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TITLE:

Experimental Paradigm for Measuring the Effects of Self-distancing in Young Children

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SHORT ABSTRACT:

An experimental paradigm was created to measure the effects of self-distancing in young children (4–6-year-olds). Self-distancing is a process through which individuals adopt a less egocentric perspective. This paradigm has been used to examine the effects of self-distancing on young children's self-regulation.

LONG ABSTRACT:

Self-distancing (i.e., creating mental distance between the self and a stimulus by adopting a less egocentric perspective) has been studied as a way to improve adolescents' and adults' emotion regulation. These studies instruct adolescents and adults to use visual imagery or language to create distance from the self before engaging in self-regulation tasks and when thinking about past and future events. For example, adults are asked to recall past, negative emotional experiences from either a first-person perspective (no distance) or a third-person perspective (self-distanced). These studies show that a self-distanced perspective allows adults to cope more adaptively when recalling negative feelings. However, the self-distancing paradigm used with adults was not developmentally appropriate for young children. This modified self-distancing paradigm involves instructing children to think about their thoughts, feelings, and actions from

different perspectives that vary in their distance from the self while completing a self-regulation task. The paradigm involves randomly assigning children to use one of three perspectives: self-immersed, third-person, or exemplar. In the self-immersed condition, children are asked to think about themselves using the first-person perspective (e.g., “How am I feeling?”) and no distance is created from the self. In the third-person condition, children are asked to create distance from the self by using the third-person perspective (e.g., “How is [child’s name] feeling?”). In the exemplar condition, the greatest distance from the self is created by asking children to pretend to be a media character and to think about that character’s thoughts and feelings (e.g., “How is Batman feeling?”). Studies using the self-distancing paradigm with 4–6-year-olds have found that as the amount of distance from the self increases (self-immersed < third-person < exemplar), children perform better on self-regulation tasks. These findings suggest that the strategies implemented in the self-distancing protocol may be useful to include in self-regulation interventions for young children.

INTRODUCTION:

Self-regulation is the ability to deliberately control one’s thoughts, actions, and emotions. Self-regulation involves the interaction between “reactive” and “deliberate” processes and is a general concept that includes several different types of skills such as emotion regulation, executive function, perseverance, and effortful control (i.e., parent-reported temperament measure of self-regulation)¹. Several studies have found that self-regulation is associated with and predictive of many important cognitive and social outcomes^{2,3}. Additionally, early self-regulation skills have been found to be predictive of long-term wealth and health outcomes⁴. This previous research highlights the importance of intervening early to improve young children’s self-regulation skills for more positive life outcomes later.

One strategy for improving young children’s self-regulation is self-distancing. Self-distancing refers to creating mental distance between the self and a stimulus by having individuals think about their thoughts, feelings, or actions from an outsider’s perspective⁵. Self-distancing is one form of psychological distancing. Psychological distancing refers to creating mental distance between a stimulus and response. This distance allows individuals to reflect and demonstrate greater control of their emotions, actions, and thoughts^{6,7}. Most of the previous research on psychological distancing with children has focused on creating distance by transforming the task stimuli. For example, having children think about treats in an abstract way such as imagining that marshmallows are clouds during a delay of gratification task⁸ or replacing actual treats with symbols (e.g., pile of rocks to represent a pile of jelly beans) during a reverse- contingency task^{9,10} promotes better performance. However, a few studies have created psychological distance in other ways such as by having children make decisions for another person instead of for themselves¹¹ or thinking about an individual who would perform well on the task, like Superman¹². These studies also showed benefits of psychological distancing for children’s ability to delay gratification^{11,12}.

While self-distancing seems like another promising way to improve different aspects of children’s self-regulation, the majority of the research on self-distancing has been conducted with adults. Self-distancing has been studied with adults mainly in the domain of emotion regulation. In these

89 studies, adults are asked to use visual imagery or language to create distance from the self¹³. For
90 example, they are instructed to recall a past event that evokes negative emotions by visualizing
91 it either through their own eyes (non-distanced) or from an outsider's perspective or as if they
92 were "a fly on the wall" (self-distanced)^{13,14,15}. In other studies, adults are asked to use first-
93 person (non-distanced) or third-person speech (self-distanced) while thinking about past
94 negative emotions^{16,17,18,19,20,21}. These studies suggest that taking a distanced perspective helps
95 adults focus on *why* they are feeling what they are feeling instead of focusing on the negative
96 emotions themselves and results in better coping when recalling these past negative
97 emotions^{13,14,15,16,17,18,19,20,21}.

98
99 Recently, a self-distancing paradigm for children was created by modifying the self-distancing
100 conditions used in the adult literature to be developmentally appropriate for young children²²
101 and creating an additional self-distancing condition based on children's love for role-play²³. The
102 self-immersed condition was adopted from the adult literature and is meant to elicit an
103 exaggerated egocentric or first-person perspective. Theoretically, the self-immersed condition
104 should be more detrimental to children's performance than a control condition in which children
105 are not given any distancing instructions. In the control condition, children may take on a first-
106 person perspective by default, but they are not as immersed in this perspective as children in the
107 self-immersed condition. In both the self-immersed and control conditions, participants should
108 not be creating distance from the self. The third-person condition creates some distance from
109 the self by asking children to think about themselves using their own name. This condition allows
110 children to think about their own thoughts, feelings, and actions from a distanced perspective.
111 Finally, an additional condition called the exemplar condition was created by looking at past
112 research with children on role-play such as a study by Karniol and colleagues¹² in which children
113 were asked to pretend to be Superman during a delay of gratification task. In the exemplar
114 condition, children are instructed to take the perspective of another person by pretending to be
115 a media character. Having children pretend to be someone else creates even more distance from
116 the self than the third-person condition since it asks children to think as if they were someone
117 else with different thoughts, feelings, and skills. It also allows children to use their love for role-
118 play, which peaks in early childhood²³. During the target task, children are given either verbal or
119 visual (e.g., stickers, costumes) reminders of their self-distancing condition. Allowing children to
120 use the different self-distancing strategies while performing self-regulation tasks avoids children
121 having to retrospectively remember situations in which they needed to exert self-regulation.
122 While the adult literature allows researchers to study the difference between taking a non-
123 distanced and distanced perspective, this child self-distancing paradigm allows children to take
124 on a broader range of distances from the self (self-immersed, third-person, and exemplar) and
125 allows researchers to test the effectiveness of these varying amounts of distance from the self
126 on the children's self-regulation.

127
128 In this article, we describe the self-distancing paradigm in detail, including the materials needed
129 and the procedure for using this paradigm with young children. Additionally, we discuss results
130 from studies that have used the self-distancing paradigm to examine its effects on young
131 children's (3–6-year-olds) self-regulation. Finally, we discuss ways that the self-distancing

paradigm can be used in future research, potential modifications to the paradigm, and implications for using it.

The target task that children complete while using the self-distancing instructions varies depending on the focus of the study. The following protocol demonstrates how the self-distancing paradigm can be used during a perseverance task²⁴. However, the self-distancing paradigm can be applied to a number of behavioral tasks that involve effort on the part of the child. The task must be sufficiently challenging so that not all children will succeed even without the task manipulation, and yet not too far beyond their developmental level such that they cannot understand the instructions or perform the task under any circumstances. The following illustration of the self-distancing paradigm was used with typically developing 4- and 6-year-olds²⁴.

PROTOCOL:

All methods described here were approved by the Institutional Review Board at the University of Minnesota and complied with guidelines for research with human subjects. Written informed consent was obtained from a parent or guardian of the child participants, and verbal assent was obtained from children given they were too young to provide written consent.

1. Procedure

1.1. Randomly assign 4–6-year-old children to one of three experimental conditions: self-immersed, third-person, or exemplar.

NOTE: It is optional to include a control group that receives no special modifications to the standard task instructions.

1.2. Obtain written informed consent from a parent or guardian of the child participant.

1.3. Build rapport with and obtain verbal assent from child participants. See **Supplementary File 1: Appendix A** for an example of an assent script that can be used by the experimenter.

1.4. Introduce the target task to the child.

NOTE: The target task will vary depending on the study's focus.

1.4.1. Introduce the distracting task. Show a tablet computer (e.g., iPad) to the child and say, "Okay, I am going to show you a game on this before we start our work."

1.4.2. Ask the child, "Have you ever played on an iPad before?" to get a sense of the child's experience with iPads or touchscreens.

1.4.3. Open up the "Where's My Water" app on the device to the second level and let the introduction play.

NOTE: “Where’s My Water” is only one example of an app that could be used for the perseverance task described. The app used should be simple enough for children in the study’s age range to understand and be a game they would be tempted to play.

1.4.4. Say, “This is the game. Have you ever played Where’s My Water before?” Wait for child’s response and then say, “In this game, you want to get the water into the pipes so the alligator can take his shower. To get the water to him, you have to move the dirt out of the way. See how moving my finger on the screen digs through the dirt?” Drag finger through dirt but only a little (not enough to complete the level).

1.4.5. Say, “Sometimes there will be rocks in the way, like this” and point to the rock on the screen. Then say, “Then you have to move the dirt around the rock, like this” and demonstrate how to move dirt around the rock.

1.4.6. Say, “After the dirt is out of the way, the water can flow to the pipes. I want the water to go to this pipe, so I am going to move my finger like this” and drag finger the rest of the way so that the water flows to the pipe. Watch the animation then restart the level by pressing the circle arrow.

1.4.7. Say, “Did you see how I got the water to the pipe? Now you try.” Let the child try the level.

1.4.7.1. If the child completes the level, say, “Good job! You got the water to the alligator.”

1.4.7.2. If the child does not complete the level, say, “Good job, let’s try again. Try moving the dirt out of the way so that it gets to the pipe. Demonstrate the game again and let the child try again. Continue this process until the child is able to complete the level or they have tried 6 times.

1.4.8. Say, “Good. Once you finish, you’ll see these buttons” and show buttons on the screen (if the child completed level) or on the script page (if the child did not complete the level). Then say, “If you want to play this level again, you can press the left button” and point to the left button that says “Replay.”

1.4.8.1. Then say, “If you want to play the next level, press this button (point to the right button that says “Next”) and you’ll get a new screen.” Finally, say, “If you accidentally press this button (press the middle button that says “Levels” so the game goes to the “box screen”), just pick a new box to play.”

1.4.9. Ask the child, “Do you have any questions about this game?” Wait for the child to respond and then answer any questions that he or she has about the game.

1.4.10. Say, “Great! That’s the game you will get to play later.”

1.4.11. Open the “Where’s My Water” app to the first level on the device so that it is ready to play when the child chooses to. Place the device next to the computer so that it is easily accessible to the child while they are sitting at the computer.

1.4.12. Introduce the work task to the child. Say, “Now, I’m going to show you the work that we’re going to do today. It would be helpful if you worked hard on this. This is a very important activity and it would be helpful if you worked hard on this for as **long** as you could. The reason I want you to do this activity is because you would be a good helper.”

1.4.13. Ask the child a rule check question to make sure the child understands why the experimenter wants them to play the game. Say, “Can you tell me why I want you to do this activity?”

1.4.13.1. If the child responds incorrectly (i.e., does not say “to be a good helper” or something similar) or does not respond, say, “Oops! Remember, I want you to do this activity because you would be a good helper. So, why do I want you to do this activity?” Move on to the next step after the second try and correction.

1.4.14. Say, “Now, I’ll show you how this activity works.” Start the computer program, select the child’s condition using the arrow keys, and then press the space bar twice to continue.

1.4.15. Place a cardboard overlay on the keyboard to cover all non-relevant keys for the task.

1.4.16. Say, “The goal of this activity is for you to feed pieces of cheese to a mouse. Whenever you see a picture of cheese on the computer screen you can feed the mouse by pressing the space bar” and then point to the space bar.

1.4.17. Say, “But, sometimes there won’t be cheese, and instead a cat may appear! Whenever you see a picture of a cat, make sure you do **NOT** press the space bar.”

1.4.18. Press the space bar twice to start the rule check phase.

1.4.18.1. Ask the child, “What will you do when you see a picture of a piece of cheese on the computer screen?”

1.4.18.2. If the child responds incorrectly (i.e., doesn’t say “press the button” or something similar), say, “Oops! Remember, when you see the cheese you press this button” and point to the space bar. Then say, “So, if you see the cheese, what do you do?” Move on to the next step after the second try and correction.

1.4.18.3. Say, “What will you do if you see a picture of a cat?”

1.4.18.4. If the child responds incorrectly (i.e., does not say “nothing” or something similar), say “Oops, remember when you see the cat you do nothing. So, when you see the cat what do you do?” Move on to the next step after the second try and correction.

1.4.19. Say, “Great job! Let’s practice” and then press the space bar twice to begin the practice trials (4 trials with feedback). Then say, “When you see the cross on the screen, just look at it.”

1.4.19.1. After the first practice trial runs, read the feedback on the screen, and press the space bar twice to continue. Continue running the rest of the practice trials and reading the feedback on the screen.

1.4.20. Say “Good job! You are ready to start the real activity!” and press the space bar twice to start the activity. Allow the child to work on the work task for 1 min.

1.4.21. Say, “Great. You did a good job! Remember, it would be helpful if you worked hard on this for as **long** as you could. But, this activity can get pretty boring. So, when you want, if you want, you can take a break by pressing this button. It’s your choice.” Then place the **break** button overlay (sticker with picture of the game) on the keyboard.

1.4.22. Demonstrate how children can take a break. Say, “And then you can switch and play this game (motion to the tablet computer [e.g., iPad]) like this.” Then demonstrate moving over to the tablet and starting the game.

1.4.23. Say, “Then, when you’re done taking a break you can come back to the activity and press this button again like this.” Point to the **break** button on the keyboard before pressing the **break** button.

1.4.24. Ask the child a rule check question to make sure they know how to take a break. Say, “Now, what do you do when you want to take a break?”

1.4.24.1. If the child responds incorrectly (i.e., does not say “press the break key” or something similar), say, “Remember, you press this button when you want to take a break” and point to the **break** key. Then say, “So, what do you do if you want to take a break?” Move on to the next step after the second try and correction.

1.4.25. Ask the child a rule check question to make sure they understand what to do when they want to end a break. Say, “And what do you do when you’re done taking a break?”

1.4.25.1. If the child responds incorrectly (i.e., does not say “press the break key” or something similar), say, “Remember, you press this button when you’re done taking a break” and point to the **break** key. Then say, “So, what do you do if you’re done taking a break?” Move on to the next step after the second try and correction.

1.5. Introduce a self-distancing strategy based on the condition that children were randomly

assigned to (self-immersed, third-person, or exemplar condition) by saying, “Before we get started, I’d like to tell you about something that you can do during this activity.”

NOTE: The following example is for a child randomly assigned to the exemplar condition. Follow the scripts in **Supplementary File 1: Appendix B** based on the child’s assigned self-distancing condition.

1.5.1. Say, “It would be helpful if you worked hard on this. This is a very important activity and it would be helpful if you worked hard on this for as **long** as you could. You would be a good helper if you worked on this activity for as **long as you can**, but it can be boring sometimes. Some kids like to pretend that they’re somebody else who would be a really hard worker on this activity, when it gets boring. That’s what I’d like you to do today.”

1.5.2. Show the child a laminated sheet of paper with pictures of four characters that are familiar and popular in the participating children’s culture and age range and say, “Which one of these characters would you like to [pretend to] be for this activity?”

NOTE: In past studies with 4–6-year-olds from the United States, Batman, Superman, Bob the Builder, Rapunzel, Elsa (Frozen), and Dora the Explorer have been used.

1.5.3. After the child chooses a character, say, “Okay, to help you pretend you get to wear this.” Then give the child the prop associated with their chosen character, so they can wear it.

NOTE: Some examples of props used in past studies include a cape for Batman, a tool belt for Bob the builder, a tiara for Rapunzel, and a backpack for Dora the Explorer.

1.5.4. Say, “So, if you get bored at any point during this task, ask yourself, “Is [**character’s name**] working hard?”

NOTE: The phrase “Is [**character’s name**] working hard” can be modified based on the nature of the target task. For example, in an emotion regulation task, “How is [**character’s name**] feeling?” could be used.

1.5.5. Tell the child about reminders to help them remember their self-distancing condition. Say, “You’re going to hear reminders to help you remember. The computer will say, “Is [**character’s name**] working hard? This sticker will help you remember too.” Place a sticker of the child’s chosen character on the computer used for the work task. Then say, “When you see the sticker, remember to ask, “Is [**character’s name**] working hard?”

1.5.6. Make sure the child can repeat their self-distancing prompt. Say, “Now you try it. Say, “Is [**character’s name**] working hard?”” Continue to ask the child to say this prompt until they are successfully able to do so.

1.5.7. Say, “So remember, while you are working on this activity, I just want you to think whether

[character's name] is working hard.

1.6. After the child's assigned self-distancing strategy has been explained, say, "Okay "I'm going to be in the corner doing some work. Do you have any questions now, before we start?" Wait for child to respond and answer any questions.

1.7. Say, "It would be helpful if you worked hard on this for as long as you could. Remember, if you see the cheese, you press this button (point to space bar) and if you see the cat you don't press any button. If you want to take a break press this button (point to break button). Make sure you stay in your seat while you're on the computer or playing the game." Then say, "Okay, go ahead and start the activity" and point to the computer.

1.8. Sit in the corner of the room with back turned to the child and look busy doing work. Let the child work on the task for 10 min.

NOTE: Make sure the child starts with the computer activity.

1.9. After the task is over, ask the children questions about the tasks and their use of their assigned self-distancing strategy (See **Supplementary File 1: Appendix C**).

NOTE: The questions included in **Appendix C** are specific to the perseverance task example described in this protocol. The questions asked after the target task should be modified to be relevant to the target task being used and can serve as a manipulation check to make sure that the children remembered their distancing strategy, to determine whether they were using that strategy, and to get information about their motivation and thoughts about the target task itself.

REPRESENTATIVE RESULTS:

Overall effectiveness of self-distancing

The self-distancing paradigm has been used in several studies focusing on young children's self-regulation including executive function skills, perseverance, and emotion regulation. To determine the effectiveness of self-distancing, children's performance on the target task is compared across the different self-distancing conditions (self-immersed, third-person, and exemplar). Studies with children between the ages of 3 and 6 years have found that children demonstrate better task performance when taking a self-distanced perspective (third-person or exemplar) than taking a self-immersed perspective^{22,24}. For instance, White and Carlson²² tested 3- and 5-year-olds and found that 5-year-olds' performance on a card-sorting executive function task was better for children in the more distanced conditions (third-person and exemplar) than in the no distance conditions (self-immersed and control; $\eta_p^2 = 0.26$). Moreover, linear trend analyses revealed that children's performance on the executive function task increased as the distance from the self increased (See **Figure 1**). In another study by White and colleagues²⁴, there was a main effect of distancing for 4- and 6-year-olds' persistence during a boring work task in the face of a distraction. A linear trend analysis showed children persisted longer as the distance from the self increased, with children in the exemplar condition showing the most perseverance

($\eta_p^2 = 0.05$; See **Figure 2**). Moreover, the distancing effect on children's perseverance was still found after controlling for verbal ability, gender, baseline executive function, and theory of mind.

Individual differences in the effectiveness of self-distancing

Some studies have begun to examine for whom the self-distancing strategy works best. Age has been the most studied factor. Studies that have compared the effectiveness of the self-distancing strategy for younger and older children have shown that children must be at least 4 years of age to benefit from the distancing strategy. For example, one study with 3- and 5-year-olds found that 5-year-olds but not 3-year-olds benefitted from self-distancing during an executive function task called the Minnesota Executive Function Scale (MEFS; $\eta_p^2 = 0.26$)²². The MEFS is a 7-level card sorting game in which children are tasked with sorting cards based on different rules such as sorting by color or by shape. Children's MEFS scores indicate their highest level passed (range from 0 to 7) with higher levels passed indicating greater executive function skills. However, other studies have shown that 4-year-olds can benefit from self-distancing during a perseverance task as much as 6-year-olds ($\eta_p^2 = 0.05$)²⁴ and that 4-year-olds can benefit more from self-distancing than 6-year-olds during an emotion regulation task ($\eta_p^2 = 0.07$)²⁵, perhaps because the 6-year-olds already were using intrinsic coping strategies in that task.

A few studies also have looked at individual differences in specific cognitive skills and whether they predict how children respond to the self-distancing manipulation. For example, White and Carlson²² found that 3–5-year-olds with better theory of mind or perspective-taking skills benefitted more from the self-distancing strategy, regardless of age ($\eta_p^2 = 0.09$; See **Figure 3**). It is likely that higher theory of mind skills allowed them to be better able to adopt the perspective of the media character they were impersonating. In another study, Grenell and colleagues²⁵ found that 4–6-year-olds with lower executive function (EF) and effortful control (EC) benefitted more from the self-distancing strategy, displaying less frustration during the attractive toy in a box task, even after controlling for children's verbal ability (EF $\eta_p^2 = 0.07$; EC $\eta_p^2 = 0.06$; see **Figure 4**). Together, these findings suggest that age may be serving as a proxy for different levels of certain cognitive skills that may be necessary for using the self-distancing strategy and these levels may differ depending on the type of self-regulation task used. Therefore, certain individuals may benefit more from the self-distancing paradigm than others.

FIGURE AND TABLE LEGENDS:

Figure 1. Mean performance of 3- and 5-year-olds ($N = 96$) on an executive function task called the Minnesota Executive Function Scale (MEFS) by self-distancing condition and age group. In this study, children were randomly assigned to one of four self-distancing conditions: self-immersed, control, third-person, or exemplar. Possible scores on the MEFS range from 0–7. Bars represent 95% confidence interval (CI). ** $p < 0.01$; * $p < 0.05$. This figure has been adapted from White and Carlson²².

Figure 2. Percentage of time 4- and 6-year-olds ($N = 180$) spent on a boring work task by self-distancing condition (self-immersed, third-person, and exemplar) and age group. During the

boring work task, children were distracted by an entertaining game on the tablet computer, so the y-axis represents the percentage of time they worked on the boring work task and not the entertaining game on the tablet. Bars represent 95% CI. This figure has been adapted from White et al.²⁴.

Figure 3. Mean Minnesota Executive Function Scale (MEFS) scores by self-distancing condition and theory of mind score adjusted for age ($N = 96$). A median split was used to divide children into a low theory of mind or high theory of mind group depending on their performance on a battery of theory of mind tasks. Children in the not self-distanced group included children in the self-immersed and control groups, and the self-distanced group included children in the third-person and exemplar conditions. ToM = theory of mind. Bars represent 95% CI. ** $p < 0.01$. This figure has been adapted from White and Carlson²².

Figure 4. Self-distancing condition by executive function (EF) level interaction for mean global frustration rating controlling for age in months, verbal ability (Peabody Picture Vocabulary Test Scores), and time on task (in seconds). In this study, 4- and 6-year-olds ($N = 139$) were randomly assigned to one of four self-distancing conditions: self-immersed, control, third-person, and exemplar. The children completed a frustrating task while using their assigned self-distancing strategy. The frustrating task was coded, and children received a global frustration rating which was a score between 1 and 3 based on their ability to regulate their emotions and behaviors during the frustrating task. Bars represent standard error of the mean. This figure has been adapted from Grenell et al.²⁵.

DISCUSSION:

The child self-distancing paradigm described herein is important because it is developmentally appropriate and capitalizes on young children's love for role-play²³. Previous research shows that this method can be successfully implemented with children between 4 and 6 years of age and that children who create the most theoretical distance from the self by pretending to be a popular media character show better performance on self-regulation tasks than children who use the first-person perspective^{22,24,25}.

Some of the critical steps of the protocol involve explaining the self-distancing strategies to young children and making sure they understand the rules of the game and their self-distancing strategy by asking rule check questions. It is also important that children have sufficient language ability to be able to understand the distancing instructions and to use language to create distance from the self, such as thinking about oneself in the third-person or thinking about someone else entirely. Therefore, it is recommended to use this paradigm with typically developing 4–6-year-olds who have sufficient verbal ability to understand the task and that a measure of vocabulary is collected to be able to control for verbal ability. It is also important that children are reminded of their self-distancing strategy during the target task to lessen the working memory demands and to ensure they do not forget the strategy they are supposed to be using. Researchers should take care in choosing the type of reminder that works best for the target task they are using. For example, in the study by Grenell and colleagues²⁵, the use of audio reminders during an emotion regulation task that elicited frustration actually seemed to annoy some children. However, similar

audio reminders used in the study by White and colleagues²⁴ did not seem to annoy children while working on a persistence task. Therefore, depending on the nature of the target task and whether the task evokes an emotional context, the same type of reminder might affect participants differently.

Another modification that researchers need to be aware of is making sure that children have background knowledge about the characters they are asked to pretend to be in the exemplar condition. Therefore, researchers should use media characters that are familiar and popular in the participating children's culture. Alternatively, novel characters can be introduced with similar results, but children must be introduced to the characters and given background knowledge about the character's personalities and competencies before introducing the target task and self-distancing strategies²⁷. Being familiar with the characters will allow children to be better able to impersonate the characters when asked to use that self-distancing strategy. It is also important that the characters that children are asked to pretend to be are competent. Research examining the effects of the character's competency on the effectiveness of pretending to be someone else for children's self-regulation suggests that the competency of the character matters and that there can be different effects of pretending to be someone else depending on the character's traits. For example, there is some evidence that children perform better on self-regulation tasks when they are wearing a cape and asked to pretend to be someone who would be good at the target task than when they wear a cape and are asked to pretend to be someone who would not be good at the target task^{12,26}. It is possible that having children pretend to be an exemplar media character allows them to identify with the character that is generally good at everything, which in turn leads children to take on a more competent self-image during the target task. However, the third-person condition also has children create distance from the self and has also been found to be more beneficial for children's self-regulation than the self-immersed condition, and yet there is no identification with an exemplar character in the third-person condition^{22,24}. Therefore, it is most likely a combination of distancing and identifying with the character that makes the exemplar condition most effective^{12,26}.

Another way the self-distancing paradigm can be modified is by including a control group that does not receive any manipulation during the target task in addition to the three self-distancing conditions (self-immersed, third-person, and exemplar). Adding a control group is advantageous because it allows researchers to compare children's standard performance on the target task to children's performance when they use the self-distancing strategies. However, there can be unanticipated consequences of using a control group if the lack of self-distancing strategies is not the only way the control and experimental self-distancing conditions differ. For example, there may be an effect of having additional instructions to remember in the experimental groups, but not the control group, or the reminders used in the experimental groups may influence children's behaviors in unexpected ways such as children finding verbal reminders of their self-distancing strategies annoying during certain tasks. Additionally, children in the control group may use specific strategies spontaneously that influence their performance on the target task. Any unexpected differences between the control and experimental groups can make differences in performance challenging to interpret.

One potential concern with the self-distancing paradigm is making sure that self-distancing itself is being manipulated across conditions. A few studies using this self-distancing paradigm found that the third-person and exemplar conditions were more beneficial for children's self-regulation than the self-immersed perspective^{22,24}. Given that children are asked to create distance from the self in both of these conditions, this evidence suggests that manipulating self-distancing itself is effective. Moreover, linear trend analyses suggest that task performance improves as the theoretical distance from the self increases^{22,24}. While these results suggest that self-distancing is being manipulated as expected, it is also important that studies using the self-distancing paradigm include a way to check to make sure that children are engaging in self-distancing in the third-person and exemplar conditions. One type of manipulation check that has been used in previous studies is asking children questions after the target task about their self-distancing strategies and their performance on the task^{24,25}. For example, one previous study found that 78% of the children correctly remembered their distancing prompt (e.g., "How is Batman feeling?") suggesting they were keeping their distancing strategy in mind during the target task²⁵. The researchers also reported anecdotal evidence suggesting that children were creating distance from the self by thinking about how another person such as Batman would approach the task. For example, a 6-year-old told the experimenter that he persisted during a frustrating task because "Batman never gets frustrated."²⁵ Therefore, it is recommended that researchers include a manipulation check to ensure children were engaging in self-distancing during the task according to their self-distancing condition.

One limitation of the self-distancing paradigm is that there are numerous ways that children might be using the self-distancing strategies during the target task. Although children's self-talk during the target task provides evidence that they are using the self-distancing strategies and most children remembered the self-distancing prompt they were supposed to be asking themselves during the task (e.g., "Am I working hard?") when asked by the experimenter, a more in-depth examination of how children are using the self-distancing strategies would be ideal. For example, it would be useful to know if children are using the self-distancing strategies to distract themselves from the difficulty they are having with the target task or if they are using the self-distancing strategies to reflect on their thoughts, feelings, and actions while working on the target task. Future studies could modify the self-distancing paradigm to give researchers a better understanding of exactly how using the self-distancing strategies are affecting children's self-talk and behavior during the target task. This information will allow researchers to have a better sense of how children are using the self-distancing strategies and if there are potential ways to modify the paradigm to make sure all children are engaging in using the strategies.

We see several other avenues for future research. One important direction would be to conduct studies with an active control group in which children engage in an activity that is not self-distancing but involves similar cognitive processes such as using mental transformation. This type of research would provide additional evidence that self-distancing itself is being manipulated in the self-distancing paradigm. Previous research has shown that other forms of psychological distancing such as mentally transforming stimuli by thinking about them in different ways positively influence children's performance on a delay of gratification task⁸. There is also evidence that certain psychological distancing strategies may be more beneficial at different

ages. For example, a study found that 3-year-olds can benefit from replacing stimuli (e.g., replacing jelly beans with rocks) during a reverse-contingency task before they are able to benefit from mentally transforming the stimuli or the self⁹. Therefore, studies that include an active control group would provide stronger evidence on the effectiveness of self-distancing and allow researchers to compare the effects of self-distancing to other potentially effective cognitive strategies across development. More research is needed to better understand the mechanisms and processes required to successfully use the self-distancing strategy. This type of research is especially important since self-distancing may require the use of certain self-regulation skills such as working memory, cognitive flexibility, and inhibition. The study by Grenell and colleagues²⁵ collected baseline measures of children's executive function and found that individual differences in children's executive function skills moderated the effectiveness of the distancing strategy. Therefore, additional research is needed to better understand the contribution of individual differences in self-regulation to using the self-distancing strategy versus the contribution of engaging in distancing itself. Training studies are also needed in which young children are trained to use the self-distancing strategies to determine if children's self-regulation improvements persist after the training. By collecting measures of children's self-regulation before and after engaging in self-distancing, these studies would also provide stronger evidence of the potential effects of self-distancing on children's self-regulation. Training studies can also help determine if the effects of self-distancing training can be generalized to contexts outside of the lab such as in classrooms or home environments. These types of studies are important to explore the potential long-term benefits of self-distancing in children. It would also be useful to conduct research using the self-distancing paradigm with a broader range of self-regulation tasks and to compare the effectiveness of self-distancing across them. These studies would allow researchers to better understand if the self-distancing strategy is most effective for certain types of self-regulation tasks and could be implemented as part of interventions targeting specific self-regulation skills. Additional research is also needed to examine individual differences in the efficacy of self-distancing to determine how this strategy can be implemented using a more personalized intervention approach. In sum, it is important for future research to determine exactly how self-distancing can best be utilized to improve young children's self-regulation.

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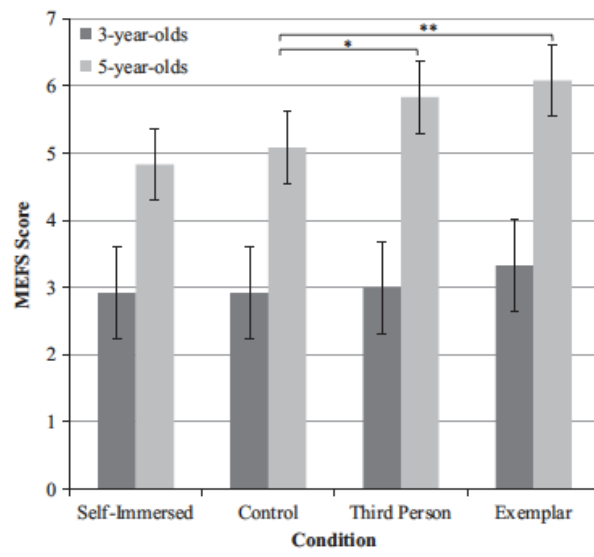
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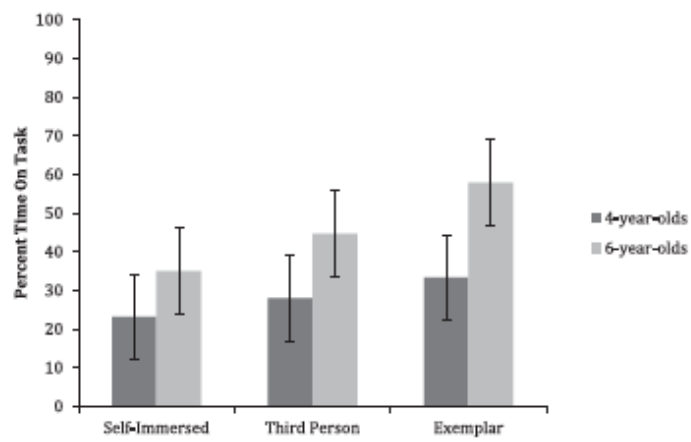
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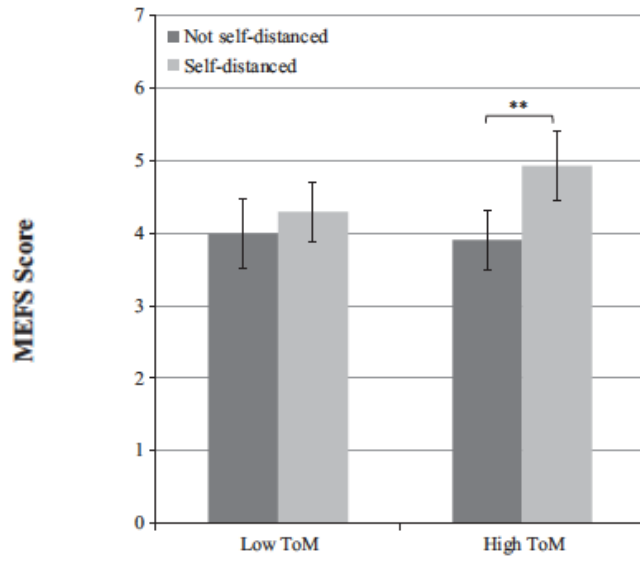
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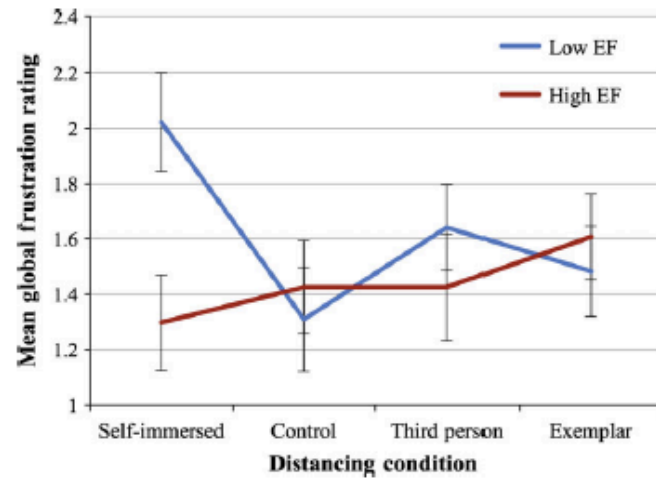
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Name of Material/ Equipment	Company	Catalog Number	Comments/Description
<p>Child-sized table</p> <p>2 Child-sized chairs (one for child and one for experimenter)</p> <p>Camera to record children working on the task for coding their behaviors later</p> <p>A laminated sheet of paper with pictures of four media characters that are popular with children of the study's age range in their specific culture</p>			<p>In past studies, Batman, Superman, Bob the Builder, Rapunzel, Elsa (<i>Frozen</i>), and Dora the Explorer have been used.</p>
<p>Props associated with each media character that children can wear while working on the target task</p>			<p>For example, a cape for Batman, a tool belt for Bob the Builder, a tiara for Rapunzel, and a backpack for Dora the Explorer.</p> <p>These recordings should say the following for each condition every 60 seconds:</p> <p>Self-immersed: "Am I working hard?"</p> <p>Third- person: "Is [child's name] working hard?"</p> <p>Exemplar: "Is [media character's name] working hard?"</p>
<p>Laptop/computer to play audio reminders if audio reminders are used</p>			<p>This is one option for reminding children of their distancing condition. The type of reminder used will depend on the target task and if the experimenter will be present in the room during the target task.</p>

Plain stickers to write "I" or the child's name to be used as reminders for the self-immersed and third-person condition

Stickers with pictures of 4 media characters chosen for exemplar condition

Ipad or tablet with developmentally appropriate and entertaining game for children in the age range being studied downloaded onto it
Laptop/computer with go/no-go task program described in the protocol

Stickers can be placed on the apparatus being used or on children's hands to remind them of their self-distancing strategy. These stickers would have the letter "I" for the self-immersed condition or their name spelled out for the third-person condition. This is one option for reminding children of their distancing condition. The type of reminder used will depend on the target task and if the experimenter will be present in the room during the target task.

Stickers with pictures of the media characters used in the study can be purchased and placed on the apparatus being or on the children's hands to remind them of their self-distancing strategy. This is one option for reminding children of their distancing condition. The type of reminder used will depend on the target task and if the experimenter will be present in the room during the target task.

"Where's My Water" is one example of an app that can be used for 4-6-year-olds. The app should be developmentally appropriate for the age range being studied and a game that children of that age want to play. This is only needed if the perseverance target task is used.

This is only needed if the perseverance target task is used.

Cardboard keyboard overlay to
cover keys that are not needed for
the go/no-go task
Sticker illustrating iPad game to
put on the "break" key on the
computer keyboard

This is only needed if the perseverance target task
is used.

This is only needed if the perseverance target task
is used.

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Dr. Alisha DSouza
Senior Review Editor, *JoVE*
1 Alewife Center, Suite 200
Cambridge, MA 02140

November 23, 2018

Dear Dr. DSouza,

My co-authors and I greatly appreciate the opportunity to revise and resubmit our manuscript, titled, “Experimental Paradigm for Measuring the Effects of Self-Distancing in Young Children” (JoVE59056). We have addressed the reviewers’ comments and suggestions in this revised version as best we could. Below, we detail these changes in relation to the specific comments.

Please let me know if you have any additional questions. We look forward to hearing from you.

Sincerely,
[blinded]

Editor’s Comments (E)

E: Please take this opportunity to thoroughly proofread the manuscript to ensure that there are no spelling or grammar issues.

Author Response: We have proofread the manuscript for spelling and grammar issues.

E: Line 39: Please do not include reference(s) in the Abstract.

Author Response: We have removed the reference in line 39.

E: Please adjust the numbering of the Protocol to follow the JoVE Instructions for Authors. For example, 1 should be followed by 1.1 and then 1.1.1 and 1.1.2 if necessary. Please refrain from using bullets, dashes, or indentations.

Author Response: We have adjusted the numbering of the Protocol section to follow the Instructions for Authors.

E: Please revise the protocol to contain only action items that direct the reader to do something (e.g., “Do this,” “Ensure that,” etc.). The actions should be described in the imperative tense in complete sentences wherever possible. Avoid usage of phrases such as “could be,” “should be,” and “would be” throughout the Protocol. Any text that cannot be written in the imperative tense may be added as a “Note.” Please include all safety procedures and use of hoods, etc. However, notes should be used sparingly and actions should be described in the imperative tense wherever possible.

Author Response: We have edited the protocol so that it only includes actions items.

E: Steps 1, 2, and substeps: The Protocol should contain only action items that direct the reader to do something. Please either write the text in the imperative tense as if telling someone how to do the technique (e.g., “Do this,” “Ensure that,” etc.), or move the solutions, materials and equipment information to the Materials Table.

Author Response: We have moved the materials and equipment information to the Materials Table.

E: Line 193: Please specify the age range of children included in this protocol.

Author Response: We have added the age range of children included in the protocol to line 193.

E: Please describe in the protocol how the MEFS scores were obtained.

Author Response: We have added a more detailed description of the MEFS task and how the scores were obtained in the section titled, "Individual Differences in the Effectiveness of Self-Distancing."

E: Please obtain explicit copyright permission to reuse any figures from a previous publication. Explicit permission can be expressed in the form of a letter from the editor or a link to the editorial policy that allows re-prints. Please upload this information as a .doc or .docx file to your Editorial Manager account. The Figure must be cited appropriately in the Figure Legend, i.e., "This figure has been modified from [citation]."

Author Response: We have uploaded the link to the policy and process for requesting reprints for Wiley journals. All three articles that we want to reuse figures from (*Developmental Science*, *Child Development*, and *the British Journal of Developmental Psychology*) are all published by Wiley. If the article is accepted, there is a formal process for requesting explicit permission to reprint the figures from each article. However, this process requires certain information that we do not have available to us at this time such as the expected publication date and the number of pages of the article.

Reviewer #1 Comments (R1)

Minor Concerns:

R1: The authors may want to address the "chicken or egg" problem that appears on page 1, lines 69-74. Specifically, as described, self-distancing seems to require working memory, which depending on the view taken, is either required for self-control or is an aspect of self-control (see Bridgett et al., 2015; Nigg, 2017 for conceptual work considering the ontology of self-regulation, including self-control and working memory). Thus, description of existing studies could be enhanced such that it is clear that self-control or self-regulation is enhanced in mixed subjects designs that include a pre-test/post-test of regulation.

Author Response: It is important to note that the protocol for the self-distancing paradigm described, includes audio or visual reminders of the children's distancing condition to lessen the working memory demands during the task and to ensure that children are keeping the distancing instructions in mind. Nevertheless, the question of which cognitive skills are required to engage in self-distancing still needs to be further studied. The majority of the studies that focus on self-distancing have only examined its benefits for improving self-regulation during a task without considering children's initial level of self-regulation skills or measuring the change in children's self-regulation as a result of engaging in self-distancing. A few studies have examined whether specific cognitive skills such as theory of mind (White & Carlson, 2015) and executive function (Grenell et al., 2018) moderate the effectiveness of the self-distancing strategy which suggest that for certain types of self-regulation tasks, individual differences in children's executive function (which includes working memory) and theory of mind influence the effectiveness of taking a distanced perspective. These findings suggest that an important area of future research is to understand better the potential cognitive processes that may be required to engage in self-distancing successfully.

R1: On page 8, the authors indicate the executive functioning skills include emotion regulation. While EF is certainly important for emotion regulation, these are usually treated as separate self-regulatory constructs.

Author Response: We changed this sentence on page 8 to clarify that executive function skills and emotion regulation are examples of different self-regulation constructs.

R1: Similar to my point made in the first item (above), on page 9, Discussion, I wondered if any of the studies employed an approach that included a baseline assessment of self-regulation. Such work would be positioned to rule-out the influence of individual differences in self-regulation affecting self-distancing, and show that self-regulation could be improved using self-distancing (an important prerequisite for use in interventions).

Author Response: As we note in the manuscript, one of the studies cited (Grenell et al., 2018) used a baseline measure of self-regulation (i.e., cool measures of executive function) to determine if individual differences in the effectiveness of self-distancing depended on children's executive function skills. They found that children with relatively lower executive function and effortful control skills benefitted more from pretending to be a media character than children who used first-person speech. These findings suggest that individual differences in aspects of self-regulation such as executive function and effortful control do influence the effectiveness of the self-distancing strategy.

None of the studies to date have measured children's self-regulation before and after using the self-distancing strategies. Instead, researchers have examined children's performance on a self-regulation task while they are using self-distancing to see if there are differences in their performance depending on the self-distancing strategy used in vivo. We believe this is an important first step in this line of research and future research should employ training studies in which pre-and post-intervention measures of self-regulation are collected, and children are

trained on how to use the self-distancing strategies to see if children's self-regulation improves after this type of training. We now note this in the Discussion.

R1: On page 10, top of the page, I wondered if use of the self-distancing procedure requires that children have adequate receptive and expressive language (e.g., one might need to exclude children without adequate language ability, and be restricted to samples old enough to possess adequate language)?

Author Response: The self-distancing paradigm described asks children to use language to create distance from the self by thinking about their thoughts and feelings during the target self-regulation task by thinking about themselves in the first-person or third-person or by thinking about someone else entirely. We chose to use this paradigm with typically developing 4-6-year-olds because they have sufficient language ability to be able to understand the self-distancing paradigm. In the revision, we have added that it is important to make sure that children have sufficient language ability to be able to understand the distancing instructions in the Discussion section. Additionally, two of the studies discussed (White et al., 2016; Grenell et al., 2018) collected a measure of children's receptive language ability (Peabody Picture Vocabulary Test, 4th edition) and found that the results held after controlling for children's verbal ability. This suggests there are still effects of the self-distancing paradigm on children's self-regulation after accounting for children's verbal ability.

R1: Related to some of the points made by the authors at the end of the manuscript, I wondered if self-distancing has shown evidence of generalizing outside of the lab. That is, can children trained to use self-distancing in the lab, generalize these skills to the classroom, or other setting? If this is an important direction for future work, it may be worthwhile explicitly pointing readers in this direction.

As we mention earlier in the Discussion, there are no training studies using this self-distancing paradigm. Therefore, we do not know if children can be trained to use the self-distancing strategy and whether they would be able to generalize those skills to other contexts. We agree that studying whether self-distancing training generalizes to contexts outside of the lab is an important direction for future research, so we have added this to the Discussion.

Reviewer #2 Comments (R2)

Major Concerns:

R2: It's confusing to me why so much time is spent on explaining the locked box task, when this manuscript is describing the distancing paradigm in Appendix B.

Author Response: The self-distancing paradigm can be applied to any target task that is effortful for the child and relevant to the researchers' interest. In our original submission, we chose to demonstrate how the self-distancing paradigm can be applied to the Attractive Toy in a

Transparent Box task. Based on this comment and a few others, however, we decided it might be clearer to describe how the self-distancing paradigm can be applied to a perseverance task that was used by White and colleagues (2016) instead of the Attractive Toy in a Transparent Box task. We have also added more steps to the protocol relevant to implementing the self-distancing paradigm instead of only including that information in Appendix B. The protocol now reflects more of a balance between the description of the target task and the self-distancing paradigm.

R2: Relatedly, it's a little confusing that one study (Grenell et al., 2018) reported that some children might be annoyed by the audio reminders, but this protocol only mentions this in "future directions". It seems like figuring out the optimal method for exposure for each distancing condition would be critical before publishing the paradigm.

Author Response: Depending on the target task and whether the experimenter will be in the testing room or not, the way in which children are reminded of their self-distancing condition can vary. In the studies discussed, stickers (with “I,” the child’s name, or a picture of the media character children were pretending to be), verbal reminders (either by the experimenter if they were in the room or via audio reminders played on a computer), or both were used. In the White et al. (2016) study, there was no evidence that children were annoyed by the audio reminders during a boring work task. In the context of a frustrating task such as that used by Grenell and colleagues (2018), however, these same reminders might have been experienced negatively by children. Given that we anticipate other investigators might want to apply the self-distancing paradigm to a wide variety of tasks, the “optimal” method of reminding children of their mantra during the task cannot be fixed. We note this issue as something for researchers to consider in the context of their own target tasks in the Discussion section.

R2: The validity evidence for this paradigm is relatively weak. It is described in three manuscripts, which all present different results and use different moderators and questionable practices (such as median splits) to obtain an effect (age, EF, theory of mind), varying results on some of those moderators (such as at distancing being better and worse for younger children), and none of which seems to replicate one another. Indeed, each of these findings is presumed to be true in spite of appearing in only a single, non-preregistered manuscript.

Author Response: These studies each were inspired by different research questions, but they all have in common this self-distancing paradigm. None was intended to be a faithful replication of a previous study, but rather a conceptual replication in different self-regulation situations, as well as an examination of the boundary conditions on the self-distancing effect. The published studies were peer-reviewed and are not being re-litigated here. Indeed, our intention to publish and codify the protocol itself in *JoVE* is to invite more investigators to study this phenomenon (replication plus extension) while ensuring it is done correctly.

E1: Moreover, no effect sizes are presented, only bar graphs, which don't provide intuitive insight into the expected magnitude and precision of effects.

Author Response: We have added the effect sizes for the three studies reported on in the results section.

Minor Concerns:

R2: There is no consideration of using an active control group. It seems that providing some alternative control that is not thought to be self-distancing but does involve some mental imagining or transformation (especially if it involved some costume, as the "Batman" condition does) would improve researchers' inferences about what exactly is being manipulated.

Author Response: We agree that future studies should include an active control group to provide stronger evidence that it is actually self-distancing that is improving young children's self-regulation. It is important to mention that a couple of studies (White et al., 2015; White et al., 2016) using this paradigm found that the third-person condition (self-talk using their own name) was also more beneficial for children's self-regulation than the self-immersed perspective. Given that children are asked to create distance from the self in both the third-person and exemplar conditions, this evidence suggests that manipulating self-distancing itself is effective, but the linear trends suggest there is still a greater benefit of pretend role-play. Studies with active control groups could also be used to compare the effectiveness of self-distancing to similar strategies that have been shown to improve children's self-control such as mentally transforming stimuli. Therefore, we have added this suggestion to the future directions section of the Discussion.

Reviewer #3 Comments (R3)

Major Concerns:

R3: It is not entirely clear to me if the authors modified their paradigm from the adult literature (as mentioned on p. 2, 2nd paragraph), or if they drew on earlier research with children using this or very similar paradigms (cf. Prencipe & Zelazo, 2005; Karniol et al., 2011 - as mentioned on p. 1, 3rd paragraph)?

Author Response: The self-distancing paradigm that we described was created by modifying the self-distancing paradigm in adults and adding the exemplar condition to take advantage of young children's love of role-play. The adult self-distancing paradigm compared a non-distanced perspective (first-person or self-immersed perspective) to a self-distanced perspective (third-person) when recalling past emotionally negative events. The exemplar condition was created by looking at past research with children on role-play such as the study by Karniol et al. (2011) that asked children to pretend to be Superman during a delay of gratification task. The study by Prencipe and Zelazo (2005) was an example of a study that created a self/other distinction by asking children to make decisions about whether to delay gratification or not either for themselves or another person but did not ask children to engage in role-play. The two studies that created distance from the self with children used the delay of gratification task, so it was not clear how creating distance from the self may influence children's performance during different

types of self-regulation tasks. The modified self-distancing paradigm described compares these three different distances from the self (no distance from the self, thinking of oneself using the third-person perspective, and thinking of someone entirely different). This paradigm allows children to take on a broader range of distances from the self and to test the effectiveness of these varying amounts of distance from the self on children's self-regulation. We have clarified these points in the paragraph in the Introduction that describes how our self-distancing paradigm was developed.

R3: It would probably be helpful if the authors stated more clearly how they define self-regulation and which constructs they subsume under this very broad construct. In the abstract they mention as outcome measures "challenging tasks", "coping with negative emotions", and "self-regulation tasks". In the short abstract, the constructs "executive function", "perseverance", and "emotion regulation" are used, whereas in the introduction (1st paragraph), where the authors define self-regulation, they do not mention these other constructs. Also, in the 2nd paragraph of the introduction, they talk about self-control - yet, another term for self-regulation where the reader does not know to which process/ skill the authors exactly refer.

Author Response: We appreciate this observation and have clarified how we define self-regulation and which constructs we consider part of self-regulation in the Introduction. We have also tried to explain what we mean when we use different terms that are sometimes used synonymously with self-regulation in the literature (e.g., self-control) or could be referring to different types of processes or skills.

Minor Concerns:

R3: On p. 3 (point 2.1) it should be added that the media characters are not only popular with children of the study's age range but also popular in the specific culture children grow up in.

Author Response: We have moved the description of the materials needed to the Materials Table as the editor suggested. However, we added that the media characters should be popular in the child's specific culture in the table and also mention this in the Discussion section when we talk about considerations researchers should keep in mind when choosing the characters children are asked to pretend to be.

R3: On p. 5 (point 6.4) it does not seem plausible that the experimenter says "(...) I forgot that I locked the box", especially since shortly before the experimenter and the child had extensively locked and unlocked the box.

Author Response: In the study that used the Attractive Toy in a Transparent Box task, 30 minutes had passed between when the box was locked and when the box was brought out again, so this part of the script was believable to children. During the delay, children completed control

measures. As mentioned in our response to an earlier comment, however, we have edited the Protocol section to demonstrate how the self-distancing paradigm can be used with a perseverance task instead of the Attractive Toy in a Transparent Box task. Therefore, this comment is no longer applicable.

R3: On p. 4 two sentences are stated to remind children of their assigned self-distancing strategy, whereas in Appendix B only one sentence ("How is xx feeling?") is mentioned.

Author Response: This information has now been moved to the Materials Table. The two sentences were examples of reminders used in different studies with different target tasks. We have edited this information so the only sentences are the sentences used to remind children of their assigned self-distancing strategy for the perseverance task (described in the Protocol) and they match the reminders in the scripts in Appendix B.

R3: It would be helpful if in the abstract the age range of the children would be mentioned.

Author Response: We have added the age range of children (4-6-year-olds) in both the short and long abstracts.

Reviewer #4 Comments (R4)

Major Concerns:

R4: I had one major concern, though. I am having a little bit of a hard time following the authors in their argument that the "exemplar" condition induces the highest level of distancing. Neither previous research by the authors (White & Carlson, 2015; Grenell et al., in press; White et al., 2016) nor the protocol suggests a possibility to test this assertion. In fact, this condition really seems messy to me, as the authors themselves admit in the discussion section. In addition to the alternative explanations of the authors, the "exemplar" condition could also be simply more fun and motivating, as kids even are allowed to wear a prop. I get that this condition has demonstrated benefits for improved self-regulation and executive functioning in children, which - by itself - makes it an interesting and useful paradigm. I just don't think the authors can make a clean claim about the incremental effect on self-distancing over and above third-person condition. The introduction needs to clearly reflect that issue. Alternatively, adding a way of testing this incremental effect on self-distancing, e.g., in the form of a "manipulation" check, would be beneficial for the protocol.

Author Response: Theoretically, the exemplar condition induces the greatest amount of distancing. In the third-person condition, they are still being asked to think about themselves but by using third-person speech (e.g., "How is [child's name] feeling?"). However, in the exemplar condition, children are asked to pretend and act as if they are someone else entirely. They are no longer being asked to think about themselves and their own thoughts and feelings from either a first-person or third-person perspective, but instead are being asked to think about the characteristics, thoughts, and feelings of an entirely different person. As we noted above, the

benefit of this increase in theoretical distance from the self has been confirmed using linear trend analyses.

Regarding adding a manipulation check to ensure that children were pretending to be their chosen character and thinking about the character during the target task, a few of the studies described asked children questions after the task was over about the task such as whether they remembered their distancing strategy. For example, in the study by Grenell and colleagues (2018), 78% of children correctly remembered the distancing prompt (e.g., “How is Batman feeling?”) they were supposed to be asking themselves during the task. In that paper we also reported anecdotal evidence from a 6-year-old boy who said he did not give up trying to find the right key to open the locked box because, “Batman never gets frustrated.” We have added asking the post-target task questions to the Protocol section and have included the importance of this manipulation check as a way to see if children are using self-distancing in the Discussion.

Minor Concerns:

R4: Why is the self-immersed condition called "self-immersed" and not simply "first-person?" There are subtle differences in experimental paradigms related to both conceptualizations of a first-person perspective. I think the introduction needs to be clearer on that front.

Author Response: The term "self-immersed" is used in the self-distancing studies with adults (e.g., Kross, Ayduk & Mischel, 2005; Kross et al., 2011). We use the term “self-immersed” instead of “first-person” because the self-immersed condition was created to immerse children in their sense of self and to elicit an exaggerated first-person perspective. This condition asks children to focus on their first-person perspective by asking them to use “I” when thinking about their thoughts and feelings during the target task. The control condition in which children are not given any distancing instructions may also elicit a first-person “default” perspective, but children are not explicitly told to focus on this perspective. Therefore, while children may take an egocentric perspective in the control condition, the self-immersed condition primes children to take on an exaggerated egocentric perspective. In both conditions, no distance is created from the self. Additionally, in the study by Grenell and colleagues, they coded children’s use of first-person speech during the Attractive Toy in a Transparent Box task and found that regardless of the child’s distancing condition, a higher frequency of first-person self-speech was associated with more frustration during the task, further demonstrating the negative effects of a self-immersed perspective. We have added more information on the self-immersed condition to the introduction to better explain why we use the term “self-immersed.”

R4: In the procedure, I had a little bit of a hard time understanding what the authors meant with "making a big show." (4.4) Consider giving more details.

Author Response: This comment is no longer applicable since we no longer describe the Attractive Toy in a Transparent Box task in the Protocol section. However, that phrase was meant to describe how the experimenter should make it very obvious how the key goes into the lock and exaggerate their actions, so children would understand how the key goes into the lock.

The script for the Attractive Toy in a Transparent Box also includes phrases where the experimenter is narrating their actions and explaining how the key can be used to unlock and lock the box.

R4: I 100% admit that this just a pet-peeve of mine and I want to apologize if this comment sounds a little bit patronizing as I am very well aware that the authors on this protocol are accomplished writers, but please re-consider use of the demonstrative pronoun "this." A couple of times in the manuscript, the authors use "this" in an ambiguous way, and disentangling what the pronoun is referencing to is only possible by way of context.

Author Response: We have identified the instances in which "this" was used ambiguously and edited these sentences.

Appendix A: Child Verbal Assent Script

After establishing rapport with the child, the examiner says the following:

We have some fun toys here, don't we? Now I'd like to show you some other neat things in the next room and ask you some questions. Some of the questions will be really easy, and you'll know the answer right away. Other questions might be kind of hard, and you might not know the answer, and that's okay. We'll also play some games. Some of them are easy and some are kind of hard to do, but that's okay. We can try them anyway. You can tell me whenever you want to stop, or if you need to go to the bathroom, or be with your (mom/dad/guardian).

Does that sound okay? Do you have any questions for me?

Appendix B: Scripts for Self-Distancing Strategies

Immersed

E: Before we get started, I'd like to tell you about something that you can do during this activity. It would be helpful if you worked hard on this. You would be a good helper if you worked on this activity for as **long as you can**, but it can be boring sometimes. Some kids like to focus on what they are thinking and how they feel when it gets boring. That's what I'd like you to do today.

In other words, if you get bored at any point during this task, ask yourself, "Am I working hard?"

You're going to hear reminders to help you remember. The computer will say "Are **you** working hard?" to help you remember to ask yourself, "Am I working hard? This sticker (*E places "I" sticker on computer*) will help you remember too. When you see the sticker remember to ask, "Am I working hard?"

Now you try it. Say, "Am I working hard?" **C repeats: Yes No #tries_____**

So, remember, while you're working on this activity I just want you to think about whether **you're** working hard.

3rd Person Distanced

_____ Child's Name

E: Before we get started, I'd like to tell you about something that you can do during this activity. It would be helpful if you worked hard on this. This is a very important activity and it would be helpful if you worked hard on this for as **long** as you could. You would be a good helper if you worked on this activity for as **long as you can**, but it can be boring sometimes. Some kids like to talk to themselves using their own name, when it gets boring. That's what I'd like you to do today.

In other words, if you get bored at any point during this task, ask yourself, "Is [**participant's name**] working hard?"

You're going to hear reminders to help you remember. The computer will say, "Is [**participant's name**] working hard?" to help you remember to ask yourself, "Is [**participant's name**] working hard?" This sticker (*E places name sticker on computer*) will help you remember too. When you see the sticker remember to ask, "Is [**participant's name**] working hard?"

Now you try it. Say, "Is [**participant's name**] working hard?"

C repeats: Yes No #tries_____

So, remember, while you're working on this activity I just want you to think about whether [**participant's name**] is working hard?"

Exemplar Distanced

E: Before we get started, I'd like to tell you about something that you can do during this activity. It would be helpful if you worked hard on this. This is a very important activity and it would be helpful if you worked hard on this for as **long** as you could. You would be a good helper if you worked on this activity for as **long as you can**, but it can be boring sometimes. Some kids like to pretend that they're somebody else who would be a really hard worker on this activity, when it gets boring. That's what I'd like you to do today.

Which one of these characters would you like to [pretend to] be for this activity?

(E shows C laminated page with character options.) (Batman, Bob the Builder, Rapunzel or Dora the Explorer)

Okay! To help you pretend you get to wear this. *(E gives C character prop)*

So, if you get bored at any point during this task, ask yourself, "Is [**character's name**] working hard?"

You're going to hear reminders to help you remember. The computer will say, "'Is [**character's name**] working hard?" to help you remember to ask yourself, "'Is [**character's name**] working hard?" This sticker *(E places character sticker on computer)* will help you remember too. When you see the sticker remember to ask, "Is [**character's name**] working hard?"

Now you try it. Say, "Is [**character's name**] working hard?"

C repeats: Yes No #tries_____

So, remember, while you're working on this activity I just want you to think whether [**character's name**] is working hard.

Appendix C: Post-Target Task Questions for Perseverance Task

1. What was the question you were supposed to be asking?

Response: _____

2. How much did you ask it? A little or a lot?

Response: A little A lot

3. Did you want to play the cat and cheese game? Why or why not?

Response: Yes No

Why/why not?: _____

4. Did you want to play Where's My Water? Why or why not?

Response: Yes No

Why/why not?: _____

5. Which game did you like better?

Response: Cat/Cheese Where's My Water

6. Did you have a choice of which game you played?

Response: Yes No

7. How hard did you try on the cat and cheese game? Not hard or really hard?

Response: Not Hard Really Hard

8. Why did you pick to play the cat and cheese game sometimes?

Response: _____

9. Do you remember why I wanted you to do this activity?

Response: _____

10. How important was it to you to work hard?

Response: _____

Link to policy and process for requesting reprints:

Developmental Science (White & Carlson, 2015):

<https://onlinelibrary.wiley.com/page/journal/14677687/homepage/permissions.html>

Child Development (White et al., 2016):

<https://onlinelibrary.wiley.com/page/journal/14678624/homepage/permissions.html>

British Journal of Developmental Psychology (Grenell et al., 2018):

<https://onlinelibrary.wiley.com/page/journal/2044835x/homepage/permissions.html>

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