# On Telling the Whole Story: Facts and Interpretations in Autobiographical Memory Narratives From Childhood Through Midadolescence

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This article examines age differences from childhood through middle adolescence in the extent to which children include factual and interpretive information in constructing autobiographical memory narratives. Factual information is defined as observable or perceptible information available to all individuals who experience a given event, while interpretive information is defined as information that articulates the desires, emotions, beliefs, and thoughts of the participant and other individuals who experience an event. Developmental research suggests that the latter type of information should become particularly prevalent in later adolescence, while the former should be abundantly evident by age 8. Across 2 studies, we found evidence for strong increases in interpretive information during adolescence, but not before. These increases were evident across different types of events, and across different subtypes of interpretive content. The results are discussed in terms of their implications for the development of autobiographical memory in childhood and adolescence.

*Keywords:* autobiographical memory, narrative, children and adolescents, age differences

To remember one's past for adults is to recall sights, smells, and sounds—the facts of the matter—but also to construct a sense of the thoughts, emotions, and goals of oneself and others. Autobiographical memory in adulthood serves many functions (e.g., Bluck, 2003; Webster & McCall, 1999), including constructing and maintaining a sense of identity, creating and maintaining relations with others, and coping with the vicissitudes of existence. Representing the thoughts, emotions, and goals of oneself and others in memory is critical for these functions. For memory to provide a sense of identity, the facts are insufficient—those thoughts, emotions, and goals are essential for rendering experiences meaningful to the self.

Across adulthood, autobiographical memory narratives that are rich in representing meanings have been linked to emotional well-being, psychological maturity, and even physical health (e.g., McAdams, 2006; McLean, 2008; Pals, 2006). As a consequence, understanding when, and to what extent, children's memories begin to fully represent these more subjective aspects of experience was the central goal of the present study.

A child (or adult) responding to a request to "Tell me about a time when . . . ." is engaged in a complex social and cognitive performance that draws on many different capabilities, each with its own developmental trajectory. When children reach 8 years old, forgetting of experiences comes to resemble the rates observed in adults, and researchers attribute this to improvements in the brain's capacity to enable the storage of experiences (Bauer, 2006; Bauer, Burch, Scholin, & Gueler, 2007). The communicative environment experienced by young children also shapes the development of autobiographical memory (Cleveland & Reese, 2005; Fivush & Nelson, 2004; Reese, Bird, & Tripp, 2007), such that children whose parents elaborate more with them about their experiences subsequently show more elaborative (rich, detailed) memories. Both experimental (e.g., Peterson, Jesso, & McCabe, 1999) and prospective, longitudinal work confirm the causal role played by parental elaborative style (Bird & Reese, 2006; Reese, Yan, Jack, & Hayne, 2010). The few existing studies of children's memories from middle childhood into adolescence uniformly find increased elaboration in memory narratives across this age range (Bohn & Berntsen, 2008; Habermas & de Silveira, 2008; Piolino et al., 2007), likely due to both continuing brain maturation (e.g., Bauer, 2006; Blakemore, 2008; Kuhn, 2006) and reciprocal interplays of parental and child elaborative remembering (e.g., Fivush & Nelson, 2004).

Previous research has looked largely at overall elaboration of memories, rather than at the elaboration of particular types of content, and has emphasized early memory development from infancy through age 5 with only a few examinations of memory in middle childhood. Still, through middle childhood, elaborate autobiographical remembering is related to better retention of memories over time, more sophisticated self-development, understanding of others, socioemotional competence, and self-esteem (Bauer, 2006; Bird & Reese, 2006; Fivush, Bohanek, Robertson, & Duke, 2004; Laible & Thompson, 2002). In this work, elaborations in a memory narrative are typically defined as new pieces of information that add to the completeness of the memory narrative. However, not all elaboration in memory narratives is the same. Some elaboration concerns factual aspects of memories that would be commonly accessible to all people experiencing an event, while what we term interpretive elaboration concerns thoughts, goals,

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and emotions that reflect the unique, subjective perspective of a particular individual (Bruner, 1990; Fivush, Bohanek, Marin, & Duke, 2010; Pasupathi & Hoyt, 2009; Reese et al., 2010; Wainryb, Komolova, & Florsheim, 2010).

The distinction between factual and interpretive information in memory narratives is supported by a variety of findings. Memory narratives that elaborate on interpretive information, as opposed to factual information, are related to higher well-being and other adaptive outcomes in both childhood and adulthood (e.g., Bird & Reese, 2006; Bohanek, Marin, & Fivush, 2008; Fivush et al., 2010; McAdams, 2006). Faced with unresponsive listeners, young adults are particularly likely to suppress the interpretive aspects of their memory narratives, rather than the factual details (Pasupathi & Hoyt, 2009). Interpretive elements of memory narratives, but not factual elements, are linked to the development of schemas that shape subsequent memory (e.g., Pasupathi & Hoyt, in press). Finally, interpretive elements in memory narratives draw meaning from the facts of one's life to create a sense of identity and purpose (McAdams, 1996; McLean, Pasupathi, & Pals, 2007; Pasupathi & Hoyt, 2009).

By contrast, factual elements of memory narratives are related to the retention of details in subsequent assessments of memory, and help people distinguish real events from imagined ones (Hashtroudi, Johnson, Vnek, & Ferguson, 1994; Pasupathi & Hoyt, in press). Moreover, some facts, such as those involving the setting and context for the event, are critical for whether a memory is deemed truly episodic—that is, truly an autobiographical recollection rather than part of what a person knows has happened (Piolino et al., 2007). Other facts, especially the actions undertaken by self and other, are important for representing aspects of agency in memory.

Despite ample evidence that factual and interpretive information are distinct facets of autobiographical memories, relatively little work examines the possibility that these facets follow different developmental trajectories across childhood and adolescence. In part, this may be because general neurobiological maturation and general parent elaborative style are not clearly connected to the differential elaboration of factual versus interpretive information. In early childhood, parental elaborative style may promote children's elaboration of all types of information in memory, given the relative sparseness of young children's memories. Similarly, because the basic neural substrates that enable the encoding and retention of experiences are maturing during early childhood, increasing elaboration of memories during this developmental period is likely to be fairly general and to affect both factual and interpretive aspects of memories (Bauer, 2006).

But later developments—developments occurring into middle childhood and adolescence—may differentially impact the elaboration of interpretive versus factual content. Because by middle childhood most children have acquired the capacity to provide a sufficiently detailed factual account of events, factual content may be unlikely to change substantially with age over that same age range. However, two developmental shifts from middle childhood to adolescence are likely to support the burgeoning of interpretive elaboration in particular during that period of time.

One of the major achievements of early childhood is an expanded understanding of one's own and other's minds (e.g., Chandler & Lalonde, 1996; Flavell, Green, & Flavell, 1995; Hughes & Dunn, 1998). By the age of 7 or 8 years, children develop a constructive theory of their own and others' minds—a notion that people actively interpret the world and that different people, faced with the same experience, may hold different interpretations about that experience (Chandler & Lalonde, 1996). A host of findings on emotion understanding, mental state language, and narrative identity development suggest that adolescence may mark the use of this constructive theory of mind acquired by age 7 or 8 to make sense of their own and others' experiences (Fabricius, Schwanenflugel, Kyllonen, Barclay, & Denton, 1989; Gnepp & Klayman, 1992; Habermas, 2007; Kuhn & Udell, 2007; Labouvie-Vief, DeVoe, & Bulka, 1989; Pasupathi, Staudinger, & Baltes, 2001).

The second developmental shift lies in increased abstraction, coherence, and temporal extension in the ways that adolescents can conceptualize themselves (Damon & Hart, 1988; Habermas & de Silveira, 2008; Harter, 1998). One way to conceptualize such shifts in the nature of self-hood across childhood and adolescence involves shifts in the construction of a sense of agency (Damon & Hart, 1988; Harter, 1998; Pasupathi & Hoyt, 2009; Wainryb et al., 2010; Wellman & Miller, 2006). By the age of 12 months, infants can focus on actions and are capable of inferring goals of others based on actions (Baldwin, Baird, Saylor, & Clark, 2001; Saylor, Baldwin, Baird, & LaBounty, 2007). Children as young as 2.5 years also demonstrate a concern with having their goals understood in addition to met (Shwe & Markman, 1997). Actions and goals are concrete and immediate. As children mature, their sense of agency begins to entail greater abstraction and a longer extension over time and space. This change is evident in the emergence of trait self-conceptions in middle childhood and early adolescence (Damon & Hart, 1988; Harter, 1998), and in the types of personal values and ideological commitments that emerge in midadolescence and beyond (Harter, 1998; Kroger, 2003; McLean & Pratt, 2006). Thus, changes in conceptions of self suggest increased interpretive content during adolescence, perhaps especially more complex interpretive content with longer temporal spans.

Although theory-of-mind and self-development research suggest that factual and interpretive content in memory narratives will follow different developmental trajectories, there are no findings directly testing that claim. Most research on autobiographical memory development past the age of 7 focuses on life stories, which entail constructing a story of one's entire life by connecting a selective series of more specific memories (Habermas & de Silveira, 2008; Habermas & Paha, 2001; Reese et al., 2010). Between age 8 and age 25, one's capacity to generate a life story emerges, and the elaboration of episodes within the life story and of the entire life story itself generally increases (Bohn & Berntsen, 2008; Habermas & de Silveira, 2008). More relevant to our questions concerning interpretive content versus factual content, findings also suggest that the prevalence of sophisticated meanings and insights in narratives rises across this age range (Bohn & Berntsen, 2008; Habermas & de Silveira, 2008; McLean & Breen, 2009; McLean, Breen, & Fournier, in press; Negele & Habermas, 2010). Insights about oneself or the world necessarily involve interpretive content around the relationship between an experience and one's sense of self (e.g., Habermas & Paha, 2001; Pasupathi, Mansour, & Brubaker, 2007).

While there are no examinations of age differences in factual and interpretive content across different ages in childhood and adolescence, gender differences in memories related to both overall elaboration and emotion elaboration have been found. Across

early and middle childhood, girls provide more elaborated narratives than boys (e.g., Bauer et al., 2007; Wainryb, Brehl, & Matwin, 2005). Findings in adulthood on overall elaboration are more mixed, with many studies finding no differences by gender in the elaboration of written memory narratives (McLean, 2005; Pasupathi, 2007). Mothers engage in more elaboration of emotional aspects of experiences with families than do fathers (Bohanek et al., 2008; Fivush, 1998). In adulthood, women's memories are rated as more vivid and emotional, perceived as more accurate, and may be more easily accessed (e.g., Ross & Holmberg, 1990). But, many studies of older adolescents and adults also find no differences between males and females in the prevalence of meanings or personality-based conclusions in their memory narratives (e.g., McLean, 2005; Pasupathi & Mansour, 2006). Because some work on the way that mothers and fathers reminisce and on adult memories suggests that emotional, and thus interpretive, information is more emphasized by mothers and women, we also examined whether gender was differentially associated with factual and interpretive information in children and adolescents' memory narratives.

## Summary and Overview of Present Studies

In sum, the goals of the present studies were as follows: (a) to examine age-related differences in the elaboration of interpretive and factual content in memory narratives across a time period in which relatively little data are available—childhood to middle adolescence and (b) to explore differences by gender. In addition, we examined different types of events in the two studies, driven by theoretical considerations about event type that we outline prior to each study. In Study 1, we examined children's and adolescents' narratives about positive and negative emotional experiences with friends. In Study 2, we examined a previously collected data set of children's and adolescent's narratives about distinct types of negative experiences—those in which they harmed someone else, and those in which they were the victim of harm (Wainryb et al., 2005).

## Study 1: Positive and Negative Events

For fostering self-development in childhood, elaboration in narrating negative experiences appears more important than elaboration for positive experiences (e.g., Bird & Reese, 2006; Bohanek et al., 2008). Similar findings are evident for constructing a mature and happy sense of self in adulthood (e.g., Pals, 2006). Thus, in Study 1, we examined children's and adolescents' memory narratives about times they felt good and bad with friends. Focusing on peer events ensured some homogeneity of the narrated experiences. We examined differences in factual and interpretive content in three age groups ranging from 8 to 17 years of age, thus focusing on children with adultlike neurological capacities for retaining events, and a constructive theory of mind (Bauer, 2006; Chandler & Lalonde, 1996).

## Method

**Participants.** Participants ($N = 90$) were recruited via flyers distributed in local school classrooms, community centers, churches, and other organizations and from children and adolescents participating in youth education programs at a large moun-

tain west university. There were thirty 8- to 9-year-olds, thirty 12- to 13-year-olds, and thirty 16- to 17-year-olds, and half of the sample was male. The sample was, consistent with the local population, overwhelmingly European American (91%).

**Procedure and measures.** After arrival at the laboratory and a warm-up phase, the parent and child completed consent and assent procedures. The parent then waited in a separate room, while the child accompanied the interviewer to a separate room. After a second warm-up period and initial measures (e.g., gender, age), the interviewer asked the child to tell about a recent, specific experience with a friend when he or she felt bad:

> I'm going to ask you to tell me about some recent experiences that you've had with your friends. By recent I mean something that happened within the last 2 weeks or didn't happen that long ago. Now, sometimes when we're with our friends we feel good, and sometimes when we're with our friends we feel bad. Can you tell me about a recent time with a friend when you felt bad?

The interviewer then went on to ask about a recent experience with friends when the child felt good: "Now I want you to tell me about a different time with a friend. Tell me about a time with a friend when you felt really good. One that also happened recently." The child then went on to complete additional assessments about his or her views of friendship and friends who were not of interest to the present study (Lucas, 2003), and were subsequently thanked, debriefed, and dismissed.

*Coding.* The children's narratives were transcribed, and coders worked from transcriptions. Each narrative was divided into idea units that roughly corresponded to verb phrases—simple repetitions were condensed into a single idea unit. Idea units were then coded according to their content. We examined three main types of narrative content that constituted elaborations of the memory being narrated (new pieces of information). The first main category was event factual information, that is, information available to the perceptual capabilities of any bystander. Examples of this category include statements like "Mom and I had a talk while she was gone," "We talked for almost 2 hours," and "She started crying and everything." Within event-factual information, we coded actions separately in order to later examine changes in agency; other types of facts included descriptive statements about the people present, or the time or setting of events.

The second category was interpretive information, or information that emphasizes the subjective, meaning-laden, and internal aspects of experience—in short, narrative identity. Examples of this category include "It was just a good talk," "She's always sappy like that," "We have become closer and everything," and "It makes it feel like things have really changed since I left for school." Within the interpretive category, statements were classified as belonging to the narrator or unspecified (e.g., "I felt bad," "It was stupid") or as belonging to someone else ("She was grouchy"). Again in order to examine content more relevant to conceptions of agency, coders also categorized interpretive statements as involving goals ("She wanted him to play"), or entailing emotions, evaluations, beliefs, or thoughts ("She was sad," "It was a really bad day," "She thought it wasn't true," "She didn't believe him," "It is like a kind of game"). Additional categories included references to the experimental setting and fragments or false starts.

Across three coders, 14 participants and 28 stories, and 919 idea units, coder reliability at the unit level was good (Cohen's κ = .76,

$p < .001$). Summary scores were employed for the main analyses as depicted in Table 1. Those summary scores consist of the sum of the number of factual elaborations, interpretive elaborations for the self, and interpretive elaborations involving others' interpretations. For other analyses, we examined the sum of subcategories of interpretive content (goals, thoughts–emotions). Reliabilities for the summary scores, as assessed by Pearson product–moment correlations, were also adequate to good and are displayed in Table 1.

## Results

**Facts and interpretations.** To examine how factual and interpretive elaboration vary with age, we analyzed sums of each type of elaboration rather than proportions because this allowed us to explore age differences in the extent to which participants constructed elaborations of distinctive types. The alternative is to use proportional scores, but proportions address a slightly different question—one revolving around the relative emphasis on one type of content over another. We computed a general linear model examining the number of elaborations as a function of type of information (factual, own interpretations, others' interpretations), valence of the event (positive or negative), age group, and gender. The results yielded significant main effects of age, $F(2, 84) = 5.9$, $p < .01$, $\eta^2 = .19$; gender, $F(1, 84) = 5.5$, $p < .05$, $\eta^2 = .06$; valence of event, $F(1, 84) = 4.4$, $p < .04$, $\eta^2 = .05$; and type of information, $F(2, 83) = 73.2$, $p < .01$, $\eta^2 = .64$. In addition, interactions of type of information and age group, $F(4, 168) = 9.8$, $p < .01$, $\eta^2 = .19$, and valence and age group, $F(2, 84) = 8.1$, $p < .01$, $\eta^2 = .16$, were evident. No other effects were statistically reliable. To decompose these omnibus tests, we examined pairwise comparisons of the estimated marginal means (EMMs) relevant for each of these effects. Those results are reported below, beginning with main effects, and followed by the two interaction effects.

The main effect of type of information was due to the fact that facts ($EMM = 12.7$; $SEM = 1.0$) predominated over own interpretations ($EMM = 9.7$; $SEM = 0.8$), which were more prevalent than others' interpretations ($EMM = 1.6$; $SEM = 0.2$), and pairwise comparisons showed that all of these differences were significant. The main effect of valence was due to the fact that negative event narratives were significantly longer ($EMM = 8.5$; $SEM = 0.7$) than positive ones ($EMM = 7.5$; $SEM = 0.6$). The main effect of gender was attributable to the fact that across

Table 1
*Reliability (Pearson Product–Moment Correlations) Across Coders for Study 1 and Study 2*

| Category | Study 1 | Study 2 |
| --- | --- | --- |
| Facts | .92 | .89 |
| Own interpretations | .81 | .86 |
| Others' interpretations | .82 | .94 |
| Actions | .90 | .80 |
| Goals | .95 | .87 |
| Evaluations–thoughts | .79 | .85 |

*Note.* For Study 2, reliability coding was done by three coders, and the correlations reported in the table represent the average Pearson product–moment correlations across the three correlations between all three possible combinations of coders.

positive and negative events, and across all types of information, girls ($EMM = 9.4$; $SEM = 0.9$) told significantly longer stories than did boys ($EMM = 6.7$; $SEM = 0.9$). Finally, 8-year-olds told the shortest stories overall ($EMM = 5.7$; $SEM = 1.0$), followed by 12-year-olds ($EMM = 7.5$; $SEM = 1.0$) and by 16-year-olds ($EMM = 10.7$; $SEM = 1.0$). However, differences between 8- and 12-year-olds were not statistically reliable ($p > .20$), while differences between these two age groups and the midadolescents were significant ($p < .01$).

The two interactions involving age group suggest that the main effects do not tell the entire story. The interaction of age group and valence was attributable to the fact that age differences in overall elaboration were evident primarily for negative events, $F(2, 84) = 9.2$, $p < .001$, $\eta^2 = .18$, rather than for positive events, $F(2, 84) = 1.8$, *ns*. Pairwise comparisons suggested that for negative events, 8-year-olds and 12-year-olds did not differ significantly from one another, but both told significantly shorter stories than did 16-year-olds. Examining the means in Table 2 also suggests that by adolescence, negative events are more elaborated than positive events, consistent with the posited greater utility of negative experiences for identity development.

The most important effect from the standpoint of our initial hypotheses involves the Type of Information × Age Group interaction. Recall that we expected older children and adolescents to tell more elaborative stories, but we expected different patterns of age differences for factual versus interpretive information. We examined this hypothesis by looking at the simple effect of age group within each type of information. The findings showed, as displayed in Table 2, that there were no significant age differences in the number of factual elaborations produced in the narratives. For our own interpretations and other interpretations, the 16-year-olds differed significantly from the younger age groups, who did not differ significantly from one another.

**Actions, goals, and thoughts–evaluations.** The above analysis is consistent with the hypothesis that autobiographical memory development across childhood and into adolescence entails increased elaboration of interpretive content in memory narratives. Our next analysis focused on specific types of content that are of special relevance to the construction of agency in memory narratives. Specifically, we focused on participants' representations of actions, goals, and more complex interpretive content (evaluations and thoughts).

A general linear model analysis of actions, goals, and evaluations–thoughts (collapsed across self and other), with type of information and event valence as a within-subjects factor, and age group and gender as between-subjects factors, revealed main effects of type of information, $F(2, 83) = 82.3$, $p < .001$, $\eta^2 = .67$, age group, $F(2, 84) = 8.4$, $p < .001$, $\eta^2 = .17$, and gender, $F(1, 84) = 6.6$, $p < .02$, $\eta^2 = .07$, as well as an Interaction of Type of Information × Age Group, $F(4, 165) = 11.5$, $p < .001$, $\eta^2 = .22$.

Pairwise comparisons of the different types of information revealed that thought–emotion elaborations were more frequent than action elaborations, which were in turn significantly more prevalent than goals elaborations. Because there is a broader class of information units captured by the thoughts–emotion elaboration category than by the actions or goals categories, this variation is to be expected; our interest was in age differences within each category of information. Girls elaborated more on average ($EMM = 5.6$; $SEM = 0.5$) than did boys ($EMM = 3.8$; $SEM =$

Table 2
*Elaboration by Type of Event and Type of Information as a Function of Age Group in Study 1*

| Age group | Overall elaborations for positive events | Overall elaborations for negative events | Facts | Own interpretations | Others' interpretations |
|---|---|---|---|---|---|
| 8-year-olds | 6.2 (1.0) | 5.3 (1.2) | 11.9 (1.8) | 4.7 (1.4) | 0.7 (0.3) |
| 12-year-olds | 7.3 (1.0) | 7.6 (1.2) | 12.7 (1.8) | 8.5 (1.4) | 1.2 (0.3) |
| 16-year-olds | 8.9 (1.0) | 12.5 (1.2) | 13.4 (1.8) | 16.0 (1.4) | 2.8 (0.3) |

*Note.* Values shown are estimated marginal means (with standard error of the means in parentheses).

0.5), and 16-year-olds elaborated more on average (*EMM* = 6.6; *SEM* = 0.6) than did 12-year-olds (*EMM* = 4.3; *SEM* = 0.6) or 8-year-olds (*EMM* = 3.2; *SEM* = 0.6), who did not differ significantly from one another.

Our main hypothesis is addressed by the Age Group × Type interaction. Estimated marginal means and standard errors for this effect are presented in the table below. Follow-up analyses of this interaction focused on the simple effects of age group within each type of information. The results suggested no age differences in the elaboration of actions, $F(2, 83) < 1$, *ns*, but significant age differences for goals, $F(2, 83) = 7.5$, $p < .01$, $\eta^2 = .15$, and for evaluations–thoughts, $F(2, 83) = 18.5$, $p < .001$, $\eta^2 = .31$. For goals and evaluations–thoughts, pairwise comparisons suggested no differences between 8- and 12-year-olds but significant differences between both of these groups and 16-year-olds; the relevant means are displayed in Table 3.

**On the nature of interpretive content at different ages: Three examples.** The above analyses focus on quantitative changes in interpretive information with age. In this section, we provide three example narratives (with names altered to preserve confidentiality) to illustrate both the quantitative changes documented above, and to outline one qualitative feature of those changes. In the examples, italics mark content that was scored as reflecting interpretive content. Within the italicized content, some content is boldfaced because it marks qualitative shifts in the nature of interpretive content across age groups, as reviewed following these examples.

*Example 1: 8-year-old girl*

Me and Julie were laughing. And then . . . then, um, Ariel and Jasmine, they pushed me. And they're like, "Sorry, I didn't mean to." But, *it was on purpose* 'cause I saw them do it. And I heard them say

Table 3
*Actions, Goals, and Thoughts–Evaluations by Age Group in Study 1*

| Age group | Actions | Goals | Thoughts–evaluations |
|---|---|---|---|
| 8-year-olds | 7.6 (1.0) | 0.7 (0.2) | 4.7 (1.5) |
| 12-year-olds | 7.5 (1.0) | 0.7 (0.2) | 8.9 (1.5) |
| 16-year-olds | 7.4 (1.0) | 1.7 (0.2) | 17.2 (1.5) |

*Note.* Values shown are estimated marginal means (with standard error of the means in parentheses).

that . . . . And then, we were hiding *so they don't hit us and hurt us*, and then, um, then we got out *'cause we forgot*.

*Example 2: 12-year-old girl*

Oh, ok. It was like after school some time and . . . and I kind of went like that to her face [displays an open hand, one finger running across her cheek] and just scratched her a little bit. She got mad . . . *So, so like I felt bad and stuff afterward*, so I call her. Well, it was before that and I talked to her and I'm like, "Well, sorry for whatever I did." *Because I thought she had gotten over this little "slap" incident and she was mad about something else that I did because with her I don't know what I do . . . . And that, it just kind of made me feel bad.* **I know that she's not my type anyway. I've known her since like first grade, but, you know, I don't really think I need to remain friends with her because we've gotten in fights last year too, for things that I didn't know about again**.

*Example 3: 16-year-old girl*

But um . . . Ok. This is as close as I can come. *It's not very bad but um . . . The other, I think it was like a week ago. I have a friend named Lisa, and lately* **she's not as close of friends as we used to be** because we don't have as many classes together this year and she was talking with me and she came up to me in the hall and *she was acting really excited* **because she's one of those people that likes to, you know, come up and say, "Oh, how are you doing?" and give you a big hug**. And, she came up and she started talking with me, and I started talking with her. But then this girl came up **who she has lately been becoming friends with**.

We wish here to focus on two qualitative shifts in the nature of interpretive content beyond what our quantitative analyses have captured. First, the first narrator focuses on her goals, thoughts, and evaluations about the particular event she is recounting. In contrast, the boldfaced and italicized content in the second and third narrative speaks to longer time frames—how relationships were in the past, how they may become in the future, and, in the last narrative, the nature of a person's character across situations. Second, although both adolescent stories contain extensive interpretive content revolving around thoughts and evaluations, the 12-year-old narrative tends to be repetitive and incoherent in articulating that interpretive content. The 16-year-old narrative, by contrast, is coherent, concise, and, from the perspective of an outsider, more clear and certain about those interpretations.

## Discussion

To summarize, Study 1 provided support for two of our major expectations. First, Study 1 suggested that, while narrative mem-

ories from adolescents are more elaborative than such memories produced by younger children, the pattern of age differences in elaboration depends on the type of information at stake and on the type of event being narrated. As we had expected, age differences across middle childhood through middle adolescence were evident for interpretive but not factual content, and these differences were more strongly evident for negative events.

Three aspects of these findings provided the rationale for Study 2. First, the lack of differences in interpretive content between the 8- and 12-year-olds was somewhat unexpected. For this reason, in Study 2 we expanded our coverage of preadolescents. This allowed us to both examine the 5–12 age range more comprehensively and to connect our findings to the age ranges that have been more extensively examined by other research groups (e.g., Bauer, 2006; Bird & Reese, 2006; Fivush & Nelson, 2004). Second, the findings suggest, in line with others' work (Bird & Reese, 2006; Fivush et al., 2010; McLean et al., 2007), a clear importance for focusing on negative events in more detail. In Study 1, participants described widely varying negative experiences. For a closer examination of content relevant to the construction of agency, it is useful to vary the roles from which memory narratives are elicited—that is, to examine differences in representing agency when recalling events where one acted, versus events where one was the target of others' actions.

So, for Study 2, we made use of a data set previously collected to address a different set of research questions (see Wainryb et al., 2005). This data set elicited narratives about interpersonal conflicts; children were asked to provide one narrative about a time when they hurt a peer or friend, and one narrative about a time when they were hurt by a peer or friend. Prior findings on this data set indicated age-related differences from preschool (5-year-olds) through adolescence (15-year-olds) in whether specific narrative elements, such as references to harmful behaviors and resolutions and to the narrator's own and other's emotions and intentions, were included in participants' stories.

## Study 2: Victim and Perpetrator Events

### Method

**Participants.** Participants were 112 children recruited from preschool, first grade, fifth grade, and 10th grade in a midsized city in the mountain west area of the United States. There were twenty-eight 5-year-olds (mean age = 4.8, $SD$ = 0.52), twenty-eight 7-year-olds (mean age = 6.9, $SD$ = 0.37), twenty-eight 11-year-olds (mean age = 10.9, $SD$ = 0.36), and twenty-eight 16-year-olds (mean age = 16.2, $SD$ = 0.60). Half of participants were female; participants were predominantly middle class and primarily European American (71%). The remaining participants were distributed across ethnic groups: 18% Hispanic, 4% Asian, 3% African American, and 2% American Indian.

**Procedure.** Following parental consent and child assent procedures, children were interviewed in a private room at their school. Interviewers audiotaped the narratives, and these were subsequently digitized and transcribed. Interviewers elicited two narratives, in counterbalanced order, from participants. The narrative prompts were as follows (see Wainryb et al., 2005, for details about the rationale behind specific wording):

Please tell me about a time when you did or said something, and a friend or a child you know well ended up feeling hurt by it. Pick a time that you remember really well, and tell me everything that you remember about that time.

Please tell me about a time when a child you know well, like a friend, did or said something and you felt hurt by it. Pick a time that you remember really well, and tell me everything that you remember about that time.

Interviewers encouraged participants to continue elaborating on their stories via nondirective prompts and/or repeating participants' words verbatim.

*Coding.* The transcribed interviews were unitized and scored using the same procedures as in Study 1. Reliability was computed on 27 stories drawn from 14 participants, and comprising 1,074 idea units. These stories were scored by all three members of the coding team. Kappa ranged from .62 to .66 ( $p$s < .01) for the full scoring system (i.e., including distinctions by content and "owner"). Correlations between coders for the summary scores used in our primary analyses were very high, as shown in Table 1.

## Results

**Facts, own interpretations, others' interpretations.** Our initial analysis examines elaborations as a function of age, gender, participant's role in the event (perpetrator vs. victim), and the kind of information (factual, own interpretations, others' interpretations). This analysis revealed significant main effects of age group, $F(3, 102) = 24.9$, $p < .01$, $\eta_p^2 = .42$; gender, $F(1, 102) = 14.9$, $p < .05$, $\eta_p^2 = .13$; and an Age × Gender interaction, $F(3, 102) = 5.0$, $p < .01$, $\eta_p^2 = .13$. In addition, there was a significant effect of type of information, $F(2, 101) = 85.5$, $p < .01$, $\eta_p^2 = .63$, and interactions of type of information with age group, $F(6, 204) = 9.4$, $p < .01$, $\eta_p^2 = .22$, with gender, $F(2, 101) = 5.8$, $p < .01$, $\eta_p^2 = .10$, and role, $F(2, 101) = 6.1$, $p < .01$, $\eta_p^2 = .11$. Finally, type of information interacted with role and age group, $F(6, 204) = 2.3$, $p < .05$, $\eta_p^2 = .06$, and with role, gender, and age group, $F(6, 204) = 2.7$, $p < .02$, $\eta_p^2 = .07$. The number of interactions involving type of information provides strong support for our contention that in memory narratives, different kinds of information show different developmental, gendered, and role-based patterns. Next, we unpack these omnibus effects. We focus first on main effects, then on interactions that do not involve the impact of role, and finally, on the impact of role.

The main effects of age, gender, and type of information are straightforward. As in Study 1, memory narratives contained more facts ($M = 20.2$; $SEM = 1.4$) than own interpretive content ($M = 7.6$; $SEM = 0.7$) and others' interpretations ($M = 2.7$; $SEM = 0.2$; all pairwise comparison $p$s < .01). Older children and adolescents told more elaborated narratives, with pairwise comparisons showing that age increases from age 5 to age 11 are nonsignificant ( $p < .06$), that 7-year-olds and 11-year-olds did not differ from one another, and that the large increase in elaboration from middle childhood to age 16 is significant ( $p < .01$). As in Study 1 and prior research (Davis, 1999; Fivush & Schwarzmueller, 1989), girls were more elaborative ($M = 12.6$; $SEM = 0.9$) than boys ($M = 7.7$; $SEM = 0.9$). The interaction of age group and gender was also straightforward, as shown by the data in Table 4. Pairwise comparisons suggested that gender differences emerged and in-

Table 4
*Facts, Own Interpretations, and Others' Interpretations by Age and Gender in Study 2*

| Age group | Average elaboration | Facts | Own interpretations | Others interpretations |
|---|---|---|---|---|
| 5-year-olds | 3.8 (1.3) | 7.2 (2.9) | 2.6 (1.4) | 1.6 (0.4) |
| Boys | 4.2 (1.7) | 8.2 (4.1) | 2.9 (1.9) | 1.4 (0.5) |
| Girls | 3.5 (1.8) | 6.2 (4.2) | 2.4 (2.0) | 1.7 (0.5) |
| 7-year-olds | 8.6 (1.3) | 18.0 (2.9) | 5.3 (1.4) | 2.4 (0.4) |
| Boys | 6.7 (1.8) | 15.5 (4.1) | 2.9 (1.9) | 1.6 (0.5) |
| Girls | 10.4 (1.8) | 20.5 (4.1) | 7.8 (1.9) | 3.1 (0.5) |
| 11-year-olds | 9.3 (1.3) | 19.4 (2.9) | 5.9 (1.4) | 2.5 (0.4) |
| Boys | 7.5 (1.8) | 15.6 (4.1) | 4.5 (1.9) | 2.3 (0.5) |
| Girls | 11.1 (1.8) | 23.2 (4.1) | 7.3 (1.9) | 2.7 (0.5) |
| 16-year-olds | 19.0 (1.3) | 36.1 (2.9) | 16.5 (1.4) | 4.2 (0.4) |
| Boys | 12.6 (1.8) | 24.4 (4.2) | 10.5 (2.0) | 2.8 (0.5) |
| Girls | 25.4 (1.8) | 47.9 (4.1) | 22.5 (1.9) | 5.7 (0.5) |
| Across all ages | | | | |
| Boys | | 15.9 (2.0) | 5.2 (1.0) | 2.0 (0.3) |
| Girls | | 24.4 (2.0) | 10.0 (1.0) | 3.3 (0.3) |

*Note.* Values shown are estimated marginal means (with standard error of the means in parentheses).

creased in magnitude across time, and that gender differences were only significant for adolescents.

These age and gender differences, however, were not the same for all types of information. The Age Group × Type interaction is reflected in the overall (averaged across gender) means presented in Table 4, columns 3, 4, and 5. Pairwise comparisons suggested the overall effect of age depicted in column 2 was consistent with findings for factual information, where significant jumps in elaboration of facts were evident for 5-year-olds versus 7- and 11-year-olds, and again for 7- and 11-year-olds versus 16-year-olds. However, for both types of interpretive information, 5-, 7-, and 11-year-olds did not differ significantly from one another ($ps > .39$) but did differ significantly from 16-year-olds. By contrast, the elaboration of interpretive information did not increase until adolescence. An examination of the Gender × Type interaction revealed that boys and girls differed for all types of information significantly, with girls always including more elaborations than boys. Descriptively and proportionally, gender differences were smallest for the inclusion of others' interpretations and largest for the inclusion of one's own interpretations. These data are also displayed in Table 4.

To explore interactions involving role, we examined the simple effects of role within other factors and combinations of factors. The Role × Type interaction was examined by looking at the effect of role for each type of information. For factual information, differences in victim and perpetrator narratives were nonsignificant ($p > .07$). Interpretive content, however, differed significantly by role, with participants including more of their own interpretive content when narrating from a victim role ($M = 8.5$; $SEM = 0.9$) than from a perpetrator role ($M = 6.7$; $SEM = 0.6$; $p < .05$. These differences reversed for others' interpretations, which were more prevalent in perpetrator narratives ($M = 3.1$; $SEM = 0.2$) than in victim narratives ($M = 2.2$; $SEM = 0.3$; $p < .01$. These findings replicate other work with adults (Baumeister, Stilman, & Wotman, 1990), as well as with children (as reflected in related findings for the same sample; Wainryb et al., 2005).[1]

However, the two- and three-way interactions of role with type of information, age group, and gender suggest more complexity.

For the three-way interaction, differences in facts were evident for adolescents, with victim narratives involving more facts ($M = 42.0$; $SEM = 4.4$) than perpetrator narratives ($M = 30.3$; $SEM = 2.5$), and adolescents also elaborated more on their own interpretations for victim narratives ($M = 20.7$; $SEM = 1.9$) than they did for perpetrator narratives ($M = 13.4$; $SEM = 1.2$). Finally, the inclusion of more others' interpretations in perpetrator narratives was evident for both 11-year-olds (perpetrator: $M = 3.2$; $SEM = 0.3$; victim: $M = 1.7$; $SEM = 0.5$) and for adolescents (perpetrator: $M = 5.0$; $SEM = 0.4$; victim: $M = 3.5$; $SEM = 0.5$). Other role differences were not statistically significant. The four-way interaction of role with age group, type of information, and gender further implied that this pattern depended on gender, but given the low likelihood of replication of a four-way interaction, we approached this pattern with caution. Pairwise comparisons suggested that the pattern of results just described applied to female adolescents, with male adolescents showing few differences by role.

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[1] Prior findings on this data set (Wainryb et al., 2005) indicated age-related differences from preschool (5-year-olds) through adolescence (15-year-olds) in whether specific narrative elements, such as references to harmful behaviors and resolutions and to the narrator's own and other's emotions and intentions, were included in participants' stories. Although some of the elements examined in that study overlap with the focus of the present study on interpretive content, specifically whether the narrators' and others' emotions, thoughts, and intentions were represented, there is an important difference between the way in which the prior study and the present study capture references to intentions, emotions, and thoughts. That is, intentions, emotions, and thoughts can be represented in a way that is factual or interpretive. In the scoring conducted in the previous study, if someone reported on the speech of another person, for example, saying "She said 'I hate you!,'" this would entail representing the emotions and evaluations of others. By contrast, in the present scheme, this report is not interpretive, in that it is a report of observable behavior. Thus, the present study focuses more on the drawing of inferences about one's own and others' internal states, rather than on content-based representation of those inferences.

**Actions, goals, and complex interpretations.**    As in Study 1, we examined a general linear model of the elaboration of actions, goals, and evaluations–thoughts as a function of type of information, role, age group, and gender. This revealed significant main effects of age, $F(3, 102) = 24.6$, $p < .01$, $\eta^2 = .42$; gender, $F(1, 102) = 14.1$, $p < .01$, $\eta^2 = .12$; and type of information, $F(2, 101) = 112.6$, $p < .001$, $\eta^2 = .69$. In addition, two-way interactions involving type of information and age group, $F(6, 204) = 10.5$, $p < .001$, $\eta^2 = .24$, type of information and gender, $F(2, 101) = 4.7$, $p < .02$, $\eta^2 = .09$, and age group and gender, $F(3, 102) = 4.8$, $p < .01$, $\eta^2 = .13$, and a three-way interaction involving age group, type of information, and gender, $F(3, 102) = 2.1$, $p < .03$, $\eta^2 = .06$, emerged. Notably, no significant differences by role were identified in this analysis, which did not distinguish own and others content.

The main effects of age and gender are essentially replications of those reported in the initial analyses above, with older children and girls constructing more elaborative narratives than younger children and boys, respectively; similarly, the Age × Gender interaction was attributable to the fact that gender differences were only statistically significant among 16-year-olds. For type of information, actions ($EMM = 12.0$; $SEM = 0.7$) were the most prevalent type of information, with evaluations–thoughts ($EMM = 8.7$; $SEM = 0.7$) next most prevalent, and again, the data revealed a very low prevalence for goals ($EMM = 1.6$; $SEM = 0.2$). All pairwise comparisons were significant.

Examining the simple effect of age group within each type of information suggested that in Study 2, age differences were significant for all types of information, $F$s$(1, 95) > 2.7$, $p$s $< .05$, $\eta^2 > .07$. However, pairwise comparisons of the data shown in Table 5 suggested that the specific pattern of age differences was distinct for different types of information. For actions, 5-year-olds differed significantly from 7- and 11-year-olds, who did not differ from one another, and all three of the younger groups differed significantly from adolescents, who included the most actions in their narratives. For evaluations–thoughts, the three younger age groups did not differ from one another, but all included significantly fewer evaluations and thoughts than did the adolescent group. Finally, for goals, the only significant age difference was between adolescents and 5-year-olds.

We then examined the simple effect of gender within each type of information. These results suggested significant gender differences for all three types of information, $F$s$(1, 102) > 6.3$, $p$s $< .05$, $\eta^2 > .06$. In all cases, girls were more elaborative than boys, but gender differences were descriptively smallest for actions (girls: $EMM = 13.8$; $SEM = 1.0$; boys: $EMM = 10.1$; $SEM = 1.0$) and

larger for goals (girls: $EMM = 2.1$; $SEM = 0.2$; boys: $EMM = 1.1$; $SEM = 0.2$) and evaluations–thoughts (girls: $EMM = 11.2$; $SEM = 1.0$; boys: $EMM = 6.1$; $SEM = 1.0$).

Finally, to decompose the three-way interaction of type of information, age group, and gender, we examined simple effects of gender within each age group and type of information. Generally, these results showed that for actions and thoughts–evaluations, gender differences were evident only for adolescents: actions, $F(1, 102) = 13.3$, $p < .001$, $\eta^2 = .12$; thoughts–evaluations, $F(1, 102) = 22.1$, $p < .001$, $\eta^2 = .18$. For goals only, gender differences were also significant for 7-year-olds, $F(1, 102) = 4.5$, $p < .05$, $\eta^2 = .04$. In all cases, girls provided more elaborations.

**Interpretive content at different ages: Examples.**    The narratives presented next (with names changed) illustrate a qualitative shift in the temporal extension of interpretive content across participants of different ages. As above, italicized content represents interpretive content, and boldfaced and italicized content indicates interpretive content reflecting a longer time frame than simply the incident being narrated. Not only does interpretive content increase across the four examples, but the inclusion of content that extends beyond the time frame of the event narrated also emerges. Only by midadolescence does some interpretive content take on a traitlike, more enduring quality.

*5-year-old*

One day Aidan got hurt . . . . He had a hole in his cheek and I wiped the blood off with water on a towel. And *he liked the water* cause it was cold . . . . *Then he felt better* cause his cheek was, his hole was going away, it was getting fixed.

*7-year-old*

. . . and so I said "If you don't . . . if . . . if you don't do it, I'll go do it and you can clean up the game." And *he didn't like any of those* so he went and told my dad and *he was really mad* that he had to do that. And when he came back he had this really mean face on him.

*11-year-old*

Ok . . . . I was friends with one with one year and then I was friends with the other and then like when I was like in third grade, we were all in the same class so we were all friends together. *And once and sometimes my friend Kara and my friend Ann they don't get along so well* and uh **I kind of tend to be with Ann sometimes cause I kind of know her a little bit better** and so I was siding with her and I said something and *I can't remember specifically what I said but I said something to and it hurt Kara's feelings and so and yeah.*

*16-year-old*

Ok. *The most vivid thing I can remember* is when this girl who was my friend at my other school . . . and Clara sat there *but Clara took offense to that. I didn't think it was that big of a deal* **because that one person isn't a bad person, she just likes to joke around a lot she's the kind of person who ya know like scares you from behind, that kind of thing**.

## General Discussion

Even if the basic capacities of the memory system are in place by middle childhood, the present studies show that memory narratives continue to reflect developmental differences in the way children and adolescents make use of their understandings of

Table 5

*Actions, Goals, Evaluations, and Thoughts by Age Group in Study 2*

| Age group | Actions | Goals | Evaluations–thoughts |
| --- | --- | --- | --- |
| 5-year-olds | 4.9 (1.5) | 1.1 (0.3) | 3.2 (1.4) |
| 7-year-olds | 10.9 (1.5) | 1.7 (0.3) | 6.0 (1.4) |
| 11-year-olds | 12.7 (1.5) | 1.4 (0.3) | 7.0 (1.4) |
| 16-year-olds | 19.4 (1.5) | 2.3 (0.3) | 18.4 (1.4) |

*Note.*   Values shown are estimated marginal means (with standard error of the means in parentheses).

minds and self to organize and give meaning to their experiences. As children move into adolescence, they recall the past in ways that are richer in interpretation, constructing narratives that can better serve the many functions of autobiographical memory. Over both studies presented here, children under age 12 displayed similar, and low, levels of interpretive content in their memory narratives. Interpretive content showed a strong increase from early into middle adolescence, and this was true both for content reflecting the narrator's own interpretations and content that involved inferences about others' interpretations.

Notably even 5-year-olds included some interpretive content in their narratives, suggesting that they already have some psychological concepts available for use in organizing their experiences. Other work on narrative memory for stories, however, suggests a greater prevalence of interpretive content in young children's story recall (Kleinknecht & Beike, 2004). One implication of the present findings in relation to those of Kleinknecht and Beike (2004) is that even when children have access to the conceptual tools to build an interpretive narrative, they do not do so consistently in relation to their own emotional experiences. This is also consistent with the rather late explosion of interpretive content in our participants' narratives. That late explosion occurs well into adolescence, although the basic conceptual tools necessary to construct such content are available to 8-year-olds (Chandler & Lalonde, 1996).

It seems likely that changes in understandings of minds and in conceptualizations of the self may be important factors driving the changes we observed in our participants' memory narratives. For example, children's grasp of minds are related to memory performance on laboratory tasks (e.g., Perner & Ruffman, 1995) and to young children's performance on autobiographical recall tasks (e.g., Welch-Ross, 1997; but see Kleinknecht & Beike, 2004, for conflicting findings). Other research, though not directly emphasizing understandings of minds, suggests that adolescents have more complex mental language (Fabricius et al., 1989); better ability to coordinate multiple perspectives in argumentation (Kuhn & Udell, 2007); appreciation of issues of morality, autonomy, conventions, and their interplay (Smetana, 2006); greater appreciation of context and complexity in advice-giving tasks (Pasupathi et al., 2001); a more complex grasp of the biographical structure of human lives (Habermas, 2007); and a better appreciation for mixed, complicated emotional experiences (Gnepp & Klayman, 1992; Labouvie-Vief et al., 1989). These shifts, which are accompanied by changes in the neural substrates that likely enable them (e.g., Blakemore, 2008; Moriguchi, Ohnishi, Mori, Matsuda, & Komaki, 2007), provide adolescents with more complex tools for organizing their experiences in narrative form. Changes in conceptualizing the self are also likely to be important. As Howe and colleagues pointed out (Howe, Courage, & Peterson, 1994), it is difficult to have an autobiographical memory without a sense of self on which to "hang" it. Moreover, most notions of self-concept define it as a conceptual structure around which autobiographical experiences may be organized, interpreted, and recalled (Harter, 1998; Markus & Wurf, 1987). From infancy through adolescence, children's sense of themselves develops over time in accessibility, complexity, abstraction, coherence, and temporal extension (Damon & Hart, 1988; Harter, 1998; Howe et al., 1994). Notably, many theorists believe that these developments in self-views arise out of the construction of autobiographical experiences in narrative

form (Fivush & Nelson, 2004; Habermas & Bluck, 2000; McLean et al., 2007). Once developed, however, self-views influence the way subsequent experiences are interpreted and recalled. As with the theory-of-mind research reviewed earlier, developmental shifts in the conceptions of self and identity may foster the elaboration of interpretive content in memory narratives.

In the memory narratives of these children and adolescents, across both studies, factual content predominated and showed a developmental pattern distinct from that of interpretive content. Factual content in these studies showed two jumps in prevalence, both only in Study 2. The first occurred between age 5 and the 7- to 8-year-old age range in Study 2, which was the only study to include younger children. This is consistent with improvements in overall memory capacity that are likely linked to maturation of the memory system (Bauer, 2006). The second jump in factual content was also evident only in Study 2 and occurred simultaneously with the jump in interpretive content, from early adolescence to mid-adolescence. This second jump was not consistent with the findings of Study 1. One possible interpretation concerns the different kinds of events in the two studies. In Study 1, events involved positive and negative peer experiences but included a wide array of types of experience. Study 2, by contrast, explicitly involved experiences of harm. Experiences involving harm may provide a greater challenge to conceptions of oneself as a good person than do more heterogeneous, emotional experiences (Pasupathi, McLean, & Weeks, 2009; Wainryb et al., 2010; Pasupathi & Wainryb, in press). When narrating such events, individuals may find that the resulting stories require both factual details and interpretive elements to a greater degree than the more heterogeneous and potentially less self-challenging events of Study 1. In fact, the level of factual elaboration in Study 2 was higher than in Study 1 across all three of the older age groups. Further, middle adolescents, who may have a unique concern with challenges and inconsistencies to self-views (Harter, 1998; Harter & Monsour, 1992), may have found the types of events in Study 2 to provoke more thoughtfulness and elaboration across the board, for this reason.

The findings, both quantitative and qualitative, additionally suggest that the burgeoning of interpretive content may involve a shift in the construction of self and others as agents toward an increasingly psychological construction of agency. Younger children's accounts were rich with actions but contained few interpretations of any kinds. Adolescents' accounts contained significantly more interpretive content for both goals and evaluations–thoughts. Not only is the construction of agency increasingly psychological, the temporal extension of interpretive content also shifts over this age range in ways consistent with the building of more long-term conceptions of self and other. The present findings, examples, and the already documented increase in meanings, insights, and thematic life story coherence (Habermas & de Silveira, 2008; McLean et al., in press) all suggest an important role for narrative and memory in the construction of identity during adolescence.

Within interpretive content, we did not find evidence for differences between goals on the one hand, and evaluations and thoughts on the other in their developmental patterns. So, the use of these types of information in organizing experience follows similar trajectories, even though the development of these concepts occurs at different ages across early childhood. However, the relative prevalence of evaluations and thoughts was quite striking, as was the relative paucity of goals. Existing work on narrative and on

agency tends to hold goals in a privileged theoretical position (Heckhausen & Schulz, 1995; Levine, Stein, & Liwag, 1999; Singer, 1990; Wellman & Miller, 2006). The experience of agency is conceptualized as involving a grasp of intentions and their relation to actions, and it is goals and intentions that serve to provide coherence in narratives—linking actions and reactions. Moreover, a basic grasp of intention is present quite early in children's development (Baldwin et al., 2001; Saylor et al., 2007). Why, then, are goals so sparsely evident in our participants' memory narratives? Although only one expression of a goal may suffice for creating a coherent set of action–outcome relations in a narrative, the data suggest that for many children in our sample, narratives expressed no goals at all. One reason for this may be that what is salient to people as they move through their everyday experiences are their own and others' actions, and their own reactions—the evaluations and thoughts that accompany choices and consequences. Goals, by contrast, may be largely implicit in their effects on behavior (Gollwitzer & Bargh, 1996). This suggests that although goals are strongly implicated in the relationship between actions and evaluations–thoughts, and may well be the "deep structure" of narratives, people's experiences are not always constructed so as to make goals explicit or transparent.

We also found little evidence that girls were more elaborative for interpretive content than boys. Across both studies, girls were more generally elaborative than boys, and this difference was stronger among older participants. These findings are consistent with findings on adult gender differences in memory elaboration and vividness (Davis, 1999; Ross & Holmberg, 1990) and with findings on early childhood remembering by girls versus boys (e.g., Fivush, 1998). Other findings that document no gender differences focus on the presence or absence of particular types of meanings, such as assertions about one's identity or relationships (McLean, 2005; Pasupathi & Mansour, 2006). One way to interpret these slightly disparate findings is to consider that girls may be more elaborative and more detailed, but boys and girls draw similar conclusions in the context of memory narratives.

Thus far, we have focused primarily on the representation of factual versus interpretive content. Other findings in our studies suggest some important differences in representing self and other in memory narratives. The first is the relative paucity with which our participants represented others' interpretations in memory narratives. Although autobiographical memory narratives might be expected to focus on one's own interpretations, others' interpretations are the category that most strongly reflects interpretive content, as access to others' minds, particularly as coded in the present study, is available only through interpretation. Moreover, being able to represent and integrate others' perspectives, both in memory and in other contexts, is associated with many positive developmental outcomes, including social competence (Blakemore, 2008; Bohanek et al., 2008; Greenhoot, Tsethlikai, & Wagoner, 2006). Representing others and one's own perspective in understanding conflicts and harm is particularly important, because doing so can facilitate forgiveness and open the possibility for reconciliation (Knutson, Enright, & Garbers, 2008; Wainryb et al., 2010; Pasupathi & Wainryb, in press).

Given the importance of representing others' interpretations and the relatively low prevalence of doing so, one context that clearly fosters the representation of others is the narration of acts of doing harm. In our data, others' interpretations are represented more

strongly in older children's and adolescents' accounts of doing harm, as opposed to their accounts of being harmed. This is, as noted, consistent with other findings (Baumeister et al., 1990), including prior work with the data in Study 2 (Wainryb et al., 2005), and it serves to underscore the importance of examining roles when exploring the construction of narrative memories, as well as the potential developmental importance of those roles. Other promising directions for examining how children represent both their own and others' interpretations include the construction of narratives in discourse, where listeners can help children and adolescents take perspectives and create a more complex understanding of their experiences, perhaps especially those around conflict (Bohanek et al., 2008; Fivush & Nelson, 2004; Pasupathi & Hoyt, 2009).

Although the present results have several limitations, including the cross-sectional nature of the age comparisons, we want to focus here on three issues. First, we cannot distinguish between encoding and retrieval processes as important for the present findings and it is likely that both are involved. Because the present studies focused on relatively recent events, it is likely that children's knowledge and capacities were similar during the encoding and retrieval periods. Second, our methods cannot speak to the veridicality of children's memories. In the present context, veridicality is less important than what children construe about their experiences—given that the incidents being recalled are not cases of criminal wrongdoing but are interpersonal experiences in everyday life. In fact, some work suggests that in that context, disputed factual content is relatively rare, in contrast to disputed interpretive content (Pasupathi, Lucas, & Coombs, 2002), and other work on adults supports the idea that memory narratives are often reasonably but not perfectly accurate (Brewer, 1988; Neisser & Fivush, 1994). Third, our approach was primarily focused on a particular "cut point" between factual and interpretive content. Different types of interpretations may be more or less interpretive, for example. Complex statements expressing beliefs and marking them explicitly as beliefs (e.g., "I thought he was just leaving without paying") can justifiably be considered more interpretive than relatively simple, unmarked assertions of emotions (e.g., "I was upset"). Further, even the choice to include some facts but not others reflects a particular interpretive stance toward one's story. And, articulating the interpretations of others is more interpretive, in some ways, than expressing one's own interpretive experience, given the differential access people have to their own mental states versus those of others. Thus, while we offer an initial examination of the inclusion of factual and interpretive content in memory narratives, more subtle explorations will be important for fully understanding these issues.

On a broader note, these findings suggest that it is only during adolescence that people begin to tell the whole story when narrating the personal past. The beginning of this whole story lays an important foundation for being able to construct a sense of identity in terms of a life story, and for being able to create intimacy within relationships via sharing experiences, some of the central tasks faced by adolescents moving into early adulthood.

## References

Baldwin, D. A., Baird, J. A., Saylor, M. M., & Clark, M. A. (2001). Infants parse dynamic action. *Child Development, 72,* 708–717.

Bauer, P. J. (2006). *Remembering the times of our lives: Memory in infancy and beyond.* Mahwah, NJ: Erlbaum.

Bauer, P. J., Burch, M. M., Scholin, S. E., & Gueler, O. E. (2007). Using cue words to investigate the distribution of autobiographical memories in childhood. *Psychological Science, 18,* 910–916.

Baumeister, R. F., Stilman, A., & Wotman, S. R. (1990). Victim and perpetrator accounts of interpersonal conflict: Autobiographical narratives about anger. *Journal of Personality and Social Psychology, 59,* 994–1005.

Bird, A., & Reese, E. (2006). Emotional reminiscing and the development of an autobiographical self. *Developmental Psychology, 42,* 613–626.

Blakemore, S.-J. (2008). Development of the social brain during adolescence. *Quarterly Journal of Experimental Psychology, 61,* 40–49.

Bluck, S. (2003). Autobiographical memory: Exploring its functions in everyday life. *Memory, 11,* 113–123.

Bohanek, J. G., Marin, K. A., & Fivush, R. (2008). Family narratives, self, and gender in early adolescence. *Journal of Early Adolescence, 28,* 153–176.

Bohn, A., & Berntsen, D. (2008). Life story development in childhood: The development of life story abilities and the acquisition of cultural life scripts from late middle childhood to adolescence. *Developmental Psychology, 44,* 1135–1147.

Brewer, W. F. (1988). Memory for randomly sampled autobiographical events. In U. Neisser & E. Winograd (Eds.), *Remembering reconsidered: Ecological and traditional approaches to the study of memory* (pp. 21–90). Cambridge, England: Cambridge University Press.

Bruner, J. (1990). *Acts of meaning.* Cambridge, MA: Harvard University Press.

Chandler, M. J., & Lalonde, C. E. (1996). Shifting toward an interpretive theory of mind: Five- to seven-year-olds changing conceptions of mental life. In A. Sameroff & M. Haith (Eds.), *Reason and responsibility: The passage through childhood* (pp. 111–139). Chicago, IL: University of Chicago Press.

Cleveland, E., & Reese, E. (2005). Maternal structure and autonomy support in conversations about the past: Contributions to children's autobiographical memory. *Developmental Psychology, 41,* 376–388.

Damon, W., & Hart, D. (1988). *Self-understanding in childhood and adolescence.* Cambridge, England: Cambridge University Press.

Davis, P. J. (1999). Gender differences in autobiographical memory for childhood emotional experiences. *Journal of Personality and Social Psychology, 76,* 498–510.

Fabricius, W. V., Schwanenflugel, P. J., Kyllonen, P. C., Barclay, C. R., & Denton, S. M. (1989). Developing theories of the mind: Children's and adults' concepts of mental activities. *Child Development, 60,* 1278–1290.

Fivush, R. (1998). Gendered narratives: Elaboration, structure, and emotion in parent–child reminiscing across the preschool years. In C. P. Thompson, D. J. Herrmann, D. Bruce, J. D. Read, D. G. Payne, & M. P. Toglia (Eds.), *Autobiographical memory: Theoretical and applied perspectives* (pp. 79–104). Mahwah, NJ: Erlbaum.

Fivush, R., Bohanek, J. G., Marin, K., & Duke, M. (2010). Patterns of family narrative co-construction in relation to adolescent identity and well-being. In K. C. McLean & M. Pasupathi (Eds.), *Narrative development in adolescence: Creating the storied self* (pp. 45–64). New York, NY: Springer.

Fivush, R., Bohanek, J., Robertson, R., & Duke, M. (2004). Family narratives and the development of children's emotional well-being. In M. W. Pratt & B. H. Fiese (Eds.), *Family stories and the life course: Across time and generations* (pp. 55–76). Mahwah, NJ: Erlbaum.

Fivush, R., & Nelson, K. (2004). Culture and language in the emergence of autobiographical memory. *Psychological Science, 15,* 586–590.

Fivush, R., & Schwarzmueller, A. (1989). Children remember childhood: Implications for childhood amnesia. *Applied Cognitive Psychology, 12,* 455–473.

Flavell, J. H., Green, F. L., & Flavell, E. R. (1995). Young children's knowledge about thinking. *Monographs of the Society for Research in Child Development, 60*(1, Serial No. 243).

Gnepp, J., & Klayman, J. (1992). Recognition of uncertainty in emotional inferences: Reasoning about emotionally equivocal situations. *Developmental Psychology, 28,* 145–158.

Gollwitzer, P. M., & Bargh, J. A. (Eds.). (1996). *The psychology of action: Linking cognition and motivation to behavior.* New York, NY: Guilford Press.

Greenhoot, A. F., Tsethlikai, M., & Wagoner, B. J. (2006). The relations between children's past experiences, social knowledge, and memories for social situations. *Journal of Cognition and Development, 7,* 313–340.

Habermas, T. (2007). How to tell a life: The development of the cultural concept of biography. *Journal of Cognition and Development, 8,* 1–31.

Habermas, T., & Bluck, S. (2000). Getting a life: The development of the life story in adolescence. *Psychological Bulletin, 126,* 748–769.

Habermas, T., & de Silveira, C. l. (2008). The development of global coherence in life narratives across adolescence: Temporal, causal, and thematic aspects. *Developmental Psychology, 44,* 707–721.

Habermas, T., & Paha, C. (2001). The development of coherence in adolescent's life narratives. *Narrative Inquiry, 11,* 35–54.

Harter, S. (1998). The development of self-representations. In N. Eisenberg & W. Damon (Eds.), *Handbook of child psychology* (5th ed., Vol. 3, pp. 553–617). New York, NY: Wiley.

Harter, S., & Monsour, A. (1992). Developmental analysis of conflict caused by opposing attributes in the adolescent self-portrait. *Developmental Psychology, 28,* 251–260.

Hashtroudi, S., Johnson, M. K., Vnek, N., & Ferguson, S. A. (1994). Aging and the effects of affective and factual focus on source monitoring and recall. *Psychology and Aging, 9,* 160–170.

Heckhausen, J., & Schulz, R. (1995). A life-span theory of control. *Psychological Review, 102,* 284–304.

Howe, M. L., Courage, M. L., & Peterson, C. (1994). How can I remember when "I" wasn't there: Long-term retention of traumatic experiences and emergence of the cognitive self. *Consciousness and Cognition, 3,* 327–355.

Hughes, C., & Dunn, J. (1998). Understanding mind and emotion: Longitudinal associations with mental-state talk between young friends. *Developmental Psychology, 34,* 1026–1037.

Kleinknecht, E., & Beike, D. R. (2004). How knowing and doing inform an autobiography: Relations among preschoolers' theory of mind, narrative, and event memory skills. *Applied Cognitive Psychology, 18,* 745–764.

Knutson, J., Enright, R., & Garbers, B. (2008). Validating the developmental pathway of forgiveness. *Journal of Counseling & Development, 86,* 193–199.

Kroger, J. (2003). Identity development during adolescence. In G. R. Adams & M. D. Berzonsky (Eds.), *Blackwell handbook of adolescence* (pp. 205–226). Malden, MA: Blackwell.

Kuhn, D. (2006). Do cognitive changes accompany developments in the adolescent brain? *Perspectives on Psychological Science, 1,* 59–67.

Kuhn, D., & Udell, W. (2007). Coordinating own and other perspectives in argument. *Thinking & Reasoning, 13,* 90–104.

Labouvie-Vief, G., DeVoe, M., & Bulka, D. (1989). Speaking about feelings: Conceptions of emotion across the life span. *Psychology and Aging, 4,* 425–437.

Laible, D. J., & Thompson, R. A. (2002). Mother–child conflict in the toddler years: Lessons in emotion, morality, and relationships. *Child Development, 73,* 1187–1203.

Levine, L. J., Stein, N. L., & Liwag, M. D. (1999). Remembering children's emotions: Sources of concordant and discordant accounts between parents and children. *Developmental Psychology, 35,* 790–801.

Lucas, S. C. (2003). *Friendships and changing identity motive concerns across the transition from childhood to adolescence.* Salt Lake City, UT: University of Utah.

Markus, H. R., & Wurf, E. (1987). The dynamic self-concept: A social psychological perspective. *Annual Review of Psychology, 38,* 299–337.

McAdams, D. P. (1996). Personality, modernity, and the storied self: A contemporary framework for studying persons. *Psychological Inquiry, 7,* 295–321.

McAdams, D. P. (2006). *The redemptive self: Stories Americans live by.* New York, NY: Oxford University Press.

McLean, K. C. (2005). Late adolescent identity development: Narrative meaning making and memory telling. *Developmental Psychology, 41,* 683–691.

McLean, K. C. (2008). Stories of the young and the old: Personal continuity and narrative identity. *Developmental Psychology, 44,* 254–264.

McLean, K. C., & Breen, A. (2009). Gender differences in adolescent meaning making. *Developmental Psychology, 45,* 702–710.

McLean, K. C., Breen, A., & Fournier, M. A. (in press). Adolescent identity development: Narrative meaning-making and memory telling. *Journal of Research on Adolescence.*

McLean, K. C., Pasupathi, M., & Pals, J. L. (2007). Selves creating stories creating selves: A process model of narrative self development. *Personality and Social Psychology Review, 11,* 262–278.

McLean, K. C., & Pratt, M. W. (2006). Life's little (and big) lessons: Identity statuses and meaning making in the turning point narratives of emerging adults. *Developmental Psychology, 42,* 714–722.

Moriguchi, Y., Ohnishi, T., Mori, T., Matsuda, H., & Komaki, G. (2007). Changes of brain activity in the neural substrates for theory of mind during childhood and adolescence. *Psychiatry and Clinical Neurosciences, 61,* 355–363.

Negele, A., & Habermas, T. (2010). Self-continuity across developmental change in and of repeated life narratives. In K. C. McLean & M. Pasupathi (Eds.), *Narrative development in adolescence: Creating the storied self* (pp. 1–22). New York, NY: Springer.

Neisser, U., & Fivush, R. (Eds.). (1994). *The remembering self: Construction and accuracy in the self-narrative.* Cambridge, England: Cambridge University Press.

Pals, J. L. (2006). Narrative identity processing of difficult life experiences: Pathways of personality development and positive self-transformation in adulthood. *Journal of Personality, 74,* 1079–1110.

Pasupathi, M. (2007). Telling and the remembered self: Linguistic differences in memories for previously disclosed and undisclosed events. *Memory, 15,* 258–270.

Pasupathi, M., & Hoyt, T. (in press). Silence and the shaping of memory: How distracted listeners affect speakers' subsequent recall of a computer game experience. *Memory.*

Pasupathi, M., & Hoyt, T. (2009). The development of narrative identity in late adolescence and emergent adulthood: The continued importance of listeners. *Developmental Psychology, 45,* 558–574.

Pasupathi, M., Lucas, S., & Coombs, A. (2002). Functions of autobiographical memory in discourse: Long-married couples talk about conflicts and pleasant topics. *Discourse Processes, 34,* 163–192.

Pasupathi, M., & Mansour, E. (2006). Adult age differences in autobiographical narratives: Integrating experiences with the self. *Developmental Psychology, 42,* 798–808.

Pasupathi, M., Mansour, E., & Brubaker, J. (2007). Developing a life story: Constructing relations between self and experience in autobiographical narratives. *Human Development, 50*(2/3), 85–110.

Pasupathi, M., McLean, K. C., & Weeks, T. (2009). To tell or not to tell: Disclosure and the narrative self. *Journal of Personality, 77,* 1–35.

Pasupathi, M., Staudinger, U. M., & Baltes, P. B. (2001). Seeds of wisdom: Adolescents' knowledge and judgment about difficult life problems. *Developmental Psychology, 37,* 351–361.

Pasupathi, M., & Wainryb, C. (in press). Developing moral agency through narrative. *Human Development.*

Perner, J., & Ruffman, T. (1995). Episodic memory an autonoetic consciousness: Developmental evidence and a theory of childhood amnesia. *Journal of Experimental Child Psychology, 59,* 516–548.

Peterson, C., Jesso, B., & McCabe, A. (1999). Encouraging narratives in preschoolers: An intervention study. *Journal of Child Language, 26,* 49–67.

Piolino, P., Hisland, M., Ruffeveille, I., Matuszewski, V., Jambaqué, I., & Eustache, F. (2007). Do school-age children remember or know the personal past? *Consciousness and Cognition: An International Journal, 16,* 84–101.

Reese, E., Bird, A., & Tripp, G. (2007). Children's self-esteem and moral self: Links to parent–child conversations. *Social Development, 16,* 460–478.

Reese, E., Yan, C., Jack, F., & Hayne, H. (2010). Emerging identities: Narrative and self from early childhood to early adolescence. In K. C. McLean & M. Pasupathi (Eds.), *Narrative development in adolescence: Creating the storied self* (pp. 23–44). New York, NY: Springer.

Ross, M., & Holmberg, D. (1990). Recounting the past: Gender differences in the recall of events in the history of a close relationship. In J. M. Olson & M. P. Zanna (Eds.), *Self-inference processes: The Ontario symposium* (Vol. 6, pp. 135–152). Hillsdale, NJ: Erlbaum.

Saylor, M. M., Baldwin, D. A., Baird, J. A., & LaBounty, J. (2007). Infants' on-line segmentation of dynamic human action. *Journal of Cognition and Development, 8,* 113–128.

Shwe, H. I., & Markman, E. M. (1997). Young children's appreciation of the mental impact of their communicative signals. *Developmental Psychology, 33,* 630–636.

Singer, J. A. (1990). Affective responses to autobiographical memories and their relationship to long-term goals. *Journal of Personality, 58,* 535–563.

Smetana, J. (2006). Social-cognitive domain theory: Consistencies and variations in children's moral and social judgments. In M. Killen & J. Smetana (Eds.), *Handbook of moral development* (pp. 119–154). Mahwah, NJ: Erlbaum.

Wainryb, C., Brehl, B., & Matwin, S. (2005). Being hurt and hurting others: Children's narrative accounts and moral judgments of their own interpersonal conflicts. *Monographs of the Society for Research in Child Development, 70*(3).

Wainryb, C., Komolova, M., & Florsheim, P. (2010). How violent youth offenders and typically developing adolescents construct moral agency in narratives about doing harm. In K. C. McLean & M. Pasupathi (Eds.), *Narrative development in adolescence: Creating the storied self* (pp. 185–206). New York, NY: Springer.

Webster, J. D., & McCall, M. E. (1999). Reminiscence functions across adulthood: A replication and extension. *Journal of Adult Development, 6,* 73–85.

Welch-Ross, M. K. (1997). Mother–child participation in conversation about the past: Relationships to preschoolers' theory of mind. *Developmental Psychology, 33,* 618–629.

Wellman, H. M., & Miller, J. G. (2006). Developing conceptions of responsive intentional agents. *Journal of Cognition and Culture, 6,* 27–55.