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Play on: Retrospective Reports of the Persistence of Pretend Play Into Middle Childhood

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Piaget (1962) asserted that children stop engaging in pretend play when they enter the concrete operational stage because they become able to accommodate reality and no longer need to assimilate it to their wishes. Consistent also with the views of Vygotsky, discussion of pretend play in developmental psychology is typically confined to early childhood, yet the activity itself does not seem to be so confined. As a preliminary investigation of pretend play in middle childhood, undergraduates were asked to complete a retrospective questionnaire about their childhood pretend play. The questionnaire items queried them about the content and context of their prior pretense engagements, when and why they stopped pretending, and personality characteristics relevant to pretense and fantasy. On average, respondents reported ceasing to pretend around 11 years of age. Among the statistically significant predictors of participants' reported ages of ceasing to pretend were gender, childhood environs, siblings' ages, belief in fantastical entities as a child, and participants involved in the last pretend memory. This preliminary study lays a foundation for future studies exploring the role of pretending in middle childhood. Although this study suggests that pretending is still widespread in middle childhood, it sheds no light on its function. This is an important issue across all ages that future research should address.

Symbolic play is one of the most intriguing childhood activities. A child might pretend to be a teacher, or Batman, and might transform objects and the environment to fit that theme, perhaps by designating a corner of a room

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as the teacher's desk or the Batcave. Pretense is an active transformation of the here and now (Garvey, 1990) that involves a living agent who is aware that he or she is pretending, a reality that is pretended about, and a mental representation that is projected onto reality (Lillard, 1993, 1998, 2001). The latter component, projection onto reality, distinguishes pretense from imagining (Walton, 1990). Moreover, pretending often involves action, whereas imagining does not (but see Nichols & Stich, 2000).

Despite its intrigue, from the early 1980s until very recently (Pellegrini, 2011; Taylor, in press), pretending has not received a great deal of attention in research. For example, it has not been accorded a chapter in the *Handbook of Child Development* since its 1983 edition (Rubin, Fein, & Vandenberg, 1983). Perhaps this is in part because play is just play, not to be taken seriously. Indeed, in what is arguably still the most important overarching theory in developmental psychology, that of Jean Piaget, pretend play was seen mainly as a symptom of immaturity, something to be outgrown by about 7 years of age when children enter the concrete operational stage (Piaget, 1962).[1]

In contrast to Piaget, Vygotsky (1967) saw pretend play as a "leading factor of development" (p. 15), and recent attention to Vygotsky demonstrates respect for this view. Many claim that pretending is vital to learning and development (Ginsburg, 2007; D. Singer, Golinkoff, & Hirsh-Pasek, 2009), and researchers have also suggested that pretend play assists children's understanding of norms (Rakoczy, 2007). However, even Vygotsky stated that pretend play ceases at "school age" (1967, p. 18), namely around age 6.

Some authors are fairly explicit in their claims that pretending stops around age 6 (Fein, 1981; Sutton-Smith, 1997; Vasta, Haith, & Miller, 1999). One seminal text on children's play states the following:

> There is singularly small disagreement about the age considered characteristic of sociodramatic play. The theorists commonly mention the age of three years and older, and agree that at about the age of six this form of play tends to become less frequent, until, at seven, games-with-rules are the common features of play behavior and sociodramatic play tends to disappear. (Smilansky, 1968, p. 11)

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[1]We acknowledge that Piaget may have been concerned with the stage rather than the age when pretense ceases. Yet Piaget states, "this last period, which we place between the age of seven or eight and eleven or twelve, is characterized by a definite decline in symbolism and the rise of . . . games with rules" (Piaget, 1962, p. 140). Furthermore, child development textbooks often present Piaget's stages of cognitive development as being associated with specific ages, claiming that children enter the concrete operational stage at age 6 or 7 years old (Siegler & Alibali, 2005; Siegler, DeLoache, & Eisenberg, 2011).

Many developmental psychology textbooks perpetuate this view. For example:

> Whereas younger children are apt to get together in groups of two or three to engage in free-flowing fantasy, elementary school children often convene in larger groups and chose games and other activities that have established rules. (McDevitt & Ormrod, 2007, p. 468)

> By 6 years of age, most children have entered the stage of concrete operational thought. Their thought processes become more logical and realistic, and fantasy and pretend tend to give way to seeing the world more as it really is. Children now enjoy play activities and games that involve structured rules. (Cook & Cook, 2005, p. 445)

Berk (2003) states that after symbolic play, rough-and-tumble play becomes commonplace at school age, along with "the complementary roles of several players in relation to a set of rules" (p. 601). Other texts (e.g., Cole & Cole, 1996; Kail, 2002) do not explicitly say that pretending ceases before middle childhood but do imply that pretending is constrained to the preschool period by limiting discussion of symbolic play to preschoolers, with no mention of such play in middle childhood. Although it is true that one sees elementary school children on playgrounds playing four-square, dodge ball, and other games with rules, this is not to say that they no longer pretend play. The evidence that children cease pretending by the age of 6 or 7 is actually quite sparse.

The citation that is typically used as empirical support for Piaget's claim that pretending stops at the end of the preoperational period (for example, in Fein, 1981) is Eifermann (1971). Primarily concerned with games with rules, Eifermann and her research team of 150 teachers and students carried out a huge observational study of approximately 65,000 Israeli children on their school playgrounds for 10 minutes. The children ranged in age from 6 to 14 years old and attended 14 different elementary schools. Across settings, observers noted the ages of children, weather, play conditions, and the name of the game being played, and these were tallied for the thousands of children observed. Because pretending was not a focus of the study, its analysis was confined to data from 2 of the 14 schools (see Eifermann, p. 285, 1971, Table 5). Eifermann summarized the findings as having:

> verified, in accord with Piaget's general statements, that symbolic play, in the one [upper-class] school that was tested for this purpose, is already rare at the age of 6 to 8—and remains steadily so throughout school—while in the corresponding [lower-class] school, there was still some noticeable symbolic play in the two first grades, with a significant decline thereafter. (pp. 295–296)

Although the aforementioned 1983 *Handbook of Child Development* chapter on play noted that ''prior to acceptance of [Eifermann's (1971)] finding . . . it will be necessary to replicate . . . in other settings and countries'' (Rubin et al., 1983, p. 727), no further study exists to our knowledge. This is troublesome. One concern is that Eifermann's methods might be ill suited for observing older children's pretend play, if it exists. First, the recess periods were 10 minutes long; older children might need longer to plan and embark on pretend play (Edwards, 2005; D. G. Singer & Singer, 1990). Second, lack of pretense-inducing materials on school playgrounds might be problematic. Provision of materials conducive to play makes a great deal of difference to whether play is observed in the laboratory (McLloyd, 1983); laboratory studies of pretending typically provide materials like replica toys or miniatures, and these were apparently not available to children in the Eifermann study but are available at home and in other naturalistic settings (Sutton-Smith, 1983). Third, the presence of observers might have diminished pretending if older children are embarrassed about pretending (Ariel, 2002; Hoff, 2005a).

In addition to the observation setting possibly not revealing middle childhood pretense, another concern is whether Eifermann's (1971) observers would have identified all instances of pretend play, particularly because the study was geared toward cataloging children's games with rules (Eifermann, 1971). Researchers coded the names of children's games, usually without corroboration from children. For example, children might have appeared to be playing tag but could have actually been playing ''war'' with imaginary objects, identities, and missions, but no set rules. Direct accounts from children are sometimes necessary to clearly identify pretense (Huttenlocher & Higgins, 1978).

In sum, although it is frequently used as empirical support for the claim that by 7 years old children no longer pretend, the Eifermann (1971) study is problematic. Indeed, several studies focusing on imaginary companions suggest that some children still pretend in middle childhood. For example, Hoff (2005b) found that 15 out of 26 fourth graders reported having an imaginary companion, and in another study, 13 of 152 sixth graders still had an imaginary companion (Taylor, Hulette, & Dishion, 2010). In fact, 33% of male adolescents and 60% of female adolescents reported writing to an imaginary companion in their diaries (Seiffge-Krenke, 1997). Taken together, different methodological techniques employed by several independent researchers have demonstrated that children have imaginary companions into middle childhood, thus providing justification for research aimed at investigating more general aspects of pretend play in middle childhood.

Although empirical support for older children pretending, aside from imaginary companions, is quite scarce, a notable study conducted by Doyle

and colleagues (Doyle, Bowker, Serbin, Gold, & Sherman, 1989) suggests that at least under facilitating conditions, pretend play continues into middle childhood. Doyle et al. observed 236 children in Grades 1 through 6 during a series of art classes in which children were encouraged to pretend with puppets and other objects. They found that older children did pretend, although fleetingly: The mean duration of pretend sequences was less than 10 seconds. However, the degree of direction by adults and the art class setting make it difficult to generalize from this study to whether elementary school children still pretend in their everyday lives.

Beyond empirical studies, several theorists have also proposed that pretense continues into middle childhood. For example, D. G. Singer and Singer (1990) suggest that although a shift toward games with rules occurs, older children might frequently infuse make-believe elements into board games, such as Clue, or take on fantastical identities during spontaneous neighborhood gatherings with friends. Göncü and Perone (2005) have proposed a link between adult improvisation and childhood pretense, suggesting that pretend play is a life-span activity.

This study aimed to chart the prevalence of pretending across middle childhood. However, directly observing older children engaging in pretense poses considerable challenges. For example, pretending probably typically occurs in unstructured time, which declines in middle childhood (Hofferth & Sandberg, 2001a). Thus, finding observational opportunities is daunting. Even if observational opportunities were available, researchers have suggested that pretend play becomes more private with age (Ariel, 2002; D. G. Singer & Singer, 1990). Therefore, middle childhood pretense might only occur when children are alone or with a few friends. Moreover, elements of pretense might be infused into actions that outwardly appear to be firmly rooted in reality, like pretending to be a master chef while merely cooking dinner, making identification of these episodes difficult. Given the inherent challenges associated with investigating older children's pretend play, a less restrictive retrospective survey method was deemed best for this initial study.

Although Piaget believed that pretend play is replaced by games with rules around age 6 and many texts about childhood perpetuate this idea, our own observations, coupled with the counterexamples mentioned, led us to hypothesize that pretending does continue into and perhaps even through elementary school. To test this hypothesis, we used a retrospective questionnaire to elicit undergraduates' memories of pretending across distinct developmental time points. By asking participants to provide details about their own pretense engagement, we captured accounts that occurred alone or might have otherwise been mistaken for nonpretend acts by observers. Secondary aims of the study included providing exploratory data on demographic and personal characteristics that predicted participants' reported

ages of ceasing to pretend like a child, hereafter CPC age, and identifying how recalled instances of pretense might have changed throughout childhood. For example, although we know how gender (Rubin, Maioni, & Hornung, 1976; J. L. Singer, 1973) and play partners (Dunn & Dale, 1984; Farver & Wimbarti, 1995; Youngblade & Dunn, 1995) impact young children's pretend play, we do not know how they impact older children's. Finally, the reasons participants gave for ceasing to pretend were explored, in part to evaluate Piaget's claim that pretending declines due to increased interest in adapting to reality.

METHODS

Participants

Participants were 113 undergraduates (56 female, 57 male; $M_{age} = 18;7$; age range $= 17;0–22;0$) at a medium-sized university located in the Southeastern United States, who completed the survey to partially fulfill a course requirement. All participants provided informed consent prior to participating. The sample reflected the racial and ethnic composition of the university participant pool and was approximately 74% Caucasian, 16% Asian, 8% African American, and 2% Hispanic. Participants had an average of 1.6 siblings (range $= 0–5$). Most were from suburban areas ($n = 73$), but others were from small towns ($n = 24$) and urban areas ($n = 13$), with a few from rural areas ($n = 3$). Their parents were highly educated: For 58% ($n = 66$), at least one parent had earned a graduate degree, and for 89% ($n = 100$), at least one parent had finished college.

Measures

Retrospective pretending questionnaire.   All participants completed a computer survey consisting of open-ended and forced-choice questions. Participants were first asked to provide demographic information, including age, gender, parental education levels, environment raised in, and the number, age, and gender of siblings. Pretending was defined for participants as a "mental transformation of the here and now," with examples including "pretending to be a soldier, pretending that a box is a boat, pretending to be asleep, and interacting with an imaginary companion." The definition and examples were repeated throughout the survey so participants could refer to them as needed.

Memories of pretend-play engagement.   Queries about specific memories of engaging in pretense focused on four relative time points (first, middle, last, and current). Each participant's age for these time points varied, as, for

example, first pretend memories occurred at different ages for different people. Participants reported their first pretend memory by thinking back to their "earliest memory of engaging in pretend behavior." Once they had done so, they described what they pretended and with whom, whether object substitution occurred, and their age.

To elicit memories of pretense from the middle developmental time point, we asked participants to remember pretending during the time of their lives when they were pretending most frequently. The survey permitted up to five middle pretend memories to be entered. Participants once again provided contextual details on what they pretended, the individuals involved, if object substitution occurred, and their age. Some participants recalled fewer than five memories; our analysis focused on the middle pretend memory that participants described first.

The last developmental time point captured when participants "stopped pretending in the way that [they] pretended as a child." More explicit directions, such as examples or a stricter definition, were intentionally avoided, as they might have influenced participants' responses. Thus, we sought pretense that conformed to each participant's subjective sense of what "pretending as a child" was like. The age at which this last pretend memory occurred was a key data point for this study. As with the first and middle time points, we also asked participants to explain what they were pretending, with whom, and whether or not object substitution occurred.

The fourth and final pretend event query concerned current memories of pretense engagement. Although participants might have ceased pretending like a child, that did not necessarily indicate that their pretending had ceased entirely. Rather, they might have continued to pretend in ways divergent from how they pretended as children. If participants reported that they were "still pretend[ing] in situations that [did] not involve babysitting children," they were asked to describe what they currently pretended, and this was coded as a current pretend activity.

Parental influences.   In addition to providing contextual information about their pretend play, participants answered two questions concerning their parents' behaviors and attitudes toward pretense. For example, participants indicated how often their parents pretended with them when they were preschoolers using a 5-point scale (1 = *never*, and 5 = *daily*). Furthermore, participants indicated their agreement with the statement, "My parents encouraged me to pretend," using a 5-point scale (1 = *strongly disagree*, and 5 = *strongly agree*).

Fantasy orientation.   The survey included several questions aimed at assessing fantasy orientation. Participants stated whether or not as children

they had believed in each of 10 fantastical entities, including event-related figures (e.g., Santa Claus, Easter Bunny) and generic fantastical figures (e.g., genies, ghosts). Participants were also asked if they had an imaginary companion as a child. Participants' preferences for fantastical fiction and video games were gathered using a 5-point agreement scale (1 = *strongly disagree*, and 5 = *strongly agree*). Finally, participants reported how often in their daily lives they daydreamed and fantasized using a 5-point scale (1 = *never*, and 5 = *daily*).

Frequency and cessation.   Participants reported how frequently they engaged in pretend play, using a 5-point scale (1 = *never*, and 5 = *daily*), during seven 2-year age spans (from 4–5 years old to 16–17 years old) and an eighth span of 18 years old and beyond. Participants were also asked to state, as they got older, whether they pretended more alone, with friends, or with family, or if the participants involved did not change as they got older. Finally, participants were asked to select any reason(s), out of eight provided, for their eventually ceasing to pretend (e.g., "Found it embarrassing," "No longer had the time," "Social group change," "Replaced by technology," "Others around you changed," "Lost interest," "Grew out of it," and "Attention shifted"). These eight reasons were from the most-cited reasons in a pilot study in which this question was posed in an open-ended fashion (Sorensen & Lillard, 2007).

Procedure

Participants were greeted in the laboratory and seated at a computer. An online survey program (SurveyMonkey) generated one question at a time. Participants completed the survey in approximately 30 minutes and were debriefed following their participation.

Coding

Memories of engaging in pretense were coded for the age when they occurred, level of self-transformation, use of miniatures, media influence, participants involved, and theme. The age when each pretend memory occurred was coded in years. When more than one age was given for a pretense memory (e.g., "11 or 12"), the average of the ages was used.

The level of self-transformation was coded according to whether the participant took on another identity or gained a skill he or she would not normally possess. For example, "pretending to be Aladdin" was scored as a full self-transformation (2), whereas "pretending that the ground was made of lava" was coded as an instance of no self-transformation (0). For

a minority of accounts, it was unclear whether participants had self-transformed (e.g., "battle"), and an intermediate self-transformation code of 1 was used.

Reports of using miniatures were coded in a binary fashion, with pretense engagements that involved miniatures (Barbies, Legos, stuffed animals) receiving a score of 1 and others receiving 0. Pretend memories that were media-influenced (professional sports player, musical artist, movie/book/cartoon character) received a score of 1 and others received 0.

To assess the social nature of the pretense accounts, the participants involved in the pretense were coded. Accounts of pretending alone received a score of 0, and those involving others received a 1. If the pretense occurred both alone and with others, the reported frequency was used as the deciding factor. For example, "usually alone, occasionally with friends" was coded as alone.

The thematic content of participants' pretense accounts was coded according to a scheme modified from Gosso, Morais, and Otta (2007). Prominent themes included: *Adventurous Work*, meaning productive activities in the culture that are especially adventurous (e.g., astronaut, cowboy, detective); *Daily Life*, broadly construed as typical routines of children's lives (e.g., caretaking behaviors, school, house); *Deception*, such as pretend sleeping; *Entertainment*, including leisure activities and performers/athletes (e.g., balls, cruises, famous singers/athletes); *Fantasy*, meaning actions related to nonexistent cartoon, legend, or fairy-tale characters (e.g., dragons, princesses, Harry Potter); *Identity*, namely physical, cognitive, or economical changes to one's self (e.g., changes in one's attractiveness, intelligence, wealth); *Place*, indicating pretend geographic locations (e.g., amusement parks, tropical islands, make-believe lands); *Play Fighting*, including threat, persecution, fight, or flight (e.g., cops and robbers, army); and *Work*, meaning productive adult activities (e.g., farmer, hunter, teacher). There were four additional theme codes (*Transportation, Imaginary Companion, Animal*, and *Anthropomorphize*) that were rarely used and thus were not analyzed. Accounts of pretense that did not clearly fit into one of the aforementioned thematic content categories were coded as *Unspecified* (e.g., "pretending with dolls").

Reliability.   The first author coded all participants' accounts of pretense for self-transformation, use of miniatures, media influence, participants involved, and theme. A second coder coded 20% of the sample. Cohen's kappas for agreement were as follows: participants involved ($\kappa = .94$), themes ($\kappa = .91$), media influence ($\kappa = .85$), self-transformation ($\kappa = .82$), and use of miniatures ($\kappa = .79$). Differences were resolved through discussion.

Exclusion of Participants From Last-Pretend Analyses

Given our specific interest in participants' reported ages of CPC, last-pretend memory accounts were carefully examined to ensure the "as a child" criteria appeared to be met. The purpose of this was to be conservative, namely to reduce the possibility of inflating the age of last pretense. Based on this analysis, 30 participants (20 female, 10 male) were excluded from analyses involving participants' last pretend memories. Most of these participants ($n = 18$) were excluded because we determined that they misinterpreted the question as the last time they pretended in any manner, and we were not confident that they were truly still pretending like a child. This determination was made based on reported CPC age: If it was within 1 year of the participant's current age, the participant was excluded. The other excluded participants either recalled an event that did not conform to our operational definition of pretense (e.g., "I was in a school performance and I pretended to be a scientist"; $n = 10$) or were unable to recall a last-pretend memory ($n = 2$). Although these excluded participants' first and middle memories are reported with those analyses, analyses involving participants' last-pretend memories are restricted to the other 83 participants (37 females, 46 males).

RESULTS

Below, we first examine CPC age, then frequency of pretending at different points across childhood. Next, we examine predictors of CPC age and how thematic content changed across the four developmental time points investigated. Finally, gender differences in pretend content and cited reasons for CPC are reported.

CPC Age

The mean CPC age was 11;3 ($SD = 36.24$ months). The majority ($n = 61$ of 83; 74%) reported stopping between the ages of 8 and 13 years; 6 of 83 (7%) reported having stopped pretending like a child before 8 years of age, and 16 of 83 (19%) pretended like a child past 13 years of age. When participants' CPC ages were categorized according to the ages typically associated with Piaget's stages of cognitive development, only 4.8% ($n = 4$) stopped pretending while they were in the preoperational stage (based on typical chronological ages for that stage), whereas 47% ($n = 39$) were in the concrete operational stage and a full 48.2% ($n = 40$) were in the formal operational stage.

Frequency of Pretense Engagement Throughout Childhood

A chi-square goodness-of-fit test examined developmental change in reported frequencies of pretense engagement. As shown in Table 1, frequencies of engaging in pretense changed with age. Most importantly, observed counts exceeded chance, at the $p < .01$ level, for the "weekly" or "daily" frequencies of pretense engagement until 12 to 13 years old. Only then did pretense begin to occur at a monthly or lesser rate.

TABLE 1
Reported Frequency of Pretense Engagement Throughout the Life Span

Age (years)	Frequency					$\chi^2(4, N = 113)$
	Never	Rarely	Monthly	Weekly	Daily	
4–5	0	0	0	21	92*	281.03
6–7	0	1	2	34	76*	193.95
8–9	1	5	16	56*	35*	92.44
10–11	7	11	34	46*	15	49.26
12–13	11	33	43*	21	5	42.97
14–15	29	44*	23	13	4	41.47
16–17	35*	52*	13	9	4	72.62
18+	48*	43*	8	9	5	78.28

Note. Asterisks indicate cells where the observed count was higher than the expected count at the $p < .01$ level.

Predicting CPC Age

Providing exploratory data on demographic and personal characteristics that predicted participants' reported ages of CPC was a primary aim of this study. To this end, we first carried out a series of simple linear regressions to identify variables that explained a statistically significant amount of variance in CPC age. Linear regressions, as opposed to zero-order correlations, were carried out because our data included unordered categorical variables. These initial analyses, shown in Table 2, identified demographic (e.g., gender, environment, sibling age), pretend play engagement (e.g., last-pretend participants), and fantasy orientation variables (e.g., fantastical entities endorsed as a child) that were related to CPC age.

Next, we conducted a hierarchical regression analysis to investigate whether last-pretend participants and fantastical entities endorsed as a child would explain unique variance in CPC age after controlling for demographic variables. We entered the demographic variables in the first step of a regression analysis predicting CPC age. Next, we entered last-pretend participants in Step

TABLE 2
Shared Variance Between CPC Age and Variables of Interest

Variable	R^2	β
Sibling	0.127*	−.274
Gender	0.088**	.296
Environment	0.089†	.289
Last-Pretend Participants	0.117**	−.342
Fantastical Entities	0.085**	.292

Note. †$p < .10$. *$p < .05$. **$p < .01$.

2 and fantastical entities endorsed in Step 3, with both variables uniquely predicting CPC age. The resulting model, shown in Table 3, explained 42% of the variance in participants' reported ages of CPC, $F(10,72) = 5.25$, $p < .001$.

The positive estimate of gender indicates that males reported older CPC ages than females. The positive estimates of environment indicate that

TABLE 3
Hierarchical Regression Analysis for Predicting CPC Age

	B	SE	p	β	ΔR^2
Step 1					
Gender	1.77	0.60	<.01	0.29	
Environment					
Suburb	1.09	0.93	>.10	0.23	
Small town	2.14	1.00	<.05	0.62	
Rural	4.03	1.95	<.05	0.65	
Sibling Age					
Younger	0.40	1.11	>.10	0.25	
Older	−0.93	1.15	>.10	−0.15	
Both younger and older	−1.44	1.34	>.10	−0.31	
Twin	−1.61	2.04	>.10	−0.47	.27**
Step 2					
Last-Pretend Participants	−1.76	0.62	<.01	−0.29	.07**
Step 3					
Fantastical Entities	0.49	0.15	<.01	0.30	.08**

Note. Final beta weights are reported. Model $R^2 = .42$, $F(10,72) = 5.25$, $p < .001$. **Gender** (0 = *female*, 1 = *male*) was dummy coded according to a binary scheme. **Environment** (0 = *urban*, 1 = *suburb*, 2 = *small town*, 3 = *rural*) and **Sibling Age** (0 = *only child*, 1 = *have a younger sibling*, 2 = *have an older sibling*, 3 = *have a younger and older sibling*, and 4 = *have a twin*) were entered as factors. **Last-Pretend Participants** (0 = *alone*, 1 = *with others*) was dummy coded according to a binary scheme. **Fantastical Entities** was contingent upon the participant's reported number of fantastical entities endorsed.

**$p < .01$.

those growing up in urban environments reported the youngest CPC ages and that each step toward a more rural environment (suburban, small town, rural) was associated with an increase in reported CPC age. However, note that the CPC ages of those growing up in urban and suburban environments did not significantly differ. The positive estimate of younger sibling demonstrates that participants with younger siblings reported an older CPC age than only children. Furthermore, the negative estimates associated with each progressive step along the coding scheme (P has a younger sibling, P has an older sibling, P has both an older and younger sibling, and P is a twin) indicate that relative to only children, CPC age declined across these groups. The negative estimate of last-pretend participants means that those who recalled pretending alone for their last-pretend memory reported later CPC ages than those who reported pretending with others. Finally, the positive estimate of fantastical entities endorsed indicates that with each entity a participant believed in as a child, reported CPC age increased.

Finally, because we used multiple measures of pretend and fantasy, we calculated variance inflation factors (VIFs) to investigate whether variables in our final model evidenced signs of multicollinearity. VIFs assess the multicollinearity in a set of predictor variables by examining the variance shared between variables. Higher values of VIF indicate more multicollinearity. The resultant VIF values, shown in Table 4, were all within the acceptable range (i.e., <10), suggesting multicollinearity among predictor variables was not a concern (Hair, Anderson, Tatham, & Black, 1995; Marquardt, 1970).

TABLE 4
Variance Inflation Factors (VIF)

Variable	VIF
Gender	1.19
Environment	
Suburb	2.75
Small town	2.42
Rural	1.21
Sibling Age	
Younger	4.16
Older	4.01
Both younger and older	2.59
Twin	1.33
Last-Pretend Participants	1.25
Fantastical Entities	1.06

Thematic Content of Pretending Across Developmental Time Points

Another topic of interest was how the content of pretend memories changed over time. What did participants report pretending later in their lives, in contrast to the beginning? Figure 1 displays the changing thematic content of participants' first, middle, last, and current reports of pretense. Only those themes that were reported by 5% or more of the sample at one (or more) of the time points are included. We begin with the three most common themes from participants' first pretend memories and detail how they change over the first, middle, and last developmental time points. Next, themes from the current time point are discussed.

The most common theme in participants' first pretend memories was *Fantasy* (21%), such as reports of pretending to be a mermaid or Aladdin. Although *Fantasy* continued to be a prominent theme in middle-childhood accounts of pretense (19%), the number of participants reporting *Fantasy* pretense declined at the last time point (13%). The next most common theme in participants' earliest accounts of pretending was *Play Fighting* (19%). Accounts of *Play Fighting* pretense also remained steady across middle childhood (17%), but in contrast to *Fantasy*, this became the most prominent theme reported at the last-pretend time point (23%). Finally, *Daily Life* pretense (17%) was the third most frequently recalled theme in participants' earliest accounts of pretending. It rose slightly in middle childhood (22%) and declined at the last-pretend time point (12%).

Forty-three participants (38%) reported still pretending in their daily lives at the current time point. This time point had a different thematic structure when compared with the three earlier developmental time points. For one, accounts of *Entertainment* pretense (20%) were most frequent. Second, themes that appeared frequently during the first, middle, and last developmental time points declined in the current time point (e.g., *Fantasy* [9%], *Play Fighting* [4%], and *Daily Life* [4%]). Third, *Identity* (18%) and *Deception* (16%) pretense, two themes that had not been reported by more than 5% of the sample in any of the three earlier developmental time points, markedly increased at the current developmental time point.

Finally, the propensity of participants to report diverse themes across developmental time points was investigated. Would participants' accounts of pretending become more multifarious across development? To investigate, we compared the themes participants recalled at the first time point to the themes they recalled at the middle time point. Participants were more likely to report engaging in a different theme at the middle time point (67%) than they were to report engaging in a similar theme (33%), $\chi^2(1, N = 113) = 13.46$, $p < .001$. In other words, if a participant reported *Daily Life* pretense at the first developmental time point, the theme of the middle
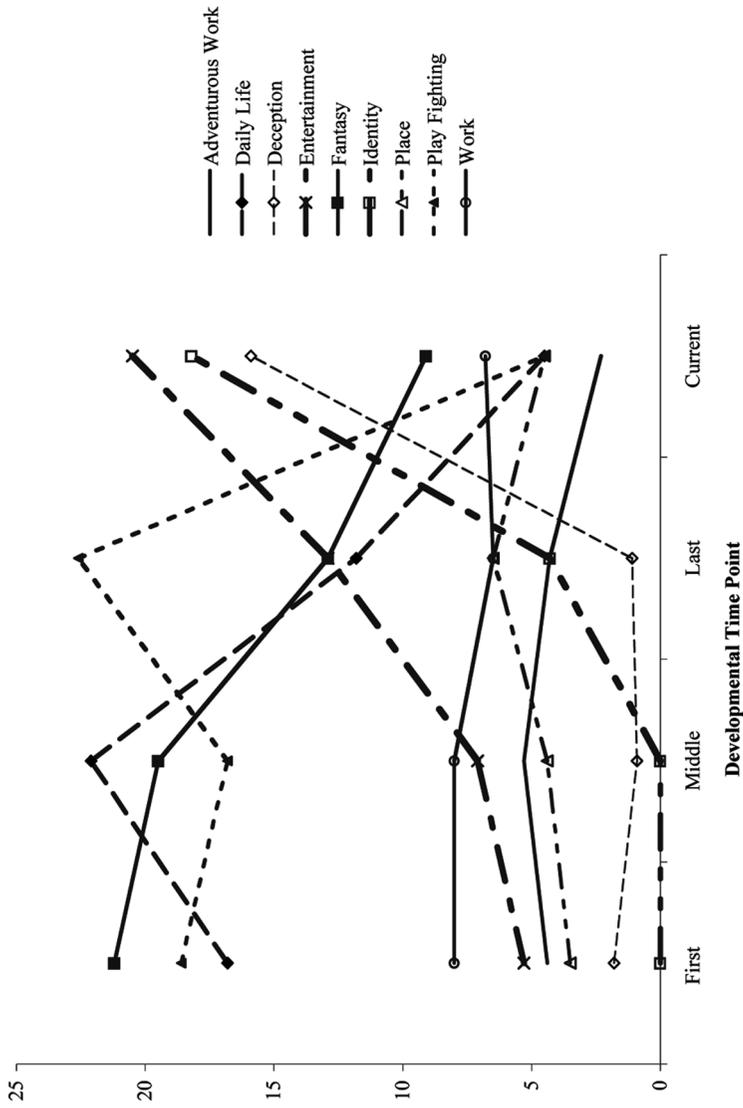
FIGURE 1   Frequencies of pretend-play themes as a function of developmental time point.

pretend memory was significantly more likely to be characterized as a different form of pretense (e.g., *Play Fighting, Fantasy*, etc.) than *Daily Life*. When we compared the themes participants recalled at the middle time point to the themes they recalled at the last time point, a similar pattern emerged: More participants reported engaging in a different theme (71%) than a similar theme (29%), $\chi^2(1, N=83)=14.76$, $p<.001$. Next, we explored the accounts of the 43 participants who reported pretending during the current time point. Pretend themes from these participants' current pretend accounts were compared to the themes they recalled during the last-pretend time point. The thematic content was once again more likely to be different (65%) than similar (35%), $\chi^2(1, N=43)=3.93$, $p<.05$. Thus, although there was continuity across time in the pretend theme engaged in by some participants, many recalled engaging in different types of pretend themes with age.

Gender Differences in the Content of Reported Pretense

Differences between female and male participants were present in three domains: miniature use, media influence, and imaginary companions. At the first pretend time point, reports of miniature use were more frequent among females (34.5%) than among males (10.5%), $\chi^2(1, N=112)=9.31$, $p<.01$. Furthermore, females differed from males with regard to how often they recalled pretend memories influenced by media. For the middle pretend time point, males (26%) were more likely to report being influenced by media than were females (5%), $\chi^2(1, N=109)=8.67$, $p<.01$. This was also the case at the last-pretend time point (28% vs. 8%), $\chi^2(1, N=83)=4.89$, $p<.05$. Finally, of the participants who reported having an imaginary companion ($n=25$; 22%), a statistically significant trend was found, with females more likely than males to report that they had one at some point in their lives (30% vs. 14%), $\chi^2(1, N=25)=3.24$, $p<.10$.

Reasons Ceased Pretending

Participants' reported reasons for ceasing to pretend (shown in Table 5) were analyzed with a series of chi-square goodness-of-fit tests. The top reasons that participants chose for ceasing to pretend included: "Grew out of it," $\chi^2(1, N=113)=66.98$, $p<.001$; and "Attention shifted," $\chi^2(1, N=113)=30.80$, $p<.001$. On the other hand, reasons that participants endorsed at levels significantly below what would be expected by chance included: "Replaced by technology," $\chi^2(1, N=113)=5.531$, $p<.05$; "Social group change[s]," $\chi^2(1, N=113)=26.7$, $p<.001$; and "No longer had the

time," $\chi^2(1, N = 113) = 52$, $p < .001$. Finally, statistically significant results were not found for "Found [pretense] embarrassing," "Lost interest," or "Others around [the participant] changed," indicating a lack of consensus among participants on whether these reasons contributed to their ceasing to pretend.

TABLE 5
Reported Reasons for Ceasing to Pretend

Reason	Frequency endorsed (%)
Grew out of it	88
Attention shifted	76
Lost interest	47
Found it embarrassing	44
Others around you changed	42
Replaced by technology	39
Social group change	26
No longer had the time	16

DISCUSSION

One of the primary aims of the current study was to determine whether participants would retrospectively report pretending beyond the age of 6 years. Our results suggest that child-like pretending continues well beyond the age of 6 for the majority of children, at least among college students in the United States. This is evidenced not only by the average reported CPC age (11;3), but also by the admission of more than 50% of the sample that they were still pretending on at least a weekly basis at 10 to 11 years old. This is consistent with studies showing that children older than 6 years of age still maintain relationships with imaginary companions (Hoff, 2005b; Taylor, Carlson, Maring, Gerow, & Charley, 2004).

A limitation of the work presented here is that it relied on undergraduates' retrospective accounts of pretending, which might have been inaccurate (Bernard, Killworth, Kronenfeld, & Sailer, 1984). However, prior research has suggested that retrospective accounts of events are fairly reliable. Regarding dating of events, Wagenaar (1986) demonstrated that when attempting to date autobiographical events that occurred during a 5-year period, approximately 83% of the events that were misdated fell within 1 year of their actual occurrence, and events were as likely to be dated too recently as too remotely, suggesting most errors are small and average out (see also Sheingold & Tenny, 1982, as cited in Nelson, 1993; Usher &

Neisser, 1993). Furthermore, undergraduates asked to date and provide details on episodic events from early and middle childhood reported information highly concordant with parental accounts (Tustin & Hayne, 2010). Although direct observation of pretense in middle childhood would be preferable, difficulties in obtaining such observations led to the choice of retrospective accounts, and prior studies suggest they are reasonably accurate for our purposes.

Although many participants reported CPC ages in middle childhood and curtailed the frequency with which they engaged in pretense by the age of 12, even then, pretending did not cease entirely. In fact, 43 participants (38%) reported still pretending in their daily lives at the time of the study. This pretending was not done in the context of babysitting or acting on a stage, but was done alone or with peers. For example, one participant recalled pretending to be Jason Bourne, from the movie *The Bourne Ultimatum*, during an extended train ride home. Another shared that he often pretended to be the richest person in the world, living lavishly in a palace. A third stated that in preparation for a party, she turned on music and pretended to be Beyoncé Knowles. Anecdotally, a college student recently told us that she and her identical twin *still* pretend on a daily basis to be a dachshund and a dragon, replete with special voices and personalities.

To our knowledge, this is the first formal report of undergraduate students still engaging in pretense. It would be interesting to examine whether differences in personality might lead some young adults and not others to pretend. Further research focusing on individual differences indicative of current pretense engagement is needed.

A secondary goal of this research was to learn about potential factors, demographic or otherwise, that could predict CPC age. We identified five variables that were statistically significant predictors; they will be discussed in turn.

First, gender was predictive of CPC age, with males reporting that they pretended later than females. Some studies have documented higher levels of pretend play in males (Doyle et al., 1989; Rubin et al., 1976; Sanders & Harper, 1976). In line with the results from the current study, the content of children's pretend play, including a willingness to impersonate and incorporate media content, has also been shown to differ by sex, with males demonstrating elevated levels (Carlson & Taylor, 2005; Götz, Lemish, Aidman, & Moon, 2005). One source of this gender difference in CPC age might be rooted in biological differences between the sexes, with females maturing earlier than males. Indeed, Carlson and Taylor (2005) offered a similar maturational explanation for why girls had more imaginary companions than boys between the ages of 3 to 4 years old. Lending credence to this maturation proposal, in the current study, when asked to select reasons that led to their ceasing to pretend, 86% of females and 91% of males chose "Grew out of it."

If females mature earlier, they would grow out of things earlier and thus cease to pretend like a child earlier than males.

Environment was also a predictor, with participants who grew up in less urban areas reporting later CPC ages. This might stem from the opportunities that children in different environments are given to play. Newman, Brody, and Beauchamp (1996) discovered that when teachers were asked to indicate the amount of play time they granted their students, those in rural environments provided the most time, followed by teachers in suburban areas, who in turn provided more play time than teachers in urban environments. However, Newman et al. only accounted for time that was accorded for play during school. Children in urban environments might also have more structured time outside of school because of increased opportunities for structured activities in urban areas, and these structured activities might supplant free time in which pretend play seems most likely to flourish.

Of those participants who had siblings, those with a younger sibling reported a later CPC age than those with an older sibling, both an older sibling and younger sibling, or a twin. Older siblings facilitate pretend play with younger siblings by encouraging and structuring pretense engagements (Dale, 1989; Farver & Wimbarti, 1995; Howe, Petrakos, Rinaldi, & LeFebvre, 2005; Youngblade & Dunn, 1995). This facilitative role, and the pleasure that might have come from engaging in pretense with their younger siblings, could have prompted older siblings to pretend longer than they would have otherwise. Alternatively, younger siblings could have persuaded their older siblings to engage in pretense, thus elevating older siblings' CPC ages.

The number of fantastical entities participants reported believing in as children was also predictive of CPC age. Believing in fantastical entities may be indicative of a heightened fantasy orientation (Woolley, Boerger, & Markman, 2004) and thus may promote prolonged engagement in child-like pretense.

Consistent with suggestions that pretending might become more private during middle childhood (Ariel, 2002; D. G. Singer & Singer, 1990), those who pretended alone during the last-pretend time point reported older CPC ages than those who pretended with others. This suggests that those who did not pretend privately ceased pretending earlier.

The current study also sought to explore how pretense engagement might change during the course of four developmental time points. The thematic content of participants' reports during the first and middle time points was stable, with participants' accounts of pretense tending to be classified as *Fantasy, Play Fighting*, or *Daily Life*. However, by the last time point, *Fantasy* and *Daily Life* themes had declined and *Play Fighting* and *Entertainment* themes were most prominent. *Entertainment* pretense was also the most

prominent theme reported during the current pretend time point, followed by *Identity* and *Deception* themes. Pretense engagement also evolved on the individual level, as the thematic content of respective pretend memories from the middle, last, and current time points were each likely to be different from the themes of the developmental time point directly preceding (e.g., middle theme differed from the first theme, last theme differed from the middle theme, etc.). Taken as a whole, this study provides exploratory data on the trajectories of pretend themes throughout participants' lives and suggests that pretending evolves on an individual level.

The prevalence of imaginary companions was also investigated in the current study. In line with prior research (Ames & Learned, 1946; Carlson & Taylor, 2005; Seiffge-Krenke, 1997; Svendsen, 1934; Vostrovsky, 1895), females, when compared with males, were slightly more likely to report having at least one imaginary companion at some point in their lives. We also investigated the frequency of imaginary companion reports across the four developmental time points. However, only 3 participants in the first time point and 1 participant in the middle time point reported having an imaginary companion. Recall that 25 participants responded affirmatively to a question directly probing imaginary companion prevalence. What may account for this seemingly disparate result? For one, participants freely recalled their memories of pretense engagement across developmental time points, so even though they might have had an imaginary companion at, for example, the first time point, other recollections of pretending could have been more salient. Order effects might have also been operative. The question probing the presence of an imaginary companion followed queries concerning participants' memories of pretend-play engagement. Had it come before, participants might have mentioned their imaginary companions more often. In sum, although we replicated the gender difference often reported in the imaginary companion literature, the current study is not informative with regard to when children are most likely to have an imaginary companion (see Taylor et al., 2004; Taylor, Cartwright, & Carlson, 1993; Taylor et al., 2010).

A final aim of the current study was to investigate the reasons participants reported ceasing to pretend. Out of the eight reasons we provided participants, "grew out of it" and "attention shifted" to alternative activities were the most commonly selected reasons. Piaget (1962) claimed that children shift from pretending to games with rules around age 6, when they lose interest in assimilating reality to their ego. Unfortunately, we cannot state with certainty how many of the participants who selected the attentional shift reason meant that their attention shifted specifically to games with rules. Even if all participants who endorsed that reason were indicating that their attention shifted to games with rules, our results still contrast with

Piagetian theory in that the age at which pretending ceases is 5 years later, on average, than is typically claimed. It is important to note, however, that the attentional shift item and the lost-interest item conceptually overlap, limiting our ability to draw strong conclusions about participants' reasons for ceasing to pretend.

Given the prevalence of pretending in middle childhood suggested by this study, why would Piaget (1962), a preeminent observer of children, have missed it? One possibility is that children did not reveal it in his presence. Around the age of 6, some behaviors once performed across all contexts and company are more or less relegated to either the social or the private world. For example, private speech begins to occur less often in public (Diaz & Berk, 1992). Pretending may also be an activity that becomes more private with age (Ariel, 2002; D. G. Singer & Singer, 1990) and was thus out of Piaget's view, just as perhaps it was less visible in Eifermann's study (1971). In one study on imaginary companions, the majority of parents were not well informed about their child's imaginary friend, with three parents failing to realize their child even had one (Taylor et al., 1993). The older children are, the more likely they are to keep imaginary friends a secret (Ames & Learned, 1946). Children being seclusive about their pretending might contribute to the perception that the behavior goes away.

Another possibility, not necessarily separate from this one, is that the settings in which Piaget (1962) observed older children were not conducive to pretending. He often observed older children in settings like those used by Eifermann (1971)—for example, on streets where they gathered to play marbles. Finally, Piaget may have failed to notice pretending in middle childhood because it did not fit his theory—a criticism that has been leveled against Piaget for other aspects of his theory—for example, its emphasis on constructivism leading to a lack of appreciation for the role associative knowledge and retrieval processes play in cognitive development (Siegler & Ellis, 1996).

The retrospective method used in this preliminary study provided a way to capture instances of pretense engagement that occurred alone or were unobservable. This was clearly integral to our study, with whether participants pretended alone or with others during their last pretend memory serving as a significant predictor of CPC age. However, it will be important for future work to investigate the persistence of pretend play into middle childhood through other techniques. Because pretense is particularly difficult to directly observe in middle childhood, and the presence of an unfamiliar experimenter might inhibit children from engaging in pretend play, researchers need to attempt to videotape older children's play as it occurs naturalistically in the home. A video camera could be left in the home and turned on by a parent during free play. The footage could then be reviewed for instances

of pretense engagement. However, this method relies on researchers' abilities to detect when children are engaging in pretense without confirmatory evidence. Thus, it suffers from many of the same weaknesses as Eifermann's (1971) research. Another candidate method, the time diary, has been used elsewhere to accurately measure children's daily activities (Hofferth & Sandberg, 2001b). Students in elementary school and middle school, with the help of a parent or guardian, could be asked to record their daily activities in a time diary, and their reports could be coded for instances of pretense engagement. Although this method would still rely on self-report, it would have the advantage of being current. An early pilot study found that it was difficult to get diaries returned (Sorensen & Lillard, 2007), but incentives could improve compliance. Additionally, elementary school and middle school participants could complete a computer-based survey similar to the one used in the current study. This method, like the proposed diary study, would be advantageous in that it would capture current behavior. However, embarrassment and social desirability biases may lead elementary and middle school participants who actively pretend to withhold such information on a survey, despite assurances of anonymity.

This study is to our knowledge the first to exclusively focus on naturalistic pretending in middle childhood. The data suggest that pretending like a child ceases toward the end of middle childhood (average age of 11 to 12 years old), although some participants report still pretending in their daily lives as college students. In addition, we have identified several factors that predict CPC age. The data show that the thematic content of middle childhood pretense is in many ways similar to that of early pretending but also suggest that thematic shifts in participants' own pretense engagements occur across the four developmental time points we investigated. Finally, we found preliminary evidence that a shift in attention, possibly toward games with rules, is not the only reason participants eventually cease pretending.

The ''purpose'' of pretending in childhood—early or middle—is not understood, although there is much speculation about it, with ideas ranging from it somehow assisting cognitive development (creative thinking, planning, theory of mind) to it helping children cope with emotional challenge and fulfilling a need for control (Bretherton, 1989; Lillard et al., in press; Lillard, Pinkham, & Smith, 2010; Rubin et al., 1983). Notably, a recent study demonstrated that high-risk children who had imaginary companions in middle school, when compared with similar peers who had imaginary companions earlier in childhood or never had them, were significantly more likely to demonstrate positive outcomes following high school (Taylor et al., 2010). Researchers might follow Taylor et al.'s (2010) lead and further attempt to consider the purpose of pretense in light of the activity's continuation into middle childhood. For example, if pretending is serving a primary function

concerning control (at any age), how do the themes of middle childhood pretense reflect what one needs to control? Alternatively, might the functions of pretending change with age? Do children who pretend frequently as preschoolers continue to pretend frequently in middle childhood, or are there multiple trajectories in terms of the prevalence of this activity? Future research on the subject of pretending in middle childhood will enhance our understanding of the activity, of middle childhood, and of cognitive development more generally.

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