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Preschool-aged children's understanding of gratitude: Relations with emotion and mental state knowledge

Jackie A. Nelson^{1,*}, Lia Beatriz de Lucca Freitas², Marion O'Brien³, Susan D. Calkins³, Esther M. Leerkes³, and Stuart Marcovitch⁴

¹The University of Texas at Dallas, School of Behavioral and Brain Sciences

²Universidade Federal Do Rio Grande Do Sul, Instituto de Psicologia

³The University of North Carolina at Greensboro, Department of Human Development and Family Studies

⁴The University of North Carolina at Greensboro, Department of Psychology

Abstract

Developmental precursors to children's early understanding of gratitude were examined. A diverse group of 263 children were tested for emotion and mental state knowledge at ages 3 and 4, and their understanding of gratitude was measured at age 5. Children varied widely in their understanding of gratitude, but most understood some aspects of gratitude-eliciting situations. A model-building path analysis approach was used to examine longitudinal relations among early emotion and mental state knowledge and later understanding of gratitude. Children with a better early understanding of emotions and mental states understand more about gratitude. Mental state knowledge at age 4 mediated the relation between emotion knowledge at age 3 and gratitude understanding at age 5. The current study contributes to the scant literature on the early emergence of children's understanding of gratitude.

Gratitude has been considered a moral virtue in most cultures (McCullough, Kilpatrick, Emmons, & Larson, 2001), and has recently gained increasing attention from researchers. Adults who more often experience and express gratitude are happier, have lower levels of depression and stress, and are more likely to help others (Bartlett & DeSteno, 2006; McCullough, Tsang, & Emmons, 2004; Watkins, Woodward, Stone, & Kolts, 2003). There is also some empirical evidence that children and adolescents benefit by experiencing and expressing gratitude (Bono & Froh, 2009; Froh, Sefick, & Emmons, 2008). Relatively little is known, however, about the development of gratitude in childhood.

Piaget (1965/1977) conceptualised gratitude as a feeling that emerges between a beneficiary and a benefactor when the former values not only the favor received but the benefactor him- or herself. We adopt Piaget's formulation and follow recent research (Bonnie & de Waal, 2004; Froh, Bono, & Emmons, 2010) in viewing gratitude as experienced when Person A (the beneficiary) receives a benefit (a present, favor, or help) from Person B (the benefactor)

*Requests for reprints should be addressed to Jackie A. Nelson, Department of Human Development and Family Studies, The University of North Carolina at Greensboro, P.O. Box 26170, Greensboro, NC 27402-6170, USA (janelso3@uncg.edu).

and, recognizing that B acted in order to meet a need or desire of A, Person A feels positive toward B in return. As a result of the positive feeling associated with Person B, Person A also wishes to repay B in some way if an opportunity arises. As McConnell (1993) pointed out, this “debt of gratitude” is freely accepted, not obligatory; in other words, it is not a duty or simply a socially acceptable thing to do, but a willing return of a favor.

Previous research suggests that exchanges between a beneficiary and a benefactor can occur at different levels of complexity (Bonnie & de Waal, 2004). For example, in very young children, an exchange may not involve a positive feeling, or a positive feeling may be associated only with the benefit received and not with the benefactor. Because gratitude develops throughout childhood (Piaget, 1954), we would expect that children of different ages understand gratitude with different degrees of complexity. The present study focuses on the emergence and development of gratitude in childhood.

Gratitude in Childhood

Most research focusing specifically on gratitude has included children age 7 and older. Several investigators, however, have found indications that children as young as 4 have some understanding of the concept of *grateful* (Gordon, Musher-Eizenman, Holub, & Dalrymple, 2004; Graham & Barker, 1990; Russell and Paris, 1994). Some have studied children’s verbal responses as a potential early indicator of children’s understanding of gratitude. In Baumgarten-Tramer’s (1938) pioneering study of gratitude, it was found that verbal gratitude (saying “thank you”) was a common response at all ages, including 7 year olds, the youngest children studied. Other research has found that spontaneous thanking increases with age (Becker & Smenner, 1986; Gleason & Weintraub, 1976). There is, however, a distinction between behaving politely and experiencing genuine feelings of gratitude (Freitas, Pieta, & Tudge, in press). Only one study to date has examined age-related changes in reasoning about returning a favor (Castro, Rava, Hoefelmann, Pieta, & Freitas, 2011). Prior to age 7, most children did not perceive that they had an obligation to return a favor. After age 7, children generally believed the reason for returning a favor was to avoid others’ negative judgments. For some older children (ages 11–12), returning a favor was considered a moral value.

In sum, the available data indicate that children begin to understand gratitude over the course of the preschool years, but little research has examined variation in the complexity of children’s understanding or aspects of children’s social-cognitive knowledge as possible precursors. The goal of the present study was to measure children’s emerging understanding of gratitude and identify the extent to which children’s earlier understanding of emotions and mental states predicted how well they understood gratitude. Previous research (Castro et al., 2011; Freitas, Silveira, & Pieta, 2009) has indicated that age 5 is the earliest time at which a majority of children can understand and respond to stories about gratitude; thus, we measured gratitude at age 5. The potential predictors, emotion and mental state knowledge, were measured at ages 3 and 4.

Knowledge of Emotions and Mental States

Because gratitude involves positive emotions connected to a specific event (a benefit received), one skill likely to be involved in understanding gratitude is an ability to recognise emotions and tie them appropriately to social situations. In the present study, we examine whether individual differences in emotion knowledge, including labeling of emotions and tying them to social situations (Denham, 1998), are reflected in children's emerging understanding of gratitude at age 5.

Secondly, a complete understanding of gratitude also involves an understanding of the mental state of the benefactor (McAdams & Bauer, 2004). To feel grateful, an individual must recognise that another person (the benefactor) has identified and acted to fulfill one's own need or desire (Froh et al., 2010; McConnell, 1993). The wish to return the favor arises out of the recognition that the benefactor acted with the intent to satisfy a need or desire of the beneficiary (Bonnie & de Waal, 2004; Freitas et al., 2009). Thus, we expected a link between children's mental state knowledge and their understanding of gratitude. The acquisition of an understanding of mental states has been studied primarily through tasks commonly labelled "theory of mind" (Wellman, 1990); these include false-belief tasks, in which children respond to stories about a protagonist who holds a belief that does not conform to reality (Miller, 2000); appearance–reality tasks, in which the appearance of objects is altered and children are asked to separate what they know about the actual object from the visual appearance (Flavell, Flavell, & Green, 1983), and perspective-taking tasks, in which children are asked to take the vantage point of another person (Flavell, Everett, Croft, & Flavell, 1981).

The developmental relation between knowledge of emotions and knowledge of mental states has been debated, with some authors viewing emotion understanding as a precursor to mental state understanding (Bartsch & Wellman, 1995; Dunn, 2000) and others proposing that an understanding of mental states contributes to children's understanding of emotion-eliciting situations (de Rosnay, Pons, Harris, & Morrell, 2004; Harwood & Farrar, 2006; Wellman & Liu, 2004). In a recent analyses of data from the same sample of children included in the present study (O'Brien et al., 2011), we found that children's emotion knowledge at age 3 predicted children's mental state knowledge at age 4, but not the reverse, suggesting a potential developmental progression from emotion knowledge to mental state knowledge.

The Present Study

The aim of this study is to examine the developmental relations between preschool children's knowledge of emotions and mental states and their early understanding of aspects of gratitude. The conceptual model underlying the study is displayed in Figure 1. In light of previous research, we hypothesize that children's understanding of gratitude at age 5 will be predicted by earlier knowledge of emotions and mental states. We also examine the possibility that mental state knowledge at age 4 mediates the relation between emotion knowledge at age 3 and understanding of gratitude at age 5.

Method

Participants

The sample included preschool-aged children recruited from child care centers and preschools in a mid-sized U.S. city. Families were enrolled in the study when children were 3 years old ($M = 41.78$ months; $SD = 2.42$) and participated again at age 4 ($M = 53.41$ months; $SD = 1.84$) and age 5 ($M = 65.51$ months; $SD = 2.25$). Of the 263 families that participated at age 3, 244 returned at age 4, and 228 returned for the 5-year visit (87% retention rate). There were no significant differences by child gender or family income-to-needs between families who continued in the study and those who did not; families lost to attrition were more likely to be minority ($\chi^2 [1, N=263] = 3.89, p < .05$).

At the first lab visit, 52% of children were female, 58% were European American, and 35% were African American. Mothers were 33 years old on average ($SD = 5.91$) and 49% had less than a 4-year college degree. Income-to-needs ratio assessed at the first time point was below 2 (low income) for approximately 37% of the sample, between 2 and 5 (middle income) for 51% of the sample, and greater than 5 (high income) for 12% of the sample.

Measures

Gratitude—Children’s understanding of gratitude was evaluated at age 5 using vignettes that were originally used with Brazilian children as young as 5 (Castro et al., 2011; Freitas et al., 2009); English translations were tested in preliminary work with similar results. A scholar (native speaker of English), fluent in Portuguese, translated the vignettes that had been used with Brazilian children, and another scholar (native speaker of Portuguese), fluent in English, back-translated them.

Cat vignette: The children were read the following story: “Nicky had a little cat. One day she disappeared. His/her Aunt Anne, who was making a cake, said: ‘No problem. I’ll help you find your cat.’ They spent a lot of time looking for the little cat. When it was almost dark, they found her. Aunt Anne had to throw away the half-made cake and start everything again.” Children were asked the following questions: *How did Nicky feel? Why? Did he/she feel anything else? Did he/she feel anything about Aunt Anne? Why? Should Nicky help Aunt Anne make another cake? Why?*

Sweater vignette: The following story was read to the children: “One winter’s day Danielle (or David) was feeling cold. Jane (or John), a new girl/boy in the class, had a sweater in her/his back-pack. She/He lent Danielle/David that sweater.” The children were asked: *How did Danielle feel? Why? Did she feel anything else? Did she feel anything about Jane? Why? And Jane, how did she feel? Why? Why did Jane lend the sweater?* After they responded, the children were told: “The story goes on as follows: The following week Jane left her scissors at home. Her teacher had asked everybody to bring scissors that day. Danielle has an extra pair of scissors in her back-pack.” We asked the children: *Should Danielle lend Jane the scissors or not? Why?*

The stories were acted out with dolls as they were read. Children’s responses were videotaped and transcribed, then coded for the presence or absence of three components of

gratitude: (a) positive emotion reported for the story child; (b) connection of the positive emotion with the benefactor; and (c) whether the story child should help the benefactor; in addition, the type of justification given by the child for providing help was scored as following social custom, belief that negative consequences would result if the child did not help, or returning the favor as an expression of appreciation for the benefactor's action. According to La Taille (2006), children are exposed to actions that occur regularly early in life, but it is only at about 4 years of age that children start to understand there can be good or bad actions. Social custom is thus considered the most basic type of justification, followed by a focus solely on potential negative consequences, then returning a favor in appreciation of the benefactor. Inter-rater reliability was high, as shown by coefficient Kappa, ranging from .82 to 1.0 for the cat vignette, and from .90 to 1.0 for the sweater vignette. The total score for each vignette could range from 0 to 6. The correlation between the scores for the two vignettes was .33 ($p < .01$). Total scores were averaged to create an index of children's understanding of gratitude.

Emotion knowledge—Three tasks were administered at the 3- and 4-year visits to evaluate children's emotion knowledge, as described below. Correlations between the three tasks ranged from .46 – .50 at age 3 (all $p < .01$) and .30 – .44 at age 4 (all $p < .01$). Total scores from each task were standardized and averaged to create a composite at each age.

Labelling of emotional expressions: Following procedures by Denham (1986), the labelling task assessed preschool children's abilities to identify basic emotions: happy, sad, angry, and scared. Children were presented with four felt faces and asked to identify each expression (e.g., "How does this one feel?") and then to point to each expression (e.g., "Show me the angry face"). In each trial, for each emotion, children received a score of 2 if they identified the emotion correctly, 1 if they identified the correct valence (e.g., sad instead of angry), and 0 if they were incorrect. Expressive and receptive scores each had a possible range of 0 to 8 and were correlated at .62 at age 3 and .42 at age 4. Scores were summed to yield a labelling total score with a possible range from 0 to 16.

Affective perspective-taking: Ten vignettes of emotion-eliciting situations developed by Denham (1986) were presented to the children along with standardized verbal and visual cues indicating the emotion of the protagonist puppet. After hearing each vignette, children were asked to indicate how the puppet felt by affixing a face depicting happiness, sadness, anger, or fear. For each vignette, children received a score of 0 for an incorrect response, 1 for an incorrect response of the correct valence, or 2 for selecting the face that matched the affect expressed; the total affective perspective-taking score could range from 0 to 20.

Identifying causes of emotions: Children's reasoning about emotions was examined using a puppet task developed by Denham, Zoller, and Couchoud (1994). One of the four emotion faces (happy, sad, angry, scared) was placed on a puppet and labelled for the children. They were asked, "What made the puppet feel this way?" Children were encouraged to report four possible reasons; their responses were recorded and coded for the number of accurate, independent causes given (possible range 0 to 4) using established accuracy criteria (Barrett & Campos, 1987; Stein & Jewett, 1986; e.g., correct causes of anger involve goal blockage).

Scores were summed across emotions to yield a total score ranging from 0 to 16. Approximately 25% of the videotapes ($n=64$) were coded independently by two coders; the correlation between the two coders' scores was $r = .93$ ($p < .01$) at age 3 and $r = .96$ ($p < .01$) at age 4.

Mental state knowledge—Four tasks were administered at both the 3-year and 4-year visits to evaluate children's knowledge of mental states, as described below. At age 3, only unexpected contents, unexpected location, and appearance–reality were correlated, r s range from .17 to .21, all $p < .01$. Thus, visual perspective-taking at age 3 was excluded from analysis. All four tasks were significantly correlated at age 4, r s from .25 to .43 (all $p < .01$). Total scores from each task were standardized and averaged to index mental state knowledge at each age.

Unexpected contents: This task, developed by Astington and Gopnik (1988), assessed a child's understanding of false belief. The examiner presented the container (Band-aid box containing stickers and crayon box containing spoons at age 3, cereal box containing pencils and bubble jar containing straws at age 4) and asked the child, "What do you think is in here?" The examiner then revealed the actual contents and asked two test questions: "Before we opened this, what did you think was in here?" and what a friend, who had not seen the actual contents of the box, would think was inside. On each of two trials, children received a score of 1 for a correct answer to each test question. Total scores could range from 0 to 4.

Unexpected location: The unexpected location task, adapted from Baron-Cohen, Leslie, and Frith (1985) and Hala and Chandler (1996), involved asking the child to predict a person's behaviour based on a mistaken belief about the location of a hidden object. The experimenter showed the child three boxes while a second experimenter entered the room, placed a toy in one of the three boxes, and then left. The child was asked by the first experimenter to play a trick and move the object from one box to another without the second experimenter knowing. Two trials were presented and for each trial the child was asked two test questions: "Where will she look for the toy when she comes back?" and "Where will she think the toy is?" Children received a score of 1 for each correct answer; the total score could range from 0 to 4.

Appearance–reality distinction: The appearance–reality task, developed by Flavell et al. (1983), assessed children's ability to distinguish between an object's real nature and its apparent nature when its properties were visually modified. The child was shown two realistic-looking imitation objects (a candle in the shape of an apple and an egg made of wood at age 3, and a pencil sharpener that looked like a light bulb and an eraser that looked like a crayon at age 4). In each trial the child was asked what the object really was and what it looked like in regards to its shape, color, and size. Children looked at the object through a clear plastic sheet for the shape trial (e.g., "Is it really an apple or is it really a candle?", "Does it look like an apple or does it look like a candle?"), through a blue tinted sheet for the color trial, and through a magnifier for the size trial. Children received a 1 for each correct answer; the total score ranged from 0 to 12.

Visual perspective-taking: The visual perspective taking task (Flavell et al., 1981; Taylor, 1988) measures whether the child is able to take the visual perspective of others. Children are shown a book and picture cards which are placed flat on the table between the child and the experimenter. The orientation of the book/cards as right-side up is alternated between the child and experimenter. The child is asked about his/her own and the experimenter's perspective. In the last trial, a picture card with a different animal on each side is placed vertically between the child and experimenter, and the child is asked what animal he/she sees and what animal the experimenter sees. Children received 1 point for a correct answer to each question concerning the experimenter's perspective. Scores could range from 0 to 7.

Covariate—Previous research has found that children's understanding of emotions and mental states is related to their language development (e.g., Cutting & Dunn, 1999; Miller, 2006). Thus, in the present study children's standardized scores on the Peabody Picture Vocabulary Test (PPVT; Dunn & Dunn, 1997) at the 3-year assessment were controlled in all analyses. There were no sex differences in children's responses on any aspect of the gratitude measure; thus, this factor was not covaried.

Results

Means, standard deviations, and ranges for each task prior to standardization are reported in Table 1. Partial correlations, controlling for child language, are displayed in Table 2.

Children's Understanding of Gratitude

Examples of children's responses to the gratitude vignettes and the percentages of children whose responses to each question indicated an understanding of a component of gratitude are shown in Table 3. In response to both vignettes, a majority of children reported a positive feeling, but only in response to the sweater vignette did a majority of children report a link between their positive feeling and the benefactor. A large percentage of children responded that the child who received the benefit should help the benefactor in return. The reasons children gave for suggesting that the story child should help differed. Fewer than 20% of the children expressed an understanding of the reciprocity involved in gratitude, that the beneficiary should help in return for having been helped (e.g., "because she helped him find his cat so he has to help her bake a cake"). More children focused on possible negative consequences (e.g., "because otherwise his [John's] teacher would say: 'Get out of school; you don't have your stuff'"), and a small group replied that the beneficiary should help because it was customary to do so (e.g., "because there are not enough scissors in the class"), indicating they understood the social rule involved in the situation but did not link the desire to help with having received help from the beneficiary.

Mean scores on each vignette are shown in Table 1. Scores ranged from 0 to 6. In the cat vignette, 11 children (6%) scored 0 and 10 children (5%) scored the maximum 6 points. In the sweater vignette, 21 children (10%) scored 0 and 23 children (11%) scored the maximum of 6 points. The median score was 3 for the cat vignette and 4 for the sweater vignette.

Predictors of Gratitude

The focus of this study was to examine knowledge of emotions and mental states as precursors to the early emergence of an understanding of gratitude at age 5. We used a model building approach comparing hierarchical path models to identify the most parsimonious combination of predictor variables that fit the data. Initially, all paths in Figure 1 were fixed to zero; this base model assumes that none of the study variables are related to one another. As hypothesized paths were estimated, the chi-square difference statistic (χ^2_D) was used to evaluate the significance of the change in fit as compared with the base model. Estimated paths that did not result in a significant increase in fit were fixed back to zero so as to retain the more parsimonious model. After each hypothesis was tested in a series of model building steps, the final model was evaluated for fit using the root mean square error of approximation (RMSEA; Steiger & Lind, 1980), the comparative fit index (CFI; Bentler, 1990), and the chi-square statistic (χ^2). Typically, RMSEA values smaller than .10 and CFI values near 1.0 are considered satisfactory (Bentler, 1990; Browne & Cudeck, 1993).

Chi-square values and change statistics for each model tested are shown in Table 4. Change in model fit is compared at each step with the previously tested model with the exception that Model 6 is tested against Model 4 because Model 5 does not represent a significant improvement in fit.

We first examined the relations between emotion knowledge and understanding of gratitude. The first model tested the hypothesis that a developmental progression of emotion knowledge from 3 years to 4 years was related to 5-year gratitude, controlling for child language. Estimating these paths resulted in a significant increase in model fit compared to the base model of no association. Next, we evaluated whether the relation between 3-year emotion knowledge and 5-year gratitude was only *partially* mediated by 4-year emotion knowledge. In other words, this model tested whether there was also a direct relation between an early understanding of emotions and a later understanding of gratitude. Estimating the path from 3-year emotion knowledge to 5-year gratitude resulted in a significant increase in fit compared to the first model. Further, including the direct path from 3-year emotion knowledge to gratitude reduced the relation between 4-year emotion knowledge and gratitude to nonsignificance. Thus, this result indicates that after accounting for emotion knowledge at age 3, a more advanced understanding of emotions at age 4 does not contribute to children's understanding of gratitude at age 5.

We ran a similar set of models for mental state knowledge. First, we tested the hypothesis that a developmental progression of mental state knowledge leads to children's understanding of gratitude. We estimated the mediational pathway from 3-year to 4-year mental state knowledge to 5-year gratitude, controlling for child language. Building on the previous model, the emotion knowledge and mental state knowledge error terms at each time point were allowed to correlate. Estimating these paths produced another significant increase in fit. Thus, in addition to the direct association between emotion knowledge at age 3 and gratitude, the mediational path from mental state knowledge at age 3 to mental state knowledge at age 4 to gratitude was significant. The test of partial mediation, estimating a direct path from 3-year mental state knowledge to 5-year gratitude, did not result in a significant fit increase.

Finally, we tested the mediational hypothesis that emotion knowledge at age 3 is related to a later understanding of gratitude through children's mental state knowledge at age 4. The inclusion of the mediation pathway from 3-year emotion knowledge to 4-year mental state knowledge to gratitude resulted in a significant increase in fit compared to the previous model. Results of this final model are shown in Figure 2. The model had adequate fit to the data, RMSEA (90% CI) = .11 (.06 – .16), CFI = .97, $\chi^2(5) = 20.67$, $p = .001$.

Discussion

The primary goal of the current study was to examine the emergence of preschool-aged children's understanding of gratitude and the relation between earlier knowledge of emotions and mental states and an understanding of gratitude. We found that most children by age 5 have a beginning understanding of gratitude, in that they associate receiving a benefit with positive feelings and, at least in one of the vignettes, with positive feelings specific to the benefactor, and some of the children understood all of the tested components of gratitude. In addition, 5-year-olds' understanding of gratitude was predicted by emotion knowledge at age 3, by the developmental progression of mental state knowledge from age 3 to age 4, and by the developmental progression of skills from 3-year emotion knowledge to 4-year mental state knowledge. In other words, 5-year-olds who have a more complete understanding of gratitude are those who showed more understanding of emotions at age 3, and more understanding of others' mental states at age 3 and 4. Further, an early understanding of emotions is associated with mental state understanding at age 4, which in turn is associated with an understanding of gratitude.

The current study extends previous work on children's understanding of gratitude in two major ways. First, we examined developmental processes by using a longitudinal design that allowed us to model the contributions of emotion knowledge and mental state knowledge to each other as well as to an understanding of gratitude. The second contribution of the present research is the examination of both understanding of emotions and understanding of mental states in the same model. We recognise that these are not independent skills. By examining both, we were able to demonstrate multiple ways in which the two aspects of early understanding are interrelated in predicting gratitude.

Most of the children in this study did not have a complete understanding of gratitude. Gratitude is complex, and its development continues over childhood and into adolescence (e.g., Freitas et al., in press; Gordon et al., 2004; McAdams & Bauer, 2004). Children tended to associate a positive emotion with receiving a benefit but did not always extend that positive feeling to the benefactor. Further, although the children reported that the beneficiary should try to help the benefactor, they did not indicate an understanding of reciprocity. Nevertheless, at age 5, almost all the children appeared to have some understanding of what it means to be grateful and some had a relatively complete understanding. Gratitude is commonly not studied until children are at least 7 years old, and some have suggested it emerges only after this age (Froh et al., 2011). The present results indicate that aspects of gratitude are experienced and understood by younger children. The extent to which the early emergence of an understanding of gratitude relates to positive outcomes over developmental time is a question for further research.

The current study is not without limitations. Measurement of gratitude understanding is rarely straightforward (Froh et al., 2011). We used two vignettes representing specific situations to evaluate gratitude knowledge. It has been suggested that gratitude may be somewhat situation-specific (Emmons & Crumpler, 2000; McCullough et al., 2001); thus, we may have omitted situations that would have allowed more children to display an understanding of gratitude. Children responded differently to the two situations we used; many more children indicated they would feel positive about the benefactor in the sweater vignette than in the cat vignette. This may be related to the conclusion of the cat vignette in which the benefactor's cake is ruined; some children may have been responding to this event rather than to the return of the cat. It may also be that children felt more positive toward the benefactor in the sweater vignette who was a child rather than an adult, as in the cat vignette. Young children have more experience being helped by adults than by children and may take the help of an adult for granted. Also, children may more often be called on to help other children than to help adults. In previous research (Freitas et al., 2009), a majority of children aged 7 or older associated their positive feeling with the benefactor's generous act in both vignettes. The 5-year-olds in the present study had greater difficulty understanding the cat vignette than the sweater vignette, or, in other words, understood the cat vignette with a lower level of complexity (Bonnie & de Waal, 2004) than the sweater vignette. Use of a wider range of ecologically valid vignettes would help us gain a better understanding of the situations in which young children experience gratitude. In addition, some children had difficulty responding to the open-ended nature of the questions and did not produce clearly codable answers; they may have understood more about the situation than they were able to articulate.

The present results add to previous work in suggesting that there are substantial individual differences in children's acquisition of and understanding of gratitude. We have identified some precursors as an understanding of gratitude is emerging, but more research is needed to explain individual differences in children's understanding of gratitude and to describe its development over a longer period of time. Because gratitude is linked to life satisfaction, to moral development, and to positive social relationships, understanding its development and the underlying skills that contribute to its development may allow us to identify ways to encourage the development of gratitude in young children.

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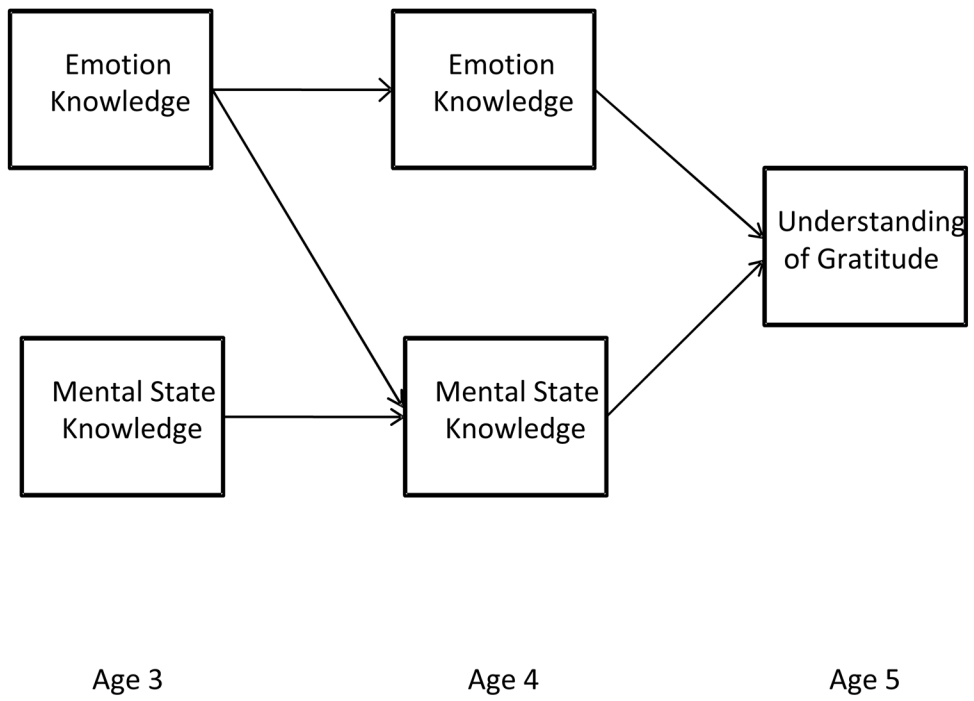


Figure 1.
Hypothesized Path Model.

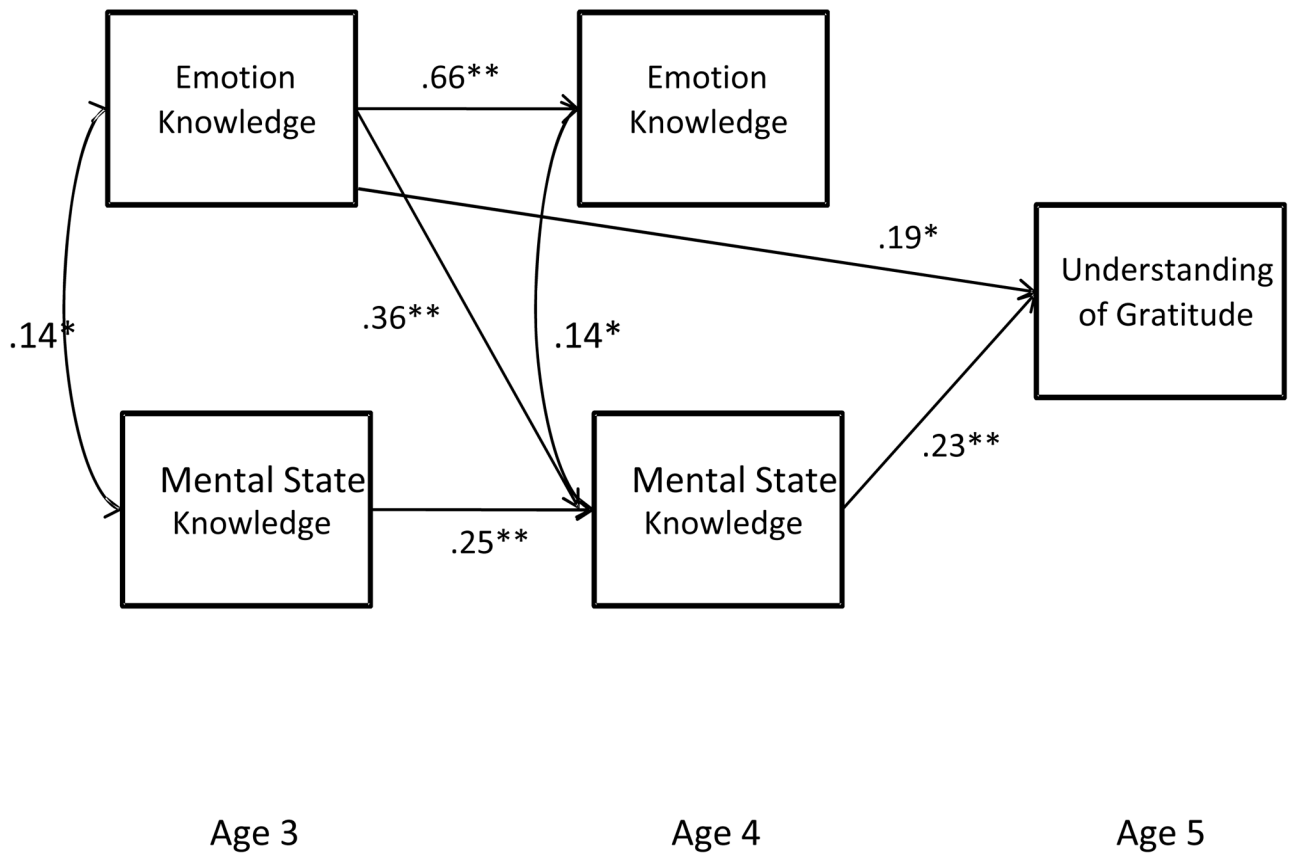


Figure 2.
 Final Model Showing Significant Paths, Controlling for PPVT at Age 3.
 Note: Model controls for child language. Only significant paths displayed. * $p < .05$, ** $p < .01$.

Table 1

Descriptive Statistics.

Variable	3 years		4 years		5 years	
	<i>M (SD)</i>	Range	<i>M (SD)</i>	Range	<i>M (SD)</i>	Range
Emotion Knowledge						
Labelling Emotions	11.84 (3.40)	0–16	14.40 (1.75)	5–16	--	--
Affective Perspective-Taking	12.19 (4.39)	0–20	16.77 (3.15)	4–20	--	--
Causes of Emotions	3.41 (2.73)	0–12	6.80 (3.76)	0–15	--	--
Mental State Knowledge						
Unexpected Contents	1.12 (1.28)	0–4	1.70 (1.64)	0–4	--	--
Unexpected Location	0.85 (1.09)	0–4	2.32 (1.55)	0–4	--	--
Appearance-Reality Distinction	7.10 (2.91)	0–12	7.75 (2.26)	1–12	--	--
Visual Perspective-Taking	--	--	3.81 (2.18)	0–7	--	--
Gratitude						
Cat Vignette	--	--	--	--	3.31 (1.38)	0–6
Sweater Vignette	--	--	--	--	3.67 (1.82)	0–6

Table 2

Partial Correlations Among Study Composites.

	2.	3.	4.	5.
1. Emotion Knowledge 3yr	.13 [*]	.47 ^{**}	.21 ^{**}	.18 ^{**}
2. Mental State Knowledge 3yr		.12	.24 ^{**}	.13 [*]
3. Emotion Knowledge 4yr			.22 ^{**}	.16 [*]
4. Mental State Knowledge 4yr				.25 ^{**}
5. Gratitude 5yr				

Note. Children's PPVT Standard Scores at age 3 are controlled.

* $p < .05$.

** $p < .01$.

Table 3
Codes, Sample Responses, and Percentage of Children Displaying Understanding on the Gratitude Vignettes

Components	Description	Sample responses		Cat Sweater	
				%	%
Positive feelings	0 No	<i>[Child] was sad (or angry, scared, cold etc.).</i>			
	1 Yes	<i>[Child] was happy (or good, thankful etc.).</i>		53.3	76.7
Relation with benefactor	0 No	<i>CAT: Because she got her cat back.</i>			
		<i>SWEATER: Because she got a sweater.</i>			
	1 Yes	<i>CAT: Because her aunt helped her.</i>		7.0	
		<i>SWEATER: Because Jane shared her sweater with her.</i>			54.6
Should help	0 No	<i>No.</i>			
	1 Yes	<i>Yes.</i>		92.1	76.9
Reason to help	1 Social custom	<i>CAT: Because this is what people do.</i>		24.2	
		<i>SWEATER: Because we are supposed to share scissors.</i>			13.4
	2 Potential negative consequences	<i>CAT: If she [Nicky] doesn't, it will take her [Aunt Anne] a long time.</i>		43.2	
		<i>SWEATER: Because Jane will get yelled at.</i>			45.4
	3 Returning the favor in appreciation of benefactor	<i>CAT: Because Aunt Anne helped her find her cat.</i>		23.2	
		<i>SWEATER: Because Jane let Danielle borrow her sweater.</i>			17.6

Table 4

Chi-Square Values and Change Statistics for Tested Models.

Model	χ^2 (df)	χ^2_D (df _D)
1. All paths fixed to zero	477.3 (15)	--
2. EK3-EK4-Grat5	152.0 (12)	325.3 (3)**
3. EK3-Grat5 , EK3-EK4-Grat5	143.2 (11)	8.8 (1)**
4. MSK3-MSK4-Grat5 , EK3-MSK3 , EK4-MSK4 , EK3-Grat5, EK3-EK4-Grat5	55.2 (6)	88.0 (5)**
5. MSK3-Grat5 , MSK3-MSK4-Grat5, EK3-MSK3, EK4-MSK4, EK3-Grat5, EK3-EK4-Grat5	54.1 (5)	1.1 (1)
6. EK3-MSK4 , MSK3-MSK4-Grat5, EK3-MSK3, EK4-MSK4, EK3-Grat5, EK3-EK4-Grat5	20.7 (4)	33.4 (1)**

Note. Paths added in each new model are in bold. Chi-square change statistics compare each model with the previous model showing significant change.

EK = Emotion Knowledge, MSK = Mental State Knowledge, Grat = Gratitude

* $p < .05$.

** $p < .01$.