CAN YOU WAIT? THE EFFECTS OF INDUCED GRATITUDE
AND PRIDE ON CHILDREN’S ABILITY
TO DELAY GRATIFICATION

by

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CAN YOU WAIT? THE EFFECTS OF INDUCED GRATITUDE AND PRIDE ON CHILDREN’S ABILITY TO DELAY GRATIFICATION

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Delay of gratification refers to the ability to wait for a preferred reward over an immediate reward. For children, this ability serves as an important predictor of future outcomes. Most research points to cognitive processes as the key strategy for aiding in children’s ability to delay gratification, yet new evidence with adults suggests that positive emotions might also be beneficial for this ability. This study is the first to analyze how positive emotions influence a child’s ability to delay gratification. Four and five-year-old children \((n = 57)\) were randomly assigned to one of three conditions - pride, gratitude, and control - and completed an emotion-inducing drawing task prior to the delay of gratification task. In this study, children were told they could have more of a preferred reward if they waited for 15 min. The results revealed that children in the pride condition delayed gratification most successfully as evidenced by their ability to wait longer and use more distraction behaviors than children in the control condition. Therefore, teachers and parents should consider implementing interventions that increase a child’s sense of authentic pride into their schools and homes.

*Keywords*: delay of gratification, positive psychology, pride, gratitude, children
Can You Wait? The Effects of Induced Gratitude and Pride on Children’s Ability to Delay Gratification

In the 1960s and 70s, Walter Mischel conducted a series of experiments (Mischel, 1961; Mischel, Ebbesen, Raskoff Zeiss, 1972) that led to the development of the “Marshmallow Test.” This popular developmental assessment, inspired by Mischel’s own children, measures emotion regulation, self-control, and ultimately, the ability to delay gratification. Since the ability to delay gratification has been shown to predict a variety of developmental outcomes (e.g., Ayduk et al., 2000; Mischel, Shoda, & Rodriguez, 1989; Schlam, Shoda, Mischel, Wilson, & Ayduk, 2013), a number of studies have focused on identifying the strategies children utilize in order to delay gratification (e.g., Mischel et al., 2011; Mischel et al., 1972). Specifically, most attention has focused on cognitive strategies, such as the ability to reframe the object of desire or to distract oneself. However, a newer body of research suggests that emotions, such as gratitude, might be manipulated, and thus might serve as a constructive strategy for delaying gratification (e.g., DeSteno, Li, Dickens, & Lerner, 2014; Ifcher & Zarghamee, 2011). This study will be the first to examine how two specific positive emotions, pride and gratitude, can influence delay of gratification in early childhood.

Generally defined, the ability to delay gratification refers to the capacity to wait for a preferred reward when a less favored, yet nevertheless tempting reward is present and salient (Mischel & Ayduk, 2004). The ability to delay gratification is one component of the larger domain of self-regulation, as theorized by Kopp (1982). Self-regulation refers to the ability to adjust various aspects of behavior, emotions, or thoughts in response to present, situational demands, especially in the absence of an external monitor. It can be observed during tasks such as the Stroop task (i.e., a task in which one must read a list of colors printed in a non-
corresponding color of ink). Self-regulation develops gradually over time, and the basis for this ability starts in infancy, with the simple capacity to control voluntary movements. Children then learn to comply with parental rules and subsequently learn to control impulses. As children experience gains both verbally and socially, the ability to self-regulate begins to emerge, typically around preschool age. Mischel and Patterson (1978) further posit that this ability depends on certain cognitive processes, such as attentional and diversionary strategies as well as introspection. The specific ability to delay gratification, which only refers to a single aptitude representative of the greater ability to self-regulate, is thus dependent on these types of developmental improvements.

The most common delay of gratification task comprises of two rewards, one smaller and one greater - classically, in the form of one or two marshmallows. In Mischel and Ebbesen’s (1970) original study, over 600 4- to 6-year old children were given the option to either eat one marshmallow immediately or wait an additional 15 min to receive a second marshmallow, the preferred reward. During the delay, children must resist the urge to eat the single, original marshmallow. Mischel and colleagues (1972) noted individual differences in ability and observed the wide range of behaviors that took place during the 15 min. For example, some children would cover their eyes or play with their hair, while others wouldn't be able to wait at all. Since these original descriptive studies, a considerable body of research has shown that the ability to delay gratification has important, lifelong implications for children’s development.

In the 40 years since Mischel’s original studies, several longitudinal studies have established links between the ability to delay gratification and certain academic, psychological adjustment, and physical health outcomes. For example, in a follow-up study, Mischel, Shoda, and Rodriguez (1989) found a positive relationship between wait time, measured in seconds, and
SAT scores. The same study found that the preschoolers who were able to delay gratification were also better able to cope with stress during adolescence. Moreover, these children had improved interpersonal relationships in adulthood. With respect to mental health, the ability to delay gratification may predict an increased sense of self-worth (Ayduk et al., 2000) and can serve as a buffer for mental illness, including borderline personality disorder (Ayduk & Gyurak, 2008). Additionally, certain physical health outcomes have been identified. For instance, Schlam and colleagues (2013) analyzed the body mass index (BMI) of over half of the women included in their original study and found that the women who delayed longer at 4-years-old had a significantly lower BMI 30 years later. Myriad outcomes are associated with the ability to delay gratification, especially those that relate to impulse control, such as the likelihood of suffering from an addiction (Kirby, Petry, & Bickel, 1999) or becoming incarcerated (Mischel, 1961). From this review, it is clear that delaying gratification is a significant psychological predictor of future life outcomes.

Cognitive and Emotional Theories of Delay of Gratification

Since delaying gratification is critical for future life success, many researchers have attempted to understand the mechanisms and strategies that underlie the ability to delay gratification. Until recently, the most prominent theory involved cognition; in this theory, those most able to delay gratification have advanced cognitive abilities. In this way, they are able to overcome emotions that might create temptation or increase impulsivity by distracting themselves or by positively reframing the task and reward. This classic theory, known the Cognitive-Affective System, posits that one must balance two innate systems: a “cool” system, composed of thoughtful, systematic cognitions, and a “hot” system, or the impulsive, reflexive emotions (Metcalf & Mischel, 1999). The weight one gives to each system is dependent on both
the unique situation at hand as well as the overall development of the person. Thus, older children balance these two systems more effectively. Mischel and Baker (1975) applied this idea to the delay of gratification task when they analyzed how children mentally represent the marshmallow. In this model, the hot system refers to any consummatory ideations (i.e., viewing the marshmallow as a tasty treat), while the cool system refers to any non-consummatory ideations (i.e., thinking of the marshmallow as a soft pillow).

Evidence for the use of cognitive strategies in delaying gratification comes from studies that report on the various types of behavioral strategies that children use during the task, including one’s visual patterns. For example, Mischel et al. (2011) argued that children who are able to redirect their attention elsewhere using self-distraction (e.g., singing, playing with their hands, etc.) are more successful at this task. Another study revealed that asking children to think about “fun things” (i.e., playing with toys or singing a silly song) before the task significantly increased the duration of the child’s delay (Mischel et al., 1972). Similarly, visual behavior is related to varying levels of success in the delay of gratification task, as shown by manipulating the location of the desired reward (i.e., both rewards in the room, one reward in the room, or no reward in the room) and by manipulating the types of images presented in the room (i.e., an image of the treat or an irrelevant image; Mischel and Ebbesen, 1970; Mischel et al., 1972). This is because visual cues reflect attention, and therefore reveal, to a certain degree, one’s mental processes. Moreover, further evidence for the use of cognitive strategies in increasing delay time comes from a study that incorporated a Superman cape into their delay task (Karniol et al., 2011). In this study, the children who cognitively “transformed” into Superman by wearing the cape delayed longer than children who did not wear a cape; this is because they felt as if they had the same qualities of Superman, such as patience. These successful children were able to embody
the powerful characteristics of Superman, which in turn, fostered feelings of self-efficacy.

Although cognition likely played a role in children’s ability to delay gratification, the influence of emotions (i.e., self-efficacy) was not considered. Taken together, these studies indicate that cognitive processes are indeed a key component of the ability to delay gratification.

Nevertheless, there is now evidence to suggest that cognition is only partially responsible for this ability. Contrary to the long-standing belief that one must overcome their emotions in order to effectively delay gratification, new studies have indicated that certain emotions might actually be beneficial for this ability. For example, Ifcher and Zarghamee (2011) induced adults with various levels of positive affect via humorous video clips and observed that an increase in positive affect significantly predicted a reduction in time preference, meaning that participants would be more likely to wait for a reward. DeSteno and colleagues (2014) found similar results when the investigators induced the specific feeling of gratitude instead of the more general feeling of happiness. The participants in this study were more likely to wait for a larger monetary reward if they were induced, prior to the delayed gratification task, with gratitude as opposed to no emotion at all. On the other hand, when participants were induced with sadness, impatience increased (Lerner, Li, & Weber, 2013). In sum, it appears that certain emotions can influence one’s ability to regulate behavior.

Other studies have manipulated emotions in children specifically, and thus serve as additional evidence for the significance of emotion in the delay task. For instance, a study explored the impact of a friendly touch on a child’s ability in delaying gratification (Leonard, Berkowitz, & Shusterman, 2014). The results revealed that children in the touch condition were, on average, able to delay two minutes longer than the control group because of an increase in positive affect from the friendly touch. Overall, research supports the emotional theory of
delaying gratification, yet the extent to which emotions can influence self-regulation remains unclear and mainly unexplored. Thus, it is this modern approach that inspired our quest to explore the outcomes of implementing certain positive emotions, namely pride and gratitude, in children during the delay task.

**Positive Emotions and The Ability to Delay Gratification**

Two particular emotions have substantial, empirical evidence as possible facilitators for the ability to delay gratification: pride and gratitude. Pride is a critical, self-conscious emotion that is inherent to self-esteem. It is defined as the feeling of being a socially valued person (Mascolo & Fischer, 1995), though it is commonly separated into two main factors: hubristic and authentic pride (Lewis, 1992). Hubristic pride is defined as a false sense of pride and is associated with arrogance, narcissism, and self-aggrandizing behavior. On the other hand, authentic pride is rooted in actual accomplishment and is marked with feelings of confidence and self-efficacy (Tracy & Robins, 2007). While hubristic pride has traditionally been linked to an array of negative outcomes, such as an increase in impulsivity, aggression, and negative affect (Carver, Sinclair, & Johnson, 2010), there is evidence to suggest that authentic pride is valuable for one’s daily life. For example, studies have shown authentic pride to promote self-control (Silvia & O'Brien, 2004), foster altruistic behavior, and increase conscientiousness (Cheng, Tracy, & Henrich, 2010). Pride also has beneficial links to outcomes in children. As the precursor to self-efficacy, authentic pride is related to academic achievement and prosocial behavior in children (Stipek, 1995). Moreover, pride is a relevant, age-appropriate emotion for children. Researchers believe that children as young as 2-years old are able to experience pride with their development of self-awareness (Stipek, 1995). Indeed, 4-year old children have demonstrated the ability to discriminate pride from other similar emotions such as happiness and
surprise (Tracy, Robins, & Lagattuta, 2005). Because pride develops at a relatively young age, more research should be conducted in order to elucidate pride’s constructive potential in school-aged children.

More importantly, as it relates to the delay of gratification task, pride has shown to be linked to important traits, such as determination. Tracy and Robins (2007) describe pride as the “fuel” for one’s desire to achieve. In a study with college students by Williams and DeSteno (2008), pride was related to perseverance as the participants engaged in an effortful task, even in the absence of extrinsic motivations. Similarly, another study found that feelings of pride, from both ambiguous and effort-based sources of praise, corresponded to an increase in task persistence in kindergarteners (Morris & Zentall, 2014). It is hypothesized that this link is due to pride’s association with social status or social relatedness; thus, pride motivates our behavior despite initial costs (Fredrickson & Branigan, 2001). These links to perseverance and motivation have important implications for the ability to delay gratification, as perseverance is a necessary skill in order to wait for an extended period of time. No study at this time has directly analyzed pride’s effect on the delay task. Therefore, our study seeks to fulfill this disparity by testing pride’s influence in children.

As previously discussed, there is research to suggest that gratitude might also be valuable in delaying gratification (DeSteno et al., 2014); however, this study analyzed the effects of gratitude in adults, and there are presently no studies examining the effect of gratitude in children. Gratitude, as conceptualized by Solomon (1977), is defined as the recognition of a gain resulting from another person’s actions. While more sophisticated variations of gratitude develop with age and with the progress of theory of mind, researchers believe that preschoolers are capable of feeling this emotion as well. For example, a study found that children as young as 4-
years old were able to speak to what they were grateful for (Gordon, Musher-Eizenman, Holub, & Dalrymple, 2004).

In the field of positive psychology, many researchers are now studying the impact of gratitude on daily life. Indeed, gratitude has been linked to numerous outcomes, such as a decrease in materialism (Lambert, Fincham, Stillman, & Dean, 2009), a decrease in anger-related reactions, including aggression (Watkins, Woodward, Stone, & Kolts, 2003), and an increase in the willingness to help others or altruism (Nowak & Roch, 2007). More specifically, in children, studies have shown gratitude to predict an increase in prosocial behavior and subjective well-being (Tian, Du, & Huebner, 2015). Additionally, school-based gratitude interventions have also shown gratitude to be associated with an increase in satisfaction in the school experience (Froh, Sefick, & Emmons, 2008). Thus, the overall consensus is that gratitude is a constructive feeling, regardless of age, suggesting that it might be an emotion that plays an important role in regulating behavior.

Perhaps the most important finding on gratitude regards the effect it may have on patience. A groundbreaking study by DeSteno et al. (2014) induced gratitude in adults through a writing task; after the participants recalled an event that made them feel grateful, they participated in a delay of gratification activity that allowed them to choose between an immediate monetary reward or a much superior, delayed cash prize. The study found that gratitude contributed to the duration of the participants’ delay as compared to the results of the control group and the more generalized, happy group. Because these findings have not yet been extended to younger children, we seek to understand if inducing feelings of gratitude in preschoolers might produce comparable results.

The Present Study
Recent work suggests that emotions may facilitate the ability to delay gratification in both children and adults. More specifically, a case can be made for both pride and gratitude as two strategies to improve delayed gratification. To date, there has been no study that has directly examined whether pride and gratitude might contribute to a child’s ability to delay gratification. Therefore, we were interested in examining the effects of the induced feelings of both pride and gratitude in two major ways: First, we examined if the children induced with pride or gratitude were able to delay longer than children in the control group. Given that these emotions have been linked to perseverance and patience respectively in the past (e.g. DeSteno et al., 2014; Williams & DeSteno, 2008), we hypothesized that both emotions will allow a child to delay longer than a child in a non-emotion inducing control condition. Secondly, we investigated this ability further by observing their regulatory and visual behaviors. We expected our results to be consistent with past research with children and adults (e.g., DeSteno et al., 2014; Kanoil et al., 2011) and hypothesized that children in emotion-inducing conditions will utilize more effective regulatory strategies as compared to the control group. These strategies will allow children to rely more heavily on their “cool” cognitive system (i.e., distraction) in order to overcome any temptation created by the “hot” affective system (i.e., talking about the reward). More specifically, because previous research has already confirmed this model in adults (e.g. DeSteno et al., 2014), we hypothesized that gratitude will be more likely than pride to have a positive impact on a child’s ability to delay gratification and on the types of strategies utilized. However, our comparison of pride and gratitude are exploratory analyses as no research has been conducted in this area.

Methods

Participants
Participants included children between the ages of four and five ($M = 4.98$, $SD = .58$). Children were recruited using an existing database of previous studies and by the use of a campus-wide announcement email. Each child was required to have no known medical or neurological conditions and at least one biological or adoptive parent to accompany them. After four participants were removed due to the child’s inability to comprehend the drawing task or the delay of gratification task, our study had a total of 57 children. Our sample was 64.3% female and 35.7% male. The children were predominantly White/Caucasian (91.1%), with 3.6% identifying as Black/African-American, 3.6% as Asian, and 1.8% as other. The families were mostly middle class (53.6% had an annual household income of at least $40,000 or more) and mothers were well educated (14.3% attended some college, 7.1% attended two years, 25% attended four years, and 53.6% received an advanced/professional degree).

**Procedure**

Families received a packet of questionnaires to complete prior to the study. All study visits took place on campus. Parents completed a consent form and children provided verbal assent. Parents and children then participated in a free play and clean-up task to become comfortable with the surroundings. The parent was then asked to leave the room and the child participated in the emotion-inducing task and delay of gratification task. At the conclusion of the visit, parents were compensated with a $25 gift certificate to a large national retailer and children were provided a small toy of their choice.

**Free play and cleanup.** The experimenter first asked the child and parental guardian to begin this study by playing with an array of age-appropriate toys in the observation room as they “normally would at home.” After 10 min, the experimenter then asked the parent and child to
clean-up the toys as they “normally would at home” by placing them into a basket. The experimenter returned after 5 min had elapsed or when all of the toys were placed in the basket.

**Emotion manipulation.** Once the experimenter returned, the parent was asked to leave the room. The experimenter cleared the room of any toys and left only a small chair and table in the corner of the room. The experimenter then told the child that they were going to play a game together. Prior to the study, the participants were randomly assigned to one of three emotion manipulation conditions: pride, gratitude, or control. Children in the pride condition were given a few crayons and a sheet of paper to draw “the best picture” they could draw. After the child completed the drawing, the experimenter gave the child high praise, used strong, positive emotion, and exclaimed that the child’s picture “was the best picture we have seen all day.” Children in the gratitude condition also received a few crayons and a sheet of paper, but they were asked instead to “think about [their] day” and to “draw something [they] are thankful for.” Upon completion, the experimenter asked the child to explain what he or she drew. Finally, children in the control condition were given a single black crayon and sheet of paper and were asked to draw five lines. The experimenter then replied “thank you,” giving no positive or negative feedback or expression.

**Delay of gratification.** The supplies of each condition were then exchanged for a plate of snacks and a bell. The first plate of snacks included two Goldfish crackers, one large marshmallow, two chocolate M&M’s candies, and two fruit snacks. The experimenter asked each child to identify which snack they preferred. Upon choosing, the experimenter took away all other snacks on the first plate, leaving only the child’s preferred treat. The experimenter then presented a second plate, which displayed a larger quantity of their snack of choice (five Goldfish, two marshmallows, five M&M’s, or five fruit snacks). At this point, the experimenter
explained the rules of the game and repeated the instructions until the child comprehended the task. The child was told that the experimenter had to leave the room, but if the child waited for the experimenter without getting up or eating the snack, he or she could have more of their preferred treat when the experimenter returned. However, if the child did not want to wait, the child was told to “ring the bell to make [the experimenter] come back.” If the child rang the bell, he or she would only receive the lower quantity treat; on the other hand, if the child waited until the experimenter returned, he or she would receive more of their preferred treat. For example, if the child selected Goldfish, the child would receive only two Goldfish if they rang the bell or ate the snack before the experimenter returned (15 min later). However, if the child waited until the experimenter returned, the child would receive five Goldfish. After the experimenter determined that the child understood the instructions, the experimenter placed the plate with the lesser amount of the preferred treat alongside the bell in the center of the table. The experimenter returned after 15 min, after the child rang the bell, or after the snack had been fully consumed. If the child successfully waited for 15 min or rang the bell, the experimenter asked the child which plate of food he or she would receive for their actions. The child then received their respective treat and the family was compensated for their visit.

**Measures**

**Duration of waiting.** To calculate the amount of time each child successfully delayed gratification, a team of coders was instructed to identify the start and end of the task \((ICC = .99)\). The task began once the experimenter had left the room and the coder heard the door close. The task ended on three variable occasions: once the child had completed the entire 15 min task, once the child had rang the bell, or once the child had completely consumed the snack. Therefore, the
possible duration ranged from 0-s (child unable to wait) to 900-s (child successfully waited for 15 min).

**Visual behaviors.** A team of coders rated the visual behaviors of each child during the delay of gratification task. The coding scheme measured the amount of time each child spent looking at the snack and/or bell, looking away from the snack and/or bell, and covering their eyes. The duration of each behavior was measured in seconds. Coders were trained and became inter-reliable before coding independently (Cohen’s Kappa ≥ .70). Further, reliability was conducted on approximately 25% of the total videos. The intra-class correlation was .99 for the time spent looking at the snack and/or bell, .99 for the time spent looking away from the snack/bell, and .94 for the time spent covering eyes.

**Distraction behaviors.** In order to assess the other types of behavioral strategies children relied upon during the delay of gratification task, a coding scheme was developed for this study using examples from previous studies (Karnoil et al., 2011; Mauro & Harris, 2000; Talwar, Carlson, & Lee, 2011). We analyzed a total of eight behaviors: talking, singing, escape from the table, emotional manipulation, eating the snack, touching the snack and/or bell, manipulating the snack and/or bell, and other general distraction behaviors. In addition, except for escape, emotional manipulation, and distraction, codes were further divided into distinct subsets. In-depth descriptions for each code can be found in Table 1. To ensure reliability, a separate team of coders was trained and became inter-reliable before coding independently (Cohen’s Kappa ≥ .70). The coders overlapped on approximately 25% of the total videos (see Table 1 for ICCs). We then calculated the frequency of each behavior for each participant. For our analyses, we collapsed singing and talking about the task into the code *Task* and singing and talking about something other than the task into the code *Other.*
**Emotion regulation.** We used the Emotion Regulation Checklist (Shields & Cicchetti, 1997) to measure a child’s overall emotion regulation abilities. The parent completed this form prior to the study visit. This questionnaire consists of 24 items on a four-point Likert scale (1 = *almost always*, 4 = *almost never*) and two subscales. The Negativity/Lability scale (10 items) measures when a child tends to lack flexibility and show an increase in negative affect. Sample items include, “child accepts unexpected changes.” The Emotion Regulation scale (14 items) measures a child’s ability to show empathy or appropriately convey feelings. Sample questions include, “child interprets body language.” Six items were reverse coded and a total score was calculated by taking the mean of the items for each subscale. The current study focused only on the Negativity/Lability subscale (Cronbach’s α = .81).

**Emotional expressiveness in the family.** We used the short form of the Self-Expressiveness in the Family Questionnaire (Halberstadt, Cassidy, Stifter, Parke, & Fox, 1995) to understand which children are exposed to a variety of expressed emotions in their home regularly. This questionnaire was completed by a parent prior to the study visit and consists of 24 items on a nine-point Likert scale (1 = *not at all*, 9 = *very frequently*). The items were divided evenly into two subscales. The positive subscale includes items such as “praising someone for good work,” whereas the negative subscale includes items such as “quarreling with a family member.” A score for each subscale and a total score were calculated by taking the mean of the corresponding items. No items were reversed coded. For this study, we focused on the positive subscale (Cronbach’s α = .81).

**Results**

In order to confirm that the random assignment resulted in random groups, we first tested whether the groups were significantly different on any of the pre-random assignment measures.
We first analyzed the demographic data to determine if any groups significantly differed in terms of child age, child gender, child ethnicity, household income, maternal education, and parent marital status using chi squared tests. No significant differences were found. However, when we analyzed study variables from the questionnaires, we found that the groups significantly differed on the ERC Negativity/Lability subscale, $F(2, 53) = 4.91, p = .01$, and the SEFQ Positive Subscale, $F(2, 53) = 4.70, p = .01$, using one-way analysis of variance (ANOVA). For the ERC Negativity/Lability subscale, participants in the pride condition ($M = 1.95, SD = .31$) reported more negative emotion than the gratitude condition ($M = 1.63, SD = .29$). In addition, participants in the pride condition ($M = 6.52, SD = 1.02$) reported that more positive emotions were expressed in their family than participants in the control condition ($M = 7.44, SD = .65$). Thus, the remainder of our analyses controlled for these two variables.

Our next set of analyses focused on the differences between the three conditions on distraction behaviors and total duration of waiting during the delay of gratification task. A one-way between subjects analysis of covariance (ANCOVA) was conducted in order to determine the differences between the three conditions (pride, gratitude, & control), controlling for the ERC Negativity/Lability and the SEFQ Positive Subscale. The groups significantly differed in the amount of distraction behaviors, $F(2, 51) = 3.78, p = .03$. Follow-up tests using the Bonferroni correction revealed that children in the pride ($M = 18.89, SD = 7.61$) condition used more distraction behaviors throughout the delay task than children in the control condition ($M = 12.00, SD = 9.35$), $t(51) = 3.78, p = .04$. Additionally, there was a marginal difference between groups in the amount of time children waited during the delay of gratification task, $F(2, 51) = 2.78, p = .07$. Post-hoc analyses showed that children in the pride ($M = 832.95, SD = 218.37$) condition
waited marginally longer for the reward than children in the control condition ($M = 682.03$, $SD = 345.61$), $t(51) = 2.78$, $p = .09$. No other differences were found between the three conditions.

In order to examine the association between behaviors performed during the delay task and the total amount of time spent waiting, we used Pearson correlations. We calculated the correlations for each group separately because the sample size in each group precluded the use of moderation analyses. First, we found that the use of distraction behaviors was correlated with a longer wait time for the control ($r = .66$, $p = .002$) and pride group ($r = .77$, $p \leq .001$), but not for the gratitude group ($r = .39$, $p = .10$). Similarly, the control ($r = .70$, $p = .001$) and pride ($r = .62$, $p = .005$) group showed that the frequency of speaking or singing about something other than the task was positively correlated to waiting time. These findings were not true for gratitude condition; however, in this condition, the time spent speaking about the task was negatively associated with duration of waiting ($r = -.48$, $p = .04$). For the pride group specifically, time spent looking at the reward was negatively correlated to waiting time ($r = -.58$, $p = .009$), while time spent looking at something other than the reward was positively correlated to waiting time ($r = .58$, $p = .009$). Finally, there was a negative correlation between the amount of times the children picked up the bell and the total duration of their delay for the gratitude condition only ($r = -.52$, $p = .02$).

**Discussion**

The ability to delay gratification refers to process of waiting for a greater reward in the presence of an immediate reward. This ability has shown to be critical for future development (e.g., Ayduk et al., 2000; Mischel et al., 1989; Schlam et al., 2013); thus, research has investigated the mechanisms by which children are able to delay gratification. Many theorists have pointed to various cognitive processes as evidence for this ability (Metcalf & Mischel,
This study is the first to analyze how certain positive emotions - specifically gratitude and pride - influence a child’s ability to delay gratification. Our findings suggest that pride is one viable avenue for cultivating this ability in children, as children induced with pride prior to the delay of gratification task waited longer and utilized more helpful distraction behaviors than children in the gratitude and control conditions.

In the current study, we found differences between the three conditions (pride, gratitude, and control) in wait time and how frequently children engaged in certain behaviors. When controlling for child and family characteristics, children in the pride condition were most successful in delaying gratification as evidenced by their ability to wait longer and use more distraction behaviors than children in the control condition. The use of distraction behaviors, which includes playing with hands, making noises, and making faces, has shown to be effective in aiding children’s ability to delay gratification (Mischel et al., 2011). Perhaps children in the pride condition performed most successfully because the feeling of pride is related to three concepts needed for self-regulation: perseverance, self-efficacy, and self-control (Morris & Zentall, 2014; Silvia & O'Brien, 2004; Stipek, 1995). In this way, children induced with pride are engaging in more distraction behaviors that are allowing them to persevere through the tempting marshmallow task.

Contrary to our hypotheses, we found no significant difference between the gratitude and control conditions or between the gratitude and pride conditions. Though past research has indicated that gratitude is highly correlated with pride in children (Froh, Yurkewicz, & Kashdan, 2009), this finding challenges the idea that we actually induced the nuanced feelings of gratitude and pride in our sample. Perhaps, instead, we merely induced positive affect in these children with our engaging drawing tasks. In previous research with adults, positive affect was not as
effective as gratitude in delaying gratification (DeSteno et al., 2014). Thus, more research is needed to confirm that our study actually induced the distinct feelings of pride and gratitude and if a better paradigm for inducing emotions before a delay of gratification task exists. Further, though research supports the idea that children this age can discriminate gratitude (Gordon et al., 2004) and pride (Tracy et al., 2005), future studies should test if a significant difference can be found in older children. Finally, it should also be noted that we did not find any other significant differences between groups in the amount of other behaviors, such as touching the reward or bell. Moreover, we did not find a significant difference between groups in the proportion of time spent looking at the reward. This could be due to our small, homogenous sample of middle class, Caucasian families or to the fact that our manipulation is not influencing these behaviors specifically. Nevertheless, though all children engaged in these visual and physical behaviors equally, the three conditions might be affecting a child’s behaviors differently.

In order to further understand the differences between the conditions, we examined the behaviors that were associated with waiting for each condition. We found that each condition differed in the types of behaviors, both physical and visual, that were associated with waiting. For example, in the pride and control conditions, distraction behaviors were associated with waiting, while this was not true for the gratitude condition. The same was found regarding talking/singing about the task. Unlike the pride and control conditions, where talking/singing about something other than the task was associated with waiting, talking/singing about the task was negatively associated with waiting in the gratitude condition. Further, visual behaviors were only linked to waiting for children in the pride condition, whereas touching the bell was only associated with waiting for the gratitude condition. Therefore, though we did not find a significant difference in the frequency of certain behaviors between conditions, we did find that
there was a nuance between conditions, where only certain behaviors were linked to waiting. This suggests that pride and gratitude are in fact differentially affecting children’s ability to delay gratification. Past studies confirm that various emotions, such as gratitude and happiness, have varying effects on the ability to delay gratification (DeSteno et al., 2014). Future research is needed with larger samples that would allow for the use of more advanced statistical models. Due to the small sample size in each group we were constrained to examining correlations within groups.

Though this study has important clinical implications, there are a few limitations that warrant discussion. Most importantly, this study could benefit from a larger sample size. More power is needed for running complex analyses, such as moderation, and for finding significant results. Moreover, this study could benefit from including children from diverse backgrounds, as most of our children were Caucasian and from middle class, educated families. Research shows that a child’s home life can significantly impact their ability to self-regulate (Grolnick & Ryan, 1989); therefore, our homogenous sample might explain why there were not as many significant differences between groups. We are presently recruiting more diverse participants to combat this issue. In addition to our sample size and demographics, another limitation to this study is how well the 4- to 5-year old participants were able to comprehend gratitude. Though research supports the idea that children as young as 4 years of age can comprehend the distinct feeling of gratitude (Gordon et al., 2004), we found that many of the children in our study asked us to define gratitude during our drawing manipulation task. In fact, some of our participants were excluded from our analyses because of their inability to understand gratitude, due to language barriers or other reasons. Because of this, future studies should investigate new ways to induce emotions besides relying on a drawing task. For instance, past studies have induced emotion
through videos clips (Jones, Buhr, Conture, Tumanova, Walden, & Porges, 2014; Philippot, 1993) and by reading stories (Rusting & Nolen-Hoeksema, 1998). Perhaps these different paradigms for inducing emotion would reveal a larger difference between the gratitude and pride conditions. Furthermore, future studies should consider how other positive emotions, such as compassion and hope, as well as negative emotions, such as sadness and frustration, affect a child’s ability to delay gratification. Finally, in addition to different emotions, future studies might consider analyzing a child’s general tendency to be proud or grateful through teacher and parent evaluations instead of inducing an emotion on one particular occasion. Because this study was the first to study the effects of emotions on children’s ability to delay gratification, there is a myriad of new ideas to explore.

Nevertheless, this study has important clinical implications for parents, teachers, and community leaders. Because the ability to delay gratification serves as a predictor for future academic success and overall well-being (e.g., Ayduk et al., 2000; Mischel et al., 1989; Schlam et al., 2013), it is important that adults cultivate this ability in children at a young age. Our study revealed that inducing children with feelings of pride is one viable avenue for increasing this ability to delay gratification. Furthermore, an authentic sense of pride—as opposed to hubristic pride—has been linked to feelings of perseverance, self-efficacy, and self-control (Morris & Zentall, 2014; Silvia & O'Brien, 2004; Stipek, 1995). Therefore, schools, homes, and community centers should seek to integrate activities into their curriculum that develop a child’s sense of authentic pride. Interventions that increase pride in children, such as Parent Child Interaction Therapy (PCIT), have already shown to be effective. For instance, in the child-directed component of the intervention, parents are able to increase feelings of mastery in their children by praising certain positive behaviors, such as completing a homework assignment (McNeil &
Hembree-Kigin, 2010). It is important to note that this intervention encourages parents to praise a child’s effort as opposed to the child itself. By praising a child’s ability, also referred to as process praise, parents improve a child’s self-esteem and instill in their children that future improvement is possible (Kamins & Dweck, 1999). PCIT has also successfully shown to reduce externalizing symptoms in children with oppositional defiant disorder (Chase & Eyberg, 2008), suggesting that this intervention might also improve self-regulation. With this, future research should assess how these interventions affect children’s general ability to self-regulate, specifically by measuring their ability to delay gratification.

This purpose of this study was to investigate how positive emotions affect a child’s ability to delay gratification, a skill critical for future development. While past studies have investigated this process in adults, our study was the first to examine the impact of positive emotions in children. Further, our study provides an important contribution to the field by suggesting that positive emotions are in fact important for the ability to self-regulate—a belief contrary to the Cognitive-Affective System theory. While we showed that inducing pride in children is one way to increase delayed gratification, there is a considerable amount of research questions to explore in the future as it relates to emotion and delay of gratification in children.
References


### Table 1
*Description and Reliability for Behavior Coding*

<table>
<thead>
<tr>
<th>Description</th>
<th>Reliability (ICC)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Singing</strong></td>
<td></td>
</tr>
<tr>
<td>Task sing: the child sung a song about the task</td>
<td>1.00</td>
</tr>
<tr>
<td><em>Other talk:</em> the child sung a different song</td>
<td>0.94</td>
</tr>
<tr>
<td><strong>Talking</strong></td>
<td></td>
</tr>
<tr>
<td>Task talk: the child talked about the task</td>
<td>0.76</td>
</tr>
<tr>
<td><em>Other talk:</em> the child talked, but not about the task</td>
<td>0.95</td>
</tr>
<tr>
<td><strong>Touching</strong></td>
<td></td>
</tr>
<tr>
<td>Bell touch: the child touched the bell</td>
<td>0.84</td>
</tr>
<tr>
<td>Snack touch: the child touched the snack</td>
<td>0.65</td>
</tr>
<tr>
<td>Plate touch: the child touched the plate</td>
<td>0.88</td>
</tr>
<tr>
<td><strong>Manipulation</strong></td>
<td></td>
</tr>
<tr>
<td>Bell pick-up: the child lifted the bell</td>
<td>0.95</td>
</tr>
<tr>
<td>Snack pick-up: the child lifted the snack</td>
<td>0.97</td>
</tr>
<tr>
<td><strong>Escape</strong></td>
<td></td>
</tr>
<tr>
<td>The child left fully left the chair</td>
<td>0.94</td>
</tr>
<tr>
<td><strong>Emotional Manipulation</strong></td>
<td></td>
</tr>
<tr>
<td>The child expressed exaggerated emotion, such as crying, a large sigh, or calling for mom</td>
<td>0.93</td>
</tr>
<tr>
<td><strong>Eating</strong></td>
<td></td>
</tr>
<tr>
<td>Tasting: the child took a small bite or licked the snack</td>
<td>0.98</td>
</tr>
<tr>
<td>Smelling: the child smelled the snack</td>
<td>1.00</td>
</tr>
<tr>
<td>Consuming: the child fully ate the entire snack</td>
<td>1.00</td>
</tr>
<tr>
<td><strong>Distraction</strong></td>
<td></td>
</tr>
<tr>
<td>The child played with their hands or face or made noises</td>
<td>0.95</td>
</tr>
</tbody>
</table>