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Measuring Gratitude in Children

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Abstract

Gratitude is a rich socioemotional construct that emerges over development beginning in early childhood. Existing measures of children's gratitude as a trait or behavior may be limited because they do not capture different aspects of gratitude moments (i.e., awareness, thoughts, feelings, and actions) and the way that these facets appear in children. The current study evaluates a battery of new measures assessing children's gratitude to address these limitations. Parent-child dyads (*N*=101; children aged 6–9) completed a lab-based assessment followed by a 7-day online parental diary and 18-month follow-up survey. In addition to newly developed measures of children's gratitude, the battery included indicators of convergent, concurrent, divergent, and predictive validity. Results demonstrate the complexity of gratitude as a construct and the relative benefits and limits of various assessment modalities. Implications for the measurement of children's gratitude and suggestions for future research on the development of gratitude are discussed.

Keywords

Children; Gratitude; Parenting; Measurement

Recent studies on children's gratitude lag behind more robust literature on gratitude in adults. Grounded in social psychology, gratitude in adults is alternately defined as a life orientation (Wood, Froh & Geraghty, 2010), a character, virtue or personality trait (Freitas, Pieta, & Tudge, 2011; Froh, Sefick & Emmons, 2008), and a mood or emotional state (Froh et al., 2008; McCullough, Emmons & Tsang, 2002; Wood et al., 2010). Despite varying perspectives on the meaning of gratitude, most studies assess gratitude as a trait that involves a sense of appreciation or thankfulness in response to the recognition of receiving something beneficial (McCullough et al., 2002). In adults, trait gratitude is associated with greater life satisfaction, better health outcomes, and lower psychopathology (Wood et al., 2010) as well as more optimal social functioning (Emmons & McCullough, 2004), positive affect, and happiness (Emmons & McCullough, 2003; Froh, Kashdan, Ozimkowski, & Miller, 2009). Similarly, when administered to adolescents as young as age 10, trait gratitude is associated with greater positive affect, optimism, and satisfaction with social relationships as well as

lower levels of symptomatology (Froh et al., 2011; Froh, Yurkewicz, & Kashdan, 2009; Park & Peterson, 2006). Given the many positive correlates of gratitude, emerging research has focused on how gratitude develops and how best to cultivate gratitude even earlier, in childhood (Froh et al., 2014; Nelson et al., 2013; Tudge & Freitas, 2017).

Early work on gratitude in children focused on expressing appreciation or saying thank you. For example, Gleason and Weintraub (1976) made audio-recordings of children on their Halloween rounds and found that 6-year-olds thanked adults for giving them candy noticeably less often (21%) than did 10-year olds (83%) and 11- to 16-year-olds (88%). Similarly, recent work has assessed gratitude behaviorally through the action of sending thank-you letters (Froh et al., 2014). Building on early work by Baumgarten-Tramer (1938), Freitas, Pieta and Tudge (2011) measured gratitude using a hypothetical scenario. These authors found that as children age they change how they say they would express gratitude to someone who granted their greatest wish, with younger children reporting more forms of *verbal* (i.e., saying thank you) and *concrete gratitude* (i.e., gift giving) than older children who in turn report more *connective gratitude* (i.e., showing affection). Although providing an objective indicator of gratitude, these measures are limited in their reliance on behavioral indicators (real and hypothetical) that do not directly assess the experience (rather than just the expression) of gratitude and that confound gratitude and social conformity (i.e., to express “good manners”).

Other studies of adolescents and children have downwardly extended gratitude measures originally designed for adults (e.g., Froh et al., 2011; although see Lippman et al., 2014). Such measures largely capture enduring attitudes and personal characteristics appropriate for assessing mature forms of trait gratitude. Although providing continuity in the study of gratitude over development, these measures may be limited in capturing children’s emerging gratitude. As with behavioral indicators, many of these measures do not fully capture gratitude as a process that includes affective, cognitive, and behavioral components (even in adults; e.g., Emmons & McCullough, 2003; Hussong et al., 2017). For example, many scholars note that gratitude involves a complex set of affective and cognitive components and may be most likely to occur when recipients view gifts as a positive benefit received not through their own efforts but as freely and purposefully given by a benefactor (Emmons & McCullough, 2003). This multidimensional view of gratitude is also reflected in parents’ views of gratitude in children as young as ages 6–9 (Halberstadt et al., 2016). Moreover, gratitude in young children is likely emerging as a developmental capacity and may not show the situational persistence assumed in measures of trait gratitude.

In our work (Hussong et al., 2018, in press), we define gratitude as a cognitively-mediated, socio-emotional process that results in a sense of appreciation, happiness, or joy due to the appraisal of having received something, which is not due to personal effort but to a benefactor’s free and unrestricted intentions to give. To experience gratitude in the moment, children must be *aware* that something has been received, experience *positive affect* connected to that awareness, and *attribute* that positive affect to the benefactors’ intentional and freely chosen behavior. We expect that the positive affect that children feel about what they receive, along with the attributions that they make about their benefactors, engender the experience of gratitude. The result of this process is often *behaviors* that express

appreciation. We view the integration of these components of gratitude as a process that develops over ontogeny, appearing as immature (not fully formed) experiences in children that may reflect only some components of this process or be evident only intermittently.

Existing measures of children's gratitude assess some components of this model, but no published measure assesses all four. We believe that assessing all components is necessary to capture this construct and to explore how it develops in childhood. This developmental process may begin in early childhood. For example, Nelson and colleagues (2013) report that by age five, most children associate receiving a benefit with positive feelings, sometimes connecting those positive feelings specifically to the benefactor and his or her actions (Nelson et al., 2013). Children's general knowledge about emotions at age three, and their understanding of others' mental states at ages three and four, also predicts children's understanding of gratitude at age five (Nelson et al., 2013), suggesting that both behavioral and cognitive components of gratitude are emergent over childhood and related to the expression of gratitude. Thus, this literature supports the development of new measures of children's gratitude that account for the multi-dimensional nature of gratitude in young children.

A challenge with developing new measures is that the optimal modality for assessing children's gratitude remains unclear. Previous studies include self-report surveys (Hoy, Suldo, & Mendez, 2013), scenario-based measures (Nelson et al., 2013) and behavioral outcomes such as sending a letter or saying thank you (Froh et al., 2014). Each of these modalities has strengths and limitations, particularly for assessing a socially desirable construct with heavy demand characteristics such as gratitude. Parent and child self-report measures are subject to enhancement and confirmation biases; scenario measures can constrain the domain of gratitude to the inquirer's rather than the participant's view of situational demands for gratitude; and behavioral measures assume that it is gratitude that underlies what might be conventional, expectation-based responses to situational demands. Rather than selecting a single measurement modality, we developed a battery of measures of children's gratitude that included child self-report and parent-report surveys, scenario-based measures, and a behavioral task.

In the current study, we evaluated the psychometric properties of this battery of children's gratitude measures (aim 1) as well as the associations among them (aim 2). We examined demographic and developmental trends in these measures (aim 3) and indicators of convergent validity (against existing downwardly extended measures of trait gratitude) as well as divergent, concurrent, and predictive validity (aim 4). To assess divergent validity, we examined correlations of children's gratitude with measures of children's symptomatology as well as with parent personality and social desirability that may impact parent reports most specifically (Froh et al., 2011; Froh et al., 2009). To assess concurrent validity, we included parent- and child-reports of developmental competencies relevant to children's gratitude, including empathy, positive affect, prosocial behavior, social competence, and emotional understanding (Bono et al., 2017; Froh et al., 2011; Nelson et al., 2013; Park & Peterson, 2006). To assess predictive validity, we tested associations between our measures of children's gratitude and parent-report measures of children's socio-emotional development, symptomatology, and gratitude 18 months later. Our goal is to offer

a set of measures for children's gratitude that may be used in future work with attention to the potential weaknesses of each modality but that together capture the complex emotion of gratitude as relevant to understanding how parents socialize gratitude in their children.

Method

Participants

Data come from the Raising Grateful Children (RGC) project (Hussong et al., 2018). For this study, we recruited parent-child dyads (N = 101) through mass emails to faculty, staff, and students at an affiliated university, flyers distributed through public and independent schools in first- to third-grade classrooms, and community postings. Inclusion criteria were English proficiency and a child aged 6–9. Child mean age was 7.4 years (SD = 1.03 years); 52% were female. Parents' mean age was 41 years (SD = 5.2 years); 85% were mothers, and they self-identified as 81% European American, 9% Asian or Asian American, 5% African American, 4% Latinx, 1% American Indian/Alaska Native and 1% Middle Eastern. Among participating families, 15% reported an annual income of less than $50,000 whereas 63% reported $100,000 or more. Less than 5% of parents had not completed a college degree and 62% had completed a masters or doctoral degree. Most families included two parents living together in the home (81% of parents were married and 4% were in committed, cohabitating relationships); 4% of families had separated parents and 11% had divorced parents. Eighteen months later, parents were asked to complete a brief online survey. A total of 97 parents did so and received $20 for participating.

Procedure

Parent-child dyads completed a lab-based assessment followed by a 7-day online parental diary and an eighteen-month online follow-up parental surveys. At baseline, we obtained parent consent and child assent and administered three observational tasks to parent-child dyads. We also asked parents to complete a computer-administered standardized battery while children completed a standardized, interviewer-administered battery in a separate room. Baseline visits lasted about 2-hours. Online daily diaries were administered via Qualtrics beginning the day after the baseline assessment. Diaries were identical each day and took 5–10 minutes to complete. Parents also received an email link to complete an eighteen month follow up survey. Participants received $20 for completing baseline and follow-up surveys and up to $10 for diaries (i.e., $1 for each completed diary and a $3 bonus if they completed all 7). Participant retention throughout the study was high; 89% of parents completed all 7 daily diaries and 96% completed at least 5 for a total of 682 observations.

Measures

RGC Measures of children's gratitude.—We developed three new measures of children's gratitude for this study: a parent-report daily diary, a child-report scenario-based measure, and a behavioral task that yielded two indicators of gratitude expression. Our process model of gratitude guided creation of these measures (Hussong et al., 2018). Psychometric properties for all measures are reported in Table 1 and results are summarized in Appendix 1.

RGC Parent daily diaries.: On a ten-item scale, parents rated how frequently (0 or "not at all" to 4 "11 times or more") their children showed awareness of being given a gift, showed positive affect in response to a gift, made gratitude-related attributions, and displayed gratitude behaviors (see Hussong et al., in press for full measure). Items were averaged within day to create daily indicators of parent-reported child gratitude that we then averaged over the 7-day assessment period to create a composite score for the current analyses.

RGC Child-report scenarios.: In this interviewer-administered measure, children responded to open-ended probes about the likely response of a character who received something from another person. After a practice scenario, interviewers showed an illustration and read aloud stories for each of up to seven scenarios followed by six open-ended probes designed to assess understanding of the four components of gratitude moments. Scenarios varied in subtlety (e.g., involving an undesirable birthday gift from a young neighbor to a classmate returning a special necklace lost on the playground). We did not administer the most complex scenario for 6- and 7-year old children.

We later coded responses to prompts to assess the components of gratitude (for details, contact first author). High scores for awareness (rated 0–4) indicated that children had a sophisticated understanding of the gratitude scenario and the gift received (both tangible and intangible). High scores for *positive affect* (coded 0–2) indicated that children explained feelings of the character with greater complexity and specific emotion words. High scores for *gratitude-related attributions* (coded as 0–4 in response to two probes) indicated sophisticated emotional or cognitive perspective taking on behalf of the giver. High score for *behavior* (coded as 0–3 in response to two probes) indicated that the child could generate multiple responses in addition to saying thank you. Different response scales reflect differences in observed codable variation across dimensions. Two research assistants independently coded all scenarios and 79% of scores were in complete agreement and intraclass correlations ranged from .78–.92 for awareness, .71–.98 for affect, .67–.75 for attribution, and .66–.92 for behavior across scenarios. Any discrepancies were reconciled by consensus. Scores for the four subscales were standardized separately within age group (6 and 7 vs. 8 and 9) and then averaged to create a composite score for the current analysis.

RGC Behavioral task.: The task consisted of four components that were videotaped for later coding. First, an RA told the child, with the parent present, that s/he had run out of gifts and would send someone to the store to buy the one the child wanted. The child selected his or her most desired gift from a box with three cubbies containing pictures of two desirable gifts (a slinky and a stuffed puppy) and a putatively undesirable gift (a single white crayon).

Second, near the end of the visit, the RA instructed the child to watch a video made by the previous child who had participated in the study (in reality a pre-recorded video from a confederate child) while the RA left the room to retrieve the child's most desired gift supposedly bought during the session by study personnel. In the video, the confederate child states that the RAs ran out of gifts during her visit but that she took the undesirable gift for herself and left the better gift for the participating child (the desirable gift NOT selected by the participating child) – this reflected an act of generosity. The participating child's reaction

to hearing about this gift (coded through indicators of awareness, positive affect, and behavior) contributed to the Peer Score.

Third, the RA then told the child that study personnel had not returned from the store, but the child can pick from two gifts in the box (i.e., the two left by the confederate child) and that the gift not selected will be given to the next child participating in the study. After the participating child selected a gift, the RA asked the participating child to create two videos (using a small webcam attached to a laptop computer). For the first, the child left a message to the confederate child; this video was coded for the expression of gratitude and informed the Peer score. For the second, the child left a message for the next child participating in the study; this video was meant to make the confederate videos more believable.

Fourth, the RA then responded to a knock on the door announcing that study personnel had return from the store with the most desirable gift for the participating child. The RA gave this gift to the child in addition to the one left by the confederate child, noting that he/she was not required to give the child both gifts but wanted to do so. The reaction of the participating child to receiving the second gift (i.e., in terms of positive affect and behavior) contributed to the RA score.

Coding of the task yielded two scores: a score of gratitude displayed toward a peer (i.e., peer scores) and gratitude displayed toward an adult (i.e., an RA score). Twenty percent of cases were doubled-coded to establish reliability; percent agreement was 98.1% (range = 94–100%) for codes indexing children's gratitude during the task. Intraclass correlations ranged from .89–.95 for awareness, affect and behavior codes forming the Peer score and .88–.93 for awareness and behavior codes forming the RA score.

Demographic indicators.—Parents reported their child's gender (females=0; males=1) and age and their own race/ethnicity (0=White; 1=Ethnic/Racial identity other than White). We standardized and then averaged five items to index socioeconomic status that included parent report of: (1) approximate family income from the previous year ranging from 0 ($9,999 or less) to 13 ($200,000 or more); (2 and 3) educational attainment of each parent using a 8-point scale that ranged from 1 (some high school) to 8 (completed graduate or professional degree); and, (4 and 5) the MacArthur scale of subjective social status in which parents indicated their own socioeconomic status relative to individuals in the US broadly as well as the socioeconomic status of their family of origin (Adler & Stewart, 2007).

Measures of convergent validity.—Parents and children completed the widely-used Gratitude Questionnaire-6 (GQ-6; McCullough et al., 2002) adapted for developmentally appropriate language and content for child-reports. Reporters rated how well each of six statements described the child over the past month using a 7-point response scale. As guided by exploratory factor analyses, one item on the parent and child scales was dropped for scoring; a mean of the remaining five items created separate scores for parent- and child-report.

Measures of divergent validity.—We used two sets of measures of divergent validity. First, we used measures to control for the confounding of parents' own tendencies toward

positivity with their views of their children's tendencies. We assessed parents' *social desirability* using the Social Desirability Scale-17 (SDS-17; Stober, 2001) in which parents indicated whether statements were true or false descriptions of themselves. We assessed parents' dispositional *optimism* (e.g., "It's easy for me to relax") with the 10-item Life Orientation Test-Revised (LOT-R; Scheier, Carver, & Bridges, 1994) using a scale ranging from 1 (strongly disagree) to 5 (strongly agree). We administered the Big-5 Mini-Markers to assess parent *agreeableness, extroversion*, and *conscientiousness*, with 8-item subscales (Saucier, 1994) that contained traits that parents rated on a 9-point response scale for how accurately the trait described him or her as compared to other people of the same sex and age. We also assessed parents' *positive affect* over the past month with five items from the Positive and Negative Affect Schedule for Adults (PANAS-A; Watson, Clark, & Tellegen, 1988); parents used a 5-point response scale. We calculated mean scores for each subscale for subsequent analysis.

Second, we also included measures of divergent validity based on parent-report of child symptomatology using the Pediatric Symptom Checklist (Jellinek et al., 1988). Parents rated how often in the past month their child had exhibited each of 38 behaviors or emotions using a 3-point response scale. A mean score indicating overall child symptomatology was calculated in addition to subscales assessing child attention problems, internalizing symptoms, and externalizing problems.

Measures of concurrent validity.—We included four parent-report measures of children's socio-emotional skills. Parents rated how frequently their child experienced each of five *positive emotions* using a 5-point Likert scale from the Positive and Negative Affect Schedule for Children – Parent Version (Ebesutani, Okamura, Higa-McMillan, & Chorpita, 2011). Parents answered six items adapted from the *social competence* scale of the child-report version of the Harter Peer Competence Scale for Children (Harter, 1982). For each item, parents read two statements that described two different types of children and then asked them to indicate which type of child was most similar to their child. Once parents selected the statement that best described their child, they then indicated the extent to which the statement they selected was true for their child (i.e., "Really true of my child" or "Sort of true of my child"). The two statements were scored together to capture the Harter 4-point response scale ranging from 1 to 4, where four indicates high social competence. Parents also completed the Child *Empathy* Attitude Questionnaire (Funk, Fox, Chan, & Curtiss, 2008) by rating how well 15 statements describe the feelings and reactions of their child using a response scale that ranged from 0 (not like them) to 2 (like them). Finally, parents also completed a subscale assessing children's *prosocial behavior* from the Strengths and Difficulties Questionnaire (Goodman, 1997) using a response scale ranging from 1 (Not true) to 3 (Certainly true).

Children similarly completed three measures paralleling those completed by their parents to assess *positive emotions* (the Positive and Negative Affect Schedule for Children – Child Version; Ebesutani et al., 2011), *social competence* (the child-report version of the Harter Peer Competence Scale for Children; Harter, 1982), and the Child *Empathy* Attitude Questionnaire (Funk et al., 2008). They also completed a measure of children's *emotional understanding* (Assessment of Children's Emotions Skills; Schultz, Izard, & Bear, 2004).

Measures of predictive validity.—We included three sets of measures of predictive validity assessed at the 18-month follow-up, including parent-report surveys of children's gratitude, socio-emotional development, and symptomatology. Measures of children's gratitude included five items assessing trait gratitude from the Flourishing Children Positive Indicators study (Lippman et al., 2014) and the RGC parent daily diary measure (given at wave 1) administered at a single time to assess past month gratitude in children (referred to here as the RGC parent survey). Because we expanded the RGC parent survey at follow-up with eleven new items to better capture components of the gratitude moment, we scored this measure two ways: (a) using the original 10 items (the RGC parent survey (original)) and (b) using all 21 items (the RGC parent survey (revised)). Measures of children's socio-emotional development and symptomatology that served as indicators of concurrent and divergent validity when assessed at baseline also served as indicators of predictive validity when assessed at the second follow-up. These scales included the PANAS-P (Ebesutani et al., 2011), the *Child Empathy* Attitude Questionnaire (Funk et al., 2008), the Strengths and Difficulties Questionnaire *prosocial subscale* (Goodman, 1997), and the Pediatric Symptom Checklist (Jellinek et al., 1988).

Results

Aim 1. Psychometric Properties of Children's Gratitude Measures

Psychometric properties are reported for all measures in Table 1. For RGC parent diaries, Cronbach's alpha estimates ranged from α=.78-.89 across each of the seven days assessed. Exploratory factor analyses confirmed that the daily diary measure was best represented by a single factor, and confirmatory factor analyses, estimated within each day of the daily diary measure, indicated that all items loaded significantly on the underlying factor. Scores averaged across days formed a scale with high reliability (α=.84). Correlations among the subscales of the RGC child scenario measure ranged from r=.20-.51, all ps<.05, and the full scale showed strong internal reliability (α=.84). RA score and peer scores from the RGC behavioral task were uncorrelated (see Table 2). For all four indices, variation in scale scores approximated a normal distribution (i.e., skew < 2 and kurtosis <5 for all measures).

Aim 2. Demographic and Developmental Trends in Children's Gratitude Measures

Results of regression analyses are reported in Table 2. Four models tested whether child gender, child age, family socio-economic status, and parent race/ethnicity predicted children's gratitude for each of the RGC indices. No effects emerged for child age or parent race/ethnicity. Higher family socio-economic status was associated with higher peer scores on the RGC behavioral task. No gender differences were found in RGC parent diary or behavioral task RA scores though girls showed more gratitude responses on the RGC child scenarios and in RGC behavioral task Peer scores.

Aim 3a. Convergent Validity Analyses

We examined correlations between RGC measures of children's gratitude and parent- and child-report on the GQ-6 (see Table 3). The RGC parent diary measure correlated positively with both parent- and child-reports on the GQ-6; the RA-score from the RGC behavioral task correlated with parent- but not child-report on the GQ-6, whereas the peer score from

the RGC behavioral task correlated with child- but not parent-report on GQ-6. Modest associations were also found among RGC gratitude measures. RGC parent diaries were associated with the RA score on the RGC behavioral task and RGC child scenarios were correlated with the peer score on the RGC behavioral task.

Aim 3b. Concurrent Validity Analyses

We examined correlations between developmental correlates of children's gratitude (i.e., empathy, positive affect, prosocial behavior, social competence, and emotional understanding) and the four RGC indices of children's gratitude to assess concurrent validity (see Table 4). We also report concurrent associations with the GQ-6 for comparison. As expected, strong reporter effects are evident for survey measures, with RGC parent diaries and parent-reports on the GQ-6 predicting all four parent-report measures of developmental correlates. Parent-reported GQ-6 scores were also associated with child-reported empathy. RA scores on the RGC behavioral task showed a similar pattern to parent-report measures and were significantly correlated with all parent-report measures of developmental precursors.

Child reporter effects were also evident. Child scenarios and child-reported GQ-6 scores were associated with child-report measures of developmental precursors (scenario scores were associated with empathy and emotional understanding and GQ-6 scores were associated with all four developmental indices). Child-report GQ-6 scores were also associated with parent-report of child positive affect. Peer scores on the RGC behavioral task showed weaker but similar patterns, correlated only with children's emotional understanding.

Aim 3c. Divergent Validity Analyses

We examined correlations between the four RGC gratitude indices (and GQ-6 measures, for comparison) and parent-report on divergent validity measures (see Table 5). Parent characteristics were associated with RGC parent diaries (which were positively associated with agreeableness, extroversion, and positive affect) and with parent-report on the GQ-6 (which was positively correlated with optimism and extroversion). Parent-report on the GQ-6 was also negatively associated with indicators of parent-reported child symptomatology across all indices, suggesting a potential lack of specificity in parent reports of children's trait gratitude (on the GQ-6) versus children's momentary gratitude (on the diary measure).

Child-report variables were associated with parent characteristics but not child symptomatology. RGC child scenarios were associated with lower rates of parent social desirability, optimism, and conscientiousness whereas child-reports on the GQ-6 were associated with higher parent extroversion and positive affect.

The two scores from the RGC behavioral task showed few associations with divergent validity measures, though the RA score was negatively associated with parent-report of overall and child externalizing symptoms and the peer score was negatively associated with parent social desirability.

Aim 4. 18-Month Predictive Validity Analyses

We conducted correlational analyses to examine predictive validity associations from the four RGC gratitude indices (and the two GQ-6 measures, for comparison) and parent follow-up reports of children's socio-emotional development, symptomatology, and children's gratitude. Results are reported in Table 6. RGC child scenario and RGC behavioral task scores showed few associations with predictive validity indices; unexpectedly, peer score from the RGC behavioral task positively predicted children's internalizing symptoms 18 months later. Child-report on the GQ-6 was also largely unrelated to future outcomes, although it did predict higher scores on parent-report children's gratitude on the Child Trends measure.

Parent-reports from the diaries and GQ-6, however, were predictive of later parent-reports of child functioning. RGC parent diaries predicted higher levels of child empathy and positive affect as well as, surprisingly, overall child symptomatology and internalizing symptoms. RGC parent diaries also predicted higher gratitude scores on all three parent-report measures. Parent-reports on the GQ-6 also positively predicted child empathy and prosocial behavior and, unlike diary scores, predicted lower overall child symptomatology and externalizing scores. Parent-reported GQ-6 scores also predicted higher parent-reports of child gratitude on the Child Trends survey.

Summary of Children's Gratitude Measures

For ease of comparison, we summarized findings regarding the four children's gratitude indices in Appendix 1. Summary indices for validity analyses are calculated as the mean and maximum (absolute) values of all relevant correlations for each form of validity and index. Greater discrepancies between convergent and divergent validity measures suggest relatively greater construct specificity for a given index.

Discussion

To expand the discourse on gratitude so that it encompasses much more than simply trait or hypothetical measures, we developed a multi-modal battery designed to better capture four components of children's gratitude moments (i.e., awareness, positive affect, gratitude-related attributions, and behavior). In evaluating the psychometric performance of four indices of children's gratitude drawn from our three RGC measures, we identified relative strengths and weaknesses of each approach. Our findings underscore the complexity of gratitude as a construct and the relative benefits of using different assessment modalities. Based on these conclusions, we offer advice for future work assessing children's gratitude.

Performance of the RGC Gratitude Battery

The four RGC indices of children's gratitude were highly reliable (more so than the adapted GQ-6 trait measure) and showed expected overall patterns of stronger convergent than divergent validity (more strongly for the child scenarios than for the parent diaries and behavioral task). The specific pattern of validity correlations, however, varied by the index of children's gratitude. Importantly, strong reporter effects marked these findings. Children's gratitude was more strongly associated with parent reports on validity measures when

assessed through parent diaries (and parent-reports on the GQ-6) than through child reports on gratitude scenarios or in gratitude behavioral tasks. Likewise, child-reported gratitude (on scenarios or the GQ-6) was more strongly associated with child reports on validity measures than were parent reports of gratitude (on diaries or the GQ-6) or behavioral tasks. Shared method (in this case reporter) variance is a common psychometric finding and is likely exacerbated when measuring such socially desirable constructs as gratitude. This finding underscores the potential benefits of using behavioral tasks in assessing gratitude.

Parent-report surveys (diaries and the GQ-6) were correlated with parent-report indicators of children's socio-emotional development and had the highest predictive validity of all measures (though it is likely that shared method variance partly accounts for the magnitude of these associations). However, our parent-report measures differed in a number of ways. First, the GQ-6 assesses trait gratitude and the RGC parent diaries assess how frequently children show instances of gratitude awareness, feelings, thoughts and actions within the day. Second, divergent validity analyses indicate that the GQ6 reports overlap (negatively) with parent perceptions of child symptomatology whereas parent diary reports are unrelated to child symptomatology cross-sectionally. Third, predictive validity analyses indicate consistency in the GQ-6-symptomatology association over time – with higher parent-reported GQ-6 scores predicting lower externalizing symptomatology 18 months later – whereas higher parent diary gratitude scores predicted higher later internalizing symptoms in children. Better understanding how children's gratitude moments map onto how parents more broadly perceive (trait) gratitude in their children may help explain the different ways in which gratitude may impact child mental health over time.

Similarly, child-report on the GQ-6, and to a lesser extent the scenario measure, showed some evidence of shared method variance effects in the pattern of significant validity correlations but were also associated with parent characteristics in different ways. Child-reported GQ-6 scores were positively associated with parent positivity indicators (i.e., extroversion and optimism), perhaps suggesting conformance in parent-child behavior or the extent to which these measures tap parents' positivity reporting biases. But child scenarios scores were negatively correlated with parent social desirability, optimism, and conscientiousness scores, perhaps suggesting some amount of reactance of children to parent behavior. Indeed, child-based scenario scores may be tapping children's knowledge or scripts of gratitude behaviors more so than gratitude itself, consistent with correlations between these measures and children's emotional understanding.

Although shared method variance was evident in our findings, associations of RA-scores and peer-scores on the behavioral task with other RGC measures of children's gratitude suggest that other factors may also account for the varied pattern of validity correlations across measures. Peers scores assessed the extent to which children displayed gratitude toward a confederate peer and were correlated with other child- but not parent-report measures of gratitude. Conversely, RA scores assessed the extent to which children displayed gratitude toward the RA when given an extra gift and were correlated with other parent- but not child-report measures of gratitude. These findings from our behavioral task may then suggest that when parents and children report on children's gratitude they may be thinking about gratitude expressions in different relationships (with peers for children and with adults for

parents). In addition, survey measures (RGC parent diaries and GQ-6 measures) were consistently associated with expected developmental correlates of children's gratitude as were RA-scores (but not peer-scores) on the behavioral task. These findings suggest that how children experience gratitude in relation to adults (versus children) may be more similar to how they and their parents describe gratitude as a more enduring experience (captured in trait and multi-day diary measures). The extent to which children's gratitude experiences vary over relationship partner remains an area for future exploration.

Divergent validity analyses suggest that RGC measures may have greater specific than parent-report trait measures of children's gratitude. Parent-report on the GQ-6 was negatively correlated with parent-reported symptomatology but RGC parent diaries were not (though RA-scores on the behavioral task showed some correlation as well). The extent to which parent-reports of children's trait gratitude better capture some overall sense of children's "good behavior" or "lack of bad behavior", without making a clear distinction and without specifically tapping into something unique about gratitude, deserves careful consideration. Establishing such specificity is a classic psychometric goal because it is central to construct validity.

Measuring Children's Gratitude in Future Studies

In summarizing our findings, we note that each measure has strengths and weaknesses. We considered potential ways of constructing composite variables that may overcome the weaknesses of any one measure but found that correlations among the measures (as well as results of confirmatory factor analyses) were not strong enough to support this strategy. Rather, we advise researchers to consider several factors in selecting gratitude measures for future studies. First, should gratitude be conceptualized as a trait akin to personality studies or a state that may differ, particularly in young children, over time and place? Second, is the goal to predict future behavior or to understand mechanisms within gratitude that might lead to future behavior? Trait measures show stronger predictive validity than other measures. However, measures of behavior, gratitude knowledge or schemas (as in the scenario measure) and diary measures (that parse gratitude awareness, feelings, thoughts and actions) may allow a more refined assessment of gratitude moments and offer insight into resilience mechanisms. For example, if children differentially develop the components of gratitude over time, focusing on only one element of gratitude may fail to capture important roles of a developing capacity for gratitude in younger children. This may be particularly true in studying the impact of parenting on children's gratitude over time. Third, is identifying measures with low reporter bias a concern? Given the potentially high demand characteristics of parents and children to endorse positive behaviors such as gratitude, having behavioral measures of gratitude that move beyond perceptions may be critical to identifying reliable associations with children's functioning.

Our summary of these questions favors the use of measures of state over trait gratitude because the rationale for state measures may be less obvious. However, we acknowledge that in many cases, trait measures may be a better choice. Trait measures are short and easy to administer, associated with developmental correlates, and predictive of future outcomes. New trait measures in addition to the GQ-6 published in the literature after data were

collected for this study (see Lippman et al., 2014) show great promise for addressing many questions. But we would argue that to understand gratitude moments as they unfold over development, additional measures are needed.

Findings from the current study should be considered in light of study limitations. For example, our modest sample was comprised of predominantly white, middle to upper-class families who are likely more motivated to engage in gratitude socialization (as suggested by high scores on several gratitude indices). The limited socioeconomic and demographic diversity of the sample restricts the generalizability of findings and does not permit the exploration of cultural factors that may be associated with children's gratitude. Additionally, this was the first iteration of a battery designed to capture each of the affective, cognitive, and behavioral dimensions of children's gratitude. Future research can build upon these findings and improve measures by including other behavioral indicators of children's gratitude, by increasing the item pool to tap each dimension of gratitude in subscale form, and by strengthening the reliability and validity of our newly developed scales.

In conclusion, the current study represents a first step in developing and refining a battery of measures assessing gratitude moments in children. Our psychometric analyses underscore challenges in assessing complex constructs such as gratitude. Indeed, our finding of modest associations between different indices of gratitude and different reporters speaks to the Rosetta Stone that comprises gratitude. Gratitude and other social indicators like it are complex because they constitute a lens into the social "goodness" or sociability of the person. Viewed from this perspective, gratitude is both more and less than a social emotion, it is more and less than a cognitively based element, and more and less than a behavior. It may be a signpost to the underlying positivity of the person. The complexity of gratitude is not simply a challenge to its measurement but a reflection of its role as a social indicator of underlying moral goodness. And for this reason, a goal worth pursuing.

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Appendix 1.: Summary of RGC and Adapted GQ6 Children's Gratitude Measures

Measures of Child's Gratitude	Modality & Description	Reliability and Validity Indicators	Validity Summary	Evaluation
Parent Diaries	(Parent-report): Ten items assessing gratitude awareness, thoughts, feelings and behaviors each day over 7 days	Cronbach's alpha = .82 Convergent: 0.15 / **0.25** Divergent: 0.11 / **0.23** Predictive**: 0.32 / 0.70**	Associated with trait gratitude, child-reported empathy, current and future parent-reported assessments of socio-emotional development, parent positivity, future internalizing symptoms & gratitude	Evidence of reporter bias; Correlated with cross-modality gratitude measures; Assesses daily gratitude; strong predictive but modest
Child Scenarios	(Child-report): Seven child-based scenarios (six for 6–7 year olds) coded for gratitude awareness, thoughts, feeling and behaviors	Cronbach's alpha = .84 Convergent: 0.17 / **0.46** Divergent**: 0.19 / 0.29** Predictive: 0.08 / **0.18**	Associated with child-report of socio-emotional development, less parent positivity & social desirability	Evidence of reporter bias; Gender effects; Associated with behavioral gratitude toward peer
Gratitude Task – RA Score	(Behavioral Task): Sum of coded awareness, feelings and behaviors directed toward generous act by an adult	ICC range = .89 – .95 Convergent**: 0.19 / 0.29** Divergent: 0.11 / **0.25** Predictive: 0.09 / 0.17	Associated with parent-report of socio-emotional development, less child symptomatology	No reporter bias; Associated with parent-report gratitude measures
Gratitude Task – Peer Score	(Behavioral Task): Sum of coded awareness, feelings and behaviors directed toward generous act by an unfamiliar peer	ICC range = .88 – .92 Convergent: 0.09 / **0.29** Divergent: 0.09 / **0.21** Predictive: 0.10 / **0.21**	Associated with child emotional understanding, less parent social desirability	No reporter bias; SES and Gender effects; Associated with child-report gratitude measures

Note. Bold numbers are significant at $p<.05$. Reliability and validity indictors represent mean and max values. ICC=Intraclass correlation.

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Table 1.

Psychometric Properties of Study Measures

	M	*SD*	Range	Cronbach's α
RGC Child Gratitude Measures (at Baseline)				
Parent Diary	0.75	0.37	0.07–1.99	.82
Child Scenarios	0.00	0.70	−1.75–1.92	.84
Behavioral Task: RA Score	0.52	0.25	0.00–1.00	n/a
Behavioral Task: Peer Score	0.63	0.35	0.00–1.00	n/a
Convergent Validity Measures (at Baseline)				
Parent-Report (PR) of Child on GQ6	5.49	0.96	2.80–7.00	.70
Child Self-Report (SR) on GQ6	4.00	0.80	1.40–5.00	.74
Concurrent Validity Measures (at Baseline)				
PR Child Empathy	1.46	0.35	0.53–2.00	.87
PR Child Positive Affect	3.99	0.54	2.20–5.00	.82
PR Child Prosocial Behavior	2.54	0.34	1.60–3.00	.63
PR Child Harter	3.24	0.60	1.00–4.00	.80
SR Child Empathy	1.47	0.35	0.20–2.00	.81
SR Child Positive Affect	3.66	0.75	1.00–5.00	.68
SR Child Prosocial Behavior	2.8	0.71	1.00–4.00	.74
SR Child Emotional Understanding	6.91	2.69	0.00–10.00	.71
Divergent Validity Measures: Parent-Effects (at Baseline)				
Parent Social Desirability	1.54	0.20	1.06–2.00	.72
Parent Optimism	3.67	0.75	1.00–5.00	.86
Parent Agreeableness	7.31	0.82	4.43–8.80	.82
Parent Conscientiousness	6.59	1.17	3.38–8.67	.84
Parent Extroversion	5.93	1.63	2.00–9.00	.89
Parent Positive Affect	3.34	0.73	1.20–4.80	.77
Divergent Validity Measures: Child-Effects (at Baseline)				
Total Symptoms	0.43	0.24	0.00–1.06	.89
Internalizing Symptoms	0.34	0.33	0.00–2.00	.74
Externalizing Symptoms	0.58	0.35	0.00–1.29	.77
Attention Symptoms	0.68	0.51	0.00–2.00	.82
Predictive Validity Measures (at Follow-up)				
PR Child Empathy	1.56	0.32	0.50–2.00	.85
PR Child Positive Affect	4.01	0.53	2.60–5.00	.80
PR Child Prosocial Behavior	1.71	0.32	0.60–2.00	.69
Total Symptoms	0.39	0.27	0.00–1.14	.91
Internalizing Symptoms	0.36	0.38	0.00–1.80	.81
Externalizing Symptoms	0.51	0.44	0.00–2.00	.86
Attention Symptoms	0.57	0.56	0.00–2.00	.85
RGC Child Gratitude Measures (at Follow-up)				
RGC Parent Gratitude Survey (Original)	1.50	0.71	0.10–3.50	.89

	M	*SD*	Range	Cronbach's α
RGC Parent Gratitude Survey (Revised)	1.33	0.68	0.05–3.47	.95
PR Child Trends Gratitude Measure	3.63	0.78	1.4–5.00	.89

Note. Sample size for all baseline analyses is n=101 and for all follow-up analyses is n=96.

Table 2.

Demographic Trends in RGC Gratitude Measures based on Multiple Regression Analyses

	Model 1 **RGC Parent Diary**	**Model 2** **RGC Child Scenario**	**Model 3** **RGC Gratitude Task – RA Score**	**Model 4** **RGC Gratitude Task – Peer Score**
Predictor	***t***	***t***	***t***	***t***
Child Gender	−0.07	−0.36 *	−0.04	−0.23 ***
Child Age	−0.01	0.06	0.03	0.06 +
Family SES	0.02	−0.10	0.01	0.10 *
Parent Race	−0.10	−0.22	−0.05	0.01
Model Adjusted R^2	0.00	0.05	0.00	0.15

+ $p<.10$

* $p<.05$

** $p<.01$

*** $p<.001$

Note: Race coded at =0 for European American and =1 for other groups.

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Table 3

Correlations among Baseline RGC and Adapted GQ-6 Child Gratitude Measures

Measure	1	2	3	4	5
1. RGC Parent Diary	--				
2. RGC Child-Report Scenarios	.10				
3. RGC Gratitude Task – RA Score	.25*	.14			
4. RGC Gratitude Behavior – Peer Score	.17+	.22*	.06		
5. Parent-Report on GQ6	.26**	.13	.31*	−.04	
6. Child Self-Report on GQ6	.24*	.16	.15	.25*	.25*

+ $p<.10$

* $p<.05$

** $p<.01$

*** $p<.001$

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Table 4.

Correlations of Gratitude Measures with Concurrent Validity Measures

	RGC Parent Diaries	RGC Child Scenarios	RGC Behavioral Task – RA Score	RGC Behavioral Task – Peer Score	Parent-Report GQ6	Child-Report GQ6
Parent-Report	***r***	***r***	***r***	***r***	***r***	***r***
Child Empathy	.32**	.15	.24*	−.02	.54***	.11
Child Positive Affect	.25*	−.10	.29*	−.03	.41***	.20*
Child Prosocial Behavior SDQ	.22*	.17+	.28**	.11	.52***	.06
Child Social Competence	.20*	−.11	.23*	−.04	.30**	.10
Child-Report	*r*	*r*	*r*	*r*	*r*	*r*
Child Empathy	.13	.26**	.15	.15	.22*	.59***
Child Positive Affect	.17+	−.07	.21	.09	.11	.52***
Child Social Competence	.12	−.01	.02	.02	.19+	.35***
Child Emotional Understanding	−.06	.46***	.07	.29*	.08	.30*

+ $p<.10$

* $p<.05$

** $p<.01$

*** $p<.001$

Table 5.

Correlations of Gratitude Measures with Divergent Validity Measures

	RGC Parent Diaries	RGC Child Scenarios	RGC Behavioral Task – RA Score	RGC Behavioral Task – Peer Score	Parent-Report GQ6	Child-Report GQ6
Parent-Effects	***r***	***r***	***r***	***r***	***r***	***r***
Parent Social Desirability	−.01	−.24*	−.04	−.21*	.03	−.15
Parent Optimism	.03	−.21*	.00	−.10	.20*	.09
Parent Agreeableness	.23*	−.03	.15	−.07	.18+	−.10
Parent Conscientiousness	.06	−.29**	.05	−.11	.00	.12
Parent Extroversion	.22*	−.05	.10	−.02	.25**	.21*
Parent Positive Affect	.20*	−.12	.09	−.11	.12	.23*
Parent-Reported Child-Effects	*r*	*r*	*r*	*r*	*r*	*r*
Child symptomatology	.06	−.05	−.20*	.09	−.35***	−.17+
Child internalizing symptoms	.13	.10	.07	.07	−.20*	−.14
Child externalizing symptoms	.03	−.05	−.25*	−.05	−.35***	−.11
Child attention symptoms	.08	−.09	−.18+	.11	−.19*	−.04

+ $p<.10$

* $p<.05$

** $p<.01$

*** $p<.001$

Table 6.

Correlations of Gratitude Measures at Baseline with Predictive Validity Measures at Follow-Up

	RGC Parent Diaries	RGC Child Scenarios	RGC Behavioral Task – RA Score	RGC Behavioral Task – Peer Score	Parent-Report GQ6	Child-Report GQ6
Parent Report Correlates	***r***	***r***	***r***	***r***	***r***	***r***
Child Empathy	.34***	.07	.14	−.04	.39***	.13
Child Positive Affect	.30**	−.04	.12	−.03	.16	.15
Child Prosocial Behavior	.14	.02	.13	.04	.51***	.17+
Child Symptomatology	.20*	−.09	−.02	.19+	−.25*	−.07
Child Internalizing Symptoms	.20*	.03	.01	.21*	−.11	−.13
Child Externalizing Symptoms	.11	−.10	−.04	.04	−.35***	.01
Child Attention Symptoms	.17+	−.18+	.02	.16	−.15	−.05
Parent Report Children's Gratitude	*r*	*r*	*r*	*r*	*r*	*r*
RGC Parent Survey (Original)	.70***	.11	11	.12	.17+	.15
RGC Parent Survey (Revised)	.70***	.09	.12	.15	.17+	.11
Child Trends Gratitude Scale	.33**	.04	.17+	.05	.52***	.22*

+ $p<.10$

* $p<.05$

** $p<.01$

*** $p<.001$