor of consideration would be the authenticity of praise. The praise needs to match the level of learning or effort exerted for praise to be considered authentic, a concept discussed by Henderlong and Lepper (2002). Praise for mastery would be considered inauthentic if the child is still a novice at the task. Similarly, if a child feels that he or she did not try hard but received effort praise for trying hard, it could be detrimental to the next attempt. Once, the child has proven to have acquired skills or exerted effort, the praise is seen as more robust and authentic (Henderlong & Lepper, 2002).

**Praise and Motivation Linked to Anxiety**

There are several mentions throughout the literature about children receiving ability praise experiencing anxiety in response to failure. Cimpian et al. (2007) found that children who received ability praise exhibited more emotional reactions after a failure. Children receiving ability praise became more anxious, tended to be more emotionally agitated and did not persist as long when they saw their failures (Cimpian,
Zentall and Morris (2010) drew on the work of Dweck (2006) when explaining that the threat of further failures may promote performance anxiety for children receiving ability praise. Zentall and Morris (2012) used eye tracking technology to assess anxiety elicited by praise. They measured duration and amount of eye fixations on errors comparing effort and ability praise. Findings suggested that ability praise altered the perceived significance of the child’s error, creating longer and more frequent fixations on errors than effort praise. This reaction is consistent with self-protective behaviors to avoid the threat of further failures or errors shown through fixations as an indirect measure of anxiety. When investigating the reactions children have to failure, self-protective behaviors are associated with children who received ability praise (Cimpian, 2010). These self-protective behaviors are seen as a reaction to a threat of the child’s ability or self concept and are utilized for maintaining self evaluation. When employing that response, persistence for the task plummets. The task is avoided to protect self evaluations (Zentall & Morris, 2010).

**Biological Stress Response to Self Protective Behaviors**

Saplosky (2004) stated “the stress response can be mobilized not only in response to physical or psychological insults, but also in the expectation of them” (p. 7). The expectation of a threat can be enough to create a stress response. Bringing this concept to motivation, a child in an environment who sees failure as a threat, and not a learning experience, could exhibit anxiety, stunting future motivation and persistence. Children detect differences between types of praise and appear to create expectations based on
them beginning as early as two years of age (Cimpian & Markman, 2008; Gelman & Raman, 2003; Heyman & Gelman, 1999). These expectations from praise facilitate a behavioral response of either persistence or self protective responses. It would be reasonable to assume that if failure is assessed as a threat to identity, there would be a physiological response associated with that threat. I hypothesize that ability praise will elicit a higher stress response after children were exposed to failure, perceiving that failure as a threat.

From a biological perspective, a reaction to a threat includes a physiological response. When an organism is exposed to a threat, the sympathetic nervous system is activated. The organism will then be in the state of fight or flight, the body prepares for that response. This reaction produces measureable biological responses to stress by changes in heart rate, blood pressure, and perspiration.

Specifically looking at perspiration, there are 3 million sweat glands found in the human body. As humans, we are born with all of our sweat glands condensed into an infant body and the sweat glands expand across our bodies as we grow and will start activating as we develop (Bousecin, 2012). Children have a greater density of sweat glands because of their smaller body size and the development of sweat gland activates at this stage of life. Noted by Sargent (1962), secretion rates of perspiration for a stress response can be up to 2 liters of sweat in an hour, resulting in a fourth of the human’s body fluid content in a single day. When exposed to a stimulating event or physical exertion, the levels of perspiration in the skin’s pores will fluctuate as a response. These
fluctuations are at such a subtle level at times that it would not always be noticeable. Measuring electrodermal activity entails sending a current over the skin and receiving a reading in microseimens ($\mu$S) that are able to measure those miniscule fluctuations of perspiration.

**Measurement of Electrodermal Activity (EDA)**

Electrodermal activity (EDA) has been found to measure emotional arousal, physical exertion and cognitive load. EDA is measured by tonic and phasic levels. There is a tonic measure that is calculated at a resting level, which has been also referred to as baseline. The phasic level of EDA is the reactivity to a stimulus, the stress response. The difference of tonic and phasic data will be the measurement that will identify the peaks of anxiety within this study. Children’s phasic and tonic levels are found to be consistent across time and tasks (El-Sheikh, Keller, & Erath, 2007).

In this study, EDA will be measured on the distal forearm (inner wrist). The wrists are not the only location for EDA reactivity, the EDA collected from the wrists shown to be intermediate skin conductance responsiveness (VanDooren, de Vries, & Janssen, 2012). VanDooren et al. (2012) examined the EDA measurements in sixteen locations on the body. They provided an overview on the evaluation of each of these locations and the level of reactivity in those areas. Poh, Swenson, and Picard (2010) identified the reliability for the distal forearm EDA recordings and the lower risk of artifacts, errors with the measurements, with this area than in the other areas of measurement.
Boucesin (2012) mentions opportune times for electrodermal collection, the ages of five to six children are starting to peak and at seven and eight are the most ideal ages for sweat gland development, which are the focused ages for the current study. El-Sheikh et al. (2007) examined the stability of children’s electrodermal activity (EDA) and found consistent reactivity from two different sessions two years apart. The study examined both the time duration of two years and across activities for children. The tonic and phasic levels of EDA were both evaluated to examine if consistency maintained across both forms of EDA. The results for El-Sheikh et al. (2007) suggested that both baseline measures and reactivity measures remained stable across time and activities. These findings gave great strength in looking at children’s EDA as a consistent measure as they develop over time.

**Current Study Hypotheses**

Using EDA measurements, the results from this current study will investigate how anxiety relates to the relation between praise and motivation. Investigating both effort and ability praise in this study, the main hypothesis is there will be higher levels of reactivity in EDA measurement for ability praise post failure than with effort praise. This study will examine whether these measures of anxiety are predictive of self-evaluation and persistence. It is hypothesized that there will be lower motivational scores with higher levels of EDA data.
CHAPTER III
METHODOLOGY

Participants

The sample for this study is 14 children, kindergarten and first grade, which results in 7 subjects randomly assigned into each condition: those receiving ability praise and those receiving effort praise. Between the conditions, the only difference was the type of praise received. The age range was five years to eight years with a mean age of six years and two months. There were total of four boys and ten females within the sample with 50% Caucasian and 50% African American. The data for the current study was collected at various schools, child care centers and reading programs in Northeast Ohio. Locations for data collection were chosen for a consistent theme that resembled a classroom setting. Parental consent forms were required for participation in this study.

Parental Consent Packets

Packets were sent home from the school or center that participated in the study. Packets consisted of an informed consent, study summary, and in some cases an informational letter from the school (when requested). Parents would then return a signed copy to the teacher or office, with a copy to keep for their own records. Only the children that returned a signed parental consent would be approached for the study. At the time of the study, the experimenter obtained verbal assent from each participant (Materials included in Appendix).
**Current Procedure**

**Baseline**

The experimenter explained the EDA sensors to the child as a device that will track the child’s feelings and emotions to a couple stories and asked if the child was interested in wearing one. During this time the experimenter gained a rapport with the child to establish a comfortable environment. Once the child agreed, the sensor was attached to the distal forearm and the experimenter synced the experimental sensor with the participant’s sensor. The experimenter read a neutral children’s book to the child (i.e. Finding Nemo) for the baseline measure. The mean baseline lasted from 5-10 minutes.

**Task**

The task and questionnaires are iterations from Cimpian et al. (2007) and Zentall and Morris (2010; 2012; Morris & Zentall, 2014) used a similar procedure. The importance of employing the repeated task and measures is to replicate the effects that have been consistent throughout all of past these studies. Implementing the EDA measurement is a facet in this study will give constant measures of any differences with the task. A deviation from the task script is there are no props or pictures presented to the children with this task. The task totaled no more than twenty minutes per participant from beginning to end (Scripts provided in Appendix).

The children’s imagination was strongly encouraged when listening to the story and answering the questionnaires. This explanation was to maximize the child’s engagement in the task. The task consisted of listening to story told by the experimenter
where the child’s pretend teacher (Miss Debbie) asked the child to draw pictures. Children never created any actual drawings, they were asked to pretend and imagine drawings described in stories.

**Successes and Praise**

Children received four consecutive praise events related to stories about of drawings. In each story, after successfully completing each drawing, participants were told, “That looks like a/n [object that was supposed to be drawn, e.g., dog]” and given either ability praise or effort praise depending on their condition: Ability: “You’re a good drawer.” or Effort: “You did a good job drawing.” The stories about successful drawings consisted of a pickup truck, a sheep, an ambulance, and a dog. Then children were asked to think about that last drawing in the story (the dog picture) and were asked self-evaluation questions on their drawing, drawing ability, and overall feeling of goodness.

**Failures**

After the self-evaluation questions, each child was given two consecutive failure drawings, (i.e. forgetting to put ears on a drawing of a cat). The children were made aware of their failure prior to the pretend presentation to their teacher. (“Uh-oh, the cat doesn’t have any ears,” but you want to show the teacher the cat you drew and so you say “Teacher, I drew a cat for you.”) The teacher’s response then confirms what the children have already noticed. “That doesn’t look like a cat. It doesn’t have ears.” The
experimenter again asked the children to think about the child’s last drawing. The children were asked the same self-evaluation questions again and persistence questions.

**Debriefing**

The final part was a debriefing in which the children were told a final story in which they corrected the failed drawings and the teacher gave the child effort praise on the corrected drawings, i.e., “You found a good way to draw that cat. I see it has ears.” This was to relieve the children from leaving the task believing that they failed in this task. At the end of the task, children were rewarded with a small prize valued at less than a dollar for their participation.

**Measures**

Motivation questions from Cimpian et al. (2007) were administered at two separate times during the task, pre-failure, directly after the last successful drawing and post-failure, after last failure drawing. Specifically, self evaluations were administered at both times and persistence was administered only after failure. The questions evaluated both self-evaluation and persistence, which are primary components of motivation (Barrett, Morgan, & Maslin-Cole, 1993; Dweck & Leggett, 1988). The importance of measuring before and after the failure is to evaluate the child’s reaction to the failure and mark any changes in the self evaluation. Having the initial measure (pre-failure) will give a baseline for that child and any difference presented in the post-failure can be assumed as a reaction to that failure. (Questionnaire Response Sheets are available in Appendix)
Self Evaluation

The child’s self evaluation was tested as a pre-failure and post-failure measure. For the pre-failure, children were asked four self evaluation questions regarding the last successful drawing. Questions were dichotomously constructed to code for either mastery or helpless orientation. (i.e. “Do you like the cat that you drew or do you not like it?”) The questions covered the drawing itself, the child’s emotion, the child’s ability and child’s feeling of goodness, (i.e. Did the story make you feel like you were good at drawing or not good at drawing? Like you were a good boy/girl or not a good boy/girl?”) For the post-failure, the children were asked the same self evaluation questions again based on the story about the last failure drawing.

Persistence

Persistence was tested after failure only in addition to the self evaluation questions. These four dichotomous questions were also coded for helpless or mastery orientation. The first two questions ask whether the child would be interested in drawing again. The child would be asked to choose between three different drawings, two options that were the same as the failure story and one that was not mentioned with the story at all. The last two questions were considered open ended questions, which were still coded for mastery and helpless orientations. (i.e. “Think about the story where you drew a cat and forgot the ears. What would you do now?”) This section provided children the opportunity to express strategies to fix the error (mastery approach) or self-protective behaviors (performance approach) to avoid the task.
Apparatus

Q Sensor

The Q sensor is a noninvasive technique of collecting EDA. It is a wristband which includes Ag/AgCl electrodes which required no skin preparation (Apparatus pictured in Figure 1). This first study of participants had a sampling frequency at 4 Hz for storage reasons. For further research, it should be decided to raise the frequency to 20 to 32 Hz. It is stated in Boucsein (2012), it is recommended to be at least 20 Hz for EDA collection. The Q Sensor is considered to be collecting data via skin conductance (direct voltage measurement). The Q sensor accounts for physical movement and body temperature. When addressing measurements of perspiration, it is essential to address other confounding factors for perspiration as a response.

Figure 1. Apparatus: Q sensor measuring EDA on the distal forearm

The Q sensor’s placement is different than conventional EDA recordings which are typically on the palmar surfaces. The Q sensor records EDA from the distal forearms (inner wrists) which maintains high correlations with the palmar readings and the location
is more resistant to artifacts created by movement (Poh et al., 2010). Working with participants in the age range of 5 to 8 years old, it is important to allow movement and comfort, in hopes of lowering distractibility. The Q sensor was placed on the participants’ left distal forearm. It is important to connect the sensor to a portion of the skin that is considered a non-haired area that is less likely to callus (Boucesin, 2012). The Q sensor is made in such a way to allow for natural movement throughout a task.

Before the task begins, sensors were synchronized to the computer for each participant. The participant’s sensor would be synced and then attached to the participant. During baseline, the experimenter would sync the experimental sensor. The experimental sensor had a button on it that allowed the experimenter to mark specific events during the task without interfering with the participant during the task. These markers divided the task into six sections: baseline, praises, pre-failure questionnaire, failures, post-failure questionnaire, and debriefing. Having the sections marked in real time gave a clear picture of identifying the stress responses and attributing them to certain time points with the task. Later, both sensors’ data would be merged into one file for further analysis.
CHAPTER IV
RESULTS

Plan of Analysis

The amplitude of EDA peaks throughout the task was calculated and used as the quantifiable stress response. The amplitude was identified as the raw score of the EDA incline: the difference of the lowest EDA reading to the highest EDA reading from the peak. Figure 2 indicates a visual wavelength of a peak. The wavelength converts to a numerical representation of EDA data. The mean and standard deviation of EDA measurement was generated for each participant and peaks were defined as amplitude of at least a half of a standard deviation in size and at a minimum of .005 μS. Peak amplitudes in each segment and total peak across task were averaged and compared across conditions. The EDA data were time stamped and event marked (e.g., praise and failure trials). Peaks were evaluated by both frequency and value. Frequency is defined as the amount of peaks within the targeted duration, whether task or section. The value is the normalized conversion of each peak amplitude score. To normalize data across participants, the peak amplitudes were converted into T-score values (Boucsein, 2012).

Figure 2. EDA Wavelength: Measured response as a marked peak
Preliminary Analyses

Five different evaluations of the peak amplitudes were conducted between the two conditions: number of peaks for the entire task (Total Peak Frequency), number of peaks for each segment (Segment Frequency), total normalized peak score for participants (Total Peak Accumulative Value), total normalized peak score separated for each segment of the task (Segment Accumulative Value) and the average of the peak amplitudes (Segment Aggregated Value). The first four were identified for both conditions across the task or by segment. The segments of the task were divided into praise, pre-failure questionnaire, failure, post-failure questionnaire and debriefing. Frequency is the number of peaks within a given time frame, whether segment or task. Accumulative Value is the sum of normalized T-score values for either segment or across the task. Segment Aggregated Value is the average of the normalized T-score values divided into the five segments.

The average of peak amplitude for each segment was compared across conditions as a repeated measures analysis (Segment Aggregated Value). This analysis compared the two conditions but also the difference from one segment to another. The Segment Aggregated Value was analyzed for the purpose of identifying the largest individual peaks for each section between the ability condition and effort condition and within ability conditions’ segments. Identifying the magnitude of the peaks will provide information about with more extreme responses within specific segments of the task.
Total Peak Frequency

Figure 3 represents the Total Peak Frequency. For the Total Peak Frequency, the total peaks across the entire task were accounted for and averaged across conditions. There was a significant difference between effort praise and ability praise for Total Peak Frequency. The Levene’s test of homogeneity of variance was significant ($F=10.64$, $p=.007$), indicating that the variance between the two conditions was not equal. Therefore, a t-test, assuming unequal variance was conducted and the results indicated that ability condition has significant more peaks than the effort condition, $t(6.44)=3.10$, $p=.019$, 95% CI [4.37,34.77].

![Total Peak Frequency Graph](image-url)
Segment Frequency

Segment Frequency is represented in Figure 4 (with the ability condition on the left and the effort condition on the right). The analysis of Segment Frequency is utilized for separating the segments of the task and to examine the number of peaks within the different segments. The segments are divided into praise, pre-failure questionnaire, failure, post failure, and debriefing. There were significant differences at the praise...
segment with the Levene’s test of homogeneity of variance, \( (F=72.49, p < .001) \) so a t-test was conducted assuming unequal variance, \( t(6.34)=2.67, p=.036, 95\% CI [33.33, 698.85] \). The results indicated that the praise segment has significantly more peaks within the ability condition. The post-failure questionnaire differed between conditions, with the Levene’s test of homogeneity of variance significant, \( (F=17.40, p=.001) \) and the t- assuming unequal variance, \( t(6.25)=2.97, p=.024, 95\% CI [58.58, 576.14] \) was significant. Post-failure questionnaire and praise segment were both found to have significantly more peaks for ability praise than effort praise. For the significance for the remaining segments throughout the task refer to the Table 1.

Table 1. Significance Levels for Segment Frequency

<table>
<thead>
<tr>
<th>Segment</th>
<th>Condition</th>
<th>M</th>
<th>SD</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Praise</td>
<td>Ability</td>
<td>8.0</td>
<td>7.28</td>
<td>2.61a</td>
<td>6.36a</td>
<td>.038* a</td>
</tr>
<tr>
<td></td>
<td>Effort</td>
<td>.71</td>
<td>1.25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-Failure Questionnaire</td>
<td>Ability</td>
<td>1.29</td>
<td>2.56</td>
<td>.85</td>
<td>12</td>
<td>.414</td>
</tr>
<tr>
<td></td>
<td>Effort</td>
<td>.43</td>
<td>.79</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ability</td>
<td>3.0</td>
<td>3.61</td>
<td>1.97a</td>
<td>6.22a</td>
<td>.094a</td>
</tr>
<tr>
<td>Failure</td>
<td>Effort</td>
<td>.29</td>
<td>.49</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ability</td>
<td>7.14</td>
<td>5.73</td>
<td>3.07a</td>
<td>6.23a</td>
<td>.021* a</td>
</tr>
<tr>
<td>Post-Failure Questionnaire</td>
<td>Effort</td>
<td>.43</td>
<td>.79</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ability</td>
<td>2.86</td>
<td>2.54</td>
<td>1.88a</td>
<td>8.6a</td>
<td>.095a</td>
</tr>
<tr>
<td>Debriefing</td>
<td>Effort</td>
<td>.86</td>
<td>1.21</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. a Significant Levene’s test for assuming unequal variances
* p<.05
Total Peak Accumulative Value

Figure 6 represents the Total Peak Accumulative Value. Total Peak Accumulative Value is incorporating both the size and frequency of all the peaks across the task. Peak amplitudes are normalized by creating T-scores for each individual peak and accumulated together across the participant. Similarly to the results of Total Frequency, the Total Accumulative Value is showing the same trend in significant differences. Ability praise is presenting with a significantly higher accumulative value than effort praise. The Levene’s test of homogeneity of variance was significant ($F=9.14$, $p=.011$). The results indicated that ability condition has significantly has significantly larger peaks than the effort condition, $t(6.47)=3.08$, $p=.020$, 95% CI [207.05, 1684.26].
Figure 6. Segment Accumulative Value

Segment Accumulative Value

Figure 7 represents the Segment Accumulative Value (with the ability condition on the left and the effort condition on the right). The Segment Accumulative Value measured the accumulative value for each segment. The trend presented very similar to the Segment Frequency, finding significant differences in the segments of praise and post
failure questionnaire. Examining the praise segment, a t-test was conducted assuming unequal variance because the Levene’s test of homogeneity was significant, $F=78.08$, $p=.001$. The results indicated that ability praise presented with a larger accumulative value than effort praise, $t(6.34)=2.67$, $p=.036$, 95% CI [33.33, 698.85]. Also, post-failure questionnaire was significantly different between conditions, the Levene’s test was significant ($F=17.66$, $p=.001$). A t-test was conducted, assuming unequal variance, $t(6.25)=2.97$, $p=.024$, 95% CI [58.58, 576.14]. The results indicating that in the ability condition post failure questionnaire has significantly larger peak values than the effort condition. For segment’s significance levels throughout the task refer to Table 2.

Table 2. Significance Levels for Segment Accumulative Value

<table>
<thead>
<tr>
<th>Segment</th>
<th>Condition</th>
<th>M</th>
<th>SD</th>
<th>$t$</th>
<th>df</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Praise</td>
<td>Ability</td>
<td>400.74</td>
<td>359.43</td>
<td>2.67a</td>
<td>6.34a</td>
<td>.036*a</td>
</tr>
<tr>
<td></td>
<td>Effort</td>
<td>34.65</td>
<td>60.39</td>
<td>.95</td>
<td>12</td>
<td>.359</td>
</tr>
<tr>
<td>Pre-Failure</td>
<td>Ability</td>
<td>62.31</td>
<td>117.04</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Questionnaire</td>
<td>Effort</td>
<td>18.41</td>
<td>34.08</td>
<td>1.99a</td>
<td>6.24a</td>
<td>.092a</td>
</tr>
<tr>
<td>Failure</td>
<td>Ability</td>
<td>160.82</td>
<td>191.22</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Effort</td>
<td>15.48</td>
<td>27.09</td>
<td>2.97a</td>
<td>6.25a</td>
<td>.024*a</td>
</tr>
<tr>
<td>Post-Failure</td>
<td>Ability</td>
<td>339.80</td>
<td>279.63</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Questionnaire</td>
<td>Effort</td>
<td>22.43</td>
<td>40.34</td>
<td>1.73a</td>
<td>8.87a</td>
<td>.118a</td>
</tr>
<tr>
<td>Debriefing</td>
<td>Ability</td>
<td>137.28</td>
<td>126.25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Effort</td>
<td>44.81</td>
<td>63.71</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. * Significant Levene’s test for assuming unequal variances
* $p<.05$
Figure 7. Segment Aggregated Value

Segment Aggregated Value

The Section Aggregated Value looks at the individual value of each peak and identifies the largest peaks within the task. Evaluating the magnitude of individual peaks, under normalized circumstances, provides another view to the strength of emotional arousal within the different segments of the task. Within Figure 8, the segments are divided out by numbers on the x-axis: (1) praise, (2) pre-failure, (3) failure, (4) post-
failure, and (5) debriefing. The segment in which the children received praise had the largest peaks throughout the task for the ability praise condition and was significantly different between conditions, with ability praise as having larger magnitude of peaks. The statistical analysis used was a repeated measures ANOVA. When evaluating within subjects effects, with sphericity assumed, there were insignificant findings, $F(4, 44) = 1.273, MSE = 349.46, p = .295$. However, there were significant findings for the transition from segment of praise to pre-failure questionnaire, evaluating the within subjects contrast, $F(1, 11)= 5.485, MSE= 548.99, p = .039$. This significance was only found for that transition from praise to pre-failure questionnaire. There were no interaction effects but there was a trend that neared significance for the transition from praise to pre-failure questionnaire, $F(1, 11)=4.11, MSE=548.99, p = .068$. When analyzing the between subjects effects, there is a significant different between conditions, $F(1, 11)=27.832, MSE=281.61, p < .001$.

**Motivation Composite Scores**

Three composite scores were created based on the children’s responses to the questionnaires (pre and post failure questionnaires)—pre-failure self-evaluation, post-failure self-evaluation, and post-failure persistence. Each section was scored as either mastery or helpless. Pre-failure self-evaluation was collected and coded. For this sample, the children all answered with complete mastery responses, allowing pre-failure to be a constant baseline and evaluating the post-failure questionnaires independently. Self evaluation was identified as having only one of two options: one response being
mastery and one response being helpless (i.e. Feeling like a Good boy or girl or Not a Good boy or girl). There were options on a Likert scale of “really” and “sort of” but these answers were not coded for the motivation composite score. Persistence had two questions that were set in the same structure and the last two questions were open-ended questions to express strategies or self-protective behaviors as a response to their failures (“What would you do now?”). These open ended questions were also scored as mastery or helpless and interrater reliability for these questions resulted in an agreement of Cohen’s kappa= 94.5%, an agreement of 97% of observations before discussion. All discrepancies were resolved post discussion. The composite scores were compared between conditions and correlated with the EDA response, Total Frequency of peaks. When seeing the trend from the segment analyses post hoc, Total Frequency was chosen to account for the emotional arousal throughout the entire task, instead of just post-failure.

Figure 8. Motivational Composite Scores (Self Evaluation and Persistence)
A t-test was conducted to compare the mean scores of both self evaluations and persistence questions post failure between ability praise and effort praise. Neither of these t-tests presented to be significantly different, post-failure self evaluation: t(12)= -0.157, p=.878, 95% CI [-2.13, 1.84] and post-failure persistence: t(12)= -1.25, p=.235, 95% CI [1.96, .53]. The purpose of incorporating these questionnaires in this study was to identify any predictive associations with the levels of EDA and the questionnaires at the post failure segment.

We also examined the relation between the total frequency of peaks with the post-failure self-evaluation and persistence questionnaires across condition. The results presented with a negative correlation with number of peaks (Total Frequency) and persistence questionnaires, r(12)= -.567, p=.035.

**Demographic Evaluations**

Mentioned by the literature (Gunderson et al., 2013), there have been several findings of gender differences within the impacts of praise. This study originally was to explore this caveat as well to identify if there were consistent findings within this sample (N=4 for boys and N= 10 for girls). The sample size was identified as too limited to analyze gender differences. The sample size would need to be larger to accurately analyze any subcategories. Further data collection would need to be completed to address this concern of gender differences.
CHAPTER V
DISCUSSION

These data demonstrate that ability praise was associated with higher emotional arousal through EDA data. Specifically, children given ability praise showed significantly higher emotional arousal levels than children given effort praise. These differences between conditions suggest that praise and motivational outcomes are clearly linked to arousal level, consistent with the anxiety hypothesis. These results confirm our initial hypothesis.

Children that were exposed to ability praise display larger and more frequent peaks of EDA. Analyzing the EDA data through several avenues, there is a consistent finding that ability praise was associated with significantly higher levels of EDA. What was unexpected was that these increases occurred in multiple segments. As predicted, arousal levels increased during the post failure segment. What was not expected, nor predicted in the previous literature, was that arousal levels also spiked when children received praise. The ability praise condition had consistently higher peak differences that were apparent throughout all of the sections.

An unexpected result from this study was the significant difference between ability and effort praise at the time of praise delivery. Previous research suggested that the failure was the pivotal circumstance that impacted differences between ability praise and effort praise responses. Previous research found that before failure there was no difference between children who received ability or effort praise. In some cases, praise can increase self efficacy (Schunk, 1983). Children will maintain positive self-
evaluations until they experience failure. This study is the first to identify that the initial exposure to ability praise is eliciting emotional arousal from children, which might be supportive of the findings of increased self efficacy depending on the view of emotional arousal.

These findings could be viewed in two different perspectives. The first perspective highlights one of the limitations to analyzing this finding. There is no clear way to identify specific emotional states associated with arousal. The responses for frustration, anxiety or excitement would all present the same in EDA reactivity. The findings could be attributed to the children expressing significantly more excitement about receiving ability praise, thus supporting the findings of self efficacy increasing with initial ability praise before failure.

Another perspective to higher emotional arousal is the reaction to praise goes back to Saplosky’s quote about the expectation of threat can induce a stress response. The children in the ability praise condition perceived the risk of not being a good drawer as a potential threat. Ability praise can be putting pressure on the children to maintain this ability and not fail.

With either perspective, the assumption can be made that the children receiving ability praise demonstrate more extreme reactivity to successes and failures throughout the task. Further research should be explored to understand the implications of extreme reactivity and what that means for delivering ability praise. The findings from the Yerkes-Dodson Law (YDL) may explain the effect of ability praise resulting in more
extreme emotional arousal and the detriments attributed to the extreme arousal state. The Yerkes-Dodson Law (1908) and Easterbrook’s findings of Cue-Utilization theory (1959) explain that there is an optimal level of arousal to promote optimal performance. It has been found that both arousal levels that are too low or too high will result in poor performance. There is a threshold of performance and it will start to decline with extreme emotional arousal states.

\[ \text{Figure 9. Yerkes-Dodson Law} \]

Applying the concepts of the YDL of arousal and performance, it would be logical that ability praise will have higher arousal levels after failure. Failure would cause the arousal to surpass the threshold of optimal performance and performance will decline. Previous research has shown that children’s ability praise will decrease in performance post failure (Cimpian, 2010).
Further research is needed to resolve the question of identifying emotional arousal as anxiety or excitement. Perhaps limiting the feedback to criticism would limit the emotional arousal to be anxiety provoking to eliminate the conflict of positive and negative emotional arousal. Kamins and Dweck (1999) found that there were no difference between criticism and praise but it was the focus of effort or ability that made the difference in children’s responses. Evaluating EDA measures for children receiving either effort or ability criticism, would provide stronger evidence that the emotional arousal was negative, anxiety, and not attributed to excitement.

The second largest disparity between conditions was found in the post failure questionnaire segment. This finding supports the original hypothesis of this study; children receiving ability praise will have higher levels of EDA post failure. The post-failure questionnaire would be the most likely section to find this reaction because at this point of the task, the children are being asked to evaluate and address their failures. Talking about the failures within the ability condition seemed to create more of a reaction then when the children were in the midst of failing, seeing post-failure questionnaire is significant and the failure segment was not significantly different. It would be safe to assume that this emotional arousal is attributed to anxiety as the previous research has suggested. Further research is this area is needed; this study is only foundational work on emotional response to praise and should be explored further.

The relationship between frequency of EDA arousal and persistence provides support that persistence may be influenced more by ability praise than effort praise.
Also, this finding offers support for the argument that persistence and self evaluations react differently to praise and are weighted differently based off how children employ self-protective behaviors (Zentall & Morris, 2010). A self-protective behavior, more associated with ability praise, maintains positive self-evaluations at the expense of persistence. Seeing that the higher levels of emotional arousal are associated with lower persistence levels gives stronger evidence suggesting that self protective behaviors are a response to a threat and are anxiety provoking.

This research has presented with a novel angle on praise and motivation. EDA data helps to explain the relation between praise and motivation. The results show a response not only after failure but more surprisingly to the delivery of praise as well. This finding suggests looking further into the extreme nature of ability praise.
APPENDICES
Dear Parent or Guardian:

I am conducting a research study titled “Identifying impacts of generic vs. nongeneric praise on motivation and emotional arousal”. The study investigates how different forms of praise influence children’s persistence and motivation. Our study investigates how children emotionally respond to praise when presented with stories of complete and incomplete drawings. We will be exploring this aspect by using skin conductance sensors, which are presented as wristbands for the children. Skin conductance is a safe and harmless technique to measure levels of sweat in the skin. Sweat indicates either physical activity or emotional response (i.e. frustration or anxious feelings). This technique provides an opportunity to compare the emotional response to the different forms of praise. The results will tell us if praise influences how children look at complete and incomplete pictures and how that relates to their motivation. I am requesting permission to allow your child to participate in this study because they are between the ages of 5 and 8.

Children’s participation is entirely voluntary and it will be made clear to your child that (s)he will be able to withdraw at any time and for any reason*. A more detailed description of the study has been enclosed (see Study Description). Children who participate will play a pretending game involving several made-up stories about the child drawing pictures and receiving praise for the pictures. The entire session will last approximately 15-20 minutes. Copies of all materials, scripts, and protocols have been provided to the principal and will be available to any interested parent/guardian. This research protocol has been approved by the IRB Committee at Kent State University.

Your child’s individual responses and information will be kept confidential as all information pertaining to the child will be kept separate from the child’s responses. Finally, the identity of all participants is protected in the event of any presentation or publication as a result of this study. I will begin conducting the sessions of this research on November 2014. There are no identified risks associated with this study. If you have any questions, you may contact me using the information provided. Thank you for your time!

Please sign the consent form, indicating whether or not you would like to have your child participate in this study, and return it to your child’s classroom teacher.

Sincerely,

Bradley J. Morris
Associate Professor, Educational Psychology
(Phone) 330-672-0590 bmorri20@kent.edu

* If any problem arises in conducting the study, you should contact me (Dr. Bradley J. Morris, Associate Professor, Dept. of Educational Psychology, 412A White Hall, Kent State University, Kent, OH 44242; Phone 330-672-0590).
APPENDIX B

STUDY SUMMARY
Dear Parent/Guardian,

We would like to thank you for allowing your child to participate in the study, *Identifying impacts of generic vs. nongeneric praise on motivation and emotional arousal*. In this study, a skin conductance sensor wristband will be attached to the child’s wrist. This device collected information about the child’s emotional responses throughout the rest of the study. The child played a pretending game involving several made-up stories about the child drawing pictures and receiving praise for the pictures. Next, the child was asked several questions about the story, such as how they feel about the story and what they would do next. The praise provided in the stories was one of the following: person (focused on a trait) or process (focused on effort). The pretending game took place during one brief session (15-20 minutes). The results will tell us how different types of praise influences children’s motivation and their emotional response.

I am happy to provide your child’s results and to answer any questions about this project at 330-672-0590. Thank you again for your help!

Sincerely,

Bradley J. Morris  
Associate Professor, Educational Psychology  
(Phone) 330-672-0590  
bmorri20@kent.edu
APPENDIX C

INFORMED CONSENT FORM IRB #14-045
Informed Consent to Participate in a Research Study

Study Title: Identifying impacts of generic vs. nongeneric praise on motivation and emotional arousal

Principal Investigator: Bradley J. Morris
Co-Investigators: Angela Junglen

Your child is being invited to participate in a research study. This consent form will provide you with information on the research project, what your child will need to do, and the associated risks and benefits of the research. Your child’s participation is voluntary. Please read this form carefully. It is important that you ask questions and fully understand the research in order to make an informed decision. If requested, you will receive a copy of this document.

Purpose: An important part of school success is a child’s motivation, for example the desire to continue performing a task despite difficulty. The type of praise a child hears may influence whether a child persists during a difficult task. Previous research has shown that praise focused on effort (“you did a good job painting”) motivates children more effectively than praise focused on a trait (“you are a good painter”). Children who receive effort praise want to learn from their mistakes. Because young children may not be able to verbally explain these goals, their skin conductance levels help us understand their goals by measuring levels of emotional response. This study investigates how different forms of praise influence children’s persistence and how they look at complete or incomplete drawing. Please see Study Description for more information.

Procedures
Before getting started, a skin conductance sensor will be attached to the child (see picture below). A sensor is simply a velcro wristband that has a device that noninvasively tracks skin conductance, sweat levels in the pores of the skin. Your child will play a pretending game involving several made-up stories about the child drawing pictures and receiving praise for the pictures. Next, the child will be asked several questions about the story, such as how they feel about the story and what they would do next. The praise provided in the stories will be one of the following: person (focused on a trait) or process (focused on effort). The pretending game will take place during one session (15-20 minutes). The results will tell us if praise influences how children look at complete and incomplete pictures and how that relates to their motivation. The session will last approximately 15-20 minutes.

Benefits
This research will not benefit you or your child directly. However, your child’s participation in this study will help us to better understand how children’s motivation is impacted by praise. These results may be beneficial in improving approaches to praise and encouraging motivation.
Risks and Discomforts
There are no anticipated risks beyond those encountered in everyday life.

Privacy and Confidentiality
No identifying information will be collected. This signed parental consent form will be kept separate from study data, and responses will not be linked to your child.

Compensation
Participation or non-participation will have no effect on your child’s grade in the classroom.

Voluntary Participation
Taking part in this research study is entirely up to you and your child. You and/or your child may choose not to participate or may discontinue their participation at any time without penalty or loss of benefits to which he/she is otherwise entitled. You will be informed of any new, relevant information that may affect your child’s health, welfare, or willingness to continue participation in this study.

Contact Information
If you have any questions or concerns about this research, you may contact Dr. Bradley J. Morris at 330-672-0590. This project has been approved by the Kent State University Institutional Review Board. If you have any questions about your rights as a research participant or complaints about the research, you may call the IRB at 330-672-2704.

Consent Statement and Signature
I have read this consent form and have had the opportunity to have my questions answered to my satisfaction. I voluntarily agree to grant permission for my child to participate in this study. I understand that a copy of this consent will be provided to me for future reference.

Please print child’s name                     Child’s birthdate

Signature of Parent/Guardian                  Date

Phone Number
* A researcher will contact you to set up a time and day (before or after the reading program) to conduct the study.
Informed Consent Requirements for Minors

Assent is required of children age 12 years and younger, as well as parental permission. Assent is a child’s affirmative agreement to participate in research.

Assent Script for Identifying impacts of generic vs. nongeneric praise on motivation and emotional arousal

Procedure for obtaining assent from children

“Hi, [child's name]. My name is ____________, and I am trying to learn more about how children respond to hearing praise. I would like you to play a game where I’m going to tell you stories about drawings that were completed by you and other children for the teacher. I will ask some questions about it. Also, we are going to ask you to wear this bracelet while we play this game. Do you want to do this? [If the child does not indicate affirmative agreement, you cannot continue with this child] Do you have any questions before we start? [Clarify if necessary]. If you want to stop at any time just tell me. A witness statement can be added if the extra protection provided by it is desired parent/guardian.
APPENDIX D

SCRIPTS

 GENERIC (ABILITY): Okay, so now we are going to play a drawing game. We’re going to act out a few stories using you and a teacher, Teacher Debbie.

1) One day you were playing at the drawing table Teacher Debbie said, "(Child’s name), will you make a pick-up truck for me?" and you said "OK, teacher." When Teacher Debbie came over and saw the pick-up truck you drew she said, "That looks like a pick-up truck. You are a good drawer. "

2) Another day you were playing at the drawing table and Teacher Debbie said, "(Child’s name), will you make a sheep for me?" and you said "OK, teacher." When Teacher Debbie came over and saw the sheep you drew she said, "That looks like a sheep. You are a good drawer. "

3) Pretend one day you were playing at the drawing table and Teacher Debbie said, "(Child’s name), will you make an ambulance for me?" and you said "OK, teacher." When Teacher Debbie came over and saw the ambulance you drew she said, "That looks like an ambulance. You are a good drawer. "

Okay, now let’s go on.

4) One day you were playing at the drawing table and Teacher Debbie said, "(Child’s name), will you make a dog for me?" and you said "OK, teacher." When Teacher Debbie came over and saw the dog you drew she said, "That looks like a dog. You are a good drawer. "

Before we go on I’m going to ask you a few questions about this dog story.

(a) Do you like the dog that you drew or do you not like it?

- How much do you like/not like it? Do you REALLY LIKE IT? Do you SORT OF LIKE IT? Do you SORT OF NOT LIKE IT? Or do you REALLY NOT LIKE IT?

(b) Did what happened in the dog story make you feel happy or sad
• How happy/sad? Does it make you feel REALLY HAPPY? Does it make you feel SORT OF HAPPY? Does it make you feel SORT OF SAD? Or Does it make you feel REALLY SAD?

(c) Did everything that happened in the dog story make you feel like you were good at drawing or not good at drawing?

(d) Did everything that happened in the dog story make you feel like you were a good boy/girl or not a good boy/girl?

5) Another day you were playing at the drawing table. After a little while, Teacher Debbie says, "(Child's name), will you make a bus for me?" and you say "OK, teacher." You look at what you did and think to yourself, "Uh-oh, the bus doesn't have any wheels," but you want to show the teacher the bus you drew and so you say, "Teacher, I drew a bus for you." The teacher looks at the bus you drew and says, "That doesn't look like a bus; it has no wheels."

Let’s see what happens in the next story.

6) Another day you were playing at the drawing table. After a little while, Teacher Debbie says, "(Child’s name), will you make a cat for me?" and you say "OK, teacher." You look at what you did and think to yourself, "Uh-oh, the cat doesn’t have any ears," but you want to show the teacher the cat you drew and so you say "Teacher, I drew a cat for you." The teacher looks at the cat you drew and says, "That doesn’t look like a cat; it has no ears."

Okay, now I’m going to ask you some questions about this cat story.

(a) Do you like the cat that you drew or do you not like it?

• How much do you like/not like it? Do you REALLY LIKE IT? Do you SORT OF LIKE IT? Do you SORT OF NOT LIKE IT? Or do you REALLY NOT LIKE IT?

(b) Did what happened in the cat story where you forgot the ears make you feel happy or sad?

• How happy/sad? Does it make you feel REALLY HAPPY? Does it make you feel SORT OF HAPPY? Does it make you feel SORT OF SAD? Or Does it make you feel REALLY SAD?
(c) Did everything that happened in the cat story where you forgot the ears make you feel like you were good at drawing or not good at drawing?

(d) Did everything that happened in the cat story where you forgot the ears make you feel like you were a good boy/girl or not a good boy/girl?

(e) On another day, when you had a chance to draw one of these again, would you want to draw the bus, the cat, or the tree?

(f) If you had a chance to do something tomorrow, would you draw or would you do something else?

(g) Think about the story where you drew a cat and forgot the ears. What would you do now?

(h) Think about the story where you drew a bus and forgot the wheels. What would you do now?

Okay, so now let’s go back to our pretending game and let’s try the bus again:

7) Another day you were playing and Teacher Debbie says, "Will you make a cat for me?" and you say "OK, teacher." So you work really hard and try to draw a good cat for the teacher. The teacher looks at the cat you drew and says, “You found a really good way to draw the cat. I see it has ears.”

That went well.

Let’s see about the cat:

8) Another day you were playing at the drawing table and Teacher Debbie asks you to make a bus and you say "OK, teacher." So you work really hard and try to draw a good bus for the teacher. The teacher looks at the bus you drew and says, “You found a really good way to draw the bus. I see that it has wheels.”

Great! Thanks for playing the game. Would you like to pick a prize for playing?
NONGENERIC (EFFORT): Okay, so now we are going to play a drawing game. We’re going to act out a few stories using you and a teacher, Teacher Debbie.

1) One day you were playing at the drawing table Teacher Debbie said, "(Child’s name), will you make a pick-up truck for me?" and you said "OK, teacher." When Teacher Debbie came over and saw the pick-up truck you drew she said, "That looks like a pick-up truck. You did a good job drawing."

2) Another day you were playing at the drawing table and Teacher Debbie said, "(Child’s name), will you make a sheep for me?" and you said "OK, teacher." When Teacher Debbie came over and saw the sheep you drew she said, "That looks like a sheep. You did a good job drawing."

3) Pretend one day you were playing at the drawing table and Teacher Debbie said, "(Child’s name), will you make an ambulance for me?" and you said "OK, teacher." When Teacher Debbie came over and saw the ambulance you drew she said, "That looks like an ambulance. You did a good job drawing."

Okay, now let’s go on.

4) One day you were playing at the drawing table and Teacher Debbie said, "(Child’s name), will you make a dog for me?" and you said "OK, teacher." When Teacher Debbie came over and saw the dog you drew she said, "That looks like a dog. You did a good job drawing."

Before we go on I’m going to ask you a few questions about this dog story.

(a) Do you like the dog that you drew or do you not like it?

- How much do you like/not like it? Do you REALLY LIKE IT? Do you SORT OF LIKE IT? Do you SORT OF NOT LIKE IT? Or do you REALLY NOT LIKE IT?
(b) Did what happened in the dog story make you feel happy or sad?

- How happy/sad? Does it make you feel REALLY HAPPY? Does it make you feel SORT OF HAPPY? Does it make you feel SORT OF SAD? Or Does it make you feel REALLY SAD?
(c) Did everything that happened in the dog story make you feel like you were good at drawing or not good at drawing?

(d) Did everything that happened in the dog story make you feel like you were a good boy/girl or not a good boy/girl?

5) Another day you were playing at the drawing table. After a little while, Teacher Debbie says, "(Child's name), will you make a bus for me?" and you say "OK, teacher." You look at what you did and think to yourself, "Uh-oh, the bus doesn't have any wheels," but you want to show the teacher the bus you drew and so you say, "Teacher, I drew a bus for you." The teacher looks at the bus you drew and says, "That doesn't look like a bus; it has no wheels."

Let’s see what happens in the next story.

6) Another day you were playing at the drawing table. After a little while, Teacher Debbie says, "(Child’s name), will you make a cat for me?" and you say "OK, teacher." You look at what you did and think to yourself, "Uh-oh, the cat doesn’t have any ears," but you want to show the teacher the cat you drew and so you say "Teacher, I drew a cat for you." The teacher looks at the cat you drew and says, “That doesn’t look like a cat; it has no ears.”

Okay, now I’m going to ask you some questions about this cat story.

(a) Do you like the cat that you drew or do you not like it?

- How much do you like/not like it? Do you REALLY LIKE IT? Do you SORT OF LIKE IT? Do you SORT OF NOT LIKE IT? Or do you REALLY NOT LIKE IT?

(b) Did what happened in the cat story where you forgot the ears make you feel happy or sad?

- How happy/sad? Does it make you feel REALLY HAPPY? Does it make you feel SORT OF HAPPY? Does it make you feel SORT OF SAD? Or Does it make you feel REALLY SAD?

(c) Did everything that happened in the cat story where you forgot the ears make you feel like you were good at drawing or not good at drawing?
(d) Did everything that happened in the cat story where you forgot the ears make you feel like you were a good boy/girl or not a good boy/girl?

(e) On another day, when you had a chance to draw one of these again, would you want to draw the bus, the cat, or the tree?

(f) If you had a chance to do something tomorrow, would you draw or would you do something else?

(g) Think about the story where you drew a cat and forgot the ears. What would you do now?

(h) Think about the story where you drew a bus and forgot the wheels. What would you do now?

Okay, so now let’s go back to our pretending game and let’s try the bus again:

7) Another day you were playing and Teacher Debbie says, "Will you make a cat for me?" and you say "OK, teacher." So you work really hard and try to draw a good cat for the teacher. The teacher looks at the cat you drew and says, “You found a really good way to draw the cat. I see it has ears.”

That went well.

Let’s see about the cat:

8) Another day you were playing at the drawing table and Teacher Debbie asks you to make a bus and you say "OK, teacher." So you work really hard and try to draw a good bus for the teacher. The teacher looks at the bus you drew and says, “You found a really good way to draw the bus. I see that it has wheels.”

Great! Thanks for playing the game. Would you like to pick a prize for playing?
APPENDIX E

QUESTIONNAIRE RESPONSE SHEET
APPENDIX E

QUESTIONNAIRE RESPONSE SHEET

Subject Number __________   Script Letter _____________
Date of Interview _______________   Interviewer ___________________

Question 4

(a) Do you like the dog that you drew or do you not like it?

LIKE   NOT LIKE   Other ______________

• How much do you like/not like it?

REALLY LIKE   SORT OF LIKE   SORT OF NOT LIKE   REALLY NOT LIKE
Other ______________

(b) Did what happened in the dog story make you feel happy or sad?

HAPPY   SAD   Other ______________

• How happy/sad?

REALLY HAPPY   SORT OF HAPPY   SORT OF SAD   REALLY SAD
Other ______________

(c) Did everything that happened in the dog story make you feel like you were good at drawing or not good at drawing?

GOOD   NOT GOOD   Other ______________

(d) Did everything that happened in the dog story make you feel like you were a good boy/girl or not a good boy/girl?

GOOD BOY/GIRL   NOT A GOOD BOY/GIRL   Other ______________
Question 6

(a) Do you like the cat that you drew or do you not like it?
LIKE NOT LIKE Other ________________

- How much do you like/not like it?

REALLY LIKE SORT OF LIKE SORT OF NOT LIKE REALLY NOT LIKE
Other ________________

(b) Did what happened in the cat story where you forgot the ears make you feel happy or sad?
HAPPY SAD Other ________________

- How happy/sad?

REALLY HAPPY SORT OF HAPPY SORT OF SAD REALLY SAD
Other ________________

(c) Did everything that happened in the cat story where you forgot the ears make you feel like you were good at drawing or not good at drawing?
GOOD NOT GOOD Other ________________

(d) Did everything that happened in the cat story where you forgot the ears make you feel like you were a good boy/girl or not a good boy/girl?
GOOD NOT GOOD Other ________________

(e) On another day, when you had a chance to draw one of these again, would you want to draw the bus, want to draw the tree, or want to draw the cat?
BUS   TREE   CAT   Other ________________

(f) If you had a chance to do something tomorrow, would you draw or would you do something else?

DRAW     SOMETHING ELSE

(g) Think about the story where you drew a cat and forgot the ears. What would you do now?

____________________________________________________________________
____________________________________________________________________

(h) Think about the story where you drew a bus and forgot the wheels. What would you do now?

____________________________________________________________________
____________________________________________________________________


REFERENCES


