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On the road: Combining possible identities and metaphor to motivate disadvantaged middle-school students

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ABSTRACT

In America, White and affluent middle-school students outperform minority students and those of low socioeconomic status on measures of academic performance. This achievement gap is partly attributable to differences in academic engagement. A promising strategy for engaging students is to elicit an *academic possible identity*: an image of oneself in the future as an accomplished student. Tests of this strategy's efficacy show mixed results, however. According to Identity-Based Motivation Theory, this is because a salient possible identity enhances goal engagement when it is perceived to be strongly (vs. weakly) connected to one's current identity. Still, the connection between temporally remote identities is an abstract concept that students may have difficulty grasping. According to Conceptual Metaphor Theory, this connection may be easier to conceptualize metaphorically in terms of a dissimilar concrete experience – in particular, a physical journey between locations. Integrating these theories, prior studies show that priming a journey-metaphoric framing of an academic possible identity increased academic engagement among college students. The current study tested whether this prime would similarly motivate middle-school students in an economically disadvantaged school setting. Results show that students (Age_{median} = 13) framing their academic possible identity as a destination on a physical path (n = 30), versus without a provided metaphor (n = 30), reported higher academic engagement. This finding extends metaphor priming effects to low-income and minority adolescents, a crucial population in educational research, and points to low-cost, theoretically grounded interventions for boosting academic engagement.

Across the United States, youth show a decline in school achievement once they transition to middle school, losing up to seven months of learning and showing declining test scores and grade point averages (GPAs) in an epidemic known as the "Middle School Plunge." These academic shortcomings predict further achievement loss in the transition to high school and rising high school dropout rates (Anderman & Mueller, 2010; Archambault, Janosz, Fallu, & Pagani, 2009; Schwerdt & West, 2013; West & Schwerdt., 2012). African American and Hispanic middle-school students are especially at risk, exhibiting significantly lower achievement across multiple academic subjects in comparison to White students (Hempfill & Vanneman, 2011; Vanneman, Hamilton, Baldwin Anderson, & Rahman, 2009). Moreover, minority students and those of low socioeconomic status (SES) are significantly more likely to drop out of high school between 9th and 11th grade than their White or affluent peers (Rosen, Chen, & Ingels, 2015).

There are several possible reasons why middle-school student attainment, especially among minority and low-SES students, falls short of aspirations. Many contributing factors are social-structural. For example, public schools often lack the resources to train teachers to provide students

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with personalized mentoring (Grace, 2014). Although low-SES students are most in need of such resources, the majority of states do little to improve funding to schools in low-income districts (Baker, Sciarra, & Farrie, 2015).

In addition to sociostructural factors, we can trace poor performance among all adolescent groups to the mismatch between students' *academic engagement*—the degree to which they intend to prioritize and put their best effort into academic activities—and how much engagement is necessary to succeed. Research shows that it is particularly in the transition from elementary school to middle school that students can feel disconnected from their school environment and less motivated to succeed (Eccles & Roeser, 2010; Skinner & Pitzer, 2012; Theoharis, 2009; Wigfield, Eccles, Roeser, & Schiefele, 2008). As a result, they often fail to apply effective cognitive strategies like rehearsal of course content, and they may be insufficiently motivated to focus their attention and energy on academics when it is difficult to do so. Engagement deficits create a negative cycle whereby repeated failure experiences in the classroom elicit learned helplessness, which leads in turn to even lower persistence in difficult learning tasks (Walling & Martinek, 1995).

Although low engagement is a problem for adolescents across the demographic spectrum, it is especially concerning in relation to students in disadvantaged school settings. For one, minority and low-SES students disengage to a greater degree, reporting especially negative perceptions of middle school, teachers, and the educational process in general (Bryk & Schneider, 2002; Mitchell, 1992; Rudduck, 2007; Wang & Holcombe, 2010). As importantly, evidence suggests that engagement can help these students to overcome sociostructural barriers to success. Schultz (1993) showed that achievement motivation correlated strongly with academic achievement among low-income Hispanic students and, at high levels, predicted success on par with their wealthier counterparts. Importantly, achievement motivation varied and predicted academic outcomes largely independently of students' SES. The broader implication is that interventions that help disadvantaged adolescents to engage in school hold significant promise for closing the achievement gap.

Researchers have developed a number of relevant interventions (e.g., Ellerbrock, Kiefer, & Alley, 2014; Patrick, Kaplan, & Ryan, 2011; Van Ryzin, 2011). We focus on those designed to increase the salience of personally meaningful academic goals. Theorists including James (1890) and Lewin (1942) noted that people can represent a desired future goal in the form of a *possible identity*—an image of the self that one could become, such as "me as successful student" or "me as popular." Formalizing these views, Markus and Nurius (1986) proposed that a desired possible identity translates an abstract aspiration into a realizable form, providing direction and impetus for current planning, decision making, and goal-directed action. This suggests that encouraging students to imagine themselves as academically accomplished in the future provides an embodiment of their own academic success, thereby boosting academic engagement.

Empirical support for this possibility is mixed, however. Although salient desired possible identities are sometimes enough to increase goal engagement (Ruvolo & Markus, 1992), this is not always the case (Oyserman, Bybee, Terry, & Hart-Johnson, 2004). To explain this inconsistency, we turn to Identity-Based Motivation Theory. Then we integrate it with insights from Conceptual Metaphor Theory to describe a new intervention designed to enhance possible identities' motivating impact.

The importance of identity connection

Identity-Based Motivation Theory explains how goal engagement varies as a function of the perceived fit or connection between one's current identity and candidate possible identities. The theory is multifaceted and broad in scope (for a complete presentation and empirical review, see Oyserman, 2015). Here, we focus on one of its key propositions: Conjuring up an image of a desired possible identity is not sufficient to motivate goal-directed action in the present. For example, imagining a fit and healthy version of oneself may boost optimism and positive feelings yet fail to increase intentions to eat right and exercise now (Gonzales, Burgess, & Mobilio, 2001; Kirk et al.,

2012; Strauss, Griffin, & Parker, 2012; Vansteenkiste, Simons, Soenens, & Lens, 2004). The critical and often missing element needed to increase goal engagement is the perception of a strong connection between a salient possible identity and one's current identity. That is, the individual must believe that his or her current actions can help to realize a possible identity.

From this perspective, priming middle-school students with an academic possible identity may not, in itself, increase academic engagement. Students at this age can easily bring to mind detailed, positive images of future accomplished selves (Oyserman, Bybee, & Terry, 2006), but they may fail to fully appreciate the connection between their current identity and an abstract possible identity that may or may not be realized in the remote future. If an image of "me as successful in school" does not feel relevant to current choices, then effortful activities such as summarizing the main points of a reading and rehearsing spelling lists are likely to feel like chores that can be put off until later (Oyserman & James, 2009).

The question then becomes how to strengthen young students' sense of current-possible identity connection. In prior studies, researchers have asked students to explicitly describe how desired possible identities are dependent on their current identity and academic activities (Destin & Oyserman, 2010). Although effective, this procedure requires a great deal of abstract reflection that may be too difficult for students of certain levels of cognitive development. In addition, the time it takes to implement may make it difficult to use as an intervention in a classroom setting. A complementary strategy, we propose, is to encourage students to conceptualize school as a *journey* along a continuous path leading up to their academic possible identity. To explain why this might increase engagement, we draw on Conceptual Metaphor Theory.

The motivating potential of a journey metaphor

We suggest that the connection between current and possible identities is an inherently abstract concept that can be difficult to grasp. By abstract we mean that it cannot be directly observed with the senses and refers to hypothetical outcomes in the distant future (Trope & Liberman, 2003). Given that this kind of abstract reflection can pose a challenge even to adults with greater cognitive development, early adolescents may find it particularly challenging to form a clear mental representation of how a potential future version of themselves meaningfully relates to their actions in the present. This requires a well-developed capacity for reflexive self-consciousness—the ability to take oneself as the object of one's attention and thought—as well as the capacities to plan, think autobiographically, and generate symbolic images of the self that differ from the person they are now (i.e., counterfactual thinking; for a review see Nurmi, 1991).

Unfortunately, the development of these cognitive skills occurs during those phases of adolescence in which educators may seek an effective intervention for increasing student engagement. For example, research consistently finds that adolescents have a dominant preference for decisions with immediate reward, even when those choices are suboptimal (Blakemore & Robbins, 2012). Other research demonstrates that adolescents are less attuned than adults to the potential consequences of their actions. For example, adolescents were more likely to make unsafe wagers in a gambling card game, particularly when the choice to do so was made under high emotional arousal (Figner, Mackinlay, Wilkening, & Weber, 2009). Without the ability to form a concrete conception of the connection between their current behavior and future outcomes, the salience of a desired possible identity may fail to provide an incentive to regulate their behavior toward long-term goals that are not tied to an immediate reinforcement.

To better conceptualize the relations between current action and future success, students may find it helpful to think using metaphor. According to Conceptual Metaphor Theory, metaphor is not merely a figure of speech, as is traditionally assumed; it is a cognitive tool that people can use to understand and experience an abstract concept in terms of a superficially dissimilar concept (Gibbs, 1994; Kövecses, 2010; Lakoff & Johnson, 1980). The dissimilar concept is typically more concrete, referring to perceptual and embodied experiences that are familiar, observable, and well-understood

(e.g., experiences of space, movement, manual grasping). The theory refers to *conceptual metaphors* to distinguish them from the linguistic and imagistic expressions that are their outward manifestation. For example, the metaphoric linguistic expressions "That's a *bright* idea" and "Jason seems rather *dim*" are the surface manifestations of a conceptual metaphor that people can use to conceive of *intelligence* (the abstract concept) in terms of *illumination* (the concrete concept). When people use a conceptual metaphor to think, they draw on knowledge of the concrete concept as a framework for interpreting corresponding parts of the abstract concept, even though the two concepts are unrelated at a surface level.

This perspective suggests that metaphor use may help students to grasp the abstract connection between their current and possible identities. But which metaphor might they use? Researchers in cognitive semantics observe that people commonly talk about long-term, purposeful activities (e.g., relationships; business ventures) metaphorically in terms of journeys (Kövecses, 2010; Lakoff & Johnson, 1980). Based on detailed studies of journey-metaphoric language, they propose that a journey metaphor operates at a conceptual level to support understanding of goal pursuit. This means that people mentally map aspects of goal pursuit onto corresponding parts of a prototypical journey. For example:

The person pursuing a goal is a *traveler*
The goal is a *destination*
A means of achieving one's goal is a *path*
Progress toward a goal is *forward motion*
Stages of goal pursuit are *locations along the way*

Of course, school is not literally a journey and academic activities such as studying are superficially quite unlike the experience of moving forward on a physical path, navigating around obstacles, and so on. Nevertheless, using a journey metaphor may help students appreciate the identity connection needed for engagement. How? In general, people learn from years of navigating their physical environment that when they are walking along a path toward a destination—even one that is far away—each of the steps they take in the moment is highly relevant to reaching that destination. With a continuous, bounded path laid out in front of them, they can vividly see that each current step determines their direction and momentum. It is possible that middle-school students prompted to think about their academic possible identity metaphorically as a destination on a journey will draw on this embodied knowledge, gaining a concrete representation that a future identity is connected to their current self through a sequence of academic activities that begins in the present. This strengthened identity connection should, according to Identity-Based Motivation Theory, motivate students to care about and invest effort into those academic activities.

Indirect evidence

Indirect empirical support for this hypothesis comes from a series of studies by Landau, Oyserman, Keefer, and Smith (2014). First-year college students were asked to imagine themselves at the end of their undergraduate careers, having attained their best possible academic selves. They were then asked to elaborate on that possible identity by writing traits that describe it. The researchers used this as a means of manipulating the imagistic framing of an academic possible identity. Some students were presented with an image of a forward-extending path, and positioned at the path's destination were spaces for writing descriptive words. For other students, the spaces appeared alone on the page or computer screen. As predicted, students primed with a journey-metaphoric (versus nonmetaphoric) framing of an academic possible identity reported stronger intentions to focus time and energy on academic activities and to take advantage of academic resources.

Follow-up studies showed that priming a journey-framed academic possible identity led students to feel a stronger connection between that possible identity and their current identity; this felt connection, in turn, mediated the prime's effect on engagement. This is what we would expect from our theoretical integration: Using a journey metaphor provided a concrete representation of the future's connection with the present, and this was necessary to convince students that they should take steps in the present. Without a salient journey metaphor, an academic possible identity in four years' time likely seemed like a distant fantasy that was not relevant to current choices and action.

This brings us to our central empirical question: Will priming a journey-framed academic possible identity similarly motivate middle-school students from disadvantaged backgrounds, and thus show potential as an intervention to reduce gaps in educational achievement? Landau et al. (2014) based their predictions on prior studies that experimentally activate conceptual metaphors by means of exposing participants to a metaphoric framing—a message comparing (via words or images) an abstract concept and a concrete concept (for review, see Landau, Robinson, & Meier, 2014). The reasoning behind this empirical strategy is that if exposure to a metaphoric framing activates a conceptual metaphor in participants' minds, it should lead them to draw on their knowledge of the concrete concept to interpret corresponding elements of the abstract concept. It is important to note, though, that prior studies employing this strategy involve adult, largely middle-class samples. For most adults, metaphoric thinking occurs automatically and without effort (Glucksberg, Gildea, & Bookin, 1982; Hoffman & Kemper, 1987). Hence, it is reasonable to expect that brief exposure to a metaphoric framing prime would be sufficient to prompt adults to *think* metaphorically about the target abstract concept.

But the ability to think metaphorically may not come as easily to younger individuals. Research shows that metaphor processing ability develops steadily over the elementary school years, but that metaphor comprehension also varies a great deal by the concepts employed in a metaphor (Keil, 1986). During early adolescence, the focus of this article, the ability to effectively form and interpret figurative language is still in the process of development (Levorato & Cacciari, 2002; Peskin & Wells-Jopling, 2012). It may be that journeys are a well-known source for middle-school students, so they may still be able to understand temporally remote aspects of identity in journey-metaphoric terms. Alternatively, because the person requires sufficiently developed concepts of both time and identity to systematically map them onto analogous parts of a journey, as schematized in the above list of correspondences, it is possible that insufficient cognitive development may prevent that mapping.

Furthermore, research suggests that economically disadvantaged students, our population of current interest, have greater difficulty with metaphor comprehension. In Johnson (1991), low-SES adolescents were less adept at interpreting metaphors than middle-class students of the same age. Thus, it is possible that an intervention that relies on students' ability to call up a conceptual metaphor may be less effective with a younger, economically disadvantaged population than it was with college students in Landau, Oyserman, et al. (2014).

The current study

In sum, our integration of Identity-Based Motivation Theory and Conceptual Metaphor Theory points to a new intervention for improving academic engagement—one that applies a journey-metaphoric conception of goal pursuit to help students vividly see the connection between their current activities and the student they hope to become in the distant future. This intervention demonstrably motivates college students, but we do not yet know whether its benefits extend to younger and lower-SES students. Testing this possibility is important for practical and theoretical reasons. Practically, increasing engagement can help these students to overcome sociostructural barriers to success and, ultimately, help educators to narrow the gaps in educational achievement. Theoretically, it is an open question whether these students will be able to access and apply a conceptual metaphor in response to a brief metaphoric framing prime, because evidence suggests that the capacity for conceptual metaphor varies as a function of age and socioeconomic status.

We modeled the study's design and procedure after Landau, Oyserman, et al.'s (2014) studies. Middle-school students were first asked to write about themselves in the future as an academically accomplished high school senior. Based on random assignment, half of the students were then presented with an image that framed their academic possible identity metaphorically as a destination on a straight path, while the other half did not receive a metaphoric framing. Comparing these two conditions provides the most targeted test of our theoretical integration, which posits that the addition of a metaphoric framing will enhance the motivating effects of a salient possible identity.

In relation to Landau, Oyserman, et al. (2014), the current study made three improvements in practical applicability and methodology, discussed in the sections that follow.

Focus on disadvantaged students

Across Landau, Oyserman, et al.'s (2014) seven studies, the college student and online adult samples were predominantly European American (80% overall). The large majority were native English speakers. Although students' socioeconomic status was not recorded, concurrent studies sampling from the same subject pool reveal that these students hail from predominantly middle- to upper-class backgrounds. Going further, the current study tests whether the proposed intervention boosts engagement among students who face three sociostructural barriers to success:

(a) The school is in a low-income neighborhood. By one standard (Borg, Borg, & Stranahan, 2012), school districts are considered as economically disadvantaged if 75% or more students receive free and reduced lunch. The current study was conducted in a school where more than 91% of enrolled students are eligible. As we discussed earlier, low-SES students are disproportionately at risk for low academic engagement, and evidence suggests that high levels of engagement can partially compensate for socioeconomic disadvantage (Schultz, 1993).
(b) The majority (80%) of the students attending this school are Hispanic American (see Table 1; race-ethnicity information was collected from school administers to maximize reliability). There are large gaps in the academic achievement and engagement between White and Hispanic middle-school students (Bingham & Okagaki, 2012; Carpenter & Ramirez, 2007). In the interest of narrowing this gap, it is important to test whether a metaphor-based intervention can boost engagement among Hispanic students.
(c) The students were equally split among native and non-native English speakers. Some of the language used in this and prior studies to prime a possible identity may be unfamiliar to early adolescents whose primary language is not English. If so, then they may benefit from an intervention that uses concrete imagery to show, in a vivid manner, the relevance of their possible identity to their current self and actions. Such an intervention could be easily administered in classrooms where students vary in English proficiency. Hence, we tested

Table 1. Demographic information.

Gender	32 Females (53%) 28 Males (47%)
Age (M_{grand} = 12.85; SD = .99)	11 (n = 5); 12 (n = 18); 13 (n = 19); 14 (n = 17); 15 (n = 1)
Race-ethnicity (classroom percentages provided by school administration)	Caucasian American: 15% Hispanic American: 80% Asian American: 0% African American: 5% Native American: 0% Other: 0%
Native language	29 Native English speakers (48%) 31 Non-Native English speakers (52%)

whether students' primary language moderated the effect of the priming manipulation on academic engagement.

Real-world setting

In all of Landau, Oyserman, et al.'s (2014) studies, students were primed with a journey metaphor (or a comparison prime) in a cubicle or other private room, free from noise and distractions. Hence, we do not yet know whether this intervention is effective in more "real-world" settings. If educators seek to implement metaphor-based interventions, we suspect they will need to do so in a classroom setting, with all of its attendant noise, distraction, and self-presentational pressure. That is why we chose to conduct the current study in students' normal classrooms. Replicating prior studies in the classroom will increase our confidence that the journey metaphor's motivating effect is robust while demonstrating that it is a viable option for educators looking to employ interventions in the classroom to improve academic engagement, especially among at-risk students.

Validated engagement measure

We improved on Landau, Oyserman, et al.'s (2014) methods by utilizing a validated measure of student engagement. Almost all of those studies operationalized academic engagement as face-valid, self-reported intentions to invest effort in school, but none utilized psychometrically established measures. The current study used a well-validated measure of academic engagement designed specifically for middle-school students: the Cognitive Strategy Use and Self-Regulation subscales of the Motivated Strategies for Learning Questionnaire. This scale was developed by Pintrich and De Groot (1990) to measure middle-school students' current motivational beliefs and self-regulated learning. We adapted the items slightly to pertain to intentions for future performance, as described in the Method section. Using this measure allowed us to test whether the motivating effect of a journey metaphor extends to another operationalization of academic engagement, and to better position the current study's results to contribute to research and applications in educational psychology.

Method

The sample included 60 middle-school students. Table 1 lists demographic information. We obtained parental consent and student assent. The study was conducted in four classroom settings by a male, high-school-aged experimenter. Students were asked to complete a packet of questionnaires, the order and content of which are described next.

Possible identity prime

The first page contained instructions to respond naturally to all questions and tasks. The second page contained the academic possible identity (PI) prime. We adapted the wording used by Landau, Oyserman, et al. (2014), which was originally modeled after Ruvolo and Markus (1992), to be suitable for middle-school students:

> Imagine yourself as a high school senior doing very well in school. Imagine that you are succeeding in all of your subjects and getting excellent grades, and that you have become good at any subjects that you have trouble with now. Take a few moments and form a picture in your head of a "future you" doing very well in your senior year of high school.
>
> Now, write a few sentences on the lines below describing this "future you." Write about what you are like, and how you imagine it feels to be doing so well in school. What kind of things do you see yourself thinking and doing?

> As you write, keep in mind that this is a private place to share your thoughts. Don't worry about what you "should" say. Feel free to tell us in your own words what you imagine it would be like to be a very successful high school senior.

Underneath the instructions were lines provided for the written response. See Table 2 for typical responses to the prompt. Although all students followed instructions and wrote at least a sentence about their academic PI, some wrote in addition about non-academic aspects of their future self as a high-school senior. A few wrote about assorted goals such as success in athletics (e.g., "I hope to make it to varsity cheer"; "When I'm in high school I'm gonna be in a soccer team") and overall maturation into adulthood ("The future me would probably be a lot less talkative, given whether or not I have matured by then"). But most conspicuous was imagining how the future self will gain social acceptance and approval (e.g., "I see myself having lots of fun with my friends"; "I would not care what other people say about me and I would have more friends than I already have").

Establishing social relationships is a major goal in middle school and a common possible identity in free-response studies (Oyserman & James, 2011), but it is irrelevant to academic engagement. Indeed, this was precisely why Landau, Oyserman, et al. (2014) included in some studies a comparison condition in which college students were primed to imagine themselves in four years' time having achieved their best possible *social* self (i.e., establish many satisfying relationships), and to frame *that* possible identity using a journey metaphor. This "social me" prime did not increase academic engagement, suggesting that the primary predicted effect was due to the unique combination of a journey metaphor and a salient possible identity focused on *academic* accomplishments.

Based on these considerations and findings, we content-coded students' written responses, categorizing them as focusing solely on an academic possible identity, as instructed (n = 41; 68%), or writing additionally about non-academic goals or dimensions of their future self (n = 19; 32%). Because pondering future goals in non-academic domains may attenuate the predicted effect, we included this variable as a covariate in our primary analyses.

Framing manipulation

The instructions on the third page, adapted from Landau, Oyserman, et al. (2014), read: "Based on the description you just gave, write a word in each box on the next page that you feel best describes this 'future you' as a high school senior. Think of the five words that best sum up the self that you imagine being."

The following page constituted the framing manipulation. Students were randomly assigned to one of two methods of organizing the five PI-defining words. In the *journey-framed academic PI* condition (n = 30), the page displayed five vertically arranged spaces in which students wrote the words. The rest of the page had a background image of a path extending forward from the viewer's vantage and labeled in the distance with "Me as a High School Senior" (see Figure 1, left panel). In the *nonmetaphoric academic PI* condition (n = 30), the five response spaces appeared in the same location on the page, but there was no background image. Instead, the five spaces were labeled at the top with "Me as a High School Senior" (see Figure 1, right panel).

It is important to note that the framing manipulation came after students wrote about an academic possible identity so that it could not influence the content of academic possible identities.

Table 2. Sample responses to possible identity prompt.

- "I see myself finally joining the marines as an engineer, since I want to work with computers. I see myself thinking about how I'm almost done with school and my goal and how far I've come."
- "It feels good knowing that I'm doing really well in school, and I'd know for sure I would be able to go to a good college because of my grades."
- "I imagine myself getting certificates, outstanding grades, and a bright future for getting into college."
- "I see myself finishing high school, going to college and then a great university. I would love to have a job in law enforcement of any kind."
- "I would feel proud and amazed because of what I have reached in life."

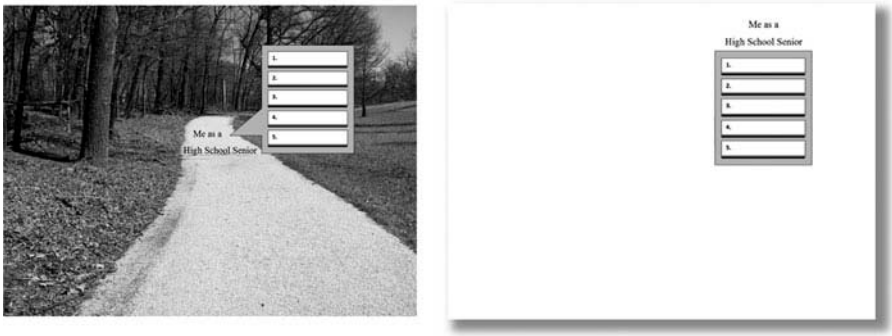

Figure 1. Images used in the journey metaphoric (left) and nonmetaphoric framing (right) conditions.

Academic engagement measure

The next three pages contained 22 items from the Cognitive Strategy Use and Self-Regulation subscales of the Motivated Strategies for Learning Questionnaire, middle-school version (MSLQ; Pintrich & De Groot, 1990). The original Cognitive Strategy Use scale consists of 13 items pertaining to one's current use of rehearsal strategies (e.g., "When I read material for this class, I say the words over and over to myself to help me remember"), elaboration strategies such as summarizing (e.g., "When I study I put important ideas into my own words"), and organizational strategies (e.g., "I outline the chapters in my book to help me study"). We modified the original item wording to pertain to future intentions by adding the word "will" to the item (e.g., "When I read material for this class, I will say the words over and over to myself to help me remember"; "When I study I will put important ideas into my own words"; "I will outline the chapters in my book to help me study").

The original Self-Regulation subscale consists of nine items pertaining to current comprehension monitoring (e.g., "I ask myself questions to make sure I know the material I have been studying") and persistence at difficult or boring tasks (e.g., "Even when study materials are dull and uninteresting, I keep working until I finish"). These items, too, were modified to refer to future intentions (e.g., "I will ask myself questions to make sure I know the material I have been studying"; "Even when study materials are dull and uninteresting, I will keep working until I finish").

For all 22 statements, students rated their agreement on a 5-point scale (1 = *strongly disagree*; 2 = *slightly disagree*; 3 = *neither agree nor disagree*; 4 = *slightly agree*; 5 = *strongly agree*). Responses were more internally reliable when treated as a unitary measure of academic engagement ($\alpha_{\text{All items}} = .87$) than when treated as separate subscales ($\alpha_{\text{Cognitive strategy}} = .83$; $\alpha_{\text{Self-Regulation}} = .69$). As a result, we report primary analyses on the full 22-item scale, but report results for the subscales as well. For the full scale composite, observed scores ranged from 1.59 to 4.77 ($M_{grand} = 3.77$; $SD = .63$).

Results

Primary analyses

Submitting academic engagement scores to an analysis of covariance (covariate = extra-academic possible goals) returned a significant effect, $F(1, 57) = 5.42$, $p = .02$, $\eta^2_p = .09$. As predicted, students primed with a journey-framed academic PI reported stronger academic engagement ($M = 3.92$, $SD = .42$) than those primed with a nonmetaphoric academic PI ($M = 3.62$, $SD = .76$).

Submitting scores on the Cognitive Strategy Use subscale to the same analysis returned a significant effect, with means in the predicted direction ($M_{journey} = 4.04$, $SD = .46$ vs. M_{no}

$_{metaphor}$ = 3.71, *SD* = .79, *F*(1, 57) = 5.60, *p* = .02, η^2_p = .09). Analyzing the Self-Regulation subscale also returned a weaker but statistically significant effect ($M_{journey}$ = 3.74, *SD* = .50 vs. $M_{no\ metaphor}$ = 3.49, *SD* = .78, *F*(1, 57) = 3.81, *p* = .05, η^2_p = .06).[1]

Secondary analyses

Condition × gender

Submitting total academic engagement scores to a 2 (Priming condition) × 2 (Gender) analysis of covariance (ANCOVA) (controlling for extra-academic focus) returned a main effect of Gender (*F*(1, 55) = 12.53, *p* = .001, η^2_p = .19), which was qualified by a significant two-way interaction (*F*(1, 55) = 4.04, *p* = .05, η^2_p = .07). The main effect was due to males reporting stronger engagement intentions than females (*M* = 4.06, *SD* = .42 vs. *M* = 3.52, *SD* = .68). To decompose the interaction, we conducted post-hoc comparisons using Fisher's Least Significant Difference (LSD) to take into account the overall error term.

The pattern of means is displayed in Figure 2. When a journey-framed academic PI was not salient, female students were less engaged than male students (*F*(1, 55) = 15.14, *p* < .001, η^2_p = .22). Priming the journey-framed academic PI significantly increased females' engagement (*F*(1, 55) = 8.43, *p* = .005, η^2_p = .13), eliminating the gender gap observed in the non-metaphoric condition (*F*(1, 55) = 1.19, *p* = .28, η^2_p = .02). Males did not benefit from the journey metaphor (*F* < 1, *p* = .95).

Condition × age

We tested the effects of priming condition and age on academic engagement using hierarchical linear regression analyses. In Step 1 we entered priming condition (dummy coded: *journey-framed academic PI* = 1; *non-metaphoric academic PI* = 0) and age. In Step 2 we entered their interaction. We observed no main effect of age or interaction between age and our priming condition (*p*s > .49).

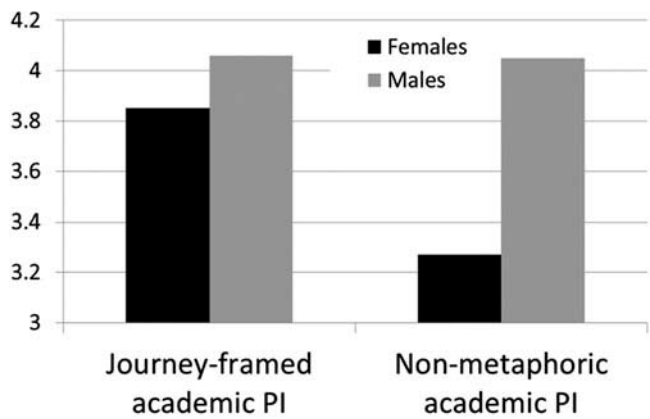

Figure 2. Academic engagement (Cognitive Strategy Use and Self-Regulation) as a function of priming condition and gender. PI = possible identity.

[1]When we conducted the primary analyses without the covariate, the effect of condition on the 22-item composite measure of academic engagement becomes marginally significant (*F* = 3.57, *p* = .06, η^2_p = .06); for the Cognitive Strategy Use subscale the effect remained statistically significant (*F* = 3.97, *p* = .05, η^2_p = .06); for Self-Regulation subscale the effect became nonsignificant (*F* = 2.22, *p* = .14, η^2_p = .04).

Condition × native language

Submitting total academic engagement scores to a 2 (Priming condition) × 2 (English primary vs. not) ANCOVA did not return a main effect of native language or an interaction ($ps > .58$), suggesting that the effect of priming condition did not differ significantly for native and non-native English speakers.

General discussion

The current study tested an intervention for increasing the academic engagement of socioeconomically disadvantaged middle-school students through the use of a quickly administered, metaphor-based task. Our specific intervention reflects an integration of Identity-Based Motivation and Conceptual Metaphor theories: The former proposes that perceived identity connection is essential in motivating efforts to achieve a possible identity, while the latter recommends metaphor as a cognitive tool for strengthening that connection. Initial research employing the intervention used in this study demonstrated its effectiveness with college students, but its applicability to the student populations most affected by academic achievement gaps remained unanswered given that metaphor comprehension ability varies as a function of age and economic status.

The results of current study confirmed that this metaphor-based intervention is broadly effective. We confirmed that the intervention promotes engagement among minority and disadvantaged students, which both demonstrates the breadth of its efficacy and suggests practical applications for reducing achievement gaps in the crucial middle-school years. Additionally, we demonstrated the breadth of its effectiveness in real-world classroom settings, far removed from the carefully controlled context of the lab. This is a key finding, because it indicates that real-world interventions based on priming conceptual metaphors would be effective in a classroom setting. Finally, regarding our outcome measures, we found that the intervention increased engagement on both subscales of a validated measure of adolescent academic engagement.

Beyond demonstrating the broad effectiveness and potential applications of our intervention for increasing student engagement, the current study contributes to a greater understanding of the development of metaphoric thinking. While other studies have found that certain kinds of figurative or metaphoric information can be difficult for students at this age to process (Johnson & Pascual-Leone, 1989; Winner, Rosenstiel, & Gardner, 1976), the pattern of results suggests that this visual metaphoric image was processed effectively. Notably, we observed no interaction between the metaphoric framing manipulation and students' primary language. This suggests that priming metaphoric imagery is a promising avenue for improving academic outcomes in classrooms where students vary in English proficiency.

Other findings, however, point to group differences in metaphor processing. We found that the metaphor-based intervention increased engagement for female, but not male, students. This effect was not expected as gender had no consistent moderating role in Landau, Oyserman, et al.'s (2014) studies. Also, we urge caution when interpreting this interaction because the sample size is not large enough to fully test it. Still, what should we make of the pattern?

One interpretation is that female students were more able to employ the visual metaphoric imagery of the intervention to draw connections between their present and the future selves. This presents an interesting counterpoint to other evidence that generally suggests that males more quickly develop spatial and visual skills (Ardila, Rosselli, Matute, & Inozementseva, 2011) as well as skills for analogy use (Hyde & Linn, 1988) that may facilitate the comparison between time and a physical path. In contrast, it may have simply been that male students were generally highly engaged with the class and thus immune to the beneficial effects of the intervention. In either case, these data have important implications for educators who may wish to employ a metaphor-based intervention in their own classes. To the extent that female students in early adolescence do benefit more from this kind of intervention, such interventions may be one means of addressing the many factors that

undermine female students' engagement with science, technology, engineering, and math (STEM) fields (Wang & Degol, 2013).

Limitations and future directions

While the current study demonstrates the broad effectiveness of a metaphor-based intervention to increase student engagement, we did not directly test the process by which this intervention worked. Our guiding analysis suggests that the intervention increases engagement by drawing clearer connections between the current self and a distant possible self. Supporting evidence for this proposed process was found in the initial studies testing this intervention (Landau, Oyserman, et al., 2014), but in an effort to keep the current procedure brief enough to avoid disrupting the class, we were unable to verify this causal explanation in the current sample. Future research could test whether identity connection is, in fact, the explanation for this intervention's efficacy with younger students or if they benefit from the metaphoric intervention for entirely different reasons.

While the original tests of the metaphoric intervention used a wide range of assessments of academic engagement, including behavioral indices, the current study relied on a single self-report measure. Future research should test whether the metaphoric intervention's effects on student engagement with a younger, disadvantaged sample similarly extend to behaviors, such as setting aside time for academic tasks, and ultimately student achievement.

The current study also relied on a critical test between a visual presentation of the journey metaphor in the intervention and a matched control condition. In the initial validation of this intervention, the researchers employed a wide range of experimental comparisons designed to address other plausible explanations for its effectiveness, including the possibility that the journey metaphor is more effective at fostering engagement than alternative metaphors because of its implied continuity (Landau, Oyserman, et al., 2014). Future tests of this intervention with younger samples should attend to these possible alternative explanations to further verify the unique power of a journey-framed possible identity.

Another question concerns the *relative* efficacy of our intervention. Identity-based motivation research has verified the effectiveness of more abstract means of increasing student engagement through identity connection (Destin & Oyserman, 2010). While we cannot directly compare those efforts to a metaphoric approach with the current data, their relative effectiveness at increasing student engagement is probably a nuanced issue. Because individuals are likely to rely on metaphor to understand a target that seems abstract (Jia & Smith, 2013) or uncertain (Landau, Keefer, & Rothschild, 2014), it may be that a metaphoric intervention is particularly effective for those students who feel this way about the future. In contrast, more explicit efforts at bolstering identity connection may be more effective for those students who have achieved the cognitive skills necessary to think about temporal relations directly, rather than through the indirect implications of a visual metaphor.

Beyond broadening the scope of comparison conditions, future research should explore whether the motivating effects of the journey metaphor extend to even broader samples. Our study focused primarily on Hispanic American students, so research on the efficacy of the intervention with African American or Native American students would provide a more complete picture of its overall potential as a means of dampening the effects of systemic inequality. In addition, testing whether the journey metaphor is motivating for even younger students could help pinpoint the age at which educators may begin employing a metaphor-based intervention. While metaphor comprehension varies considerably among age groups (e.g., Johnson & Pascual-Leone, 1989), it is possible that students in late or even early elementary school may respond to the intervention. If so, educators could potentially employ this or other metaphor-based interventions to strengthen student engagement in the elementary-school years in order to reduce the severity of the "Middle-School Plunge."

However, if real-world interventions based on the journey metaphor are to be developed to improve academic engagement, it will be crucial to know whether a journey-metaphoric framing of

students' academic careers provides a lasting boost to motivation. In Landau, Oyserman, et al. (2014), college students tested a week after initially being exposed to the journey metaphor still demonstrated heightened academic engagement, but it is still unknown whether such an intervention has a persistent impact over semesters or even years. It may be that for some students, the positive effects of this intervention on engagement improve performance and that this positive performance enhances future motivation (an "upward spiral," Sheldon & Houser-Marko, 2001), but this possibility requires further study.

Conclusion

The current article offers a focused test of the effectiveness of a metaphor-based intervention for increasing student engagement among early adolescents of disadvantaged backgrounds. The study supported this view despite the much younger and more diverse sample than those tested in the original studies, broadening the evidence that this particular approach can ultimately improve student outcomes. Metaphor-based intervention is thus one promising avenue for ultimately reducing the achievement gap between socioeconomically advantaged and disadvantaged students.

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References

Anderman, E. M., & Mueller, C. (2010). Middle school transitions and adolescent development. In J. L. Meece & J. S. Eccles (Eds.), *Handbook of research on schools, schooling, and human development* (pp. 198–215). New York, NY: Routledge.

Archambault, I., Janosz, M., Fallu, J. S., & Pagani, L. S. (2009). Student engagement and its relationship with early high school dropout. *Journal of Adolescence*, *32*, 651–670. doi:10.1016/j.adolescence.2008.06.007

Ardila, A., Rosselli, M., Matute, E., & Inozementseva, O. (2011). Gender differences in cognitive development. *Developmental Psychology*, *47*, 984–990. doi:10.1037/a0023819

Baker, B. D., Sciarra, D., & Farrie, D. (2015). *Is school funding fair? A national report card* (4th ed.). Newark, NJ: Education Law Center.

Bingham G.E., Okagaki L. (2012). Ethnicity and Student Engagement. In: Christenson S., Reschly A., Wylie C. (eds) *Handbook of Research on Student Engagement*. Boston, MA: Springer.

Blakemore, S., & Robbins, T. W. (2012). Decision-making in the adolescent brain. *Nature Neuroscience*, *15*, 1184–1191. doi:10.1038/nn.3177

Borg, J. R., Borg, M. O., & Stranahan, H. A. (2012). Closing the achievement gap between high-poverty schools and low-poverty schools. *Research in Business and Economics Journal*, *5*, 1–24.

Bryk, A., & Schneider, B. (2002). *Trust in schools: A core resource for improvement*. New York, NY: Russell Sage Foundation.

Carpenter, D. M., & Ramirez, A. (2007). More than one gap: Dropout rate gaps between and among Black, Hispanic, and White students. *Journal of Advanced Academics*, *19*, 32–64. doi:10.4219/jaa-2007-705

Destin, M., & Oyserman, D. (2010). Incentivizing education: Seeing schoolwork as an investment, not a chore. *Journal of Experimental Social Psychology*, *46*, 846–849. doi:10.1016/j.jesp.2010.04.004

Eccles, J. S., & Roeser, R. W. (2010). An ecological view of schools and development. In J. L. Meece & J. S. Eccles (Eds.), *Handbook of research on schools, schooling, and human development* (pp. 6–22). New York, NY: Routledge.

Ellerbrock, C., Kiefer, S. M., & Alley, K. M. (2014). School-based interpersonal relationships: Setting the foundation for young adolescents' belonging in middle school. *Middle Grades Research Journal*, *9*, 1–32.

Figner, B., Mackinlay, R. J., Wilkening, F., & Weber, E. U. (2009). Affective and deliberative processes in risky choice: Age differences in risk taking the Columbia card task. *Journal of Experimental Psychology: Learning, Memory and Cognition*, *25*, 709–730.

Gibbs, R. W. (1994). *The poetics of mind: Figurative thought, language, and understanding*. Cambridge, UK: Cambridge University Press.

Glucksberg, S., Gildea, P., & Bookin, H. (1982). On understanding nonliteral speech: Can people ignore metaphors? *Journal of Verbal Learning and Verbal Behavior*, *21*, 85–98. doi:10.1016/S0022-5371(82)90467-4

Gonzales, M. H., Burgess, D. J., & Mobilio, L. J. (2001). The allure of bad plans: Implications of plan quality for progress toward possible selves and postplanning energization. *Basic and Applied Social Psychology*, *23*, 87–108. doi:10.1207/S15324834BASP2302_2

Grace, K. (2014). De facto segregation: How it is affecting America's inner-city schools. *Lincoln Memorial University Law Review*, *1*, 183–215.

Hempfill, F. C., & Vanneman, A. (2011). *Achievement gaps: How Hispanic and White students in public schools perform in mathematics and reading on the National Assessment of Educational Progress* (Report No.: NCES 2011-459). Washington, DC.: National Center for Education Statistics, Institute of Educational Sciences.

Hoffman, R., & Kemper, S. (1987). What could reaction time studies be telling us about metaphor comprehension? *Metaphor and Symbolic Activity*, *2*, 149–186. doi:10.1207/s15327868ms0203_1

Hyde, J. S., & Linn, M. C. (1988). Gender differences in verbal ability. *Psychological Bulletin*, *104*, 53–69. doi:10.1037/0033-2909.104.1.53

James, W. (1890). *The principles of psychology*. New York, NY: Holt.

Jia, L., & Smith, E. R. (2013). Distance makes the metaphor grow stronger: A psychological distance model of metaphor use. *Journal of Experimental Social Psychology*, *49*, 492–497. doi:10.1016/j.jesp.2013.01.009

Johnson, J. (1991). Developmental versus language-based factors in metaphor interpretation. *Journal of Educational Psychology*, *83*, 470–483. doi:10.1037/0022-0663.83.4.470

Johnson, J., & Pascual-Leone, J. (1989). Developmental levels of processing in metaphor interpretation. *Journal of Experimental Child Psychology*, *48*, 1–31. doi:10.1016/0022-0965(89)90038-6

Keil, F. C. (1986). Conceptual domains and the acquisition of metaphor. *Cognitive Development*, *1*, 73–96. doi:10.1016/S0885-2014(86)80024-7

Kirk, C. M., Lewis, R. K., Scott, A., Wren, D., Nilsen, C., & Colvin, D. Q. (2012). Exploring the educational aspirations–expectations gap in eighth grade students: Implications for educational interventions and school reform. *Educational Studies*, *38*, 507–519. doi:10.1080/03055698.2011.643114

Kövecses, Z. (2010). *Metaphor: A practical introduction*. New York, NY: Oxford University Press.

Lakoff, G., & Johnson, M. (1980). *Metaphors we live by*. Chicago, IL: University of Chicago Press.

Landau, M. J., Keefer, L. A., & Rothschild, Z. K. (2014). Epistemic motives moderate the effect of metaphoric framing on attitudes. *Journal of Experimental Social Psychology*, *53*, 125–138. doi:10.1016/j.jesp.2014.03.009

Landau, M. J., Oyserman, D., Keefer, L. A., & Smith, G. C. (2014). The college journey and academic engagement: How metaphor use enhanced identity-based motivation. *Journal of Personality and Social Psychology*, *106*, 679–698. doi:10.1037/a0036414

Landau, M. J., Robinson, M., & Meier, B. (Eds.). (2014). *The power of metaphor: Examining its influence on social life*. Washington, D.C.: APA Press.

Levorato, M. C., & Cacciari, C. (2002). The creation of new figurative expressions: Psycholinguistic evidence in Italian children, adolescents and adults. *Journal of Child Language*, *29*, 127–150. doi:10.1017/S0305000901004950

Lewin, K. (1942). Time perspective and morale. In G. Watson (Ed.), *Civilian morale* (pp. 48–70). Oxford, England: Houghton Mifflin.

Markus, H., & Nurius, P. (1986). Possible selves. *American Psychologist*, *41*, 954–969. doi:10.1037/0003-066X.41.9.954

Mitchell, J. V., Jr. (1992). Interrelationships and predictive efficacy for indices of intrinsic, extrinsic, and self-assessed motivation for learning. *Journal of Research and Development in Education*, *25*, 149–155.

Nurmi, J. (1991). How do adolescents see their future? A review of the development of future orientation and planning. *Developmental Review*, *11*, 1–59. doi:10.1016/0273-2297(91)90002-6

Oyserman, D., Bybee, D., & Terry, K. (2006). Possible selves and academic outcomes: How and when possible selves impel action. *Journal of Personality and Social Psychology*, *91*, 188–204. doi:10.1037/0022-3514.91.1.188

Oyserman, D., Bybee, D., Terry, K., & Hart-Johnson, T. (2004). Possible selves as roadmaps. *Journal of Research in Personality*, *38*, 130–149. doi:10.1016/S0092-6566(03)00057-6

Oyserman, D., & James, L. E. (2009). Possible selves: From content to process. In K. Markman, W. M. P. Klein, & J. A. Suhr (Eds.), *The handbook of imagination and mental simulation* (pp. 373–394). New York, NY: Psychology Press.

Oyserman, D., & James, L. E. (2011). Possible identities: Possible selves, subjective experience, and self-regulation. In S. J. Schwartz, K. Luyckx, & V. L. Vignoles (Eds.), *Handbook of identity theory and research* (pp. 117–148). New York, NY: Springer-Verlag.

Oyserman, O. (2015). *Pathways to success through identity-based motivation*. New York, NY: Oxford University Press.

Patrick, H., Kaplan, A., & Ryan, A. M. (2011). Positive classroom motivational environments: Convergence between mastery goal structure and classroom social climate. *Journal of Educational Psychology*, *103*, 367–382. doi:10.1037/a0023311

Peskin, J., & Wells-Jopling, R. (2012). Fostering symbolic interpretation during adolescence. *Journal of Applied Developmental Psychology*, *33*, 13–23. doi:10.1016/j.appdev.2011.08.002

Pintrich, P. R., & De Groot, E. V. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology*, *82*, 33–40. doi:10.1037/0022-0663.82.1.33

Rosen, J. A., Chen, X., & Ingels, S. (2015). *Early high school dropouts: What are their characteristics?* (Report No.: NCES 2015-066). Research Triangle Park, NC: RTI International.

Rudduck, J. (2007). Student voice, student engagement, and school reform. In D. Thiesson & A. Cook-Sather (Eds.), *International handbook of student experience in elementary and secondary school* (pp. 587–610). New York, NY: Springer.

Ruvolo, A. P., & Markus, H. R. (1992). Possible selves and performance: The power of self-relevant imagery. *Social Cognition*, *10*, 95–124. doi:10.1521/soco.1992.10.1.95

Schultz, G. F. (1993). Socioeconomic advantage and achievement motivation: Important mediators of academic performance in minority children in urban schools. *Urban Review*, *25*, 221–232. doi:10.1007/BF01112109

Schwerdt, G., & West, M. R. (2013). The impact of alternate grade configuration on student outcomes through middle and high school. *Journal of Public Economics*, *97*, 308–326. doi:10.1016/j.jpubeco.2012.10.002

Sheldon, K. M., & Houser-Marko, L. (2001). Self-concordance, goal attainment, and the pursuit of happiness: Can there be an upward spiral? *Journal of Personality and Social Psychology*, *80*, 152–165. doi:10.1037/0022-3514.80.1.152

Skinner, E. A., & Pitzer, J. R. (2012). Developmental dynamics of student engagement, coping, and everyday resilience. In S. L. Christenson, A. L. Reschly, & C. Wylie (Eds.), *Handbook of research on student engagement* (pp. 21–44). New York, NY: Springer.

Strauss, K., Griffin, M. A., & Parker, S. K. (2012). Future work selves: How salient hoped-for identities motivate proactive career behaviors. *Journal of Applied Psychology*, *97*, 580–598. doi:10.1037/a0026423

Theoharis, J. (2009). "I hate it when people treat me like a fxxx-up." Phony theories, segregated schools, and the culture of aspiration among African American and Latino teenagers. In G. Alonso, N. Anderson, & C. Su (Eds.), *Our schools suck: Students talk back to a segregated nation on the failures of urban education* (pp. 69–112). New York, NY: New York University Press.

Trope, Y., & Liberman, N. (2003). Temporal construal. *Psychological Review*, *110*, 403–421. doi:10.1037/0033-295X.110.3.403

Van Ryzin, M. J. (2011). Protective factors at school: Reciprocal effects among adolescents' perceptions of the school environment, engagement in learning, and hope. *Journal of Youth and Adolescence*, *40*, 1568–1580. doi:10.1007/s10964-011-9637-7

Vanneman, A., Hamilton, L., Baldwin Anderson, J., & Rahman, T. (2009). *Achievement gaps: How Black and White students in public schools perform in mathematics and reading on the National Assessment of Educational Progress* (Report No.: NCES 2009-455). Washington, DC: National Center for Education Statistics, Institute of Educational Sciences.

Vansteenkiste, M., Simons, J., Soenens, B., & Lens, W. (2004). How to become a persevering exerciser? Providing a clear, future intrinsic goal in an autonomy-supportive way. *Journal of Sport & Exercise*, *26*, 232–249. doi:10.1123/jsep.26.2.232

Walling, M. D., & Martinek, T. J. (1995). Learned helplessness: A case study of a middle school student. *Journal of Teaching in Physical Education*, *14*, 454–466. doi:10.1123/jtpe.14.4.454

Wang, M., & Degol, J. (2013). Motivational pathways to STEM career choices: Using expectancy-value perspective to understand individual and gender differences in STEM fields. *Developmental Review*, *33*, 304–340. doi:10.1016/j.dr.2013.08.001

Wang, M. T., & Holcombe, R. (2010). Adolescents' perceptions of classroom environment, school engagement, and academic achievement. *American Educational Research Journal*, *47*, 633–662. doi:10.3102/0002831209361209

West, M. R., & Schwerdt., G. (2012). The middle school plunge. *Education Next*, *12*, 62–68.

Wigfield, A., Eccles, J. S., Roeser, R. W., & Schiefele, U. (2008). Development of achievement motivation. In W. Damon, R. M. Lerner, D. Kuhn, R. S. Siegler, & N. Eisenberg (Eds.) *Child and adolescent development: An advanced course* (pp. 406–434). New York, NY: Wiley.

Winner, E., Rosenstiel, A. K., & Gardner, H. (1976). The development of metaphoric understanding. *Developmental Psychology*, *12*, 289–297. doi:10.1037/0012-1649.12.4.289