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## Moral Virtue and Practical Wisdom: Theme Comprehension in Children, Youth, and Adults

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MITCHELL

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*Darcia Narvaez, Tracy Gleason, and Christyan Mitchell*

# Moral Virtue and Practical Wisdom: Theme Comprehension in Children, Youth, and Adults

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ABSTRACT. The authors tested 3 hypotheses about the relation of moral comprehension to prudential comprehension by contrasting comprehension of themes in moral stories with comprehension of themes in prudential stories among third-grade, fifth-grade, and college students ( $n = 168$ ) in Study 1, and among college students, young and middle-aged adults, and older adults ( $n = 96$ ) in Study 2. In both studies, all groups were statistically significantly better at moral theme comprehension than prudential theme comprehension, suggesting that moral comprehension may develop prior to prudential comprehension. In Study 2, all groups performed equally on moral theme generation whereas both adult groups were significantly better than college students on prudential theme generation. Overall, the findings of these studies provide modest evidence that moral and prudential comprehension each develop separately, and that the latter may develop more slowly.

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The relation of moral virtue to *phronesis*, or practical wisdom applied to achieving one's goals, has been a source of conjecture and reflection among moral philosophers since antiquity (Aristotle, 1925/1988). For philosophers, this problem concerns the ways in which individuals conceptualize their obligations to others and their own self-interest and the developmental progression of these concepts (MacIntyre, 1981). For example, mastering practical approaches to achieving personal goals may be a prerequisite for moral behavior, but moral virtue may be necessary

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for wise, practical decisions. For psychologists, investigating these constructs in terms of their related cognition can inform the study of two aspects of adaptive development. First, successful social functioning is dependent on accurate evaluation and comprehension of moral situations. Second, addressing practical problems, whether social or personal, requires comprehension of the steps necessary to arrive at constructive solutions. Consequently, by investigating the cognition underlying moral versus practical, or prudential, situations, we sought to shed empirical light on the philosophers' questions regarding the relative development of moral virtue and practical wisdom.

Three views characterize the history of ethics on the relation between moral virtue and practical wisdom. One view, the identity hypothesis, considers practical wisdom as essential to, if not indistinguishable from, the virtues. For example, Plato included practical wisdom (as prudence) as one of four cardinal virtues (Plato, 1955/1987). Similarly, Aristotle (1925/1988) argued that because *phronesis* unifies and drives the use of the virtues, no one has genuine moral virtue without it (VI 13 1144b7-17, 1144b30-32). From this perspective, all other virtues imply and employ practical wisdom (Casey, 1990), meaning virtue and wisdom are essentially intertwined and develop in parallel.

A second view, which we call prudential self-interest, is associated with the Kantian tradition and argues that practical wisdom is not part of morality at all. Kant (1785/1993) split the human person into the empirical and the rational. The empirical human is driven by bodily inclinations and addresses prudential considerations. Practical wisdom thus involves acting from self-interest (Kant, GMM I, V) and has as its goal personal happiness, without concern for the happiness of others. In contrast, the rational human is divorced from the empirical and as a result is capable of grasping the moral point of view. Separation from the pursuit of self-interest, which requires some cognitive sophistication, allows for judgment with the purity of a priori moral principles, such that the goal of Kant's rational moral agent is a good will. In this view, practical wisdom is more fundamental in human functioning than morality and develops earlier, because morality requires the ability to set aside the needs of the self and engage in advanced reasoning.

A third perspective, the developmental view, is based on contemporary ethical thinking. This view borrows Aristotle's (1925/1988) emphasis on the role of experience in wisdom, and yet expands the previous perspectives by emphasizing the distinctly developmental nature of virtue as well. "To possess a virtue is to be a certain sort of person with a certain complex mindset" (Hursthouse, 2003, p. 1), which requires some cultivation. Similarly, according to some modern virtue theorists, practical wisdom cannot be found in the young because it requires life experience. However, practical wisdom and moral virtue are thought to be asymmetrical in development, with moral virtue as the more primary of the two. As Hursthouse (2003) pointed out, "Both the virtuous adult and the nice child have good intentions, but the child is much more prone to mess things up because

he is ignorant of what he needs to know in order to do what he intends” (p. 3). In other words, although moral virtue develops earlier than practical wisdom, the skilled adult knows what ends are good (as a result of moral expertise) and how to reach them (through practical, general knowledge), an understanding developed via extensive moral and practical experience.

The relation between moral virtue and practical wisdom is not an issue that has typically preoccupied or inspired research in moral psychology. Of the three perspectives, contemporary work has tended to adopt the second, isolating the moral point of view from practical wisdom. The most well-developed and empirically supported tradition in moral psychology, viz., the Kohlbergian, was based primarily on Kantian philosophy—focusing on morality as judging right action based on duty—ignoring practical wisdom. This tradition (e.g., Kohlberg, 1983; Piaget, 1932; Rest, Narvaez, Bebeau, & Thoma, 1999) intentionally used hypothetical dilemmas to avoid diluting moral reasoning with too much detail, situational caveats, or the emotional press often found in personal dilemmas. Decontextualizing reasoning thus eliminated the application of practical wisdom.

*Study of Moral Virtue and Practical Wisdom Using Narratives.* Recent work in moral psychology has retained the Kantian perspective on morality as distinct from wisdom. However, some moral psychologists have attempted to increase the ecological validity of this work by reintroducing contextual factors through a narrative approach to studying and understanding moral thinking (e.g., Day & Tappan, 1996). One of these research programs uses narratives to study moral development (Narvaez, Bentley, Gleason, & Samuels, 1998; Narvaez, Gleason, Mitchell, & Bentley, 1999). The present research is an extension of this latter program and is a first empirical step in addressing the development of moral virtue versus practical wisdom in the context of the competing historical perspectives. In the studies that follow, we used narrative theme comprehension to examine comprehension of moral and prudential concerns as a way of comparing the identity hypothesis, the prudential self-interest view, and the developmental view.

Our study of moral virtue and practical wisdom using moral and prudential comprehension of narrative themes comes with two caveats. First, moral and prudential comprehension are only components of the larger constructs of moral virtue and practical wisdom, respectively. The nature of cognition within these constructs, however, is fundamental to their development and thus likely to shed some light on which philosophical perspective most accurately characterizes their relative progression. Second, we did not conceptualize moral issues as being uniquely socially concerned versus being uniquely self-focused, as the philosophical perspectives described may suggest. Instead, we used a conservative approach in which the distinction between moral and prudential comprehension is a matter of relative emphasis on social concerns rather than on social versus nonsocial issues. This method is an ecologically valid one, as few decisions lack social implications completely, but how salient social implications are varies dramatically.

For example, many prudential decisions, although primarily focused on practical concerns for the self, involve social components, such as what people may think. Likewise, some moral decisions are social only in the abstract (e.g., present conservation efforts affect our great-grandchildren's environment).

A relative emphasis on moral or prudential concerns within a narrative offers a useful tool for detecting differences in cognition in text processing. Previous research has demonstrated that text processing elicits topic-specific schemas (Afflerbach, 1990; Pressley & Afflerbach, 1995). In the present case, the use of morally or prudentially oriented narratives could highlight differences in cognitive schemas associated with these types of comprehension. Specifically, evidence for moral and prudential cognitive schemas was expected to emerge through the use of narratives because narrative processing evokes mental representation in the reader. The representation is built primarily from the interaction between the reader's background knowledge and textual characteristics as suggested by the Construction-Integration model (Kintsch, 1988). Text events that are unfamiliar are often reinterpreted or forgotten due to a lack of background knowledge on which to pin them (Bartlett, 1932). Consequently, persons with particular moral developmental schemas are more likely to activate those schemas when processing a moral text. Persons without the necessary moral schemas to understand embedded moral reasoning are likely to distort or not remember the event (Narvaez et al., 1998; Narvaez et al., 1999). Thus, while direct questioning through interviews or standardized tests assesses explicit comprehension of a domain, discourse-related methods such as narrative processing tap implicit understanding as well. Moreover, because most of the discourse we process is embedded in narratives and everyday events, the use of narratives to measure moral thinking has superior ecological validity compared to other methods.

We focused on one aspect of discourse processing: narrative theme comprehension. A reader with full understanding of a narrative is presumably able to generate a theme (finding global coherence by linking events across episodes), defined as either an evaluative or nonevaluative commentary on text content (Williams, 1998; Williams, Brown, Silverstein, & deCani, 1994). When asked to ascertain the author's intended theme, the reader evaluates the story outcome in relation to the events of the story. However, this process shows developmental differences, in that children vary much more widely than adults on the themes they extract (Narvaez, 2002; Narvaez et al., 1998) and can extract a theme opposite to the one intended (e.g., Hull, 1993).

If the point of reading a story is to comprehend its theme as intended, then it is important to determine the factors that affect success in extracting the appropriate theme. Theme extraction depends on experience, including specific knowledge required for interpreting story events, and the cognitive capability to hold in mind all the critical events of a story. Among children, influences include not only basic reading comprehension skills (Goldman, Reyes, & Varnhagen, 1984), but also exposure to literature (Lehr, 1988), level of achievement (Vauras, Kinnunen, &

Kuusela, 1994), distractibility (McKenna & Ossoff, 1998), and moral development (Narvaez et al., 1999). In particular, Narvaez and colleagues (Narvaez et al., 1998; Narvaez et al., 1999) demonstrated that children do not necessarily understand the theme of a moral story the way adults do.

165 In two studies using either existing children's stories (Narvaez et al., 1998) or constructed stories (Narvaez et al., 1999), Narvaez and colleagues found significant developmental differences between third-grade, fifth-grade, and college students in their abilities to generate themes, select an appropriate theme from a list, and select a vignette with a theme similar to a target story. In both studies, even  
170 after partialling out reading comprehension scores, the statistical difference among the groups was large (effect size = 1.00; Narvaez et al., 1999). Narvaez and Gleason (2007) tested comprehension of moral narratives and moral expository texts among undergraduates, seminarians, and graduate students in political science and philosophy. They showed that domain experience had an influence beyond age and  
175 educational level on recall of moral content. These studies demonstrated the effectiveness of using theme comprehension as a technique for mapping developmental differences in moral schemas. We were interested in investigating whether similar developmental differences would emerge in narratives whose emphasis was prudential rather than moral, and if so, whether those differences would mirror those  
180 we found for the moral narratives or if their development would follow a different trajectory. The extent of the overlap or distinction between theme comprehension in moral versus prudential narratives was expected to provide support for one of the philosophical traditions regarding the relation between moral virtue and practical wisdom.

185 *Present Studies.* In the present studies we used theme comprehension to compare comprehension of moral and prudential concerns across several age groups using a cross-sectional design. We tested three competing hypotheses inspired by the three perspectives drawn from philosophical traditions. First, the identity hypothesis proposes that practical wisdom and moral virtue develop in tandem,  
190 and may even be the same cognitive process. According to this perspective, theme comprehension should be equivalent across moral and prudential stories and no differences should emerge within age groups. Second, the prudential self-interest view proposes that practical wisdom is primary, whereas moral virtue, because it is more specialized, develops later. Thus, this perspective would be supported  
195 if themes of prudential stories were easier to comprehend than themes of moral stories, although this distinction should wane with age. Third, the developmental hypothesis postulates that practical wisdom develops at a slower pace than moral virtue because practical wisdom requires more experience. If so, comprehension of moral themes should be easier for children than comprehension of prudential  
200 themes, but again, this distinction should wane with age and experience.

## STUDY 1

### *Method*

**Q2** *Participants.* Participants were 79 typically developing third-grade students (41  
**Q3205** girls, 38 boys;  $M$  age = 8.66 years,  $SD =$  ) and 53 fifth-grade students (26  
 girls, 27 boys,  $M$  age = 10.70 years,  $SD =$  ) from two urban elementary schools  
 serving primarily middle-class students. We selected third- and fifth-grade students  
 because the third-grade students were old enough to comprehend the study tasks  
 and the fifth-grade students had reached the age in which the majority of children  
 typically can generalize a theme from a text (Goldman et al., 1984). To represent  
 the higher end of theme comprehension, we also recruited 36 college students  
**Q4** (24 women, 12 men,  $M$  age = 21.83 years,  $SD =$  ) from psychology classes  
 at a public, urban university. Each college student received course credit for  
 participating. Across groups, only 23 individuals indicated that they were other  
 than “white/Euro-American” in ethnicity, including Hispanics, so no analyses  
 were performed on ethnic differences. All child participants provided informed  
 consent from a parent through a form sent home to parents prior to testing and  
 verbal assent for participation. Children whose parents did not provide consent  
 engaged in other activities provided by their teacher. All college students signed a  
 consent form.

### 220 *Materials*

*Stories.* Two moral and two prudential stories were used. The two moral  
 stories were developed previously to demonstrate developmental differences in  
 moral theme comprehension (Narvaez et al., 1999). A moral story was defined  
 as a story that conveys a theme about a specific aspect of getting along with  
 others (e.g., being honest with strangers) and addresses the components of moral  
 behavior: moral sensitivity, moral judgment, moral motivation, and moral action.  
 In each story the protagonist faced a moral dilemma that is resolved by affirming  
 the values of the theme. “Kim” concerns a girl whose family, while moving  
 across the country, stops at a gas station where Kim receives too much change  
 from the cashier. The theme concerns being honest with everyone, even strangers,  
 and using self-control. “Jed” is about a boy who is tempted to abandon his home  
 responsibilities and the theme concerns doing an individual’s duty and being  
 trustworthy. In both stories, the emphasis is on the social consequences of behavior.

**235** We created two prudential stories using the narrow definition of practical  
 wisdom as involving self-regarding virtues (as opposed to other-regarding virtues  
 such as honesty) of morality (Hursthouse, 2003). Self-regarding virtues of morality  
 are those that concern doing what is good, primarily from the perspective of  
 the self and with little regard for how an individual’s behavior affects others.  
 Our prudential stories concerned individuals facing typical challenges in life that

240 required problem solving. Unlike the moral stories, the prudential stories did not  
lay out the social consequences of behavior, emphasizing instead only personal  
goals. “Tony” is about a boy who gets a part time job (dog-sitting) that he thinks  
he can handle even though he has no experience, but that proves too much for  
him. The theme concerns the importance of accurately assessing an individual’s  
245 capabilities before taking on a job. “Martha” is about a girl who moves to a rural  
area in new state and tries many extracurricular activities (mostly unsuccessfully)  
in order to find her niche. The theme has to do with persevering until an individual’s  
goal is reached.

All four stories were similar in length and readability. All stories were written  
250 at a third-grade reading level, using Fry’s analysis available in Microsoft Word. In  
addition, a group of judges ( $n = 14$ ) specializing in reading comprehension (grad-  
uate students and faculty in text comprehension) were asked to judge whether  
the moral and prudential stories were equivalent in complexity and structure.  
Prudential stories were modified slightly according to their suggestions for equiv-  
255 alency. We also piloted the prudential stories with several children to make sure  
the sentences were clear.

*Reading comprehension.* Reading comprehension was used as a covariate  
in the analyses. We used 40 true–false items: 10 items per story and 20 items  
260 for each type of story (in Narvaez et al., 1999, this measure performed better as a  
covariate than standardized reading comprehension scores). These items measured  
factual recall and inferences about the story (e.g., a factual recall item from Kim  
was “Kim’s father stopped the car at a grocery store,” and an inference from Tony  
was, “After his experience, Tony no longer liked dogs”). The ability to make the  
inferences necessary to connect goal-action-outcome causal chains is critical for  
265 extracting a theme and increases with age and cognitive development (Perfetti,  
1985; van den Broek, Lorch, & Thurlow, 1997). The Reading Comprehension  
score comprised the correct answers to the set of 10 true–false questions for each  
story added together (maximum score of 20 points for each story type). In addition,  
we also used children’s scores on the Minnesota Comprehensive Reading Test as  
270 a covariate where appropriate. This test is administered to third-grade children by  
the state and provides a standardized measure of reading comprehension. As no  
more recent test was available for the fifth-grade children, we used their third-grade  
scores.

*Themes and distractors.* In order to measure theme comprehension, we  
275 adopted the same approach used in Narvaez et al. (1999), which consisted of  
four tasks: (a) Vignette Rating, in which participants rated four paragraph-long  
vignettes on a 5-point Likert-type scale for how close each one’s theme matched  
the original story’s theme; (b) Vignette Choice, in which participants selected the  
vignette that best matched the theme of the original story (as no themes were



280 explicitly presented these vignette tasks were meant to elicit a more implicit  
understanding of the theme); (c) Theme Rating, in which participants rated each  
of seven themes for how well it matched the theme of the original story (using a  
Q6 5-point Likert-type scale); and (d) Theme Choices, in which participants selected  
the two theme choices that best matched the theme of the original story from the  
285 list of choices just rated. The theme tasks measured an explicit, recognition-type  
understanding of the theme.

The vignette selection task included one correct (same theme) vignette and  
three types of distractors for each story. Distractors varied systematically on super-  
ficial characteristics: one used the same actions (i.e., the same plot characteristics)  
290 but had different actors and a different theme; a second used the same actors but  
involved different actions and themes, and the third had only the same setting.  
The target (correct) vignette had different setting, actions, and actors but the same  
theme. The distractor and theme choices were randomly ordered and protagonists  
in all vignettes were of the same gender as the protagonist of the target story.

295 For the moral stories, we used the same one-sentence themes and distractors  
as in Narvaez et al. (1999). Each story had five different categories of theme  
distractors (each scored as “incorrect”) and two theme choices (both scored as  
“correct”). The five distractor types for the moral stories were: (a) Kohlberg Stage  
1 theme distortion (a focus on reprisal), (b) Kohlberg Stage 2 theme distortion (a  
300 focus on personal gain or loss), (c) Kohlberg Stage 3 theme distortion (a focus on  
losing or gaining the approval of others), (d) an item using multisyllabic, grownup  
words (that made sense but did not reflect the theme), and (e) an item focusing on  
the priority of the in-group (an item emphasizing collectivism). The distractor and  
theme choices were randomly ordered, and were used both for the theme rating  
305 and the theme choice tasks.

For the prudential stories, we used a separate group of respondents to help  
generate the themes. A similar procedure was used in Narvaez et al. (1999) in which  
children and adults were pilot tested and asked to generate themes for the stories.  
Their responses were used to create the themes used in the theme comprehension  
310 measure. Distractor themes were created based on principles similar to the earlier  
study and were designed to be comparable to the distractors for the moral stories,  
yet in the prudential domain: (a) irrelevant observation based on world knowledge  
(e.g., “It pays to rest after working hard”), (b) irrelevant tangential issue (e.g.,  
“Children should not be allowed to care for large dogs”), (c) prudential statement  
315 that was not the theme (e.g., “Be sure the pay is worth the job”), (d) a coherent  
sentence with adult multisyllabic words that was not the theme (e.g., “Canine  
synergy can supercede the greatest humanitarian”), and (e) a cliché that was not  
the theme (e.g., “Persistence is the key to success”). The distractor and theme  
choices were randomly ordered.

320 *Procedure.* The children were tested by grade in their classrooms in two 50-min  
sessions one week apart. In order to minimize reading comprehension differences,

the stories and tasks were put on audiotape as well as on paper for the children. College students received the written version only and completed the tasks alone or in small groups.

325 First, children were guided through a practice story that included all the types  
of questions about the theme. Then in each of two sessions, the children read along  
as two stories and questions about them were played on tape. After hearing/reading  
a story, participants were asked to think about the theme of the story (“What do  
330 you think the author would like you to learn? Think about what would be the *best*  
*lesson* from this story?”) After thinking about the theme, participants completed  
the story-specific reading comprehension measure. Next, the four theme-related  
tasks were administered in the following order: Reading Comprehension, Vignette  
Rating, Vignette Choice, Theme Rating, and Theme Choice.

Vignette and theme choices were each scored as incorrect (score of 0) or  
335 correct (score of 1). For the vignette ratings, the ratings for the three distractor  
items were averaged. The resulting score was subtracted from the rating for the  
theme item, resulting in a rating difference score, which was used in the analyses.  
High comprehenders rate theme items highly and distractor items low, resulting in  
a higher positive difference score. Second, the scores for the five distractor themes  
340 for each theme rating were averaged, as were the scores for the two correct themes.  
A theme rating difference score was then obtained by subtracting the averaged  
distractor score from the averaged theme score. Each score type was combined  
across stories of the same type. For some analyses, the scores for each of these  
four combination variables were added together for a composite score indicating  
345 moral or prudential theme comprehension. The reliability of the composite score  
(across two stories and four tasks) using Cronbach’s alpha was .81 for the moral  
stories and .70 for prudential stories.

In order to minimize the effect of response sets on the vignette and theme  
ratings (individuals consistently rating widely or narrowly), ratings were stan-  
350 dardized at the individual level. Theme and vignette choice scores were also  
standardized, but only for use in the composite score, not in the analyses of choice  
variables alone. Further standardization would be likely to remove variance due  
to important story or task differences.

### *Results*

355 Each analysis was conducted with alpha set at .05 and all t tests were two-  
tailed. When a participant failed to complete every instantiation of a response type,  
we eliminated that person from the analysis of that type of response. Hence, the  
number of participants across the analyses varied slightly.

*Reading Comprehension.* We began by analyzing the differences in the story-  
360 specific reading comprehension scores by story type and age group (Grade 3, Grade  
5, college). Examination of the scores on these measures provided information on

**TABLE 1. Study 1 Means and Standard Deviations of Reading Comprehension Scores, by Age Group and Story Type**

Story	Third grade ( <i>n</i> = 79)	Fifth grade ( <i>n</i> = 53)	College ( <i>n</i> = 36)
Moral comprehension			
<i>M</i>	18.46***	19.43***	18.97
<i>SD</i>	1.69	1.01	1.18
Prudential comprehension			
<i>M</i>	17.81**	18.00*	18.92***
<i>SD</i>	1.67	1.83	1.30

*Note.* Means in the same row with the same subscripts differ significantly using Bonferroni.  
\**p* < .05. \*\**p* < .01. \*\*\**p* < .001.

Q7

the magnitude of the differences in reading comprehension between groups and the kinds of mistakes children made in reading the stories.

Means and standard deviations for reading comprehension scores by age group and story type are displayed in Table 1. A repeated measures analysis of variance (ANOVA) revealed a main effect of age on comprehension,  $F(2, 165) = 6.30$ ,  $p = .002$ ,  $\eta^2 = .07$ . Bonferroni post hoc tests revealed that third-grade students did not perform as well as fifth-grade students ( $p = .031$ ) or adults ( $p = .005$ ) but that the latter two groups did not differ. A main effect of story type also emerged,  $F(1, 165) = 25.94$ ,  $p < .001$ ,  $\eta^2 = .14$ ; comprehension was higher for moral than prudential stories. Last, an interaction between age and story type was also present,  $F(2, 165) = 7.25$ ,  $p = .001$ ,  $\eta^2 = .08$ . Both the third- and fifth-grade students found moral stories easier to comprehend than prudential stories,  $t(78) = 3.55$ ,  $p = .001$ ;  $t(52) = 5.57$ ,  $p < .001$ , respectively. College student comprehension of the stories did not differ significantly by type. Because of these differences, we controlled for reading comprehension in all subsequent analyses.

*Theme Comprehension.* We examined theme comprehension in two ways. First, we tested for age group by story type interactions using composite scores formed through the combination of the scores on each of the tasks (theme rating, theme choice, vignette rating, and vignette choice). Next, we tested for age group by story type interactions for each of the task scores individually.

*Composite scores.* We performed a repeated measures analysis of covariance (ANCOVA) using moral and prudential composite scores as dependent variables, age group as a between-subjects factor, and moral and prudential reading comprehension scores as covariates. Although no main effect emerged for story

**TABLE 2. Study 1 Means and Standard Deviations of Composite Theme Comprehension Scores, by Age Group and Story Type**

Story	Third grade ( <i>n</i> = 67)	Fifth grade ( <i>n</i> = 46)	College ( <i>n</i> = 31)	<i>F</i> (2, 139)	$\eta^2$
Moral theme				43.40	.38
<i>M</i>	-1.98	1.73	2.68		
<i>SD</i>	2.84	2.05	1.97		
Prudential theme				14.89	.18
<i>M</i>	-1.18	.65	2.19		
<i>SD</i>	2.70	2.57	2.39		

*Note.* Both *F*s were significant at *p* < .001.

type, a significant age by story type interaction emerged,  $F(2, 139) = 7.21, p = .001, \eta^2 = .09$ . Pairwise comparisons within story type revealed that on moral stories, third-grade students differed significantly from both fifth-grade students ( $p < .001$ ) and adults ( $p < .001$ ), whereas fifth-grade students and adults did not differ (see Table 2 for means). In contrast, all three groups differed on prudential stories ( $p$ s < .01). An overall significant effect of development also emerged, in that a main effect of age was present,  $F(2, 139) = 35.89, p < .001, \eta^2 = .34$ . As hypothesized, third-grade students' demonstrated the poorest performance, followed by fifth-grade students and adults. Univariate tests (see Table 2) revealed significant effects of age for both moral and prudential stories, but these differences were greater and of larger effect size for the moral than the prudential stories.

As a check against the usefulness of the story-specific reading comprehension scores in factoring out children's reading comprehension from their theme comprehension, we included the standardized reading comprehension scores (Minnesota Comprehensive Reading Test) for the third- and fifth-grade students as covariates along with our reading comprehension scores in a repeated measures ANCOVA for the moral and prudential composite scores (age as between-subjects factor) for these two groups. A significant positive age by story type interaction again emerged,  $F(1, 96) = 12.41, p = .001, \eta^2 = .11$ . Fifth-grade students outperformed the third-grade students for both the moral theme composite score,  $F(1, 96) = 47.97, p < .001, \eta^2 = .33$ , and for the prudential theme composite score,  $F(1, 96) = 9.85, p = .002, \eta^2 = .09$ , but again, the effects were smaller for the prudential stories.

*Task scores.* To test whether there were group differences for some tasks and not others, we performed a series of four repeated measures ANCOVAs, one for each of the four tasks (theme difference rating, theme choice, vignette difference

**TABLE 3. Study 1 Means and Standard Deviations of Task Scores, by Age Group and Story Type (Moral and Prudential) With Univariate Significance Test Results**

Task	Third grade		Fifth grade		College		<i>F</i>		$\eta^2$	
	Moral	Prud	Moral	Prud	Moral	Prud	Moral	Prud	Moral	Prud
Theme	-0.84	-0.69	0.72	0.52	1.06	0.84	21.34	12.16	.22	.14
Difference	1.53	1.56	1.34	1.30	1.22	1.34				
Theme	2.13	2.13	3.38	2.67	3.61	3.00	37.38	8.34	.32	.09
Choice	1.04	1.00	0.82	0.81	0.73	0.72				
Vignette	-0.83	-0.54	0.49	-0.01	1.10	1.15	18.62	13.49	.19	.14
Difference	1.63	1.54	1.44	1.46	1.68	1.31				
Vignette	0.73	0.45	1.40	0.57	1.67	0.97	19.30	7.88	.21	.10
Choice	0.77	0.58	0.71	0.62	0.53	0.70				

*Note.* All *F*s were significant at  $p < .001$ . Scores shown are adjusted (*z*-scores) within story for difference variables and unadjusted for choice variables.

rating, vignette choice), again using age as a between-subjects factor and reading comprehension scores as covariates. For theme difference ratings, no significant effects emerged for story type, nor was there an interaction between age and story type. A main effect of age did emerge,  $F(2, 154) = 23.42, p < .001, \eta^2 = .23$  (see 415 Table 3 for descriptive statistics).

For theme choice ratings, scores were marginally higher for moral than prudential stories,  $F(1, 162) = 3.03, p = .084, \eta^2 = .02$ , and a significant interaction between age and story type emerged,  $F(1, 162) = 7.82, p = .001, \eta^2 = .09$ . Pairwise comparisons within story type revealed that for both moral and prudential 420 stories, third-grade students differed significantly from both fifth-grade students and adults ( $ps < .015$ ), whereas fifth-grade students and adults did not differ. The main effect of age was also significant,  $F(2, 162) = 36.30, p < .001, \eta^2 = .31$ .

For vignette difference ratings, significant effects emerged for story type, 425  $F(1, 161) = 9.49, p = .002, \eta^2 = .06$  (moral scores were higher than prudential on average), and age,  $F(1, 161) = 21.75, p < .001, \eta^2 = .21$ . A marginal interaction between them also emerged,  $F(2, 161) = 2.82, p = .06, \eta^2 = .03$ . Pairwise comparisons within story type revealed that on moral stories, third-grade students differed significantly from both fifth-grade students and adults ( $ps < 430 .001$ ), whereas fifth-grade students and adults did not differ. In contrast, third- and fifth-grade students differed on prudential stories ( $p = .05$ ), and both groups of children differed significantly from adults ( $ps < .002$ ).

For vignette choice ratings, a marginally significant effect emerged for story type,  $F(1, 149) = 3.24, p = .07, \eta^2 = .02$  (moral scores higher than prudential

435 scores), and significant effects emerged for age,  $F(2, 149) = 19.85, p < .001,$   
 $\eta^2 = .21,$  and story type by age interaction,  $F(2, 149) = 4.90, p = .009, \eta^2 = .06.$   
 Pairwise comparisons within story type revealed that on moral stories, third-grade  
 students differed significantly from both fifth-grade students and adults ( $ps <$   
 440  $.001$ ), whereas fifth-grade students and adults did not differ. In contrast, third- and  
 fifth-grade students did not differ on prudential stories, whereas both groups of  
 children differed significantly from adults ( $ps < .006$ ).

The results of all of the univariate analyses that examined age differences  
 on the task scores (theme rating difference score, theme choice, vignette rating  
 difference score, vignette choice) were significant for both moral and prudential  
 445 stories. In each case, college students performed best, followed by fifth- and then  
 third-grade students, indicating consistent developmental trends for all story task  
 variables (see Table 3). In addition, the effect sizes for these differences were all  
 larger for the moral than the prudential stories.

As with the composite scores, we ran another set of repeated measures AN-  
 450 COVAs using the standardized reading scores and our reading comprehension  
 scores as covariates for predicting moral and prudential task scores (age as fixed  
 factor). Findings were the same as for the previous analyses with three exceptions:  
 (a) for theme choice ratings, the marginally significant effect of story type dis-  
 appeared; (b) the marginally significant interaction on vignette difference scores  
 455 disappeared; and (c) the marginally significant main effect of story type on vignette  
 choice scores reached significance,  $F(1, 101) = 4.02, p = .048, \eta^2 = .04;$  scores  
 were higher for moral than prudential stories. Results for the univariate tests are  
 displayed in Table 4. The effect sizes for the positive relation between age and  
 460 performance on the moral task variables were generally strong and robust unlike  
 those for the prudential tasks (all but one of the effect sizes for the moral tasks  
 were more than double those for the prudential tasks).

**TABLE 4. Study 1 Univariate Test Results for Comparisons of Third and Fifth Graders, by Task and Story Type Using Standardized Reading Comprehension Scores as a Covariate**

Task	<i>(df, N)</i>	Moral stories		Prudential stories	
		<i>F</i>	$\eta^2$	<i>F</i>	$\eta^2$
Theme rating	(1, 109)	24.18***	.18	11.62***	.10
Theme choice	(1, 113)	47.22***	.30	5.16*	.04
Vignette rating	(1, 113)	16.94***	.13	6.32**	.05
Vignette choice	(1, 101)	15.99***	.14	1.93	.02

\* $p \leq .05.$  \*\* $p \leq .01.$  \*\*\* $p < .001.$

*Discussion*

Comparisons of third-grade, fifth-grade, and college students on theme comprehension in moral versus prudential stories revealed significant interactions between age group and story type. With the exception of the theme difference scores, every measure of theme comprehension revealed a similar configuration of results: third-grade students performed poorly regardless of story type, fifth-grade students and adults performed similarly for moral stories, but on prudential stories, adults outperformed the fifth-grade students. In other words, the pattern of performance was different for moral versus prudential stories, showing earlier evidence of comprehension of moral themes than prudential themes. These results suggest that the cognition underlying the identification of a moral theme may be distinct from that underlying a prudential theme. One explanation for this finding is that schemas for understanding stories that emphasize moral issues are better constructed and solidified than those for understanding stories that emphasize prudential issues. Schemas relevant to these different problems may be established separately, through different types of experiences.

If moral and prudential comprehension are indeed separate as these findings suggest, then the identity hypothesis, which postulates overlap between moral virtue and practical wisdom, is not supported here. These findings also do not support the prudential self-interest view. If, as this view suggests, practical wisdom is primary and moral virtue develops later, performance on the prudential stories should have been higher than on the moral stories, but it was not. The developmental view, however, predicts that moral virtue develops prior to practical wisdom, meaning that moral cognition should be superior to prudential cognition in children, but that differences between the two should diminish with age and experience. In addition to the interactions between age and story type, two other findings support this hypothesis. First, performance on the theme comprehension tasks was generally better for moral than prudential stories. Second, as in moral versus prudential theme comprehension, children's story-specific reading comprehension was better for moral than prudential stories. College students, on the other hand, comprehended both types of stories equivalently, suggesting a better grasp of the prudential stories (on some level, if not on theme comprehension) than that possessed by the children. Taken together, these findings provide modest support for a different developmental pathway for moral than prudential comprehension, with moral developing somewhat earlier.

The idea that moral may precede prudential theme comprehension suggests that moral issues may be dominant and salient in everyday experience. Given that social relationships are the context in which development occurs, we may spend more time pondering and addressing ways in which our behavior affects others than we do focusing on our self-interested goals. Prudential theme comprehension may require problem-solving experience that is less readily available than the social problem solving that characterizes moral issues. If so, an understanding of

505 moral themes may develop independently and prior to prudential themes, lending  
 support to the developmental view. As Hursthouse (2003) pointed out, “children  
 and adolescents often harm those they intend to benefit either because they do  
 not know how to set about securing the benefit or, more importantly, because  
 their understanding of what is beneficial or harmful is limited and often mistaken”  
 (p. 4). In other words, children may have the moral virtue to recognize a sit-  
 510 uation that requires a moral response, but not the practical wisdom to respond  
 appropriately.

The results of this study provided modest evidence of an asymmetry in age  
 group performance of the two types of theme comprehension, but we also noticed  
 that even college students had more trouble with prudential than moral theme  
 515 comprehension. As college students are emerging adults, we decided to sample  
 two adult groups: young and middle-aged adults and older adults. We hypoth-  
 esized that perhaps in middle or old age, experience with moral and prudential  
 issues would eventually plateau, and the developmental differences in moral and  
 prudential theme comprehension would disappear. Consequently, in the second  
 520 study we looked at group of young and middle-aged adults and older adults to find  
 out whether prudential theme comprehension might catch up with moral theme  
 comprehension and whether performance on the two tasks would remain distinct.

## STUDY 2

### *Method*

525 *Participants.* Fifty-three college students from a public, urban university and a  
 private, suburban Eastern college (32 women, 20 men, 1 unidentified; age range =  
 18–25 years;  $M$  age = 19.67 years,  $SD$  = ) participated for course credit or pay. Q8  
 Twenty-five working-class young and middle-aged adults drawn from the staff of  
 a private college (12 women, 11 men, 2 unidentified; age range = 26–59 years;  
 530  $M$  age = 41.35 years,  $SD$  = ) were paid for their participation. Q9  
 Twenty-one active older adults from a Midwestern senior day center (17 women, 4 men; age range =  
 62–85 years;  $M$  age = 77.51 years,  $SD$  = ) responded to an ad for volunteers and Q10  
 were paid for their participation. Only 2% of the entire sample included members  
 of minority groups so no analyses included ethnicity. All participants signed a  
 535 consent form prior to participation.

*Procedure.* Participants were tested in groups of 1–15. The participants completed  
 the same tasks as in the first study, reading four stories and rating and ranking  
 multiple choices responses. All participants read the stories in the same order. The  
 same scoring methods were applied. Cronbach’s alpha for the task scores were  
 540 .70 for moral stories and .72 for prudential stories.

We asked the 25 young and middle-aged adults and 35 of the college students  
 to generate a theme for each story before answering any questions about the story.



Responses were scored on a 3-point Likert-type scale that ranged from 0 (*incorrect response*) to 0.5 (*response contains elements related to the story theme but is not entirely correct*) to 1 (*correct response*). Scores for the two stories within a type were added together, providing a score between 0 and 2 for each type of story (moral or prudential). Two judges rated the themes and agreed at 100%.

*Results*

*Reading Comprehension.* Despite the fact that all of the participants in Study 2 were adults, we decided to repeat our analysis of differences in story-specific reading comprehension scores by story type and age group using a repeated measures ANOVA. We were concerned that because of their age ( $M = 77.51$  years,  $SD =$ ), the older adult participants might demonstrate an age-related decrement in reading comprehension ability.

Means and standard deviations for reading comprehension scores by age group and story type are displayed in Table 5. No main effect of story type or interaction between age and story type emerged. However, a main effect of age revealed that the older adult participants performed significantly worse than the young and middle-aged adults and the college students ( $p < .01$  for both) but that the latter two groups did not differ.

*Theme Comprehension.* As in Study 1, we began by examining story type by age group interactions in moral and prudential theme comprehension. We first looked the moral and prudential composite scores formed through the combination of the scores on each of the tasks (theme rating, theme choice, vignette rating, and vignette choice), and second, we examined the group differences for moral and prudential stories based on the four tasks separately.

**TABLE 5. Study 2 Means and Standard Deviations of Reading Comprehension Scores, by Age Group and Story Type**

Story	College students ( $n = 52$ )	Adults ( $n = 25$ )	Elderly ( $n = 21$ )
Moral comprehension			
<i>M</i>	19.15	19.16	18.29
<i>SD</i>	.94	.80	1.59
Prudential comprehension			
<i>M</i>	19.13	19.20	18.43
<i>SD</i>	1.03	.91	1.16

**TABLE 6. Study 2 Means and Standard Deviations of Composite Theme Comprehension Scores, by Age Group and Story Type**

Story	College ( <i>n</i> = 52)	Adults ( <i>n</i> = 25)	Elderly ( <i>n</i> = 21)
Moral theme			
<i>M</i>	1.98	1.52	-6.45
<i>SD</i>	2.82	4.41	5.65
Prudential theme			
<i>M</i>	0.87	2.25	-4.37
<i>SD</i>	3.79	4.80	5.13

*Composite scores.* We performed a repeated measures ANCOVA using moral and prudential composite scores as dependent variables, age group as a between-subjects variable, and moral and prudential reading comprehension scores as covariates. No main effect of story type emerged, but we found a significant main effect of age in theme comprehension composite scores,  $F(2, 87) = 20.06, p < .001, \eta^2 = .32$  (see Table 6 for descriptive statistics). A significant interaction between age and story type was also evident,  $F(2, 87) = 4.51, p = .014, \eta^2 = .09$ . Pairwise comparisons revealed differences between the older adults and the other two groups on both types of stories ( $ps < .001$ ). The difference between the scores of young and middle-aged adults and college students was not significant for either story type. However, the interaction appeared to be driven by the fact that young and middle-aged adults' and college students' scores were quite close on the moral composite scores, and young and middle-aged adults' scores were higher than college students' (albeit not significantly so) on the prudential composite scores (see Table 6).

*Task scores.* We performed a series of repeated measures ANCOVAs including the same factors and covariates but used as dependent variables the four moral and four prudential theme task scores (vignette rating, vignette choice, theme rating, theme choice). No main effects of story type emerged for any of the four different task scores, although most participants received higher scores for moral than prudential theme comprehension tasks. For theme difference ratings, there was no interaction between age and story type. A main effect of age did emerge,  $F(2, 92) = 12.10, p < .001, \eta^2 = .21$ , primarily as a result of the poor performance of the older adult participants (see Table 7 for descriptive statistics).

For theme choice ratings, the interaction between story type and age group was not significant,  $F(2, 93) = 2.68, p = .074, \eta^2 = .05$ . Pairwise comparisons

**TABLE 7. Study 2 Means (and Standard Deviations) of Task Scores, by Age Group and Story Type**

Task	College		Adult		Elderly	
	Moral	Prudential	Moral	Prudential	Moral	Prudential
Theme	0.43	0.31	0.50	0.57	-1.80	-1.49
Difference	1.32	1.43	1.76	1.80	1.43	1.88
Theme	3.85	3.54	3.52	3.44	3.38	2.76
Choice	0.36	0.58	0.65	0.71	0.67	0.99
Vignette	0.47	0.02	0.68	0.48	-1.93	-0.72
Difference	1.25	1.38	1.69	1.70	1.42	1.43
Vignette	1.90	1.24	1.78	1.52	1.10	0.85
Choice	0.30	0.56	0.42	0.59	0.72	0.67

*Note.* Scores shown are adjusted (z-scores) within story for difference variables and unadjusted for choice variables.

within story type revealed that for moral stories, college students outperformed both of the other groups ( $ps < .01$ ), whereas young and middle-aged adults and the older adults did not differ. On prudential stories, college students and young and middle-aged adults did not differ, but the older adults performed poorly in comparison to both other groups ( $ps \leq .01$ ). The main effect of age was also significant,  $F(2, 93) = 8.21, p = .001, \eta^2 = .15$ . College students had the highest scores, followed closely by the young and middle-aged adults but with lower scores among the older adults.

For vignette difference ratings, the story type by age interaction,  $F(2, 92) = 6.33, p = .003, \eta^2 = .12$ , and the main effect of age,  $F(2, 92) = 12.91, p < .001, \eta^2 = .22$ , were both significant. Pairwise comparisons within story type revealed that on moral stories, the older adults differed from college students and young and middle-aged adults ( $ps < .001$ ) but the latter two groups did not differ. On prudential stories, only the young and middle-aged adults and the older adults differed ( $p = .038$ ). Again, the main effect of age was driven by the poor performance of the older adults.

For vignette choice ratings, an interaction between story type and age was detected,  $F(2, 88) = 3.40, p = .038, \eta^2 = .07$ , and a significant effect emerged for age,  $F(2, 88) = 15.81, p < .001, \eta^2 = .26$ . Pairwise comparisons within story type revealed that on moral stories, the older adults were outperformed by the other two groups ( $ps < .001$ ), whereas college students and young and middle-aged adults did not differ. For the prudential stories, college students' scores were marginally lower than those of the young and middle-aged adults ( $p = .076$ ) and marginally

**TABLE 8. Study 2 Descriptive Statistics for Theme Generation**

Story	College ( <i>n</i> = 42)	Adults ( <i>n</i> = 25)	Elderly ( <i>n</i> = 19)
Moral theme			
<i>M</i>	1.65	1.66	1.61
<i>SD</i>	0.42	0.43	0.46
Prudential theme			
<i>M</i>	1.19	1.56	1.55
<i>SD</i>	0.56	0.46	0.47

higher than those of the older adults ( $p = .056$ ). Young and middle-aged adults' scores were significantly higher than those of the older adults ( $p = .003$ ).

*Theme Generation.* We asked the young and middle-aged adults, the older adults, and a subset of the college students to generate themes for the stories prior to responding to the multiple-choice questions. A repeated measures ANOVA revealed a main effect of story type,  $F(1, 83) = 10.38, p = .002, \eta^2 = .11$ , and an interaction between story type and group,  $F(2, 83) = 5.09, p = .008, \eta^2 = .11$  (see Table 8 for descriptive statistics). There was no main effect of age. Pairwise comparisons showed no significant differences between groups in their success in generating themes for moral stories, but for prudential stories, college students were outperformed by both the young and middle-aged adults ( $p = .006$ ) and the older adults ( $p = .013$ ). The latter two groups did not differ.

*Discussion*

Findings in Study 2 provided modest evidence for asymmetric development of moral and prudential comprehension in early to middle adulthood postulated by the developmental view. In general, scores of college students and young and middle-aged adults were more similar than different, aside from a few indications, such as on the composite scores and the vignette scores, where young and middle-aged adults demonstrated slight superiority on prudential theme comprehension. Further, whereas college students, young and middle-aged adults, and the older adults were equally accurate in generating moral themes, young and middle-aged adults performed significantly better than college students in generating prudential themes. In other words, to the extent that moral and prudential comprehension represent the development of moral virtue and practical wisdom, we found evidence suggesting that moral virtue develops somewhat more quickly, and that practical wisdom develops with age and experience over the course of adulthood. These

ideas were not, however, entirely supported by the results from the older adult participants.

We found a mixed performance for both types of theme comprehension among the older adults in comparison to the college and adult groups. Although they performed poorly on the ratings and choices tasks for both types of stories, they performed on par with the young and middle-aged adults in theme generation. Our interpretation of these findings is that their poorer performance on the multiple-choice tasks reflects a lack of familiarity with such methodologies. The task demands may have overwhelmed their ability to express their understanding. This interpretation is supported by the fact that in theme generation the older adults performed as well as the young and middle-aged adults for both moral and prudential themes, outscoring the college students. If our interpretation is correct, this latter finding supports the developmental view.

#### 655 **General Discussion**

The purpose of these studies was to test philosophical hypotheses with respect to the development of moral virtue and practical wisdom. Although contemporary moral psychology has not attended to this relation in great detail nor provided a context for deriving clear hypotheses about the relation between these constructs or their developmental priority, a long and rich tradition of engagement with these issues exists in philosophical ethics. We considered three hypotheses: the identity hypothesis, the prudential self-interest view, and the developmental view, and analyzed moral and prudential thinking through theme comprehension. Our results provided modest support for the developmental hypothesis. In particular, we found significant interactions between age and story type on many of our tasks. These interactions suggest that (a) theme comprehension of moral stories is distinguishable from that of prudential stories, and (b) that the two follow different developmental paths, specifically, that moral theme comprehension develops prior to, or more quickly than, prudential theme comprehension.

670 *Evidence That Moral Comprehension and Practical Comprehension Are Distinct.* Where differences emerged, moral themes were easier to identify than prudential themes, although the young and middle-aged adults appeared to be equally skilled with generating both types of themes. Moral comprehension may thus develop independently from prudential comprehension, a view that is consistent with the developmental hypothesis. As mentioned in the discussion of Study 1, the notion that moral reasoning may develop separately from practical reasoning makes logical sense as the development of cognition—of virtually all types—occurs in a social context. Indeed, social interaction is foundational to human experience, meaning that all age groups have social experiences upon which they can draw when comprehending a moral story with an emphasis on social outcomes. The Construction-Integration model explains this process (Kintsch, 1988). According

to the model, understanding is constructed in interaction with prior knowledge, which provides frameworks (simple and composite schemas) for processing information. As appears to be the case when readers read about familiar topics, 685 activations of multiple moral schemas during moral story reading may be extensive and nearly effortless (Afflerbach, 1990; Narvaez & Bock, 2002). This greater activation results in a more solid integration of elements, makes particular schemas salient, and brings about an emergent sense of theme from the stimuli in the text. In contrast, when children and emerging adults read stories about practical wisdom 690 or prudence—stories that emphasize self-interest—the stories may not activate as many complex schemas. The schemas relevant to these stories either may not exist or may not be fully formed. Young and middle-aged adults were more skilled at identifying prudential themes than any other group, suggesting that the construction of schemas relevant to prudential theme comprehension was present in this 695 age group and less so at younger ages.

In order to further verify the distinction between moral and prudential comprehension, as a result of a separate study we were able to test the moral judgment of the college students ( $n = 36$ ) using the Defining Issues Test, an established test of moral judgment. Moral judgment score was a significant predictor of the 700 composite moral theme comprehension score,  $\Delta R^2 = .28$ , but not of the composite prudential theme comprehension score,  $R^2 = .09$ . These findings support the notion that schemas for moral and prudential issues may be separate. Even so, our findings do not support an unequivocal separation of moral and prudential schemas. The lack of a significant interaction on the composite scores in Study 2 705 and the few main effect differences that we found between moral and prudential task scores suggest that these processes may share some commonalities. What those are, or what aspects of the development of these schemas may converge or diverge, remains to be explored.

*Moral Virtue and Practical Wisdom May Develop Asymmetrically Across the Lifespan.* Apart from theme generation, across the two studies we found the suggestion of curvilinear age effects for both moral and prudential theme comprehension on composite scores and most individual task scores. Unlike the other groups, young and middle-aged adults performed well on both moral and prudential tasks, suggesting that experience may improve prudential comprehension. But what have they learned? Sternberg (1998) suggested that the core of wisdom is what he calls 715 *tacit knowledge*. Tacit knowledge is procedural knowledge that is relevant to the goals of the person and acquired with little help from others. Tacit knowledge cannot be directly taught because it is applied distinctively in each situation and develops from experience. The results of Study 2 imply that such tacit knowledge 720 is still developing in college students but can be used by young and middle-aged and older adults to generate a theme from a story about prudential issues.

In contrast to a vast literature on the development of moral judgment, little is known about the development of this tacit knowledge, or how the acquisition

of tacit knowledge may eventually lead to the development of practical wisdom. Life-span researchers define wisdom as “a metaheuristic to orchestrate mind and virtue toward excellence” (Baltes & Staudinger, 2000, p. 122) “expert knowledge system concerning the fundamental pragmatics of life” (p. 123), or “expertise on the conduct and meaning of life” (p. 124). On the one hand, the young and middle-aged adults’ performance relative to the other groups supports the notion that wisdom arises from experience. On the other hand, it may not be experience alone that prevents children from displaying prudential comprehension. Increasing evidence demonstrates that biological development plays a significant role in cognition, even in adulthood. The ability to make long-term plans and control impulses—skills essential to pragmatic behavior—is a sign of mature brain development, often lacking even in late adolescence (Sowell, Delis, Stiles, & Jernigan, 1999; Sowell & Jernigan, 1998). Moreover, recent work suggests that brain maturation continues well into adulthood. For example, myelination appears to peak at age 45 (Sowell et al., 2003), around the same point in development as wisdom (Labouvie-Vief, 1990). Likewise, evidence suggests that wisdom grows more differentiated with age (Clayton & Birren, 1980) and with age-independent measures of developmental complexity (Labouvie-Vief). The performance differences detected among our age groups are thus most likely a function of both experience and development.

Development and experience seem to explain the performance of the youngest children and the older adults, who did the most poorly on both types of theme comprehension. Certainly the poorer performance of the children relative to the college students and young and middle-aged adults, and the third-grade students relative to the fifth-grade students, concurs with other research. Children of these ages are still developing their reading comprehension skills (Goldman et al., 1984) for both types of stories, and have only just begun to amass the experience needed for handling moral and prudential issues. As for the older adults, despite the life experience they may have at their disposal, their performance on the multiple-choice and reading comprehension tasks relative to theme generation suggests that aging may negatively influence responses on these types of tasks. Lifespan development researchers (e.g., Baltes & Staudinger, 2000) find that decrements in performance on experimental tasks begin after age 75; our older adult sample was mostly older than that ( $M = 77$  years,  $SD =$  ). A pattern of performance similar to that of the younger students was evident—poorer performance overall but especially on the prudential stories. The older adults may find issues of morality to have greater salience than issues of practical wisdom, a conclusion suggested in studies of moral text processing in older adults (Narvaez, Radvansky, Lynchard, & Copeland, in press). Nevertheless, although the older adults did more poorly than the young and middle-aged adults, their performance on prudential themes was better than that of the children and their moral theme comprehension was better than the third-grade students in Study 1. Also, for theme generation, the older adults were as skilled as the young and middle-aged adults in generating

moral and prudential themes. Methodology may thus have a greater impact on performance for the older adults than for younger groups.

*Limitations and Future Directions.* The findings of this study must be qualified by several limitations. For instance, the data presented here are cross-sectional. In addition, our concerns that the data obtained from the older adults may have been unduly influenced by our methods suggest that the use of alternative research techniques may clarify the meaning of the results we obtained. Taken together, these two concerns also raise the issue that our findings may be compromised by cohort effects in people's responses to the stories and questions. After all, the stories were all about children, which may have affected the adults' reading of them in ways we cannot evaluate from our data. Similarly, our groups differed in size and may not have been representative of the adult population as more randomly selected groups. The samples we used had little ethnic or cultural diversity so generalizability to other populations is limited. Certainly what is considered moral and prudential can vary by culture. A separate concern is that our prudential stories were simply more difficult to understand than our moral stories, independent of the development of moral or prudential schemas. We find this possibility unlikely given our efforts to make the stories equivalent (e.g., all were at a third grade level and rated by experts as equivalent in complexity and structure), but significant pretesting of all stories would be needed to verify our claims.

The findings presented here leave several avenues for productive future research. For example, longitudinal work is essential to enhance researchers' understanding of the development of both moral and prudential schemas, and thus to the development of moral virtue and practical wisdom. In fact, the ways in which practical wisdom, in particular, develops across situations could be usefully researched by providing vignettes that vary in the practical background knowledge that is provided to support solving the problem presented. Might children outperform adults on tasks that tap tacit knowledge that they currently use but that adults no longer access? Last, the stories we used differed in their emphasis on social versus prudential concerns, as do many stories common in American culture (e.g., fairy tales and *Aesop's Fables*). Some prudential concerns, however, are focused on purely asocial issues (e.g., do not touch the stove lest you burn your hand). We did not test the asocial aspect of practical wisdom here. A comparison of theme comprehension of moral and asocial prudential stories may further illuminate the differential development and role of experience in the development of moral virtue and practical wisdom.

*Conclusions.* The work presented here is a first step toward empirically addressing philosophical concerns regarding the relation between moral virtue and practical wisdom. We do not claim that our results regarding moral and prudential theme comprehension map perfectly onto the broader constructs of moral virtue and practical wisdom, but as components of these constructs they suggest that these



kinds of thinking may develop separately and at different developmental rates. In contrast to the philosophical views that posit no separation of these constructs or primacy for practical wisdom, the research presented here places developmental priority on interpersonal concerns. Greater understanding of moral versus prudential themes may be a function of the faster and more complete development of moral than prudential schemas. Ostensibly, these schemas develop as a function of the wide variety of social experiences available from birth onward. Attention to prudential issues may become more salient with age. As with autobiographical memory, which generates themes automatically from the rich detail of personal life, prudential theme comprehension may require access to richer detail or experience than moral theme comprehension does (Conway, 1996; Zwaan, Radvansky, & Whitten, 2002). Prudential themes, and indeed, prudential concerns in general, may even depend on the integration of subsets of knowledge, some of which may even be sociomoral in nature (Kim, 2001). For example, knowing how to solve a personal problem may require attention not just to an individual's own needs, but to the needs of others as well—even if the problem is primarily one of self-interest. With age and experience, individuals may realize that prudence is not matter of luck but of selection of environments and tailor their behavior accordingly. Further attention to questions regarding other aspects of moral virtue and practical wisdom may help illustrate how these skills evolve through cognitive development and experience.

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