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ORIGINAL ARTICLE

On the Measurement of Self-Conscious Emotions

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Abstract
Self-conscious emotions, like shame and pride, are thought to have an evaluative component in which the self is posited against a set of standards, rules, and goals of society. This study compares the two methods used to examine self-conscious emotions: a self-report questionnaire, the Test of Self-Conscious Affect in Children (TOSCA-C), and a direct observation of behaviors in response to particular tasks, developed by Lewis, Alessandri and Sullivan (1992). 126 young children participated in both tasks at ages 6 and 7. For the observation data, we found that the tendency to be self-evaluative in terms of success were not related to be self-evaluative in failure, and individual consistency across age was found for self-conscious emotions but not for the primary emotions. The questionnaire data showed that children who scored high in shame also scored high in failure, and there were no consistencies across age. There were weak, inconsistent associations between shame measured by the questionnaire technique and sadness observed in the experiment.

Keywords Self-conscious emotions · Shame · Pride · Embarrassment

Introduction

While much attention has been given to the measurement and study of early emotional development, mostly in the first years of life, little study has been given to the study of what Darwin called the self-conscious emotions [1]. In this paper we discuss the two major methods available for the study of these emotions, which include shame, guilt, embarrassment, and pride.

Lewis has suggested that one difficulty in the study of these self-conscious emotions is that these emotions require elaborate evaluations and attributions of the self which in turn require more extensive cognitive abilities than the early emotions [2, 3]. For example, for these emotions to be elicited, children need to evaluate their behavior against their families' standards, rules, and goals. They need to assume responsibility for their failure or success. Thus, for one child a C grade can be evaluated as success, while for another child the same C grade is evaluated as a failure. The fact that these self-conscious emotions require self-attributions makes for part of their difficulty in being studied directly.

Beside the difficulty of creating experimental situations, there is the issue of the measurement of these emotions. The measurement of these self-conscious emotions poses another challenge since these emotions are expressed behaviorally, not only through facial expression, but through body language as well. While Darwin used blushing as a measure of these emotions, the use of blushing has been augmented by other measures which include both facial expression and body action [1]. For example, shame, beside facial expression, is also measured by body collapse and change in vocal behavior, while pride is also measured by bodily and vocal behavior (see [2]).

In response to these two difficulties, experimental paradigms have been developed both to elicit and to measure these emotions by encoding facial expressions and bodily movements. Lewis et al. [4] explored these emotions by videotaping children who were presented with a set of tasks varying in difficulty and labelled as "easy" and "difficult" tasks. For example, an "easy" color-matching task involved less items to match, and the children were prompted that the game was easy and that most children their age could finish it. The "difficult" task had more items, and the children were prompted that it would be difficult to finish. In addition, to avoid the problem of individual differences in

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performance, the children's success or failure was manipulated by controlling the time given to solving these tasks. The timer was usually set for 2 min to solve the task, which could then be manipulated to increase this time, allowing for "success," or decrease the time to produce a "failure." Such a paradigm has been used successfully in many studies [see 3 for a review of them]. The findings indicate that children 4–6 years who fail an easy task show more shame than when they fail a difficult task, and they show more pride when they succeed in a difficult task than when they succeed in an easy task [4]. This seems to match what adults do and indicates young children's ability to make self-attributions.

This experimental paradigm, observing children's self-conscious emotions, works for obtaining emotions such as shame and pride, as well as embarrassment and guilt [2, 5]. In addition, it is possible to record other emotions, such as anger and sadness, in such a paradigm. One limitation of directly observing these emotions, however, is that there are not only individual but cultural variations in their expressions. For example, Japanese children show more embarrassment than Europeans and African Americans when they "succeed" a task as well as when they "fail" [6]. Such cultural differences allow us to examine the differential role of embarrassment. Embarrassment has been found to be elicited by both being the object of others' regard, as in receiving a compliment [7, 8], as well as failing to meet some standard, rule, or goal [1, 3]. The measurement of these self-conscious emotions requires observation of both facial expressions as well as bodily movements. Likewise, while shame may have a unique facial expression, it also has body movement; bodily collapse, head down, shoulders bent inward. It also involves cessation of movement and loss of speech. These measures require videotaping children's responses since their occurrence are often fleeting.

The other measurement system used to examine the self-conscious emotions is a self-report to a series of questions that tap self-attributions. The most used measure is the Test of Self-Conscious Affect (TOSCA; [9]). Each measurement system (direct observation under experimental conditions vs. self-reports) has both advantages and disadvantages and reflects the different measurement of states and traits; states being temporary feelings which depend upon a particular situation, while traits are stable individual characteristics. In regard to the emotion of shame, for example, we might measure how much shame a child shows when they fail a task that has been labelled as easy. Shame as a trait, on the other hand, reflects the difference between children in the amount of shame the child feels as a general characteristic, something that the TOSCA is designed to tap. For example, in a recent study of children with siblings who are on the ASD spectrum, we found that the TOSCA guilt score and a specific measure of pro-social behaviors towards the sibling with ASD were significantly correlated [10]. While scenario-based self-reports like the TOSCA can provide insights into individual traits, it cannot capture the children's emotional state in response to a specific trigger, which is better accomplished by videotaped observation under experimental conditions.

Therefore, using the dataset of children who participated in both the TOSCA self-report measure and the success-failure task developed by Lewis et al. [4], the aim of the study was to investigate: (1) whether the success vs. failure condition can be distinguished as designed in the experimental measure, and whether their self-evaluative in terms of the success condition are related to their evaluative process in failure; (2) the reliability of each measurement across age; (3) the correlation between the two measures, to examine whether they form any associative or recursive relationships.

This methodological study explores the advantages and limitations of the two methods that measure self-conscious emotions. At the crux of experiencing self-conscious emotions lie the self-evaluative process that mediates how an individual interprets and responds to the external world, particularly in their adjustment following maltreatment. Thus, research into better understanding of these emotions has important implications for developing interventions to promote children's mental health in the face of adversity.

Method

The present study compares the two methods used to examine self-conscious emotions: an established self-report measure and a direct observation of behaviors in response to particular tasks. For direct observation, puzzle-solving tasks were given where embarrassment, pride, shame, and guilt were to be measured directly. Also collected were other emotions, such as anger and sadness. The two techniques were given at 6 and 7 years of age to look at their relationship to one another, and their consistency at a particular age as well as across age.

Participants and Procedure

Participants were 126 6-year-old children (69 boys, 57 girls) drawn from three urban communities in New Jersey (Trenton, Elizabeth, Perth Amboy) and Philadelphia, PA. This study is a part of a longitudinal study that looked at children's early adjustment and their later risk for depression. Participants were recruited from flyers posted in public preschools and other community agencies, including *Women, Infants, and Children* program offices. At the initial visit, parents signed the consent form approved by the Institutional Review Board.

The longitudinal study was comprised of two waves of children seen in an overlapping cohort design. One cohort

was seen at 4-years old and followed until age 7 ($n = 86$), and the other cohort from age 6 to 9 ($n = 99$). Data were available for children seen at both 6 and 7 years, and those who had data for both the questionnaire and observation data were used. Sample characteristics and demographic information is presented in Table 1. Preliminary analyses indicated no differences between subjects who had complete versus missing data.

A female examiner who was blind to the family's background conducted the procedures at the child's preschool or at the research program's office. At ages 6 and 7, children's emotional behaviors around success and failure was observed and recorded. They also completed a self-report proneness to self-conscious emotions, called The Test of Self-Conscious Affect for Children (TOSCA-C; [11]). The families were paid $90 in total for their participation.

Observation of self-evaluative emotions during success and failure tasks

An observation of responses to success and failure task, which has been developed to elicit shame and anger among pre-school children [3], was administered. During the visit, children were given a series of four color-matching tasks and four puzzles. In the color matching tasks, the child was presented with an answer key diagram that shows multiple figures (e.g. dog, chicken, fish, etc.) matched to a respective color sticker underneath each figure (e.g. blue sticker under the picture of the dog, yellow sticker under the picture of the chicken, etc.). The task sheet given to the child has the same figures without the corresponding color stickers, and the child was asked to match the color stickers according to the key. After completing practice trials, the child was given a new page and was instructed to put the correct sticker under each animal. After the completion of four color-matching tasks, the child was administered four puzzles with a similar format. For each puzzle, the child was presented with a completed puzzle, which were then mixed up and asked to put them back together.

Children were told, "I am going to set my clock for 2 min. When time is up, the bell will ring like this (the examiner then demonstrates the sound). If you do not finish before the bell rings you will have failed the task." They were also told in the easy condition that most children can solve the puzzle, or in the difficult task that most children cannot do it. Success and failure were manipulated by the examiner. For the success conditions, the examiner rang the bell 5 seconds after the child finished. For the failure conditions, the examiner rang the bell when there was three color stickers or puzzle pieces remaining.

The examiner followed a strictly scripted protocol, which included sitting at a right angle from the child, giving instructions in a monotone voice, and refraining from making compliments/criticisms. Children were videotaped during the tasks, and the child's behavior for the 30 seconds post-completion of task was coded. Shame, anger, embarrassment, and pride were coded based on the children's facial, body, and language expressions. The following definitions were used to score the child's behavior. The coding scheme is based on the work of Geppert [12] and Izard [13], and its reliability has been demonstrated in previous work [4, 6, 8].

Table 1 Sample characteristics and demographic information

Variable	Values	N = 126	%
Gender	Male	69	54.8
	Female	57	45.2
Ethnicity	Black	89	70.6
	Hispanic	20	15.9
	White/non-Hispanic	12	9.5
	Other	5	4.0
Primary language	English	115	91.3
Spoken by child	Spanish	7	5.6
	Other	4	3.2
Years of schooling	< 12 years	42	33.3
Completed by mother	12 years	55	42.1
	> 12 years	31	24.6
Mother employed	Yes	61	48.4
	No	65	51.6
Father figure present	Yes	42	34.4
	No	80	65.6

N = 126 was total number of research participants

Measures

Self-Evaluative Emotions Measured During Success and Failure Tasks

During the success and failure tasks, self-conscious evaluative emotions of shame, embarrassment, pride, anger, and sadness were coded as follows:

Shame was defined as body collapse by slouching to make oneself smaller, lip tucked down in a frown, and negative self-evaluations (e.g., sighing, hitting oneself, or "Aw! Man!"). Shame was coded as occurring if the three criterion behaviors were present.

Embarrassment was coded as head turning/shifting away and back, nervous smile, and bodily touching.

Pride was scored as occurring as a change in the child's erect posture, as in chest expansion, smiling with one's eyes open, directly gazing at the experimenter, or pointing to the outcome and making positive comments in regard to their performance.

Two other emotional expressions were obtained:

Anger was coded if the child showed an anger expression (MAX) or if they verbally said angry things to the experimenter, kicking items, or gritting teeth.

Sadness was coded as mouth movements that were consistent with sad expressions in the Maximally Discriminative Facial Movement Coding System (MAX; Izard, 1995).

Scores for each emotional behavior ranged from 0 to 12, as there were three coding blocks per four failure tasks and the same three blocks for four success tasks. Five raters were trained using sample tapes from a prior study of African American Children [14]. Reliability based on a random sample of 15 tapes resulted in average 93% inter-rater reliability over each pair of coders (range = 85–97%). Cohen's kappa coefficient of reliability was .73 (range = .62 to .82).

Self-Report of Proneness to Shame, Guilt, Pride, and Blaming Others

The Test of Self-Conscious Affect for Children (TOSCA-C; [11]) consists of 15 pictured scenarios (10 negative and 5 positive) designed to assess proneness to shame, guilt, blaming others, alpha pride (pride in the global self) and beta pride (pride in specific actions). Each hypothetical scenario is accompanied by responses that measure the likelihood that the child would feel shame, guilt, pride, or externalize the blame. Each subscale per scenario is rated on a 5-point scale, ranging from 1 (*not at all likely*) to 5 (*very likely*). The TOSCA-C has been validated for ethnically and socioeconomically diverse public school children in the 4th to 6th grade (ages 8–12). For the subjects at 7-years old, the mean proneness scores and standard deviations were similar to those reported by Tangney and Dearing [11]. Cronbach alphas were the highest for the guilt (.80), shame (.79), and blaming others (.75). Cronbach alpha was .49 for both alpha pride and beta pride. These Cronbach alpha values were also similar to the values reported by Tangney and Dearing [11]. Due to the unique variance introduced by the individual scenarios, Tangney and Dearing [15] argue that coefficient alpha are reasonably expected to have lower internal consistency compared to other types of measures like the adjective checklists.

Notwithstanding these limitations, we used these variables as there are no other methods to consistently capture the variety of self-conscious emotions. Since the aim of this paper is to evaluate the two methods for measuring self-conscious emotions, our analysis will include the investigation of the test-retest stability in each measure across age.

For the TOSCA-C administration at 6-years old (Kindergarten—1st grade), we modified part of the test to address the children's cognitive limitations. First, the examiner sat next to the children and read all of the items out loud to them. Children were given their own pencil and marked their answer. Secondly, we eliminated 3 items that pertained to school or home activity that 6-year-olds would be unlikely to have experienced (i.e., making honor roll at school, mother not allowing the child to invite friends for sleepover, and child forgot to get something for mother's birthday). Two items were added to generate more responses to the subscale (i.e., your best friend loves the gift you made, and your favorite teacher asks a question and you give the wrong answer).

In addition, the 5-point Likert scale was modified to a 3-point scale, ranging from 1 (*would not do*) to 3 (*would do*). Research on self-attributions in younger children has shown that simple and direct questions are the best way to obtain reliable information, as they tend to respond at one extreme or another [16–18]. In addition, research by Fantuzzo et al. [19] on a similarly formatted test (i.e., the Pictoral Scale of Perceived Competence and Social Acceptance; [20]) suggests that low-income preschool children (ages 4–6) have trouble with understanding the Likert-type quantities and picture recognition ability. Cronbach's alpha for TOSCA subscales at 6-years old were similar to 7 year TOSCA scores; guilt (.69), shame (.70), blaming others (.64), alpha pride (.64), and beta pride (.42).

Given the available data on both the observation of the self-conscious emotions and the TOSCA data, several hypotheses can be drawn. For the observational data, we predict that shame will be shown when the children fail, and pride when they succeed. Embarrassment will be shown for failure as well as success, a finding that we have repeatedly found (see [6]). Shame and pride should not be related to each other, however shame should be related to both sadness and anger at failure. For the questionnaire data (TOSCA) there is evidence that children who are high on shame will be high on pride; that is, high emotional responders will be high on all emotional items [4]. Finally, there will be a weak association between the measures of trait (TOSCA) and state (observation) shame, a finding found in a recent study [10].

Results

Mann–Whitney tests were initially conducted to examine the differences in emotional behaviors by sociodemographic factors; sex, ethnicity, and parental employment. No significant differences were observed at both ages. These same sociodemographic factors were tested for any differences in self-report measures of self-conscious emotions, and no significant differences were found.

Emotions Observed during Success-Failure Tasks

Table 2 presents the mean and standard deviations of emotional behaviors (shame, embarrassment, pride, anger,

Table 2 Emotions observed during success-failure tasks at 6-years old and 7-years old

	Mean frequency of expressed emotions			
	6-years old		7-years old	
Emotions Expressed	Success	Failure	Success	Failure
1. Shame*	0.00 (0.00)	0.44 (0.87)	0.04 (0.23)	0.29 (0.80)
2. Embarrassment	4.77 (3.04)	4.50 (3.09)	4.32 (2.88)	4.25 (3.04)
3. Pride*	2.31 (2.49)	0.89 (1.58)	1.84 (2.47)	0.58 (1.29)
4. Anger*	0.00 (0.00)	2.37 (3.26)	0.00 (0.00)	1.54 (2.13)
5. Sadness*	0.15 (0.47)	0.77 (1.50)	0.15 (0.67)	0.51 (1.25)

Mean average reported and standard deviation in parentheses

N = 103

*Wilcoxon rank-sum test significant at 0.05 level

sadness) that were observed at ages 6 and 7. Both success and failure conditions are presented in order to examine how these children responded to success and failure. A Wilcoxon Rank Sum test was performed with success and failure as within-subject factors. Shame was observed more in the failure condition than the success condition at both age 6 and 7 ($Z = -4.650$, $p < .01$, and $Z = -3.859$, $p < .01$, respectively). Sadness was also observed more in the failure condition than the success condition at age 6 and 7 ($Z = -4.555$, $p < .01$, and $Z = -3.160$, $p < .01$), and anger was only shown when the subjects failed and never observed in success at ages 6 and 7 years ($Z = -6.406$, $p < .01$, and $Z = -6.428$, $p < .01$). Pride was observed more in success than failure at both 6 and 7 years ($Z = -6.882$, $p < .01$, and $Z = -6.461$, $p < .01$). The most observed behavior was embarrassment, which occurred equally in both success and failure.

The Relation Between Emotions During Success and Failure

At 6 years there were no associations between shame, guilt, embarrassment, or pride. Embarrassment during success was related to embarrassment during failure ($rho_s = .57$, $p < .01$) and pride during success was related to pride during failure ($rho_s = .69$, $p < .01$). Shame during failure was related to anger and sadness during failure ($rho_s = .21$ and $rho_s = .57$, $p < .05$ and $p < .01$, respectively. Anger-sadness during failure was also significant ($rho_s = .20$, $p < .05$).

At 7 years, shame during failure was positively related to anger and sadness ($rho_s = .23$, $p < .05$ and $rho_s = .27$, $p < .01$, respectively), and embarrassment over success and failure was related ($rho_s = .63$, $p < .01$). Thus, as expected, embarrassment was seen and individual differences found between the success and failure conditions (see [6]). Shame but not embarrassment was related to sadness and anger, and shame was not related to either pride or embarrassment.

In general, the findings for 6 and 7 years show a consistent pattern to other data collected on other children of the same age (see [3]). In particular, shame was seen to failure and pride to success, while embarrassment was seen in both success and failure. Given the idea that embarrassment can result under two conditions, that of failure of a standard, rule, or goal, as well as embarrassment at being the object of attention [2], we suspect we are seeing both types of embarrassment, the former during a failure condition, the latter during success. Finally, other across age associations suggest that individual consistency in the expression of these emotions under the conditions of success and failure can be observed. This is consistent with the idea that when state conditions are held constant, individual differences in children's emotion responses can be observed [21].

Across Age Consistency

Table 3 presents consistency in observed behaviors across age 6 and 7. Self-conscious emotions (i.e., shame, pride, and embarrassment) showed consistency over age, but anger and sadness did not show consistency over time. Shame behavior at 6 years was correlated with shame at 7 years ($rho_s = .32$, $p < .01$), and the same finding was observed for embarrassment for both conditions (rho_s = ranging from .28 to .52, $p < .01$) and pride for both conditions (rho_s = ranging from .39 to .49, $p < .01$). Anger and sadness in failure did not show any individual consistency over time. In addition, there were two other correlations. embarrassment during failure at 6 years was negatively related to pride during success at 7 years ($rho_s = -.25$, $p < .05$), and embarrassment during failure at 6 years was associated with embarrassment during failure at 7 years ($rho_s = .22$, $p < .05$).

Emotions Obtained for the Test of Self-Conscious Affect (TOSCA) Measure

Mean and standard deviations of TOSCA measures at 6 and 7 are consistent with the published values of 8–12-year-old children [15]. Table 4 shows the correlations of the TOSCA scales to each other at both 6 and 7 years; guilt, shame, pride, and blaming others are all highly correlated. That all these emotions are highly correlated suggests TOSCA tapping into a general expressivity dimension rather than specific emotions. Finally, across age consistency was not found except for a weak correlation in blaming others over age ($rho_s = .27$, $p < .05$).

Comparison of Two Methods of Assessment of Self-Conscious Emotions

Table 5 presents at both 6 and 7 years the association between the TOSCA and the observationally obtained measures. There were few that showed consistency across procedures. At age 6, shame-proneness trait on the TOSCA was correlated with shame as state observational measure (*rho*$_s$

Table 3 Individual consistency in observed emotion behavior over time at 6 and 7 Years

Emotions Expressed	1	2	3	4	5	6	7
1. Shame, Failure	**.32****	−.14	−.12	−.05	.06	.02	−.08
2. Emb, Success	−.12	**.52****	**.43****	.20	−.05	−.15	−.10
3. Emb, Failure	−.16	**.28****	**.46****	**−.25***	−.02	−.13	−.11
4. Pride, Success	−.03	−.13	.10	**.49****	**.39****	.10	.12
5. Pride, Failure	.02	.02	**.22***	**.41****	**.47****	.07	.00
6. Anger, Failure	.10	−.12	−.16	.08	.11	−.01	−.04
7. Sadness Failure	.17	−.01	−.12	.02	.01	.10	.09

Vertical Axis (Rows) is emotions expressed at 6-years old. Horizontal Axis (Columns) is emotions expressed at 7-years old. Spearman rho coefficients are reported. N = 91

*Correlation is significant at the 0.05 level (2-tailed) and highlighted in bold

**Correlation is significant at the 0.01 level (2-tailed) and highlighted in bold

Table 4 Individual consistency across Self-Report Subscale Scores at 6 years and at 7 years

	6 years (N = 91)					7 years (N = 108)				
Emotions expressed	1	2	3	4	5	1	2	3	4	5
1. Guilt										
2. Blaming others	**.45****					**.22***				
3. Shame	**.34****	**.48****				**.36****	**.58****			
4. Alpha pride	**.55****	**.43****	**.29****			**.43****	**.44****	**.26****		
5. Beta pride	**.38****	**.50****	**.24***	**.52****		**.34****	**.34****	.17	**.64****	

Spearman rho coefficients are reported. Vertical Axis (Rows) represents TOSCA subscales at respective ages: TOSCA at 6 years was correlated with subscales at 6 years, and TOSCA-C at 7 years was correlated with subscales at 7 years. Because our primary interest was in shame and pride scales, we removed the detachment subscale

*Correlation is significant at the 0.05 level (2-tailed) and highlighted in bold

**Correlation is significant at the 0.01 level (2-tailed) and highlighted in bold

Table 5 The relationship between behavior observation and self-reports at each age

	TOSCA at 6 years (N = 96)					TOSCA at 7 years (N = 100)				
	Guilt	Blame others	Shame	Alpha pride	Beta pride	Guilt	Blame others	Shame	Alpha pride	Beta pride
Shame, failure	− .12	.17	**.20***	.05	.10	− .09	− .01	.00	− .16	− .08
Emb, success	.01	− .15	.03	− .10	− .05	.01	.00	− .16	− .09	− .02
Emb, failure	.01	.02	.12	− .10	.02	.04	− .11	− .07	.06	− .02
Pride, success	.02	− .04	.03	− .09	− .02	− .05	.02	− .04	− .03	− .12
Pride, failure	.08	− .01	.12	− .10	− .06	− .15	.01	− .12	− .13	− .06
Anger, failure	.00	− .01	− .04	.10	.06	− .10	.05	− .11	− .17	− .17
Sadness, Success	− .10	− .01	**.22***	.07	− .03	− .18	− .11	− .05	− .11	− .04
Sadness, Failure	.01	.08	.14	.08	.02	.10	.18	**.28****	− .05	.00

Vertical Axis (Rows) represents emotions observed during success-failure tasks at respective ages: TOSCA at 6 years was correlated with success-failure tasks at 6 years, and TOSCA-C at 7 years was correlated with success-failure tasks at 7 years

*Correlation is significant at the 0.05 level (2-tailed) and highlighted in bold

**Correlation is significant at the 0.01 level (2-tailed) and highlighted in bold

= .20, $p < .05$) and sadness in success ($rho_s = .22$, $p < .01$). At age 7, shame-proneness was correlated with sadness state during failure ($rho_s = .28$, $p < .01$).

Discussion

The findings directly address three issues: task evaluation and emotional expression, consistency of observed self-conscious emotions across age, and the role of behavior observation in the assessment of self-conscious emotions in young children.

Task Evaluation and Emotion Expression at 6 and 7 Years

The findings of this study support the idea that the evaluative process has an important role in the children's experience of self-conscious emotions [4]. Pride behavior was seen more in the success condition, and negative emotion behaviors (shame, sadness, anger) were more likely to occur in the failure condition. Furthermore, negative emotions in failure were correlated with each other. For the self-conscious emotions that were expressed in both success and failure conditions (i.e., embarrassment and pride), tendency to express one emotion in either condition was related to its expression in the other. However, there was no consistency between the amount of shame and pride exhibited. These findings suggest that children of this age are capable of evaluating the nature of the task and one's success or failure at it, and the tendency to be self-evaluative in terms of success were not related to be self-evaluative in failure. This role of evaluative process in self-conscious emotion expression has been consistently reported in previous research on a similar success-failure task for a sample of 3-year-olds [4] and 4-5-year-olds [22].

Starting age 3, children expand their ability to reflect, conceptualize, and verbalize ideas about their emotions, and they acquire new strategies for self-regulating negative emotions. The early elementary school years (age 6 to 7), in particular, mark the point at which children gain an explicit understanding of the social rules around emotion display [5, 23]. Interestingly, children in this study showed pride behavior in the failure condition, which were not observed in any of the preschool children (ages 3–5), who underwent a similarly designed success-failure task [4, 22]. This paradoxical behavior suggests children's ability to engage in a compensatory response to deflect and avoid the negative experience of failure. Furthermore, embarrassment behavior appears to be another axis that represents these children's ability to engage in mood regulation strategies. Although it is difficult to use videotaped observations to distinguish between the two types of embarrassment (i.e., embarrassment as exposure vs. embarrassment as lesser form of shame), embarrassment as exposure is conceptually aligned with embarrassment in success, while embarrassment as lesser form of shame is more likely to be associated with the failure condition. In our study, only the embarrassment in failure has shown consistent correlations with pride behaviors across both ages 6 and 7. Although further research is necessary to examine children's emotion regulation patterns, observations of pride and embarrassment behaviors in failure strongly suggest children's ability to engage in greater and more complex self-regulation strategies that were not observed in younger cohorts of similar design.

Consistency of Observed Self-Conscious Emotions Across Age

Unlike primary emotions that are transient responses to stimuli, self-conscious emotions require an axis of self-evaluation that weighs the outcome of the event to the valuation of the self. Shame and pride, in particular, stem from global self-evaluation of the self in response to failure and success, and tendency towards global self-evaluation has been linked to socialization practices in the classroom as well as parenting styles [24–26]. Thus, it follows that the tendency towards the expression of specific self-conscious emotions would be more stable across time than that of primary emotions. In the behavior observation technique, children showed consistent correlation in the self-conscious emotions (i.e., shame, embarrassment, pride) across age 6 and 7, while the primary emotions (i.e., anger and sadness) did not reveal any correlation over time.

Role of Behavior Observation vs. Self-Reports in the Assessment of Self-Conscious Emotions in Young Children

In the self-report of proneness to self-conscious emotions, no discernable pattern was found, as most of the subscales were highly correlated with each other. Across both ages, no consistency was found except for a weak correlation in the blaming others subscale. This finding contrasts to studies of older children (ages 8 to 12) that has shown good internal consistency in the TOSSCA-C across socioeconomic diversity [11, 15]. In a study of Korean, Japanese, and US students aged 8 to 11 years, shame-proneness was positively correlated aggression constructs, whereas guilt-proneness was associated with tendency to take responsibility for failures [27]. On the other hand, our sample of 6- and 7-year old children does not show any differential pattern in individual consistency across subscales or across age. This finding is consistent with research that have reported on the difficulty measuring self-concepts in young children, as they tend to respond at one extreme or another [16–18]. Work of Fantuzzo et al. also shows that low-income preschool children

have difficulty understanding Likert-type quantities and have trouble with picture recognition ability [19]. For the child to understand and report back on the emotional response to hypothetical scenarios, self-reports require a higher order of thinking. The children must have the cognitive capacity to not only understand the situation but vicariously experience the emotion of the scenario and record it. It appears that, at ages 6 and 7, children are capable of engaging in self-evaluative behavior relative to success and failure on a task, but they have not yet mastered the ability to fully engage with all the cognitive components required by self-reports.

Correlating self-report values to behavior observation, we found weak correlation in the self-report shame-proneness to observed shame and sadness. However, these findings were not consistently reproduced at both ages. Considering the low correlation coefficient as well as the diffuse inter-correlations found in the self-report subscale, it is difficult to draw any meaningful conclusions about the relationship between behavior observation and self-reports. It may have been related to the differences between the measurement of state vs trait, or that these young children were not able to use the TOSCA-like questionnaire.

The two presented methods for studying self-conscious emotions are clearly different, but they have both been used to investigate the role of self-conscious emotions in predicting various adjustment outcomes. Research on success-failure task has reported on the potential role of shame and anger in school behavioral adjustment [28], and the TOSCA Shame Scale displayed linkages with maladjustment in older children [15, 24, 29]. To our knowledge, this paper is the first to examine the direct relationship between the two measures, and additional research attention is needed to investigate whether the two methods yield the same outcome prediction in our population.

Summary

Overall, the findings for 6 and 7 years showed a consistent pattern to other data collected on other children of the same age, supporting the idea that the evaluative process has an important role in the children's experience of self-conscious emotions. In particular, shame was seen to failure and pride to success, but there was no consistency between the amount of shame and pride exhibited. These findings suggest that children of this age are capable of evaluating the nature of the task and one's success or failure at it, and the tendency to be self-evaluative in terms of success were not related to be self-evaluative in failure. Across age 6 and 7, children showed consistent correlation in the self-conscious emotions (i.e., shame, embarrassment, pride), while the primary emotions (i.e., anger and sadness) did not reveal any correlation over time. This finding is consistent with the idea that when state conditions are held constant, individual differences in children's emotion responses can be observed. However, the questionnaire data through the TOSCA showed that children who are high on shame was high on pride, as well as guilt and blaming others. This finding suggest that, for this young age group, high emotional responders report high levels on all emotional items. It appears that, at ages 6 and 7, children are capable of engaging in self-evaluative behavior relative to success and failure on a task, but they have not yet mastered the ability to fully engage with all the cognitive components required by self-reports. Correlating self-report values to behavior observation, we found weak correlation in the self-report shame-proneness to observed shame and sadness. However, these findings were not consistently reproduced at both ages. The two presented methods for studying self-conscious emotions have been used to investigate their role in predicting various adjustment outcomes, and additional research is needed to see whether the two methods yield the same outcome prediction in our population.

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Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the original study.

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