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From future self to current action: An identity-based motivation perspective

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ABSTRACT

Adults ask children what they want to be when they grow up, hoping that this will motivate children to focus on their schoolwork- this does not necessarily happen. Identity-based motivation theory predicts that one way to increase the odds is for children to experience their adult future self as connected to their current self. Five studies test this prediction ($N = 641$). We find that children can be guided to experience connection between their current and adult future self. Children guided to experience high connection work more and attain better school grades than children guided to experience low connection. Experienced connection works by moderating the effect of seeing school as the path to one's adult future self.

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Future self; possible self; school engagement; connection; identity-based motivation

Tinker, tailor, soldier, sailor, rich man, poor man, beggar man, thief, doctor, lawyer, Indian chief.
Or what about a cowboy, policeman, jailer, engine driver, or a pirate chief? ... Oh it's such a lot
of things there are and such a lot to be ...

(Children's counting song, Cherry Stones, A. A. Milne, 1927).

Many well-meaning adults ask even quite young children what they want to be when they “grow up” and then admonish them to work hard and stay in school so they can attain their “grown up” or adult self. Indeed, most children, no matter their current school attainment, do aspire to succeed in school and go on to college (New, 2014; Oyserman, 2013). Adults might think that if children just bring their “grown up” adult future self to mind, this will remind children to be more engaged with their schoolwork. However, children's adult future self is far away. This distance matters, anything that is not immediate, right now, today, is less central to judgment (e.g., Chapman & Elstein, 1995). The here and now requires attention, what is later may not require action as yet – starting tomorrow should be just as good (Lewis & Oyserman, 2015; Oyserman & Lewis, 2017). But it is always now (today) and never tomorrow so there must be some way in which the future can be made to feel imminent, as if it is now, so that it requires current action. We predict that this occurs when children's adult future selves feel connected with (linked) rather than disconnected (decoupled) from their current selves (Oyserman, 2015). As outlined next, this prediction is built from a synthesis of identity-based motivation theory and prior research on lay intuitions about time as distance.

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Identity-based motivation

Identity-based motivation theory¹ is a social psychological theory of motivation and goal pursuit that builds on social cognition research to explain when and in which situations people's identities motivate them to take action toward their goals (Oyserman, 2007, 2009, 2015). Following the logic of social cognition (e.g., Bargh, 2016; Higgins, 1998; Strack & Schwarz, 2016), something that is on the mind or "accessible" will be used in making judgments only if it is experienced as relevant to the task at hand. A social cognition perspective on self-concept predicts that people include as self-relevant accessible information, either assimilating it into their concept of self or using it as a contrasting standard against which to judge the self, unless that information appears irrelevant to making these judgments (Oyserman et al., 2012). This implies that an adult future self will influence judgment only if it is on the mind and experienced as relevant for current choice. Relevance is not to be taken for granted, after all, adulthood is in the distal future, a future so far away that it simply may not be relevant to right now.

What identities imply for meaning making and action is dynamic rather than fixed

Identity-based motivation theory starts with the assumption that people prefer to act and make sense of situations in identity-congruent ways – ways consistent with what "I" do, but at the same time, which identities come to mind and what these identities imply for action and meaning-making is not fixed but dependent on features of the immediate situation. The thing of interest here is not that people can change how they regard themselves after putting in sustained and conscious effort, but rather that small shifts in context can have surprisingly large effects by changing how people regard themselves.

In the case of children and their adult future selves, small shifts in contexts can matter if they change the extent that adult "me" seems relevant to current "me" (Oyserman, 2015). In context, adulthood can feel imminent or far away, if adulthood is imminent, then children should experience current "me" and future adult "me" as connected constructs. Since most children expect to go to college, concentration on schoolwork should increase in contexts in which current "me" and adult future "me" are experienced as connected and overlapping (e.g., Destin & Oyserman, 2009). But current "me" and adult "me" can also be experienced as disconnected and non-overlapping. The implication is that future adult "me" does not always matter not just because it is not always on the mind but also because it may not always seem relevant.

Time as distance and identity-based motivation

Spatial cues provide information about distance in visual perception. Vividness is a distance cue; closer objects can be seen in greater detail and more vividly. Because time is abstract, people reason about time by using a concretizing metaphor, space (Landau, 2017). Thus, time is described as distance (in a short time, in a long time, near, and far). One of the inputs people use in judging relevance is their everyday intuition about what distance in time and space implies. One such intuition, termed "authorship," is that things that are close in time and space are likely related (e.g., Ebert & Wegner, 2010). A second intuition is that things that are close require current action while things that are far, even if valued, do not (Trope & Liberman, 2003). A third intuition is that as distance increases, likelihood decreases, that is,

far events are understood to be less likely than near ones to occur (Liberman & Förster, 2008). Hence, distal events are less likely to influence current actions in three ways. First, things that are far are uncertain, probabilistic and may not actually occur. Second, things that are far away do not require current action. Third, things that are far may not be relevant to right now. Understanding when distal things matter is important because distance may be a critical feature of children's adult future selves – for an eight to twelve years old, becoming eighteen or twenty-two is a decade away, by any measure that is far away and separate from right now.

Do people use distance to gauge the relevance of their future selves for current action?

Three kinds of studies support the prediction that people use their intuitions about distance to make sense of the relevance of their future selves for current action. These studies (temporal discounting studies, vividness studies, and linking studies) are described next. First, temporal discounting studies show that people are more likely to prefer immediate smaller rewards to farther larger ones when a future “me” is far enough away (for a review, Pronin, Olivola, & Kennedy, 2008). People are more likely to regard future “me” as discontinuous with current “me”, even “not me,” or a “total stranger” when future “me” is sufficiently distal. Distancing can be manipulated in adults by having them refer to themselves in the third person “she” rather than the first person “I” (Ayduk & Kross, 2010; Kross, 2009).

Second, studies that measure or manipulate experienced vividness of the future self show that vividness matters just as would be expected if vividness is taken to imply closeness in time (e.g., Ellen, Wiener, & Fitzgerald, 2012; Gelder, Luciano, Weulen Kranenbarg, & Hershfield, 2015). For example, in one study, adults who rated an imagined retired future identity as being more vivid reported being more financially prepared for their retirement (Ellen et al., 2012). In another study, participants shown a photograph of themselves that had been digitally aged (so that they were looking at their future self) were more likely to take future-focused action if they reported that their future self was vividly experienced (Gelder et al., 2015).

Third, studies that measure or manipulate experienced link between near and distal future selves show that this experience of link matters. Considering a proximal future is energizing if near and far future are strongly linked (Stephan, Shidlovski, & Sedikides, 2017). One way that such linking can occur for students is believing that school is the path to one's far future (Destin & Oyserman, 2009; Landau, Oyserman, Keefer, & Smith, 2014). This should result in long term effects on grades and attendance. This possibility was tested in a randomized control trial with middle school students (Oyserman, Bybee, & Terry, 2006; Oyserman, Terry, & Bybee, 2002). Students either went to school as usual or engaged in a sequenced set of activities to create a sense that their adult future self was imminent, connected to their right now selves through their current actions. For example, they chose adult images, drew timelines into the future with forks in the road (choices) and roadblocks (obstacles to get around), and created poster boards linking next year and adult possible selves with things they were doing now (strategies). Intervention improved classroom engagement, time on homework, attendance and grades and effects were stable over two years.

Gaps to be addressed in the current studies

Prior research documents first, that people experience time as distance. Second, that they perceive closer things as more related to one another than farther ones. Third, they perceive

closer things as requiring current action more than farther ones. Fourth, people use these intuitions with regard to their future self – taking more action when the future self is experienced as vivid (a perceptual cue of nearness), and linked (a way to make objects seem closer). However, prior research has not yet documented that experienced connection with a distal future self can be manipulated in children or that higher connection is associated with better school performance, even on trivial tasks. We predict that experienced connection with one's adult future self matters in part by getting students who see school as the path to their adult selves to engage more immediately and more deeply with their schoolwork.

We test this prediction in the current studies in three parts. First, we test the prediction that whether children experience current “me” and adult future “me” as connected is context sensitive and so can be primed. Second, we test the prediction that compared to children guided to experience low connection, children guided to experience high connection between current “me” and adult future “me” will perform better in school. Third, we test the prediction that this will be due to higher concentration, even when school tasks seem trivial if children believe that school is the path to their adult future selves.

The current studies

Our general process model is that connection matters by prompting students who believe that school is the path to their adult future selves to get going, focus on their schoolwork and keep going, studying, engaging, and doing their homework over time. We test our process model in three steps in five studies with students in grades 6–12. By testing our process model in three steps, we follow the advice of Spencer, Zanna, and Fong (2005) that it is better to test a process model study by study rather than within a single study.

First we show that experienced connection between current and adult future self is malleable (Studies 1 and 2). Second we show that experienced connection is consequential (Studies 3 and 4). We do so by showing that students led to experience high connection between current “me” and adult future “me” subsequently have better academic performance (school grades) than students led to experience low connection between current “me” and adult future “me.” We assess short term (Study 3) and long term (Study 4) effects. Third, we examine process. We do so by showing that experienced connection moderates the effect on performance of believing that school-is-the-path to one's adult future self (Study 5).

In each study, we started by asking our participants to describe their adult future self and the age this future self will be obtained as open-ended questions, followed by a blank space. These open-ended questions served to verify that children were indeed thinking of an adult future self. The most frequent mention was of a job, often not very specific. Children often described a number of seemingly quite different jobs, and the jobs they described often, but not always, required higher education. For example, “I want to work in a pet shop, I want to be a veterinarian and a stylist.” “I want to have kids, a dog, and a husband. I will work as a hairdresser.” “Being a fireman or a policeman, building things and have a really big house, learn how to play piano and violin, make people laugh,” “... I would like to be a kindergarten teacher, or write books where I will do the illustrations.” When possible, we counted the number of words written and the number of identities described to rule out alternative explanations based on verbal ability. Preliminary analyses did not reveal any such effects, so these analyses were not further pursued.

All studies were conducted in France. Different schools were used for each study. The French school year runs from September to July and is divided into three marking periods.

We report when data were obtained relative to these marking periods. The first author obtained approval for the project from the French educational authorities and data were collected with school permission following the requirements of the French educational authorities about public school data collection.

Studies were completed in a single session either in students' own classroom or in a joint session with another classroom. When classes were joined, students from each class were mixed so that classmates were not seated next to one another to reduce the chance that responses were shared. Randomization was handled by presorting questionnaire booklets.

The first page of questionnaire booklets looked the same so that participants were blind to the existence of conditions. Schools differed somewhat in the demographic make-up of their student bodies, though following French norm information about national or religious background was not obtained. Gender data were obtained for purpose of sample description, but no gender effects were posited and preliminary analysis did not yield any gender effects so gender is not included in analyses.

With regard to planned sample size, we estimated an effect size of about $d = .60$ based on our pilot work. Using the software G*Power (Faul, Erdfelder, Lang, & Buchner, 2007), we estimated that for independent samples and this effect size, and a power of .80, we would need 36 participants per condition. Our planned sample sizes were thus a function of the number of conditions in each study. The exception was Study 4, because this was a longitudinal study. We expected to lose students across the 3 and 6 months lag necessary to obtain subsequent semester grades, we sought as large a sample as we could get. Hence, our average condition size was 35.75 per analytic "cell" and was higher in the longitudinal study (57 by "cell", counting 2 cells for the continuous variable).

For readability, we present instructions in English. We looked for outliers prior to analyzing our research question, following the method proposed by Judd, McClelland, and Ryan (2009) as noted in each study.

Study 1

In Study 1, we tested the prediction that experienced connection is context sensitive and malleable. We predicted that children can be guided to consider their current "me" and their adult future "me" as connected or as disconnected. We manipulated experienced connection using the words "near" and "far" following lay intuitions about time as distance. Our dependent measures were self-reported feeling of connection with a face-valid set of circles varying in overlap labeled "me now", and "future me" and a face-valid self-report of the vividness with which the future self was experienced.

Participants

Sixth graders ($N = 65$, 30 female) in three middle school classrooms participated in the middle of the first marking period of the school year as part of their orientation to high school class.

Material and procedure

Three classrooms were joined together for high school orientation. The orientation instructor handed out questionnaire booklets. There were two conditions (near, far). Half of students

were randomly assigned to the adult future self is near condition and half to the adult future self is far away condition. In the near condition instructions (in English translation) were

Each of us has some image of what we want to be like as an adult. For a young person, being an adult is near to the present because it arrives soon. How about you? What do you want to become as an adult? To answer this question, imagine what you want to be like in the near future and write it down in the following space. Soon, when I will be an adult, I ...).

In the far condition instructions were

Each of us has some image of what we want to be like as an adult. For a young person, being an adult is far from the present because it arrives in a long time. How about you? What do you want to become? To answer this question, imagine what you want to be like in the far future and write it down in the following space. In a long time, when I will be an adult, I ...).

After writing about their adult future self, students were asked how old they would be when they attained that future self.

To assess experienced connection between current and adult future selves, we modified materials from Aron, Aron, and Smollan (1992) and Ersner-Hershfield, Garton, Ballard, Samanez-Larkin, and Knutson (2009). As presented in Figure 1, the materials show two circles varying in their extent of overlap from completely separate and not at all overlapping to fully overlapping. The written instructions were: "Among the following drawings, choose the one that best represents the link between who you are and who you want to become as an adult. Check the corresponding box". An additional oral instruction stated "The two circles represent the link between what you are now and what you want to be as an adult, that is, how connected you feel now with the adult future self you just described" (Table 1 provides information on responses).

On the next page were four close-ended statements we developed that described the future self as vividly imagined and four close-ended statements we developed that described pursuit of the adult future self. Students were asked to rate each statement from 1 = *not at all true for me* to 5 = *really true for me*. The Vivid Future Self items, listed next, formed a marginally reliable scale ($\alpha = .65$) and were used in analyses but the Future Self Pursuit items, also listed next, did not scale ($\alpha = .38$) and hence these items are not further considered. The items for Vivid Future Self were: "What I want to be when I grow up feels close", "I can explain exactly what I want to become as an adult", "When I think about my adulthood, I feel like it will happen soon", and "I can explain precisely what I want to become as an adult." The items for Future Self Pursuit were: "I often try to become the person I want to become", "I do things to become the person I want to become", "It's important for me to become the person I want

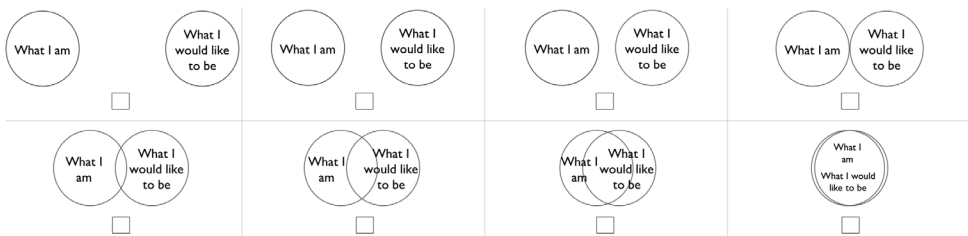


Figure 1. Measure of connection.

Table 1. Examples of future self description from Study 1.

Adult self characteristics	<i>M</i> (SD) or #(%)	Examples of future self
# words	30.21 (22.85)	"Being an actor because I really like the theater, I like make people laugh, I like to be on stage"
# possible identities	4.63 (2.97)	"I want to make pizza, and help my parents that are working on psychology. I also want two kids and doing theater"
Described at least one job or career	91 (91.9%)	"I want to be nice a having a lot of patience" "I want to do the summer Olympics game and play basket. I want to be a great sport woman"
Age of adult self	22.74 ^a (5.19)	"I would like to help the developing countries, and maybe change the world"

^aThe question was "How old do you think you will be when you attain your future self?"

to become"; "It will be hard to become the person I would like to become." After these statements were orientation instructor questions about the specific information provided in the orientation session.

Results

Preliminary analysis

Children's open-ended responses to the prime on the first page of the questionnaire revealed that all but four students complied with the instruction to write about how they imagined their adult future self. Since it is not clear whether the four students who did not follow the instruction read the manipulation, we excluded them from analysis.² Response content varied somewhat but almost all responses (see Table 1) included at least one job or occupation-focused adult future self. On average, students expected to attain their desired adult future self in about ten years ($M = 10.10$, $SD = 3.64$), which given their grade level, would be about age 21. Randomization to condition did not significantly affect the age children imagined they would be when their adult future identities were realized, $t < 1$.

Effects of condition on experienced connection between current and adult future selves

We predicted that students in the adulthood is near condition would rate their adult future self as more connected with their current self than students in the adulthood is far condition. Indeed, participants in the near condition chose circles that were more overlapping ($M = 5.52$, $SD = 2.26$) than participants in the far condition ($M = 4.03$, $SD = 2.58$), $t(59) = 2.38$, $p = .021$, $d = .62$, 95% CI for difference in means [.24, 2.72]. To test for robustness of our effects, we reran these analyses controlling for age at which the adult future self would be attained. Our results are robust to this control, $t(58) = 2.26$, $p = .028$, 95% CI for the difference in means [.16, 2.66].

Effect of condition on experienced vividness of the adult future self

We predicted that students in the adulthood is near condition would rate their adult future self as more vividly instantiated than students in the adulthood is far condition. That is what we found: participants in the near condition more strongly agreed with the 4-item Vivid Future Self measure ($M = 3.85$, $SD = .76$) than participants in the far condition ($M = 3.27$, $SD = .93$), $t(59) = 2.63$, $p = .011$, $d = .68$, 95% CI for the difference in means [.14, 1.00]. To test for robustness of our effects, we reran these analyses controlling for age at which the adult future self would be attained. Our results are robust to this control.

Discussion

In Study 1 we showed that experienced connection between current and adult future self is sensitive to linguistic cues about distance. We used concrete distance labels so that children imagined their adult future self as near (vs. far). We showed effects on both connection (overlap) and vividness of the adult future self. Effects were due to condition and not to the effect of condition on the age at which adult future selves were to be attained. To test whether effects could also be found using the kind of more abstract cues used with adults, in Study 2 we use a different and more abstract linguistic cue, describing the self in the first or third person.

Study 2

In Study 2 we tested the malleability of children's experienced connection between their current self and adult future self. We used first person vs. the third person description of the adult self as our linguistic cue and an abbreviated set of the dependent variables we used in Study 1.

Participants

Twelfth graders ($N = 74$, 45 female) in five school classrooms participated in the study as part of their orientation to post high school degree possibilities (college or other tracks).

Material and procedure

Five classrooms were joined for their high school orientation and at this time the orientation instructor handed out questionnaire booklets. There were two conditions (first person, third person). Half of students were randomly assigned to the first person condition and half to the third person condition. In the first person condition, instructions (in English translation) were

Each of us has some image of what we want to be like as an adult. Imagine what your adult life will be and in the following space describe what you imagine. For example, you can respond by describing: what will be my job? How will my life be? And so on.

In the third person condition, instructions were

Each of us has some image of what we want to be like as an adult. Imagine what life will be for the person you want to become and in the following space describe what you imagine. For example, you can respond by describing: what will her [his] job be? How will her [his] life be? And so on.

After the instruction there was a small open rectangle for writing a response. After writing about their future self, students were asked in how many years they would become this adult future self.

Participants then filled in two close-ended statements assessing vividness of the future self ($\alpha = .87$, "I can explain exactly what I want to become as an adult" and "I can explain precisely what I want to become as an adult.") mixed with four items that were meant to assess pursuit of the future self ($\alpha = .49$). These items were identical to the four items used to in Study 1 and again did not scale and hence are not further considered. To assess experienced connection between current and adult future selves, we used the same modified materials from Aron et al. (1992) and Ersner-Hershfield et al. (2009) used in Study 1. Specifically,

as displayed in Figure 1, we showed two circles varying in their extent of overlap from completely separate and not at all overlapping to fully overlapping. The rest of the questionnaire was for the use of the orientation instructor who obtained specific information about what students learned in the orientation session.

Results

Preliminary analysis

Children's open-ended responses on the first page of the questionnaire revealed that all but seven students wrote about a potential future job in describing their future self. The remaining seven students wrote: "I do not know." Hence, we can assume that they thought about the instruction and might have been influenced by the priming condition (which was embedded in the instruction). While in Study 1, students included other aspects of their adult future self as well, in Study 2, students only wrote about potential future jobs. Perhaps this difference is because the questionnaire was part of their orientation to post-high school education and job was included as an example in the instructions. On average, students expected to attain their desired adult future self in about 6 and a half years ($M = 6.48$, $SD = 3.51$), which given their grade level, would be about age 24. Randomization to condition significantly affected the age students imagined they would be when their adult future identities were realized, with students randomized to the first person condition, reporting significantly younger ages than students randomized to the third person condition, $t(72) = 2.02$, $p = .047$. This is both direct evidence that the first person prime increased overlap and something to be controlled in subsequent analysis.

Effects of condition on experienced connection between current and adult future selves

We predicted that students in the first person condition would rate their adult future self as more connected with their current self than students in the third person condition. Indeed, participants in the first person condition chose circles that were more overlapping ($M = 3.74$, $SD = 1.92$) than participants in the third person condition ($M = 2.86$, $SD = 1.83$), $t(72) = 1.99$, $p = .050$, $d = .47$, 95% CI for difference in means $[-1.759, .001]$. To test for robustness of our effects, we reran these analyses controlling for age at which the adult future self would be attained, finding that with age as a control, the effect of first vs. third person condition was in the same direction but reduced, $t(72) = 1.86$, $p = .068$.

Effect of condition on experienced vividness of the adult future self

Unlike Study 2, we did not find the predicted effect of condition on the two-item vividness measure, $t < 1$. This null effect remains when age is added as a control.

Discussion

In Study 1, the near-far prime influenced each of the dependent measures (connection with adult self, vividness of one's adult self) and was not associated with the age one would be when one became an adult. In Study 2, the first-person third-person prime influenced connection with adult self but not the vividness of one's adult self. Moreover, the first-third person prime did influence the age one would be when one became an adult and controlling

for age reduced the effect of the prime on connection. Taken together, the results of Studies 1 and 2 imply that the specific manipulation of connection used matters. The more concrete adulthood is near-far cue had a more robust effect compared to the more abstract first-person third-person cue. Hence, in our next studies, we used more concrete cues of spatial distance. In Study 3 we turned to our second prediction, which is that experienced connection matters for classroom behavior.

Study 3

In Study 3, we tested our second prediction – that experienced connection to future self influences classroom behavior. Students were randomly assigned to experimental group (near future, far future) or to control so that the relative effect of condition on behavior could be compared to control. We included measures of self-esteem and efficacy to rule out the possibility that experienced connection to adult future self only matters for children who believe that they can take action to attain their future self or have high self-regard generally.

Participants

Fourth and fifth graders ($N = 116$, 52 female) in five classrooms in three primary schools participated in the middle of the third marking period of the school year as part of their orientation to high school class.

Material and procedure

There were three versions of the questionnaire which were mixed prior to arrival in the classroom. All had identical covers and students were unaware of the difference in instructions among questionnaires – which is detailed next. Near and far condition instructions were

Each of us has some image of what we want to be like in the future. Imagine what you want to be like [in the near future/when you will be an adult]. After imagining what you will be like [in the near future/in the far future], use the lines below to describe.

Then children were asked to describe what they were doing to attain their future self and the age they would be when they attained their future self. Control condition instructions omitted the bracketed information; thus these children did think about their future self but whether that was near or far was not specified. Teachers were not present.

On the next page children were asked to rate nine statements on a 5-point response scale from 1 = not at all true for me to 5 = really true for me. There were six statements about the general sense of efficacy children felt to attain their future self, $\alpha = .79$ (e.g., “I feel really capable of becoming like I want to become”) and three statements about self-esteem, $\alpha = .75$ (e.g., “I am satisfied with myself”). The experimenter then thanked the children, collected the questionnaires and left the room. The regular teacher handed out a standardized 20-figure geometry task and told children they had ten minutes to identify any figures that were squares, rhombuses, rectangles, parallelograms, quadrangles, or polygons. Of the 20 figures, five were figures children had learned to identify in prior class lessons. Which of these five figures were identified constituted our behavioral dependent measure. Because participants had no reason to assume that this was anything other than a regular school task, our

behavioral dependent measure provided an ecologically valid test of the effect of increasing subjective nearness of the future self on actual in-class school behavior.

Results

Preliminary analysis

Across conditions, 79.5% of children (all but 25) wrote about at least one occupation-focused adult future self. Children expected to attain their future self at age 22 ($SD = 5.55$). We looked for an effect of condition on how the future self was described. We did not find an effect on content but did find an effect on age, $F(2,108) = 7.06$, $p = .001$. Near condition children ($M = 19.1$, $SD = 4.8$) expected to be an adult at a younger age than control group ($M = 23.7$, $SD = 6.1$) and far condition ($M = 22.6$, $SD = 4.6$) children. So we included age as a control in our analysis as reported below. In addition, outlier analysis revealed five outliers; these responses were excluded from analysis as reflected in degrees of freedom in the results section.

Effect of condition on actual school behavior

We predicted that children in the “my adult self is near” condition would perform better at the geometry task than children in the “my adult self is far away” condition. We tested the effect of experimental condition with a set of two orthogonal contrasts: one contrasting experimental (near and far) condition students (coded -1 , 1 , with control coded as 0) and one contrasting control condition students with the experimental condition students (control coded 2 and experimental conditions coded -1 , -1). Children in the “my adult self is near” condition performed better at the geometry task ($M = 3.03$, $SD = .48$) than children in the “my adult self is far” ($M = 2.76$, $SD = .43$) condition, planned contrast $t(108) = 2.39$, $p = .019$, $d = .46$, 95% CI for difference in means $[.05, .50]$. Children in the control condition were in the middle ($M = 2.88$, $SD = .50$), not significantly different from either experimental condition (near or far), suggesting that both primes mattered, shifting performance slightly up or down from control, $t < 1$.

To test for robustness of our effect, we reran this analysis twice, once controlling for age at which the adult future self would be attained, and once for self-esteem and efficacy in doing what is needed to attain one’s adult self. Our results are robust to including these controls – primed nearness of one’s adult self influenced actual school behavior, even when controlling for the age at which the adult future self would be attained, efficacy in attaining the adult future self and self-esteem.

Discussion

Study 3 results support our prediction that when children experience their adult future self as near their school performance improves. Children randomly assigned to consider their adult future self as near outperformed children randomly assigned to consider their adult future self as far away. Children in the control group were midway between both of the experimental groups, as might be the case if, without guidance, some children experience their adult future selves as near and others as far away. We showed that this effect is robust; it remains even when adding as a control the actual age children imagine they will be when their adult self is attained and when adding as a control their efficacy in attaining their adult self and their self-esteem. In Study 4 we ask if behavioral effects sustain over time.

Study 4

In Study 4 we again tested our second prediction – that experienced connection with adult future self is consequential, this time using actual school grades as our dependent measure. To prime experienced connection, we used a variant of the overlapping circles task, showing overlap with adult future self visually and as well as linguistically. We also included a no-prime control group.

Participants

Twelfth graders ($N = 173$, 75 female) in nine classrooms in two high schools (one general, one technical) participated at the end of the first marking period of the school year. Data from five students were missing the dependent variable because the students had moved or changed academic track so their grades were not available. In addition, four students did not have core grades but we were able to attain as a substitute, their overall grade point average. This resulted in $n = 168$ for analyses of core course grade at 3-months and $n = 114$ for core grade at 6-months post in-class manipulation of overlap between current and adult future self.

Material and procedure

The study took place as part of academic-career orientation instruction and the orientation instructor handed out questionnaire booklets. Students were randomized into one of three conditions (high connection, low connection, control). Students were randomly assigned to the adult “me” and current “me” high connection condition, to the adult “me” and current “me” low connection condition, or to the control condition. Students in the control group were shown the eight circle pairs used in Studies 1 and 2 as dependent variables asked which best represented how they thought about their current and adult future selves. Students in the high connection condition saw only circle 6 from the overlapping circles task shown in Figure 1 and the text

Each person has some image of what he or she is like now and may be like in the future. For an adolescent, being an adult is really connected to the present. In other words, imagining oneself as an adult is imagining oneself as the same person.

Students in the low connection condition saw only circle 1 from the overlapping circles task shown in Figure 1 and the text

Each person has some image of what he or she is like now and may be like in the future. For an adolescent, being an adult is really not connected to the present. In other words, imagining oneself as an adult is imagining oneself as a different person.

To ensure participants did not skip this step, we asked students in each of the three conditions to write an example of what they want to be like as an adult.

After completing the priming or control task, participants filled out a questionnaire for the use of the orientation instructor who obtained specific information about what students learned in the orientation session and four items about the future self on a 5-point scale (1 = *not at all true for me* to 5 = *really true for me*). Three of these items (“I feel like I work enough in high school” reverse coded, “To achieve what I want, I will need to do my homework more seriously”, “To achieve what I want, I will need to pay more attention at high

school.") formed a marginally reliable scale ($\alpha = .56$).³ We used this perceived current effort scale as a control in our analyses of effects on core grades.

Our primary behavioral dependent variable was core course grades at the end of the second marking period (about 3 months after the priming task). We also obtained core course grade at the end of the second marking period (about 6 months after the priming task) as a secondary measure of the persistent effect of the priming task. In the French educational system core course differs by track: the core course is philosophy for students in the humanities track, math for students in the science track, economics for students in the social and economics track, and a specific vocational or technical course for students in the vocational or professional training tracks. At the time of data collection, four students did not yet have a grade in their area of specialization and teachers provided instead their mean grade across the rest of the curriculum to maintain the full sample for analyses (effects do not change if these students are omitted, as detailed next). Grades in the French system range from 0 to 20, with higher scores representing a higher percentage using a 0 to 100% scale (e.g., a score of 10 represents 50% correct). At the diploma stage, scores are chunked so that 16–20 is very good (*très bien*), 14–15.9 is good (*bien*), 12–13.9 is satisfactory (*assez bien*), 10–11.9 is correct (*passable*), and 0–9.9 is failing (*insuffisant*). French grades tend to be lower than American grades. A failing grade does not necessarily mean that the student failed the class as ranking in class also matters.

Results

Preliminary analyses

Preliminary analyses revealed that all students did write something and that all but four students wrote about at least one occupation-focused adult self so all students were retained for analyses.

Effect of condition on grade point average

We tested the effect of condition with a set of two orthogonal contrasts: one contrasted the two experimental conditions (high connection and low connection); the other contrasted the control condition with the average of the experimental conditions. As we predicted, the first contrast revealed that students in the current “me” and adult “me” are highly connected condition ($M = 11.45$, $SD = 2.35$) attained better grades than students in the current “me” and adult “me” are distinct condition ($M = 10.69$, $SD = 2.50$) = .31, $t(163) = 2.03$, $p = .044$, $d = .31$, 95% CI for the difference in means [.02, 1.62]. The second contrast was not significant, $t < 1$. In the control condition, overlap ($M = 5.6$, $SD = 1.7$) between current and adult self was not correlated with core grades, $t < 1$, and was on average between the overlap primed in the experimental conditions.

We followed up with additional contrast analysis to understand how the experimental and control groups differed. These analyses showed that grades of students in the control condition ($M = 11.07$, $SD = 1.98$) did not differ from the grades of students in the experimental conditions, $t < 1$. Grades in the next marking period were generally lower. Both control condition and high connection condition students showed declining grades so that the bolstering effect of the high connection condition had dissipated by six months after the prime, $t < 1$.

Discussion

Study 4 supports the prediction that guiding students to experience their adult future self as connected with their current self rather than separate from their current self improves academic performance over time. Results also suggest that without intervention, students vary in their intuitions about the connection between their current and adult future self. In the control group, mean overlap reported was higher than the overlap in the low connection condition and just under the overlap in the high connection condition – these were assigned to be the first and sixth pairs of circles respectively. However, overlap itself was not enough, in the control condition overlap was not associated with subsequent grades. In the experimental condition, overlap was described as implying connection between adult and current self or separation of current self from adult self – and condition was associated with subsequent grades. The implication is that without instruction, some students experience connection and others do not but this connection requires framing to be experienced as relevant to taking action in school. We found that this effect was relatively long lasting – influencing grade point average three months later. However, effects did not last forever, the effect of guiding students to consider their current and adult future self as connected dissipated after six months. In Study 5, we turn to our third prediction, which is that children guided to experience connection between their current and adult future self will be more focused on even seemingly trivial school tasks if they see school as the path to attaining their future selves.

Study 5

In Study 5 we tested our third prediction – that the effect of connection would be seen even on seemingly trivial school tasks among students who believe that school is the path to their adult future selves. We used a timed attention task as our behavioral variable.

Participants

Sixth and seventh graders ($N = 213$, 104 female) participated as part of a larger study that took place in the middle of the third marking period of the school year. Data were collected across two academic years.

Material and procedure

Students were randomly assigned to one of three conditions (near, far, control) using the same method as in prior studies, again, questionnaires looked identical on their cover pages and students were unaware that different conditions were presented. Each questionnaire began with a description of one's desired adult future self, then students rated the extent that they saw school as the path to attaining this self, completed a concentration task, and wrote in the age they would be when they attained their future self (open-ended).

Instructions in the near condition were:

Each of us has some image of what we want to be like as an adult. For a young person, being an adult is near the present because it comes soon. How about you? What do you want to become as an adult? To answer this question, imagine what you want to be like in the near future and write it down in the following space. Soon, when I will be an adult, I: (...).

Instructions in the far condition were

Each of us has some image of what we want to be like as an adult. For a young person, being an adult is far from present because it comes in a long time. How about you? What do you want to become as an adult? To answer this question, imagine what you want to be like in the far future and write it down in the following space. In a long time, when I will be an adult, I: (...).

Instructions in the control condition were:

Each of us has some image of what we want to be like as an adult. How about you? What do you want to become as an adult? To answer this question, imagine what you want to be like in the future and write it down in the following space. When I will be an adult, I: ...

Then students were asked an open-ended question about the age they would be when they attained this desired adult future self ($M = 23.44$, $SD = 4.98$), this did not differ by condition, $t < 1$.

Next children rated (1 = *a little bit true for me* to 3 = *really true for me*) five statements describing school as the path to attaining one's adult future self ($M = 2.36$ $SD = .41$, $\alpha = .65$). Example items: "Achieving in middle school will help me become the person I want to be as an adult", "What I'm doing in middle school is important because it will help me to become the person I want to be as an adult."

After children had completed this part of the study, the second part was passed out. This was the dependent variable, Brickenkamp's (1998) D2 timed attention task, a test of attention, described to students as a task related to school competence. There were 14 lines, in each line, the letters d and p and one to four dashes appeared in a variety of combinations. Children were instructed to identify each instance in which the letter d was accompanied by two dashes. We followed Brickenkamp's (1998) instruction and KL score computation protocol, that is, children were given 20 seconds to complete each line and we computed their concentration score by calculating the number of d's accompanied by dashes they correctly identified, $M = 145.29$ ($SD = 25.18$).

Results

Preliminary analyses

Children's open-ended responses on the first page of the questionnaire revealed that all children wrote about their future self. All but 11 children wrote about at least one description of a job or occupation-focused adult self.

Effects of condition on concentration

We tested the effect of condition with set of two orthogonal contrasts: one contrasting experimental (near and far) condition students (coded -1 , 1 , with control coded as 0) and one contrasting control and experimental condition students (control coded 2 and experimental conditions coded -1 , -1). We used regression analysis to test the predicted school-is-the-path by condition interaction by entering the centered school-as-the-path score, two orthogonal contrasts, and the interaction between each contrast and centered school-as-the-path score. We found a main effect of endorsing school-as-the-path to attaining one's adult future self, $b = 11.55$, $t(207) = 2.79$, $p = .006$, $d = .39$, 95% CI of the b [3.33 , 19.70]; that was marginally moderated by Condition, $b = 9.85$, $t(207) = 1.913$, $p = .057$, $d = .27$, 95% CI of the b [$.30$, 19.99]. This effect was robust to inclusion of age at which the future self would be attained as a control, $b = 10.09$, $t(199) = 1.961$, $p = .051$, 95% CI for the b [$.56$, 20.23]. To

decompose this interaction, we reran the regression analysis, this time recoding the school-as-the-path variable as high ($M + 1$ SD) or low ($M - 1$ SD). Testing the simple slope at $M \pm 1$ SD revealed that concentration scores were higher among children with high school-as-the-path scores ($M + 1$ SD) who were randomized to the near rather than the far future condition, $b = 6.49$, $t(207) = 2.20$, $p = .029$, $d = .31$, 95% CI for the b [.67, 12.31]. No effect of condition was found for children with low school-as-the-path scores ($M - 1$ SD), $b = -1.58$, $t < 1$, 95% CI for the b [-7.43, 4.26]. As would be expected if students in the control condition varied in whether they experienced their adult future selves as near or far and if nearness mattered for school engagement, concentration scores in the control condition were midway between scores in the two experimental conditions and did not differ significantly from the mean of the experimental conditions. As would be expected if school-as-the-path scores matter only when combined with experiencing one's adult future self as connected, school-as-the-path score did not affect concentration in the control group.

Discussion

We found the predicted condition by school-as-the-path interaction effect on performance. Specifically, on average, students were more attentive in performing a boring task they were told related to school competence if they were guided to consider their adult future selves as near rather than far away and believed that school was the path to attain that self.

General discussion

Building on prior research, the current studies test three predictions. First, we predicted and demonstrated that whether children experience their current "me" and adult future "me" as connected is context sensitive and can be primed (Studies 1 and 2). Second, we predicted and demonstrated that compared to children led to experience disconnection (less overlap), children guided to experience high connection (more overlap) between current "me" and adult future "me" performed better in school (Studies 3–5). They performed better on a school task provided by their teacher (Study 3). They attained better grades in their core classes three months later (Study 4). Our results also suggest some caveats. First, not all primes of connection are equally robust, we found that concrete linguistic (near, far; connected, separate) and visual (overlapping, not overlapping) cues worked better for children than abstract ones (first person, third person ways to describe the future self). Second, while our brief priming task had consequences for immediate behavior and lasted for some time, it did not last forever. That is, we found significant effects on core grades after three months but not after six months (Study 4). Third, effects seem to require that students notice that the way they are thinking about their future self matters. Thus, the amount of overlap between current and adult future self in the control group had no consequence for grades and behavior, whereas in the experimental groups it did (Studies 4, 5). Fourth, effects seem to require that students believe that school is the path to attaining their adult future selves, implying that for students who do not, this kind of brief intervention would not be sufficient to improve academic engagement and performance.

Taken together, our experiments highlight four conclusions. First, students have available in memory two lay theories about their adult future selves: that these future selves are near and connected to their current selves and that they are far and disconnected from their

current selves. Activated (on the mind) lay theory influences judgment and which lay theory is one the mind depends on whether contextual cues highlight nearness and connection or far distance and separation. Second, activated lay theory about adult future selves is consequential for engagement with school and for academic attainment across high school tracks (e.g., humanities, sciences, vocational-technical). Third a mediating path by which activated lay theory about future selves produces these effects may be via increased concentration—at least among students who believe that school is the path to attaining their adult future selves. Fourth, the size of effects on school engagement and schoolwork are in the small-to-moderate range and hence worthy of consideration given the small size of the intervention itself. Our results have implications for basic research on self-control and motivation as well as for interventions to improve academic outcomes, as we detail next.

Advancing research on self-control and motivation

Our findings complement prior research on self-control, delay of gratification, and temporal discounting in a number of ways (e.g., Fujita, 2011; Kross, Ayduk, & Mischel, 2005; Loewenstein, O'Donoghue, & Rabin, 2000). First, with regard to self-control, prior research on harnessing effortful action in pursuit of future goals has focused on failures of self-control (e.g., Baumeister, Vohs, & Tice, 2007). Our results suggest an alternative route to self-control, which is experiencing the future self as near and connected to the current self. It might be easier to focus on the needs of the future self if that future is experienced as near and connected to present “me”. Second, with regard to delay of gratification, prior research has highlighted failures to down regulate immediate visceral impulses for smaller proximal rewards over larger distal ones (e.g., Metcalfe & Mischel, 1999; Mischel, Ayduk, & Mendoza-Denton, 2003). One way to control one's visceral urges is to pre-commit and hence limit freedom to ignore one's future self (Schelling, 1984) or to moralize self-control itself (Mooijman et al., 2017). Our results suggest an alternative route to regulating visceral impulses might be to increase experienced nearness of the future self so that current and future selves have the same rather than independent desires.

Third, our results also add to research with adults on temporal discounting. Prior research shows that adults discount future rewards relative to current ones less (Bartels & Rips, 2010; Loewenstein et al., 2000) and cheat less (Hershfield, Cohen, & Thompson, 2012) when they perceive their future and current selves as similar. Our results show that children can act in future-oriented ways if primed to consider their adult future self as near so that their current self and adult future self are connected rather than separate.

Finally, our results provide a way to understand how distal goals can serve as guides for current action. Typically, distal, far future goals are not good guides for current action because temporal distance induces formulation of abstract goals, focused on higher-order features that clarify why one would want to attain the goal rather than formulating concrete goals with a focus on how to attain them (Trope & Liberman, 2010). In that sense, higher order goals are “be” goals in contrast to lower order goals which are “do” goals (Carver & Scheier, 1999; Trope & Liberman, 2010; Vallacher & Wegner, 1987). We show that priming connection between an abstract distal adult self and a more concrete current self induces children to take action, bridging a “why” goal of becoming like one's desired adult future self with a “how” goal of engaging with schoolwork for students who believe that school is the path to their adult future selves.

Limitations and future directions, implications for intervention

The current studies raise a number of questions that deserve attention. For one, we utilized relatively explicit priming procedures. It might be useful to consider more implicit primes. It remains an open question whether implicit primes have parallel effects. Future studies could examine, for example, the effect of subliminally presented sentences connecting adult future and current selves (e.g., “Your adult self starts now”). At the same time, we believe that one of the strengths of the current research is the ecological validity of our priming procedures, which resemble the language and tasks used in schools.

A second question has to do with generalizability to younger ages. Our studies involve children from sixth grade through high school; it is possible that for younger children, adult future selves might always feel distinct and separate from rather than similar to and connected with current ones. Very young children may think about the self differently (Davis-Kean & Sandler, 2001). This is an issue we are beginning to explore (Lewis & Oyserman, 2017).

A third question has to do with generalizability to higher poverty, more chaotic contexts. On the one hand, it may be that all children have developed lay theories about adult future selves as being both near to and far from their current selves. Indeed, regardless of socioeconomic circumstances, most children aspire to college, implying that they see school as the path to their adult possible selves (e.g., Mello, 2009; reviews Oyserman, 2013; Oyserman & Lewis, 2017). However, peers (Harris, 2010), socio-economic and other factors may influence how easy it is to imagine moving along this path. Without guidance, students who find imagining moving forward difficult might interpret this as low odds of success and decide that school is not the path (e.g., Smith & Oyserman, 2015). Indeed, explicitly evoking a path metaphor in addition to connection framing may be helpful. In a series of experiments, college students led to imagine their best academic possible selves worked harder on school tasks if also provided a path metaphor (Landau et al., 2014). On the other hand, it may be that impoverished children living in more chaotic neighborhoods than the ones we studied are more frequently cued to consider present and future as separate and disconnected (Evans, Gonnella, Marcynyszyn, Gentile, & Salpekar, 2005) or to see the future as too uncertain to act on (Smith, James, Varnum, & Oyserman, 2014). Future research should explore whether the motivating effect of seeing one’s adult self as connected to one’s current self is constrained by socio-economic and structural factors.

A fourth question has to do with the interplay between objective and subjective sense of distance. In our studies children reported that they would attain their adult future selves in about 10 years. Controlling for the number of years in the future students estimated their adult future self to be did not remove the effect of guiding students to consider the adult future self as near and connected to the current self. This implies that actual temporal distance is not driving our results. However, our studies were not really set up to test the interplay between objective and subjective sense of distance. This leaves open the possibility that there are other aspects of the future self that we could have measured and that may play a significant mediating role. We attempted to measure a number of possibilities such as belief that one is taking action to work toward one’s future self, but were hampered by failure of items meant to test various mediating process to adequately scales in our first two experiments. Future research is necessary to examine whether and how other features of the future self influence identity connection (and hence engagement).

A fifth question has to do with directionality. In our experiments, we primed a lay theory about the future self (it is near and connected to the current self or it is far, disconnected,

and separate from the current self) and tested consequences. However, in everyday life, the direction of effect may be reversed. That is, children who are guided to act in future-oriented ways may come to see their adult future selves as near and connected to their current self. Moreover, the process might be iterative and reciprocal rather than unfolding primarily in either direction. That is, considering the future self as connected to one's current self might activate school engagement and working on school might activate the idea that the future is near; a process that might unfold through parallel distributed processing (McClelland & Rogers, 2003; Rogers & McClelland, 2005; Rumelhart & McClelland, 1986). This would imply a positively escalating engagement effect from initial engagement with schoolwork because children might infer from their own behavior that school is the path to attaining their adult selves. Working on a goal can either increase or decrease future engagement depending on how working on the goal is interpreted (Fishbach & Dhar, 2005; Fishbach, Dhar, & Zhang, 2006). It could imply goal commitment, if so, working on schoolwork implies that one is committed to this goal. This interpretation is congruent with experiencing current and futures selves as connected via schoolwork. However it could imply that one is making progress, if so, working on schoolwork could imply that one can switch to another task, and hence would not likely cue an experience of current and adult future selves as connected via schoolwork.

The foregoing qualifications aside, our results empirically demonstrate that whether or not adult future selves are experienced as near and connected to one's current self significantly influences their impact on students' school motivation and school-focused action. When writing about their adult selves, almost every child wrote about a job or occupation but we found no evidence that the specific job or occupation they wrote about mattered. For teachers, parents, and interested policy makers, our results suggest that it is less important that children pick a career than that they experience school as the path to their adult future selves and experience these adult future selves as near and connected to their current selves. Our results point to the process by which this effect occurs, children concentrate more on schoolwork, recalling more of what they have been taught, and expending more energy in fully completing tasks, eventually improving their performance if guided to consider their adult future selves as in the near future and connected to their current self rather than as in the far future and disconnected from that self.

A clear question for intervention is how long effects are sustained. We showed effects lasting through one but not through two subsequent marking periods. This implies that a brief intervention can have lasting effects but that boosters are needed if the effect is not to dissipate. Boosters can involve other features of the environment that reinforce children's experience of their adult future self as near and connected to current self. For instance, a brief series of half-hour sessions is sufficient to induce changes in school engagement and performance that lasted for two years (Oyserman et al., 2006). In this intervention, students engaged in a number of activities, including drawing a timeline to the future, making a pathway linking next year and adult possible selves with strategies for attaining them, and other activities to encourage students to see adult future selves as near and connected. In the current studies we showed that simple techniques matter: asking a child to imagine her adult self can improve her school performance if she is guided to experience her adult self as near and connected to her current self. This is a message that likely warrants repetition, in a variety of ways, over time, if the intuitive appeal of the "what do you want to be when you grow up" question is to have its intended effects on children's engagement with school.

Notes

1. We use the term “identity” to refer to the personal traits and characteristics, social relationships, roles, and group memberships that define who a person is or might become, the combination of which defines their sense of self (Oyserman, Elmore, & Smith, 2012).
2. Including these children does not change the pattern of results.
3. The other item (“Working at high school will help me to become what I would like to become in the future”) did not load and was not used.

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