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If 'we' can succeed, 'I' can too: Identity-based motivation and gender in the classroom

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Abstract

Gender matters in the classroom, but not in the way people may assume; girls are outperforming boys. Identity-Based Motivation (IBM) theory explains why: People prefer to act in ways that feel in-line with important social identities such as gender. If a behavior feels identity-congruent, difficulty is interpreted as meaning that the behavior is important, not impossible, but what feels identity-congruent is context-dependent. IBM implies that boys (and girls) scan the classroom for clues about how to be male (or female); school effort will feel worthwhile if successful engagement with school feels gender-congruent, not otherwise. A between-subjects experimental design tested this prediction, manipulating whether gender and success felt congruent, incongruent, or not linked (control). Students in the success is gender-congruent condition described more school-focused possible identities, rated their likely future academic and occupational success higher, and tried harder on an academic task (this latter effect was significant only for boys).

Keywords

adolescence; social identity; gender; school; academic; possible selves

1. Introduction

> "I think girls work harder than boys. Maybe not doing your work is a sign of being cool." (Male middle school student, Portland Press Herald, 2006)
>
> "Girls are a lot more organized. Every homework I remember to do is because it's still in my head. In contrast, 90 percent of the girls have the neat handwriting, the notebook, the color-tabbed notes." (Male high school student, Portland Press Herald, 2006)

The boys quoted in the Portland Press Herald (2006) experience school as gendered. The first boy identifies working hard in school as a girl thing, something not cool for boys. The second boy identifies organization as a skill girls have and boys simply do not have. If working hard is not cool for boys and being organized seems just not possible for boys, then

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whenever their gender is salient, male students do not need to seriously weigh the pros and cons of choices such as studying vs. goofing off. Instead, they know they are boys, and this identity directs their choices. In that sense, their choices feel identity-based and identity-congruent but are likely to produce negative academic consequences for them as well as for other boys who identify school as gendered.

Indeed nationwide girls seem to rule the classroom, outperforming boys on virtually all visible indicators of classroom success, particularly among low income and minority populations (EPE Research Center, 2007; Roderick, 2003). Girls participate more in academic clubs, student government, and school newspapers (Bae, Choy, Geddes, Sable, & Snyder, 2000), select harder courses (King, 2006), earn better grades (Peter & Horn, 2005), and equal (math) or outperform (language arts) boys on standardized tests (CEP, 2010). Girls finish high school (EPE Research Center, 2007) and go on to college (King, 2006) at higher rates than boys. We use an identity-based motivation perspective to consider the implications of this experience for children's identities and effort in school. We make two core predictions: first, that both boys and girls are sensitive to gendered cues about who is likely to succeed in school; and second, that this sensitivity influences both the content of children's identities and their willingness to work hard at academic tasks. With regard to identity content, experiencing one's own gender as successful means that academics are more likely to be salient in one's own imagined possible future identity. Similarly, with regard to current investment in school tasks, experiencing one's own gender as successful means that one should be willing to persist even if a task feels difficult. With regard to expectations for adult success, experiencing one's own gender as successful implies that one should expect success in adult career and educational endeavors as well.

The idea that current success matters for future identity construction was described in early writings by Erikson (1963). During adolescent identity development, youth seek clues in their present situations about the adult they may become. Both one's own current successes and the successes of people like oneself are useful in predicting who one may become: one's future adult identity. Erikson (1963) also emphasizes that identity development is rooted in socio-historical and cultural context. In his description of the ‘Eight Ages of Man’, Erikson (1963) tasks adolescents with the challenge of integrating how they view themselves with the roles available to them in this context. This requires that they fit their individual “dreams, idiosyncrasies, roles, and skills cultivated earlier with the occupational and sexual prototypes of the day” (Erikson, 1963, p. 307). From his perspective, both boys and girls are sensitive to messages about gender as they seek information about the identities currently available to members of their group. If in the current time and place, a look around the classroom leads boys and girls to the conclusion that girls are more successful, then Erikson would predict that girls would be more likely to develop success-based identities. As reviewed next, a similar argument could be made based on the gender identity literature which provides evidence that gender is part of children's self-image from an early age. These perspectives predict a gender effect with girls working harder than boys in school and girls having more school-focused possible selves or future identities than boys. However, what these perspectives neglect is that whether gender comes to mind and its consequences for behavior and identity content are not fixed. Instead, context dynamically determines whether gender is salient and shapes what identity content is linked to gender. As predicted by identity-based motivation theory, girls and boys are sensitive to subtle cues about what it means to be a boy or a girl but not to the source of these cues. In the current study, a small experimental manipulation shifts the salience of academic success in children's imagined future identities (both for the coming year and as an adult) and increases boy's current effort in school.

1.1 Gender Identity

Why should gender matter? Gender is a core identity; it is established early, and there is evidence that it is consequential for both boys and girls. Boys and girls know their own gender before their second birthday (Martin & Ruble, 2009), and knowing whether one is a boy or girl influences what one prefers to do and what feedback matters. Preschoolers increase their effort on a maze task after being shown the successful maze completion of a same-gender child and decrease their effort on the task after being shown the successful maze completion of an opposite gender child (Rhodes & Brickman, 2008). Both boys and girls scan their environments for gender-connected information, constructing gender stereotypes about the traits, abilities, and behaviors of boys and girls (Bigler & Liben, 2007; Patterson & Bigler, 2007). Having learned their own gender, boys prefer behavior that is gender-typed as male, while girls prefer behavior that is gender-typed as female (for a review, Martin & Ruble, 2009). When asked about future occupations, boys express more interest in professions stereotyped as masculine, while girls are more interested in feminine-stereotyped professions (Liben, Bigler & Krogh, 2001). Even in experimental situations in which novel toys are presented as preferred by boys or girls, girls report more liking of the toy that girls prefer (and boys like the toy they are told is preferred by boys) even if it is a less attractive toy (Martin, Eisenbud, & Rose, 1995).

While gender stereotypes may become more flexible during adolescence, this does not mean that the influence of gender fades. There is some evidence that both genders remain interested in engaging in gender congruent action during adolescence (Martin & Ruble, 2004; Alfieri, Ruble, & Higgins, 1996). It is possible that gender may become an even more salient determinant of identity and behavior during puberty. First, physical changes may make gender even more psychologically salient. Second, pubertal adolescents are rewarded for engaging in gender-congruent behavior (Eccles et al., 1983; Hannover, 2000; Hill & Lynch, 1983). Third, effects of gender identity on behavior are not necessarily consciously chosen. Consider the research on stereotype threat which documents that standardized test performance of both women and men is influenced by making gender salient (for a review, Steele, Spencer & Aronson, 2002). As documented by Spencer, Steele & Quinn (1999), effects are congruent with gender stereotypes about capabilities, with women showing decline in math performance if gender is subtly brought to mind. The effect of gender is completely eradicated if participants are either informed of the effect (Johns, Schmader, & Martins, 2005) or told that there are unlikely to be gender differences on the particular task being performed (Spencer et al., 1999).

While the stereotype threat literature has focused primarily on the negative effects of gender identity for women, there is some support for the notion that boys may be more influenced by gender than girls. First, what gender-congruent behavior entails may be more tightly defined for boys than for girls. Second, boys are more likely to be sanctioned for failing to pay attention to the gender relevance of behavior. Boys prefer gender-congruent behaviors at an earlier age than girls (Bauer, 1993). They face more criticism for engaging in gender-incongruent play activities (Fagot, 1994; Fagot, 1985) and show more interest in enforcing and adhering to gender norms (Leaper & Friedman, 2007; Leaper, 1994) than girls. Even parents reinforce more narrow gender roles for boys than for girls (Fagot & Hannon, 1991). More broadly, it is possible that boys are more sensitive to many types of environmental cues beyond information about gender. In support of this gender-specific sensitivity, findings from correlational studies examining the influence of parents (Morisset, Barnard, & Booth, 1995; Bee et al., 1984) and neighborhoods (Oyserman, Johnson, & James, 2010; Entwisle, Alexander, & Olson, 1994) on child outcomes indicate increased sensitivity to environmental influence among males as compared to their female peers.

Taken together, the gender identity literature documents that gender identity is established early and that from an early age children care about what their gender implies for their own actions. Gender, gender identity, and gender-based stereotypes continue to matter as shown in the stereotype threat literature, which shows that contexts which make gender salient can influence outcomes outside of one's awareness. While the gender identity literature focuses on the stability of identity content, we now turn to the identity-based motivation literature which focuses on the dynamic and situated nature of identity.

1.2 Identity-Based Motivation

Identity-based motivation theory (IBM) assumes that the self-concept is multifaceted, including many diverse and not well integrated identity-components whose content is dynamically constructed in context (Oyserman, 2007, 2009a, 2009b; Oyserman, Fryberg, & Yoder, 2007). People prefer identity-congruent to identity-incongruent behaviors. Furthermore, people are more likely to use identity-congruent than identity-incongruent lenses to interpret their social and physical world. IBM specifies this underlying motivational process with three core postulates which can be termed *action-readiness, dynamic construction*, and *interpretation of difficulty* (Oyserman, 2009a; Oyserman & Destin, 2010). Action-readiness refers to the prediction that identities cue readiness to act and to make sense of the world in terms of the norms, values, and behaviors relevant to the identity. However, which actions are relevant and what sense to make of situations depends on identity content, which itself is dynamically constructed. Dynamic construction refers to the prediction that which identities come to mind, what these identities are taken to mean, and therefore which behaviors are congruent with them are dynamically constructed in context (even though identities feel stable and separate from contexts). The third postulate, interpretation of difficulty, refers to the prediction that when a behavior feels identity-congruent, difficulties in engaging in the behavior will be interpreted as meaning that the behavior is important not impossible. Therefore, effort is meaningful not pointless. Thus, the interpretation of difficulty matters because it influences judgment, choice, and behavior.

These three postulates explain both how it is that identities feel stable but are instead malleable and why it is that school success needs to feel identity-congruent. William James (1890) first articulated a version of these postulates by arguing that the self includes content, motivation, and action tendencies, that social contexts matter for who one is in the moment, and that the self is malleable. In that sense, the identity-based motivation approach is rooted in the earliest psychological formulation of the self-concept. The novel approach that the identity-based motivation model brings is twofold. First, it focuses on predicting *when* and *how* aspects of the self-concept matter by operationalizing the three core postulates (action-readiness, dynamic construction, interpretation of difficulty) in a manner amenable to experimental manipulation. Second, it focuses on experimental methodology to test the efficacy of these postulates to predict behavioral outcomes in the moment and to form the basis for interventions influencing behaviors over time. Like James, the IBM model invokes both current and possible future identities, the identities one has now and the ones a person can imagine becoming in the future. The term possible identities is used in preference to the more commonly used *possible selves*, because as detailed in Oyserman and James (2011), what is typically studied in the possible self literature is some possible identity or part of the future self, such as the successful in school self or the salary-earning self, not the future self in its entirety. Rather than refer to both parts and the whole as self, we refer to possible identities as composing the future self.

As outlined next, prior identity-based motivation studies have demonstrated the contextual sensitivity of social identities including race-ethnicity, social class, and being an undergraduate or graduate student. In some studies, a social identity was made salient in an experimental induction; in other studies the content of a social identity such as race-ethnicity

was assessed. However, prior research has not focused explicitly on gender identities. By focusing on gender identity and manipulating contextual cues of whether one's gender is associated with success, the current study moves beyond prior gender identity and IBM research as detailed next.

In perhaps the most relevant prior research, Oyserman, Fryberg and Yoder (2007) showed that racial-ethnic and social class identities are associated with consequential beliefs about health. Students were asked whether they themselves or people like them engage in a variety of health and health risk behavior. Healthy behaviors such as eating salads or keeping one's weight down as an adult were generally not perceived as congruent with working class and minority racial-ethnic identities (Oyserman et al., 2007, Studies 1-2). A series of follow-up experiments documented that whether healthy or health risky behaviors felt identity congruent matters when identity is salient. Low income and minority eighth graders were asked about their social class and racial-ethnic identities either before or after a healthy behavior quiz. Students performed worse on the quiz if their social class and racial-ethnic identities had been brought to mind before the quiz, implying that health risky, not healthy behavior, felt identity congruent (Oyserman et al., 2007, Study 3). This result was replicated using a measure of health fatalism rather than a health quiz. Students reported more fatalism about their future health if their social class and racial-ethnic identities had been brought to mind first, again implying that health risky, not healthy behavior, felt identity congruent (Oyserman et al., 2007, Study 4). To test whether effects were due to the perception that health risk behavior, rather than healthy behavior was identity congruent, three follow-up experiments tested the moderating effect of identity content. As predicted, making racial-ethnic identity salient only had negative consequences for participants who perceived unhealthy behavior as identity congruent and healthy behavior as identity incongruent (Oyserman et al., 2007, Studies 5-7).

Racial-ethnic identities also were shown to matter for academic outcomes in a number of studies (Oyserman, Gant, & Ager, 1995, Study 2; Oyserman, Kemmelmeier, Fryberg, & Brosh, 2003, Studies 2 and 3). In these studies, students were randomly assigned to describe the content of their racial-ethnic identity either before or after working on a novel math task. Students who first brought to mind their racial-ethnic identities worked harder on the math task, but only if their racial-ethnic identity included school-attainment as ingroup congruent, not otherwise (Oyserman, et al. & Ager, 1995, Study 2; Oyserman, et al., Studies 2 and 3). These experiments pinpoint the causal effects of salient racial-ethnic identity content. Follow-up studies using short term longitudinal designs rather than experimental manipulations replicate results while increasing the ecological validity of the experimental results. In one study, African American and Latino low income students reported on the content of their racial-ethnic identity at four points in time (fall and spring of eighth grade and fall and spring of ninth grade) (Altschul, Oyserman, & Bybee, 2006). The three assessed components, termed connectednesss, awareness of racism, and embedded achievement, were not only relatively stable across time but also predicted grade point average over time. In another study, the racial-ethnic identity, grade point average, and classroom engagement of entering high school students were assessed (Oyserman, 2008). Here too, racial-ethnic identity content at the beginning of high school predicted change in grades and engagement four years later. Thus, whether racial-ethnic identity was induced to be salient with an experimental manipulation or simply assessed over time, identity content mattered as predicted by the IBM model.

Other research has sought to manipulate the content of a relevant social identity and demonstrate the effect of identity content in this way. In one experiment, a group of Stanford undergraduates were made to believe that graduate students were particularly heavy consumers of alcohol. These undergraduates subsequently reported less interest in and less

consumption of alcohol, an effect interpreted as signaling distance from the undesired identity of graduate student (Berger & Rand, 2008). In another field study, Livestrong wristbands were distributed to a campus dorm, and wristband wear was measured among dorm residents. A week later, wristbands were distributed to a neighboring academic dorm known for being the “campus geeks.” After the second distribution, wristband wear decreased by a third in the target dorm, as wearing the wristband could signal an undesired “geek” identity (Berger & Heath, 2008). These studies imply that associations between particular identities and certain products or behaviors can be successfully manipulated. Effects have also been found for health promotion behaviors. Health messages to reduce caffeine consumption were more persuasive to East Asian participants when they were collectively-focused and more persuasive to European American participants when they were individually-focused, but only when the relevant cultural frame was first primed (Uskul & Oyserman, 2010). Similarly, cancer awareness leaflets (published by Cancer Research UK) that described prevention strategies increased readiness to take preventive action among participants who described themselves as cautious and prevention-focused if they were first reminded of this identity (Uskul, Keller, & Oyserman, 2008).

Moreover, experimentally induced effects are robust; Oyserman and colleagues used the identity-based motivation model as the basis for intervention in schools (Oyserman, Terry, & Bybee, 2002; Oyserman, Bybee, & Terry, 2006). They designed classroom-based activities to create a sense that school success is a possible identity, congruent with other important social identities, and to encourage an interpretation of difficulty as meaning that engaging in school is important (rather than a sign that success is impossible). Follow-ups at one and two years post intervention showed effects for academic outcomes (grades, test scores) and effort (attendance, homework, in-class behavior). Effects were mediated by changes in students' school-focused possible identities (Oyserman, et al., 2006). In intervention but not control group students, believing that success in school was a possible future identity was positively associated with racial-ethnic identity (Oyserman, et al., 2006). Following these experimental manipulations of identity-congruence based on identity-based motivation theory, the current study explicitly tests the malleability of gender identity in relation to motivation at school.

2. Current Study: Hypotheses and Research Design

Following identity-based motivation theory, we predict that children will be sensitive to subtle contextual cues about the gender-identity congruence (vs. incongruence or irrelevance) of school success. Specifically, when primed to consider success as gender-identity congruent, children will imagine more school-focused possible identities, work harder on difficult school tasks, and believe that they will be generally successful relative to other Americans (finishing more years of schooling and earning more).

To test our predictions, we use a between-participants experimental design. Children are randomly assigned to experimental or control conditions in which adult graduation rates and income are presented either with or without gender information. We chose graduation and income as context cues for two reasons. First, these are ecologically valid descriptors of gender-based differences. Second, as described next, prior research shows that current school success and future occupational success are linked in children's minds by middle school. In a set of studies with urban, low-income and minority youth, Destin and Oyserman (2010, Study 1) first asked 12-13 year olds to imagine themselves in ten years and the job they would most likely have. About half described an education-dependent future identity that was linked to school success, and about half described an education-independent future identity that was separate from school success. Children who described their future as education-dependent reported spending more time on homework and, controlling for their

prior school grades, attained a better grade-point average by the end of the semester. Results implied that children work harder in school when they see their adult futures as dependent on education. In a follow-up experiment to test the underlying causal process, the authors randomized children to adopt either an education-dependent or an education-independent mindset by showing them information on adult earnings either organized by education-level or not. As predicted, students in the education-dependent condition planned to spend more time on homework that night than students in the education-independent condition. Moreover, eight times as many children in the education-dependent condition completed an extra credit assignment that night (while 3% of students in the education-independent condition completed the assignment, about 24% of students in the education-dependent condition did so, Destin & Oyserman, 2010, Study 2).

Our dependent variables test the theoretically relevant predictions that identity is dynamically constructed in the moment and influences behavior. We use two previously validated measures, operationalizing identity content as the content of next year possible identities (possible selves, following the coding of Oyserman & Markus, 1990) and school behavior as the number of attempts at a novel math task (following Oyserman, Gant & Ager, 1995). We chose the future identity task because it would allow us to see if children's future identities were dynamically constructed, becoming more focused on school when success seemed gender identity congruent. We chose the math task because it provided a measure of effort relevant to the context of the study (math class). We also assessed expectations for adult educational and career success with a two-item measure developed for this study to test the effects of children's current conceptualization of identity on more distal future expectations.

2.1 Sample

Participants were eighth-grade students (n = 149, 68 male, 80 female, 1 who omitted gender information, 76 African American, 34 European American, 9 Latino, and 30 who gave other responses or omitted this information) enrolled in one of six math classes taught by two teachers in a Detroit-area middle school. Most were from low income families – 68.3% were eligible for free or reduced lunch. Those who were eligible for free lunch came from families with incomes up to 130% of the Federal poverty guidelines ($29,000 for a family of four), and those eligible for reduced cost lunch had families with incomes up to 185% of the Federal poverty guidelines ($40,000 for a family of four).

2.2 Procedure

Children participated in their math class (tracked as advanced, regular, or needing-support). They were told that they would be asked questions about how students their age see themselves in the future and that they would see a graph and complete a few academic problems. Randomization to condition occurred within classroom. Specifically, each child was given a 5-page booklet that looked identical from the outside but contained the condition manipulation (displayed in Figure 1) inside the front cover on the booklet's first page. Each child saw one of four graphs created from Michigan Census data. The instructions were "*Please look carefully at the graph below then answer the questions below it.*" As displayed in Figure 1, below each graph were four comprehension questions meant to simulate a graph comprehension activity in math class but serving as the manipulation check. Graphs showed information about income or high school graduation and were presented either as a single bar (control -- no gender information) or as two bars marked by gender. The comprehension questions matched the graph, for example "*Men typically earn more than women*," or *"A little more than 75% of all students in Michigan graduate from high school."*

The control condition graphs did not provide gender information: One showed the median income in Michigan (Figure 1a); the other showed the percentage of Michigan adults who graduated high school (Figure 1b). The experimental condition graphs provided information by gender for income (Figure 1c) or high school graduation (Figure 1d). Since men earn more than women, in this condition, success was gender congruent for boys, not for girls. Since women are more likely to graduate high school, in this condition, success was gender congruent for girls, not for boys.

On the second page of the booklet, instructions were "*Each of us has some image or picture of what we will be like and what we want to avoid being like in the future. Think about* ***next year*** *-- imagine what you'll be like, and what you'll be doing next year*" followed by the prompt, "*Next year, I expect to be*:" and four lines. Children were asked to list up to four expected identities. Next was the instruction "*Think a minute about ways you would* ***not*** *like to be next year -- things you are concerned about or want to avoid being like*" and four lines. Children were asked to list up to four feared identities with the prompt, *"Next year, I want to avoid:"*. [1]

On the third page of the booklet, instructions were: "*In the lines below, write down as many ways as you can think of to combine the numbers* ***2, 3, and 7*** *to obtain* ***the number 36****. You can add, subtract, multiply, or divide and use each number as many times as you like*." The rest of the page was lined. Students decided for themselves how many attempts to make. [2]

On the fourth page of the booklet were two items, "*Select the response that best describes how much farther you expect to go in school*" and "*Select the response that best describes how much money do you think you will earn as an adult*", each followed by a 5-point response scale (labeled at the end points as 1=*A lot less than the average American*, and 5=*A lot more than the average American*).

Students reported their gender and race/ethnicity on the last page of the booklet.

The study took less than 30 minutes to complete. Each class was thanked and fully debriefed. All were reminded that effort in school matters.

2.3 Dependent Measures

2.3.1 School-Focused Possible Identities—We used the method described by Oyserman and Markus to count and content code expected and feared possible identities. Two independent coders double coded a random 20% of responses, yielding an interrater reliability of α=83. On average, children wrote six possible identities (M = 5.92, SD = 2.13). We counted any mention of school as a school-focused possible identity (among both expected and feared possible identities). School was the most common focus (M=3.26, SD=1.66), followed by interpersonal relationships (M = 1.11, SD = 1.08). We content coded what students described about school in their school-focused possible identities and found two themes: academics (e.g., expecting to be "getting good grades" and wanting to avoid being "unfocused on my studies") and behavior in school (e.g., expecting to be "well behaved" and wanting to avoid "talking back to teachers"). Almost all children (95%) generated at least one academic possible identity (98.7% of girls and 90.5% of boys). Most (70%) also generated at least one school behavior-focused possible identity (67% of girls and 73% of boys). School-focused possible identities were basically academic in nature;

[1]Based on Oyserman & Markus (1990). The entire text of the measure and format of the responses is available online at http://www.sitemaker.umich.edu/culture.self/measures.

[2]Based on Oyserman et al. (1995) and Oyserman et al. (2003).

only 3% of children described a school behavior-focused future identity without also describing a future identity related to academic achievement.

2.3.2 Math Task—We counted each attempt on the math task. Attempts ranged from 0 (no attempts) to 29. Outliers above 11 were truncated to equal 11 to adjust for positive skew. On average children made three attempts ($M = 2.99$, $SD = 3.08$).

2.3.3 Future Success Expectations—The two future success items were averaged ($\alpha = .64$) to attain a future success expectation score ($M = 4.19$, $SD = .69$).

3. Results

3.1 Analysis plan

Given our prediction that gender congruence of success matters, we labeled the graduation condition for girls and the income condition for boys as gender-congruent success. We also labeled the income condition for girls and the graduation condition for boys as gender-incongruent success. Preliminary analyses of variance demonstrated no difference between the two control conditions or between the control conditions and the gender-incongruent success conditions (all $Fs < 1.50$, ps between .23 and .78). Therefore we combined the two control conditions (results do not differ when analyses preserve original four groups)[3]. This allowed us to focus on the planned contrast between children in the gender-congruent success condition and children in the other conditions (gender-incongruent success and control). We controlled for possible effects of race, math track and teacher by entering race, dummy coded for the school context's majority racial group (African American), math track, and teacher codes as covariates. We considered the possibility that condition affected the number of possible future identities listed but did not find any evidence for this, so we do not include this count variable as a control.

3.2 Manipulation Check

The initial sample included $n = 149$ children, data from one child was omitted because he or she did not report on gender. Of the $n = 148$ children who reported their gender, all but two correctly answered at least one of the manipulation check questions and were retained for further analyses (final $n = 146$).

3.3 School-focused possible identities

As depicted in Figure 2, children imagined more school-focused future identities if success was presented as characteristic of their own gender (i.e., graduation success for girls, income success for boys) rather than otherwise, $F(1, 129) = 4.85$, $p < .05$. This effect was not moderated by gender ($F < 1$, *ns*).

3.4 Math task

As depicted in Figure 3, children made more attempts to solve the math task if success was presented as characteristic of their own gender (i.e., graduation success for girls, income success for boys), than otherwise, $F(1,135) = 3.08$, $p < .10$. When effects for boys and girls were analyzed separately, we found a significant condition effect only for boys, who increased effort if success was presented as characteristic of their gender rather than otherwise, $F(1,135) = 3.99$, $p < .05$. Girls worked equally hard at the task across conditions.

[3]Analyses of contrasts were conducted with and without boys and girls combined in the control conditions and no substantive differences were found. For simplicity, we are reporting results with boys and girls combined in the control conditions.

3.5 Future success expectations

As depicted in Figure 4, boys and girls imagined themselves going farther in school and earning more money as adults compared to the average American if success was presented as characteristic of their own gender rather than otherwise, $F(1,133) = 4.14$, $p<.05$. This effect was not moderated by gender ($F<1$, *ns*).

4. Discussion

Gender identity and identity-based motivation models both predict that gender identity matters. However, while gender identity theories assume the stability of identity content once formed, the identity-based motivation model predicts that identity may feel stable but is actually dynamically constructed from situational cues. Moreover, according to the identity-based motivation model, once a course of action feels identity-congruent, difficulty along the way is likely to be interpreted as meaning that the behavior is important, not impossible. Results of a brief experimental manipulation support these latter predictions, demonstrating that subtle situational cues about the link between one's gender and future success influence not only identity content but also current effort on academic tasks, especially for boys.

Specifically, we presented boys and girls with graphs of earning and graduation success. Half of the children saw graphs marked by gender; half did not. When success was linked to one's own gender rather than to the other gender or not linked to gender at all, children reported more academic goals for themselves – that is, they generated more school-focused identities when describing what they expected and feared being like in the coming year. In this condition, children also expected relatively more success as adults – higher income and educational attainment compared to the average American. At trend level, children also tried harder on a novel math task, generating more attempted solutions. The effect of contextual cues about the link between gender and success was equally strong for boys and girls for the two future identity measures. For the behavioral measure, the effect was significant for boys only, and girls tried equally hard regardless of the contextual cue.

By demonstrating that content of an important, chronically accessible or *broad* social identity (Oyserman, 2009a, 2009b) such as gender is dynamically constructed by subtle momentarily salient contextual cues, our results move beyond prior identity-based motivation research. Research to date has either assessed the content of broad social identities (e.g., racial-ethnic identities; Oyserman et al., 2003; Oyserman, 2008) or manipulated salience rather than content of these identities (e.g., Oyserman et al., 1995). When content of identity has been manipulated, the focus was on *narrow* social identities – identities that are less likely to be chronically accessible and less likely to be relevant across contexts and life domains such as that of video-gamer, graduate student, or dorm resident (Berger & Rand, 2008; Berger & Heath, 2008).

We demonstrate that effects are not limited to manipulations of the content of such narrow social identities. Rather, subtle contextual cues were used to dynamically construct a broadly important social identity, gender identity. Effects of this manipulation are important because both children and adolescents prefer gender-congruent actions (Martin & Ruble, 2009). Therefore, by demonstrating a manipulation of gender-congruent action, our results advance gender-identity research.

A limitation of our study is that, while we successfully changed the extent to which boys and girls envisioned academics and earnings as part of their next year and adult identities, we succeeded in changing the behavior of boys but not girls. Perhaps our behavioral task was too easy for girls, who are more likely to work hard in school (Peter & Horn, 2005; King,

2006). Moreover, our primes differed, reflecting differences in outcomes between men and women in earnings and graduation rates. Prior research has demonstrated both effects separately. Children work harder at school tasks when school-success is linked to future earnings (Destin & Oyserman, 2010) and when the path to future school-success feels open (Destin & Oyserman, 2009). However, the relative power of each cue is not known, and it is possible that a larger gap favoring women could lead to behavioral effects among female participants as well. Finally, it is possible that boys are more sensitive to gender cues or to contextual cues generally. Higher responsiveness among boys to cues about gender fits with evidence that boys are more likely to be monitored for deviance from gender-congruent behavior than girls (e.g., Leaper & Friedman, 2007). While the next year and adult possible identities of boys and girls were equally influenced by the prime, boys might be particularly sensitive to behavioral possibilities. If the range of acceptable behavior is more restricted for boys than for girls, then information that expands the behaviors defined as masculine may be especially powerful for boys who might otherwise see effortful engagement with school tasks as a something girls, not boys, do.

Taken as a whole, our findings also have practical implications for interventions in schools to motivate effort among both boys and girls. As evidenced by the gender gaps between girls and boys on achievement measures (e.g., CEP, 2010; Peter & Horn, 2005), gender matters for students at school. The findings reported here support the possibility that currently children experience differing local contexts, with girls' better performance creating a sense that school is for girls. This produces an upward spiral of effort and therefore outcomes for girls, and a downward spiral of effort and therefore outcomes for boys. Boys and girls' identities and behavioral responses are likely to fit the sense they make of gender. Indeed, in the current study we demonstrate that boys and girls are sensitive to situational cues about the link between gender and school performance. In the world outside our experimental manipulation, if cues stay stable, so will perceptions and behavior. Conversely, if cues change, so will perceptions and behavior. Schools may not be causing gender gaps to occur, but schools can help remediate them. Currently, contextual cues highlight the congruence between female gender and academically oriented behavior; if cues differed, both boys and girls should be sensitive to them, with both boys' and girls' outcomes improving if success were cued as congruent with both genders. Identities feel stable but are dynamically constructed in context. When a behavior feels identity congruent, then effort is more likely because difficulty will be interpreted as importance, not impossibility. We are currently testing this possibility by manipulating interpretations of difficulty directly. This ongoing work may offer additional insight on approaches that encourage academic effort and persistence among boys and girls alike.

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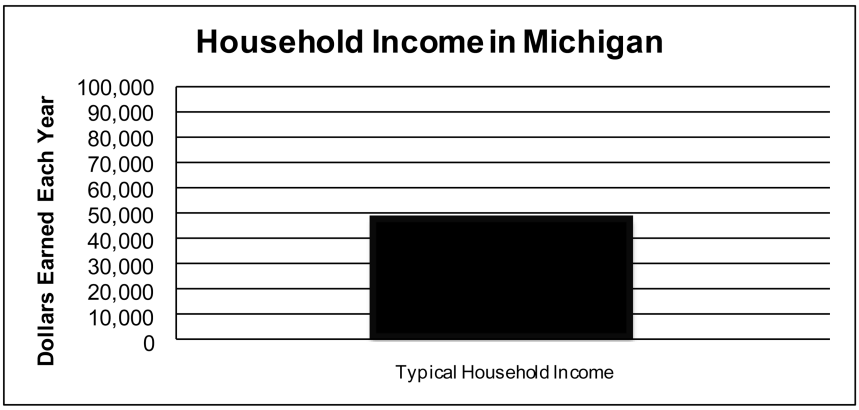
Highlights

- Gender is psychologically salient and part of children's identity from an early age
- Though it feels stable, what it means to be a boy or girl in school is malleable
- Success feels possible and effort improves if context implies one's gender succeeds

Figure 1a Control (Income)

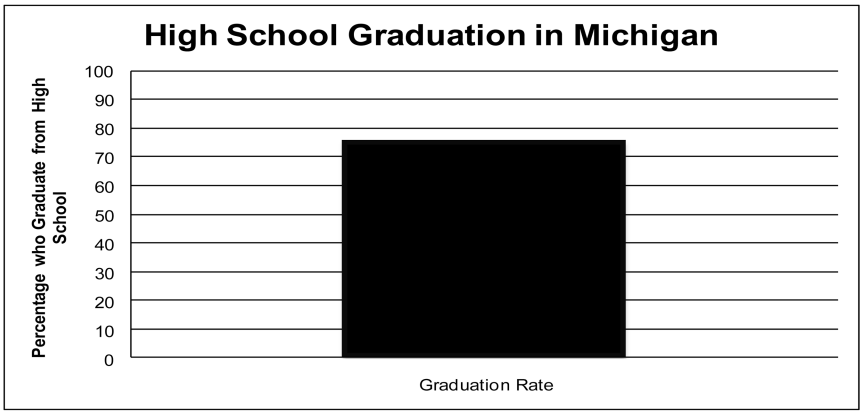


Here are some statements that students made about this graph. Read each statement and mark whether it is true or false according to the graph above.

☐ True ☐ False - Student 1 said, “It is typical to earn more than $40,000 a year.”
☐ True ☐ False - Student 2 said, “The typical annual income of a household in Michigan is around $48,000.”
☐ True ☐ False - Student 3 said, “Most families live on less than $100,000 a year in Michigan.”

Of the students above, which one do you think gave the statement that is the best, most complete summary of the information shown in the graph? (Student 1, Student 2, or Student 3?)

Figure 1b Control (Graduation)

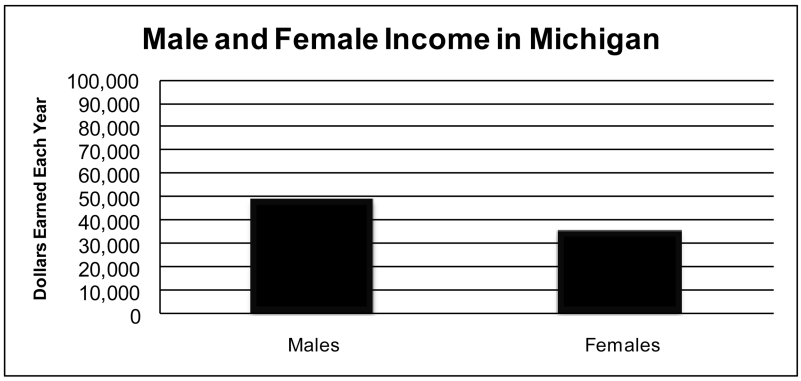


Here are some statements that students made about this graph. Read each statement and mark whether it is true or false according to the graph above.

☐ True ☐ False - Student 1 said, “Most students finish high school.”
☐ True ☐ False - Student 2 said, “A little more than 75% of all students in Michigan graduate from high school.”
☐ True ☐ False - Student 3 said, “Not graduating from high school is uncommon.”

Of the students above, which one do you think gave the statement that is the best, most complete summary of the information shown in the graph? (Student 1, Student 2, or Student 3?)

Figure 1c Experimental Condition (Success as Gender Congruent for Girls)



Here are some statements that students made about this graph. Read each statement and mark whether it is true or false according to the graph above.

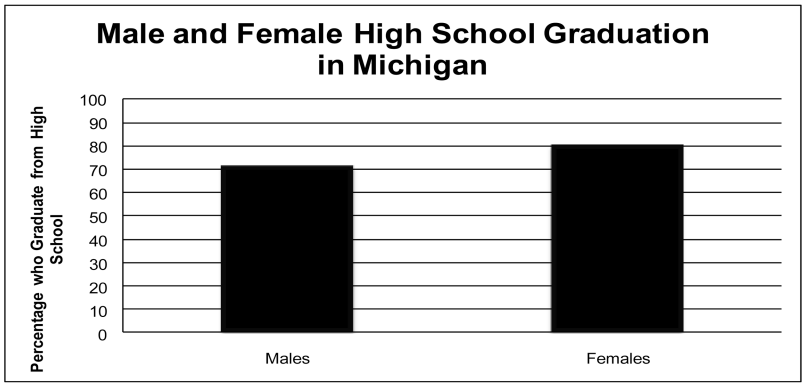
☐ True ☐ False - Student 1 said, "Men typically earn more than women."

☐ True ☐ False - Student 2 said, "The typical annual earnings of a man in Michigan are higher than the typical annual earnings of a woman."

☐ True ☐ False - Student 3 said, "Women typically earn less than men."

Of the students above, which one do you think gave the statement that is the best, most complete summary of the information shown in the graph? (Student 1, Student 2, or Student 3?)

Figure 1d Experimental Condition (Success as Gender Congruent for Boys)



Here are some statements that students made about this graph. Read each statement and mark whether it is true or false according to the graph above.

☐ True ☐ False - Student 1 said, "More girls finish high school."

☐ True ☐ False - Student 2 said, "A higher percentage of female students than male students graduate from high school in Michigan."

☐ True ☐ False - Student 3 said, "The amount of boys who do not finish high school is higher."

Of the students above, which one do you think gave the statement that is the best, most complete summary of the information shown in the graph? (Student 1, Student 2, or Student 3?)

Figure 1. Manipulations of the Gender Ingroup Congruence of Success

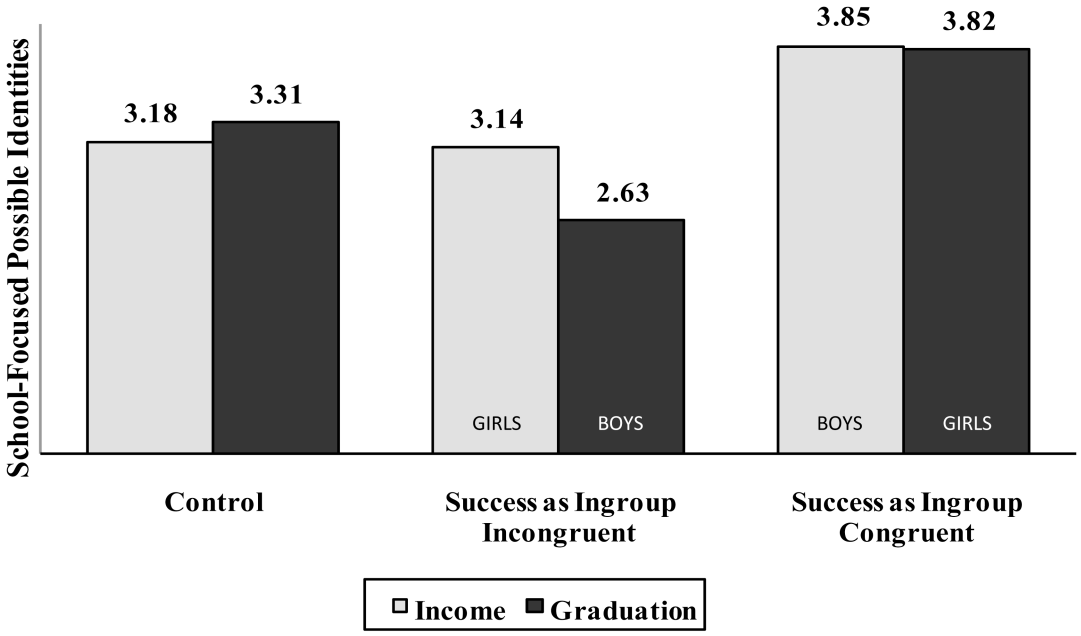


Figure 2. Differential effect of priming success as gender identity-congruent vs. gender identity-incongruent or no gender controls on school-focused next year possible identities

Note: Boys and girls generated more school-focused possible identities in the Success as Ingroup Congruent condition than in the other two conditions combined. The two Control conditions (Figure 1a income, F1b graduation) did not present gendered information: boys and girls saw information about income or graduation rates in the population at large. The Ingroup conditions (Figure 1c income, Figure 1d graduation) did present gendered information. Success was Ingroup Incongruent for girls when they saw the gendered income information (males earn more). Success was Ingroup Incongruent for boys when they saw the graduation information (females graduate at higher rates). Success was Ingroup Congruent for boys when they saw the income information by gender (Figure 1c) and Ingroup Congruent for girls when they saw the graduation information by gender (Figure 1d).

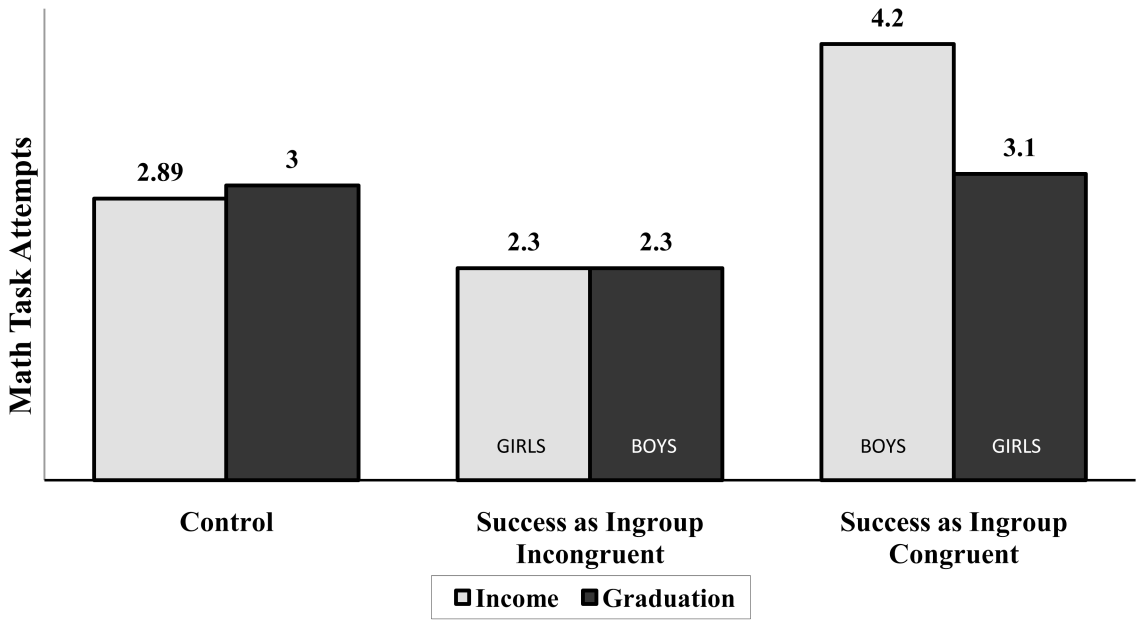


Figure 3.

Effect of priming achievement success as identity-congruent on students' effort on an academic math task

Note: Boys made more attempts to solve an academic math task in the Success as Ingroup Congruent condition than in the other two conditions combined. The two Control conditions (Figure 1a income, F1b graduation) did not present gendered information: boys and girls saw information about income or graduation rates in the population at large. The Ingroup conditions (Figure 1c income, Figure 1d graduation) did present gendered information. Success was Ingroup Incongruent for girls when they saw the gendered income information (males earn more). Success was Ingroup Incongruent for boys when they saw the graduation information (females graduate at higher rates). Success was Ingroup Congruent for boys when they saw the income information by gender (Figure 1c) and Ingroup Congruent for girls when they saw the graduation information by gender (Figure 1d).

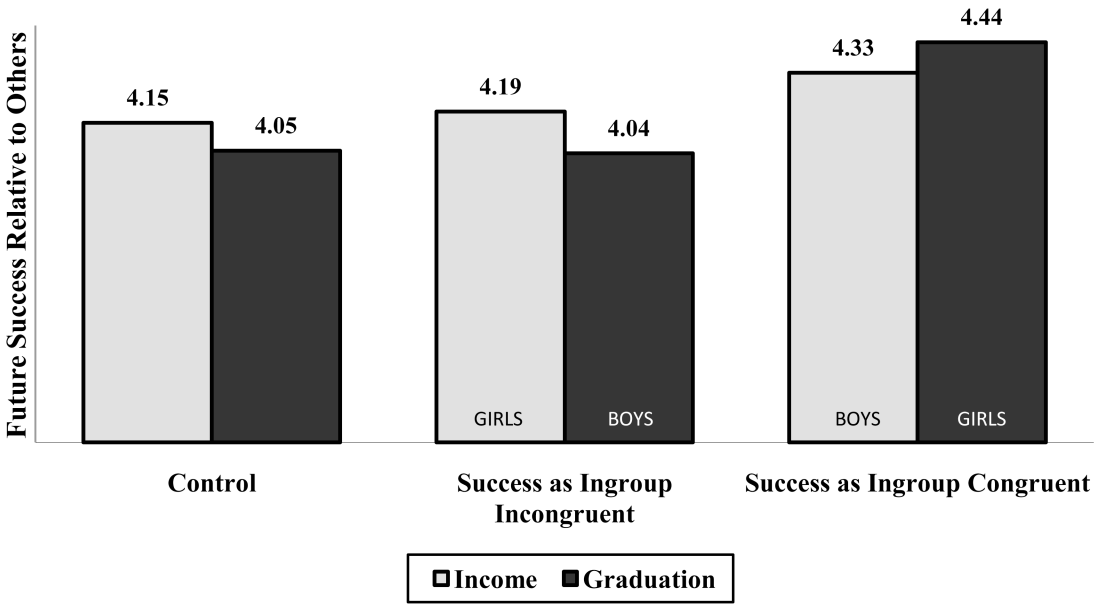


Figure 4. Differential effect of priming success as gender identity-congruent vs. gender identity-incongruent or no gender controls on future success expectations

Note: Boys and girls reported higher expectations of adult success in the Success as Ingroup Congruent condition than in the other two conditions combined. The two Control conditions (Figure 1a income, F1b graduation) did not present gendered information: boys and girls saw information about income or graduation rates in the population at large. The Ingroup conditions (Figure 1c income, Figure 1d graduation) did present gendered information. Success was Ingroup Incongruent for girls when they saw the gendered income information (males earn more). Success was Ingroup Incongruent for boys when they saw the graduation information (females graduate at higher rates). Success was Ingroup Congruent for boys when they saw the income information by gender (Figure 1c) and Ingroup Congruent for girls when they saw the graduation information by gender (Figure 1d).