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The "Batman Effect": Improving Perseverance in Young Children

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This study investigated the benefits of self-distancing (i.e., taking an outsider's view of one's own situation) on young children's perseverance. Four- and 6-year-old children (N = 180) were asked to complete a repetitive task for 10 min while having the option to take breaks by playing an extremely attractive video game. Six-year-olds persevered longer than 4-year-olds. Nonetheless, across both ages, children who impersonated an exemplar other—in this case a character, such as Batman—spent the most time working, followed by children who took a third-person perspective on the self, or finally, a first-person perspective. Alternative explanations, implications, and future research directions are discussed.

Perseverance is necessary throughout our lives, from children struggling to sound out each letter on the page as they learn to read, to college students studying organic chemistry late into the night. Whether due to the tedium of the task at hand or the pull of the many more immediate gratifications that abound in our environments, success often requires persisting through some "unpleasure" (Duckworth, Kirby, Tsukayama, Berstein, & Ericsson, 2010; Ericsson, 2006; Freud, 1916–1917). The ability to push through when confronted with these obstacles has been linked to intelligence, school achievement, and work success (Meier & Albrecht, 2003). Thus, understanding how perseverance manifests in the face of environmental temptations is important.

Early childhood presents an opportune period to address this question. Demands on children's burgeoning self-regulatory skills increase dramatically with the onset of formal schooling (Duckworth & Carlson, 2013). Learning and mastery require perseverance toward one's goals (e.g., Duckworth et al., 2010; Ericsson, 2006; James, 1892/2001), but young children's relatively immature self-regulatory skills leave them especially susceptible to distraction (Carlson, 2005; Patterson & Mischel, 1975).

Surprisingly little research has focused on the early development of perseverance, including the psychological processes that facilitate it. In the most notable exception, Patterson and Mischel (1975, 1976) demonstrated the value of providing children with strategies to cope with a tempting distraction, such as averting their attention away from it. Oftentimes children must work in the presence of temptations (e.g., TV in the background), highlighting the need for research to identify additional means of self-regulation in such contexts. This study examined the benefits of a specific self-control strategy known as self-distancing (i.e., taking an outsider's view on one's own situation) on perseverance in young children.

Taking a mental step back from one's own situation could help children persevere in the face of distraction. Dozens of studies performed with young

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adults indicate that shifting from a self-immersed perspective to an outsider's point of view allows people to mentally step away from the pull of immediate distractions and reflect on their situations from a more objective perspective that facilitates goal attainment (Kross & Ayduk, 2011; Mischel, 2014; Sigel, 1970; Trope & Liberman, 2010). This transition from stimulus control to volitional control of one's thoughts and behaviors is precisely what is needed for successful self-regulation (Vygotsky, 1978; Zelazo et al., 2003). A growing body of research with adults and adolescents links self-distancing to benefits on a range of self-regulatory processes (Kross & Ayduk, 2011; Kross, Ayduk, & Mischel, 2005; Kross, Duckworth, Ayduk, Tsukayama, & Mischel, 2011; Mischel, 2014; White, Kross, & Duckworth, 2015).

Recent studies have also shown that transcending one's self-immersed point of view can facilitate self-regulation in preschoolers. Making decisions for another person rather than themselves (Prencipe & Zelazo, 2005) or impersonating a character (Karniol et al., 2011) helped preschoolers' to delay gratification. In another recent study, White and Carlson (2015) assessed the effects of varied levels of self-distancing on children's executive function (EF) performance using the Minnesota Executive Function Scale (Carlson & Zelazo, 2014). Five-year-olds' performance improved as distance from the self increased. They performed best when making decisions *as if* they were another person—in this case, taking on the persona of a character such as Batman or Rapunzel. They also demonstrated greater self-control when taking a moderately distanced outsider's perspective on the self through third-person speech.

This evidence is consistent with research on psychological distance more generally, which indicates that it aids self-control by decreasing the salience of momentary distractions and increasing attention toward distal considerations, like goals (Carlson & Zelazo, 2008; Fujita, Trope, Liberman, & Levin-Sagi, 2006; Mischel & Rodriguez, 1993; Sigel, 1970; Trope & Liberman, 2010). Indeed, the positive effects of increased psychological distance are well supported by research showing that children can use their precocious representational skills to symbolically transform a tempting stimulus. For example, in the preschool delay-of-gratification task, young children waited longer for a larger reward when they imagined marshmallows to be puffy clouds, than when they focused on how sweet the marshmallows taste (Mischel & Baker, 1975). Similarly, when 3-year-old children were given the difficult task of pointing to a reward they would like to give away (rather than one they would like to keep), increasing perceptual separation between food rewards and the symbols used to represent them—from concrete symbols (e.g., photographs) to relatively abstract ones (e.g., large and small stuffed animals)—helped children to curb impulsive responses and maximize rewards (Carlson, Davis, & Leach, 2005; see also Addessi, Bellagamba, Delfino, De Petrillo, & Focaroli, 2014; Apperly & Carroll, 2009). Carlson et al. (2005) posited that symbols afforded children with the opportunity to reflect on the task at hand and thus act in a way that was consistent with their longer-term goal.

Despite these important insights, we still do not know if distancing affects children's ability to voluntarily work toward a goal when faced with a more desirable alternative. Psychological distance promotes more objective, big picture evaluations (Sigel, 1970; Trope & Liberman, 2010). From a cognitive standpoint, this could allow children to evaluate their choices more clearly and, in turn, react flexibly and deliberately (Carlson & Zelazo, 2008; Sigel, 1970). As such, distancing could enhance children's ability to selectively attend to relevant, versus irrelevant, aspects of the situation. Importantly, perseverance can also be an emotionally charged process, working toward a goal could elicit negative emotions such as boredom or frustration. By taking the focus off of the self, children might begin to regulate their emotional responses to these "hot" aspects of the situation and respond in a more controlled manner.

Present Study

This research therefore investigated the effects of self-distancing on perseverance in 4- and 6-year-old children. To test work perseverance, we created a laboratory analog of a common modern self-control dilemma: The option to do work that is beneficial in the long run but tedious in the moment, or to indulge in a pleasurable distraction. Children were asked to be a "good helper" by completing a boring activity: an extended, and therefore particularly tedious, version of a computerized go/no-go task. At the same time, they were given the option to take a break if and when they wanted by playing games on a nearby iPad.

Following previous research by White and Carlson (2015), children were assigned to one of three conditions. In the self-immersed condition, children reflected on the task from a first-person point of view. In previous research, the effects of first-

person manipulations have not differed from no treatment (Mischkowski, Kross, & Bushman, 2012; White & Carlson, 2015); therefore, this condition served as our control group. In the third-person condition, children were encouraged to reflect on the task while referring to themselves by name. This condition was intended to elicit a moderately distanced, outsider's perspective on the self and has been successfully used toward this end in prior research (Grossmann & Kross, 2014; Kross et al., 2014). Finally, inspired by children's precocious role-playing skills (Harris, 2000; Taylor, 1999; Singer & Singer, 1990), children in the exemplar condition were encouraged to reflect on the task as if they were a specific character (e.g., Batman, Dora the Explorer). Together these three conditions were designed to represent increasingly distant perspectives from the self (self-immersed < third person < exemplar).

We predicted that taking an outside view on their situation would allow children to persevere longer in working toward their goals, even when faced with temptations. Given the well-established developmental increase in EF skills that likely underpin increases in perseverance, we further expected that 6-year-olds would persist longer across conditions than 4-year-olds.

Method

Participants

Participants were 180 typically developing 4- and 6-year-old children from the Minneapolis area including ninety 4-year-olds (M = 47.77 months, SD = 0.61; 49% girls) and ninety 6-year-olds (M = 71.70 months, SD = 0.64; 54% girls). Stratified random assignment was used to place 60 children in each of the three conditions.

Data were collected from May 2012 through January 2013. Participants were recruited using a volunteer participant database maintained by the university. Families received $10 for their participation and children received a T-shirt. Exclusion criteria included developmental delays (e.g., autism), premature birth (more than 3 weeks), non-English speaking (although bilingual children were included), or physical disabilities affecting vision or hearing. Most children were White, non-Hispanic (84.7%), although other ethnicities and races including Hispanic (3.9%), Asian (2.8%), African American (1.1%), and biracial (6.7%) were represented. The sample was primarily middle class with 14% of the families earning under $50,000 per year, 28% earning $50,000–$100,000, 37% earning $100,000–$150,000, and 16% earning over $150,000; 5% of families did not respond to this question.

Power Analyses

Sample size was determined based on the effect size of $\eta_p^2 = .10$ for self-distancing in White and Carlson (2015), which used similar protocols. An a priori power analysis using G*Power (v. 3.1; Faul, Erdfelder, Lang, & Buchner, 2007) indicated that a sample of 166 children should provide sufficient power (> .9) to detect a main effect of condition tested at a conservative $\alpha = .01$; we rounded up to 180.

Procedure

Children were tested individually in a 60-min laboratory session. To examine potential covariates of perseverance, we first administered baseline tests of theory of mind and EF. Children then received condition-specific instructions and completed the target perseverance task, followed by a test of receptive vocabulary.

Work Task

After completing baseline measures, children were introduced to an age-appropriate media distraction (an iPad game called "Where's My Water?"). If children had difficulty playing this game, we provided a simpler Lego iPad game. The experimenter demonstrated one trial and then let the child complete one trial successfully.

Next, children were introduced to a work activity on a laptop (based on a commonly used go/no-go task; Eigsti et al., 2006) that required them to pay attention but was modified to be long and boring (relatively slow intertrial interval of 1,500 ms). The experimenter first told children, "This is a very important activity and it would be helpful if you worked hard on this for as long as you could." She then administered a rule check to ensure children understood they were to work hard and be a "good helper." Next, children were provided with task instructions to press the space bar if they saw cheese on the screen ("go" stimulus, 75% of trials) and to not press anything if they saw a cat ("no-go" stimulus). Four practice trials were administered with feedback and continued in sets of four until the child passed three of four trials. An initial trial run of the task began and lasted for 2 min without feedback.

The experimenter then paused the task and told children this activity could get boring sometimes

so, if they wanted, when they wanted, they could take a break by playing with the iPad that was placed next to them. The experimenter demonstrated how to take a break by pressing the "break button" on the keyboard (labeled with a sticker illustrating the iPad game) and checked children's understanding of this rule.

Self-distancing manipulations. Next, children received instructions tailored to each condition (see Supporting Information for complete instructions).

For the self-immersed condition, children were told to think about their *own* thoughts and feelings and then ask themselves the question, "Am *I* working hard?"

For the third-person condition, children were told to use their *own name* to ask themselves the question, "Is *[child's name]* working hard?"

For the exemplar condition, children were told to think about *someone else* who is really good at working hard. They were given the option of four characters familiar to children of this age: Batman, Bob the Builder, Rapunzel (from the movie *Tangled*), and Dora the Explorer. After choosing a character, children were given a prop to dress up as that character (e.g., Batman's cape). They were then told to ask themselves the question, "Is *[character's name]* working hard?"

In all conditions, a sticker (the letter "I," their name spelled out, or an image of their character) was placed on the computer and the iPad to remind children of these instructions.

Testing phase. For 10 min, children could freely move between the work task and the game. During this time, children were reminded of their condition instructions through a prerecorded message that played from the computer speakers (e.g., "Is Dora working hard?") once every minute. Perseverance was measured by time spent on work (calculated by the computer).

Additional Measures

Theory of mind. In five brief tasks, the Theory-of-Mind Scale (Wellman & Liu, 2004) measures diverse desires, diverse beliefs, knowledge access, false belief, and real-apparent emotion. Scores were created by summing the number of tasks passed (0–5).

Executive function. Scores on the following four EF measures were standardized and averaged to create an EF composite.

Forward and backward digit span. Children were asked to repeat sequences of digits given by the experimenter as demonstrated (forward) and then in reverse order (backward; Davis & Pratt, 1996). In both cases, the experimenter added one digit to the sequence after each correct answer until she was able to ascertain the child's highest level for forward and backward digit spans.

Dimensional change cart sort. Children were asked to first sort cards based on one dimension (e.g., color) and then switch, sorting the same cards according to another dimension (e.g., shape; Zelazo, Anderson, Richler, Wallner-Allen, & Beaumont, 2013). If children correctly sorted these cards, they advanced to the "switch" trials in which color and shape trials were presented in a variable fashion. Scores were computed by the computer program based on accuracy and reaction times.

Flanker. Children were presented with a row of five fish on a computer screen and asked to press an arrow key that matched the way the middle fish was pointing (Zelazo et al., 2013). On congruent trials the middle fish was facing the same direction as the other fish, whereas on incongruent trials the middle fish was facing the opposite direction. Total scores were created using a combination of accuracy and reaction time data.

Receptive vocabulary. In the Peabody Picture Vocabulary Test, 4th ed. (Dunn & Dunn, 2006), children were asked to identify pictures that correctly depicted words given by the experimenter. We followed standard testing procedures and raw scores were used in data analysis.

Results

Across conditions, the game was a tempting distraction from work: Children spent 37.01% of their time on the work task, and conversely, 62.99% (SD = 32.37%) on the iPad, mean difference (25.98%) > 0, $t(179) = 5.38$, $p < .001$. As shown in Table 1, time on task correlated positively with EF, theory of mind, and verbal ability; however, these correlations did not hold when controlling for age.

To test the effects of self-distancing on perseverance, we conducted a 2 (age group) × 3 (condition) analysis of variance (ANOVA). As shown in Figure 1, 6-year-olds (M = 45.87%, SD = 30.65%) persevered longer on the work task than 4-year-olds (M = 28.15%, SD = 31.77%), $F(1, 174) = 15.00$, $p < .001$, $\eta_p^2 = .08$, suggesting important age-related improvements in children's ability to persevere across the preschool and kindergarten years. Critically, the extent to which children were self-distanced when reflecting on their goal affected performance regardless of age, $F(2, 174) = 4.38$, $p = .01$, $\eta_p^2 = .05$. Post hoc tests revealed that

Table 1
Descriptive Data and Correlations Among Study Variables

	n	*M*	*SD*	Gender	Time on task	PPVT	Flanker	FDS	BDS	DCCS	EF	ToM
Age in months	180	59.84	12.14	.06	.28**	.77**	.64**	.53**	.64**	.50**	.74**	.60**
Gender	180				.08 (.06)	.11 (.10)	.06 (.03)	−.02 (−.06)	.08 (.06)	.12 (.11)	.09 (.06)	.10 (.09)
Time on task	180	37.01	32.37			.23** (.03)	.11 (−.01)	.13† (−.03)	.10 (−.11)	.07 (−.08)	.16* (−.08)	.20** (.04)
PPVT	179	107.82	26.24				.59** (.21**)	.53** (.22**)	.60** (.21**)	.51** (.24**)	.71** (.33**)	.60** (.27**)
Flanker	170	5.75	1.57					.45** (.18*)	.59** (.30**)	.39** (.11)	.79** (.61**)	.50** (.19*)
FDS	179	4.41	0.88						.56** (.33**)	.41** (.19*)	.78** (.69**)	.54** (.33**)
BDS	175	2.19	1.06							.49** (.25**)	.85** (.72**)	.51** (.20**)
DCCS	153	4.32	1.49								.73** (.63**)	.53** (.33**)
EF composite	180	−0.01	0.80									.65** (.40**)
ToM	180	3.69	1.18									

Note. Partial correlations controlling for age (in months) are shown in parentheses. PPVT = Peabody Picture Vocabulary Test; FDS = forward digit span; BDS = backward digit span; DCCS = dimensional change card sort; EF = executive function; ToM = theory of mind. †$p < .10$. *$p < .05$. **$p < .01$.

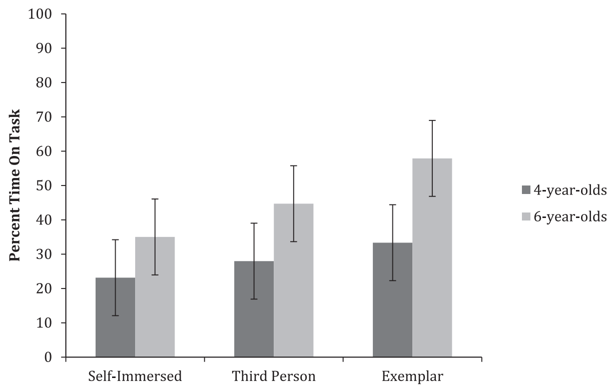

Figure 1. Percentage of time spent on work task by condition and age. Bars indicate 95% CI.

children in the exemplar condition worked longer than children in the self-immersed condition, t (118) = 2.95, $p < .01$, $d = .54$. Moreover, a follow-up Age × Condition linear trend analysis within an ANOVA framework revealed children spent more time on work as distance from the self increased, $F(1, 176) = 8.81$, $p < .01$, $\eta_p^2 = .05$. We found no Condition × Age interactions. Notably, all results held when controlling for gender, EF, theory of mind, and receptive vocabulary. These variables also did not moderate condition effects.

Discussion

This research shows that taking an outsider's perspective on one's own behavior can improve perseverance in the face of entertaining distractions. Our findings also advance understanding of perseverance in two vital ways. First, we designed an ecologically valid context that closely resembles an important real-world dilemma, and second, we investigated the development of perseverance at ages 4 and 6, spanning the transition from preschool to formal schooling.

Although all children were prompted to think about whether they were being a good helper, this reflection was most successful when it involved impersonating a character. Compared to those who took a self-immersed perspective, children who were asked to reflect on the task as if they were another person were less likely to indulge in immediate gratification and more likely to work toward a relatively long-term goal. There are several potential reasons why this manipulation was most successful. First, consistent with theories of self-distancing, taking on the perspective of another person could have provided the greatest separation

from children's own experience, allowing them to disengage from immediate temptations or negative emotions and focus on their goals (e.g., Sigel, 1970; Trope & Liberman, 2010). A second possibility is that perseverance increased because children identified with powerful features of the characters they chose to impersonate; the options we provided were all competent. The addition of dress-up props could have further scaffolded children's identification with these characters and their positive characteristics (Adam & Galinsky, 2012). Finally, this condition could have been particularly accessible, and perhaps more fun, for children given their familiarity with role play (Singer & Singer, 1990; Taylor, 1999). Further research will be needed to determine how each of these possibilities might contribute to increases in perseverance.

Notably, however, across all conditions perseverance increased as a function of hypothesized distance from the self. Children in the exemplar condition worked longest, followed by those in the third-person and self-immersed conditions. This finding is consistent with previous experiments, which demonstrated incremental increases in self-control as a function of self-distancing (White & Carlson, 2015) and symbolic distancing (Apperly & Carroll, 2009; Carlson et al., 2005) in young children. As such, it lends support to the theory that greater mental separation from one's situation can lead to corresponding increases in self-regulation (Sigel, 1970).

The finding that several potential correlates of perseverance (i.e., EF, theory of mind, receptive vocabulary) did not moderate the effects seen here suggests that role playing is a robust strategy, accessible to children with wide-ranging abilities. This is in contrast to previous research (White & Carlson, 2015) that found that the efficacy of role playing and third-person self-talk was greater for children with relatively advanced theory of mind. However, this previous study tested younger children than we tested here and the substantial leaps in theory-of-mind abilities between ages 3 and 4 could account for these different results.

This research also provides insight into the development of perseverance in early childhood. Little work exists on this particular form of self-control, especially in terms of its early development, although there is evidence that persistence is correlated with delay of gratification in preschool children, independent of age (Harrod, Carlson, Duckworth, & Mischel, 2011). Here, we found that 6-year-olds spent nearly half their time on task across conditions, whereas 4-year-olds spent only about a quarter of their time working. This dramatic increase in performance follows the developmental course of self-regulatory skills across the preschool years (Carlson, 2005; Zelazo et al., 2013). Of course, given the cross-sectional nature of this study, further research is needed to draw firm conclusions about developmental trends.

Finally, this study presents a novel task through which researchers can study perseverance. A core strength of this task is its ecological validity. From a very early age, children are asked to complete schoolwork and other tasks whose benefit might not be immediately apparent. At the same time, they are also often bombarded with highly tempting distractions in the form of online apps, videos, and games. Children in the United States are exposed to an average of nearly 7 hr of entertainment media per day (Kaiser Family Foundation, 2010; Roberts & Foehr, 2008). Thus, our task represents a very real dilemma: the choice to give in to these momentary distractions or to exercise the self-control needed to benefit from work that is not as much fun. Moreover, this study demonstrates that performance on this task is malleable.

Limitations and Future Directions

These findings raise important questions for future research. Perhaps the most pressing is why did children persevere longest in the exemplar condition? Follow-up studies are needed to isolate effects of self-distancing versus character competence. As mentioned above, thinking about the positive attributes of an exemplar could have led participants to take on positive characteristics such as working hard (Adam & Galinsky, 2012; Karniol et al., 2011), in conjunction with self-distancing—or maybe even independent of it. What if characters were not powerful exemplars but rather unfamiliar children? Results of such a study could shed light on the impact of character competence versus self-distancing. Given that increasing positive affect can enhance self-control (Tice, Baumeister, Shmueli, & Muraven, 2007; Qu & Zelazo, 2007), it will also be important to investigate whether role play could improve performance, at least in part, because it improves children's mood.

Furthermore, in this study, manipulations were delivered via questions that could have prompted children to engage in self-talk. Several studies have underscored the value of private speech during problem solving (e.g., Al-Namlah, Fernyhough, & Meins, 2006; Fernyhough, 2009). Importantly, self-talk from a self-distanced perspective could have promoted greater reflection on those longer-term

goals (Vygotsky, 1934/1986; Zelazo, 2004). In fact, some children spontaneously commented, "[Batman] is working hard," in response to the voice prompt and would return to the work task if they had been playing on the iPad. Think aloud paradigms (Davison, Robins, & Johnson, 1983) could shed some light on this topic.

Regardless of the origins of the benefits seen here, it is important to note that pretending to be another character had large effects on children's perseverance. Within-person studies are now needed to investigate the development and potential application of this strategy. Longitudinal studies could trace the trajectory of children's ability to use these strategies across the early years of life in relation to the concurrently developing processes (e.g., theory of mind) that might support that ability. This study was limited in its ability to speak to developmental changes in strategy use because of insufficient power to detect Age × Condition interactions. In the future, even short-term longitudinal experiments could provide critical insights as to the generalizability and longevity of the benefits seen here for self-control. One possibility would be to examine whether allowing children to experience and practice successful self-regulation in the context of role play might strengthen these skills to a point where they are sufficient to help them succeed without the aid of pretense.

Conclusion

Perseverance can pave the pathway to success. Indeed, William James famously noted that the "faculty of voluntarily bringing back a wandering attention over and over again is the very root of judgment, character and will" (2001/1892, p. 95). However, he also lamented the difficulty in teaching this important life skill. The current research suggests that perseverance can be taught through role play, a skill that is accessible to even very young children.

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Supporting Information

Additional supporting information may be found in the online version of this article at the publisher's website:

Appendix S1. Self-Distancing Scripts